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Issues for the 1990's. Janet B. Stevens, editor. Economic Research Service, U.S. Department of Agriculture. Agriculture Information Bulletin No. 664.

Abstract

Food and agriculture, more than ever, operate globally, with producers and agribusiness people competing head on with foreign interests. This increasing integration of world financial markets means that national and international monetary and fiscal policies directly affect U.S. agriculture. New and diverse groups, such as consumer and environmental interests, compete for policy agenda. A broader range of congressional committees also deal with issues affecting agriculture. And, a growing number of government agencies promulgate rules, regulations, standards, and programs involving agriculture and rural America. These rules and regulations are coming under increasing scrutiny by the food and agricultural sector. This report is a collection of front-burner policy issues focusing on America's food and agricultural industry and rural economy. The premise of this collection is that awareness and understanding improve decisionmaking.

Keywords: Trade, environment, markets, technology, commodity programs, food, nutrition, rural economy, and conservation

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Economic Research Service

Agriculture Information Bulletin Number 664-1

April 1993

Issues for the 1990's: TRADE

U.S.-Canada Free Trade Agreement: Trade Disputes and Settlement

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Issue. The U.S.-Canada Free Trade Agreement (CFTA) went into effect on January 1, 1989, to reduce barriers and promote trade between the two countries. But, trade disputes for agriculture have continued despite liberalization in tariffs, export subsidies, certain nontariff barriers, and technical regulations. Prominent disputes over the past 3 years have been over U.S. countervailing duties on Canadian pork and hogs, Canadian durum wheat exports to the United States, border meat inspection, and the U.S. Export Enhancement Program (EEP). The CFTA established a Canada-U.S. Commission to resolve trade disputes through a binational dispute settlement panel. The equitable settlement of trade disputes can remove potential impediments to trade.

Context. The agricultural provisions of the CFTA are relatively limited, because both countries preferred to exclude their domestic price support programs and accompanying border measures from a bilateral agreement. The two countries decided to leave the question of domestic agricultural policies having trade-distorting effects to the Uruguay Round of the General Agreement on Tariffs and Trade (GATT). However, both pledged to develop mutually advantageous rules and disciplines on subsidies and dumping, both contentious agricultural issues.

Several agricultural trade disputes have arisen, partly resulting from the relatively limited nature of the CFTA provisions. For example, U.S. producers alleged that Canada used its Western Grain Transportation Act (WGTA) rail subsidy to unfairly export wheat to the United States. The CFTA had removed the WGTA subsidy on westbound, but not eastbound, shipments destined for the United States. The United States has also alleged that Canada has sold durum wheat below the cost of acquisition, a violation of CFTA Article 701.3. This allegation is difficult to confirm since Canada's wheat export monopoly, the Canadian Wheat Board (CWB), does not disclose sale prices.

Canada has complained about U.S. EEP activity in wheat markets where the European Community (EC) is not a significant presence. EEP was designed primarily to counteract EC export subsidies. The CFTA, prohibiting use of bilateral export subsidies, requires that "each Party take into account the export interests of the other Party in the use of any export subsidy on any agricultural good exported to third countries."

At Stake. Agricultural trade between the two countries continues to rise under the CFTA as tariffs decline (see chart). The United States is Canada's largest supplier of agricultural imports. Fruits, vegetables, and other horticultural products account for about half of Canada's agricultural imports from the United States. Other important U.S. exports to Canada include livestock products, grains, oilseeds, and sugar products. Leading Canadian agricultural exports to the United States include livestock products, grains, and oilseeds. The United States has become increasingly important for Canadian agricultural exports, taking over a third of Canada's total agricultural exports in 1990.
Although agricultural trade has expanded, the CFTA has not ended all trade disputes. For example, Canada and the United States had agreed to a 1-year experiment of an open border for meat and poultry starting in February 1990. The experiment would have recognized Canadian meat inspection as equivalent to the U.S. standard. However, the United States delayed implementation and continued to re-inspect Canadian meat imports. Canada then began re-inspecting U.S. meat imports at the border.

In the summer of 1992, the dispute was resolved by instituting new rules on destination reinspection, with the goal of attaining a comprehensive reinspection system based on destination.

Alternatives. The dispute settlement panel has resolved two significant agricultural trade disagreements: U.S. countervailing duties on Canadian pork and Canadian durum wheat pricing. The panel ruled in Canada's favor in both cases and the United States accepted the decisions. The panel, operating bilaterally, was envisioned as being more expedient than a GATT panel; however, the pork case took over 1.5 years. On the other hand, some decisions made by GATT panels, such as the U.S. complaint against Canadian ice cream and yogurt quotas, have never been implemented.

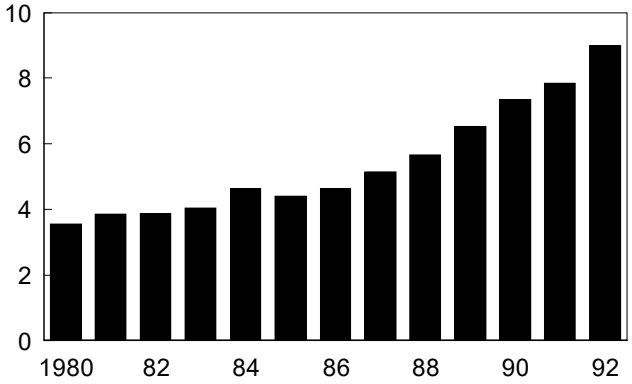
The United States sought to include new provisions in the North American Free Trade Agreement (NAFTA) to address trade-distorting border measures, a major area of dispute. However, Canada was not willing to liberalize its supply-management programs under the NAFTA, and excluded its dairy and poultry sectors from the agreement.

The United States and Canada agreed to develop rules on subsidies and dumping under the CFTA, but these discussions have largely been in abeyance, awaiting a conclusion to the GATT negotiations. Several of the contentious agricultural policies could be made less trade-distorting with a successful GATT outcome. In earlier GATT rounds, agriculture had been primarily excluded, with the exception of tariff reductions. However, agriculture is now the major concern, with reductions being sought in domestic support, market access barriers, and export subsidies. Trade disputes may occur less often under the CFTA with a GATT agreement for agriculture.

Agenda. The GATT agreement, originally scheduled for completion in December 1990, has been delayed because of the intractability of the agricultural negotiations. The dispute settlement panel did rule in favor of Canada in the U.S. complaint on the durum wheat issue, but the CWB is now subject to annual audits to ensure it does not violate CFTA Article 701.3. The first audit will take place by June 1, 1993.

Information Source. C. Goodloe and M. Simone, *A North American Free Trade Area for Agriculture: The Role of Canada and the U.S.-Canada Agreement*, AIB-644, U.S. Dept. Agr., Econ. Res. Serv., Mar. 1992.

U.S.- Canada agricultural trade
Trade expands as tariffs decline.



Source: U.S. Census, Statistics Canada.

United States Department of Agriculture

Economic Research Service

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April 1993

Issues for the 1990's: TRADE

Economic Realignments Affecting Trade: EC Agreements with EFTA and Eastern Europe

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Issue. The current 12-nation membership of the European Community (EC) will likely expand to as many as 20 members through the recent trade agreements the EC has signed with its European neighbors and the growing list of EC applicants. A larger EC membership, covered by the Common Agricultural Policy (CAP) with its traditionally high farm prices, could substantially displace U.S. food and agricultural exports to Europe and other regions of the world. An agreement in agriculture in the GATT negotiations would substantially reduce the likelihood that an enlarged EC would capture a larger share of world agricultural markets.

EC enlargement will affect other trade issues, including the EC's ban on the production and import of meat derived from animals treated with hormones, the EC's moratorium on allowing the use of bovine somatotropin, and adoption of the EC's single market legislation by new members that will affect plant and animal health and food safety regulations throughout the world.

Context. The EC signed association agreements with Poland, the Czech and Slovak Federal Republic (CSFR), and Hungary that took effect in March 1992. These agreements include concessions on many agricultural commodities and are precursors to the eventual EC membership for these Eastern Europe countries. In May 1992, the EC signed a treaty forming the European Economic Area (EEA) with the seven-member European Free Trade Association (EFTA). However, a Swiss referendum on the EEA in December 1992 failed to ratify the treaty, temporarily excluding Switzerland from the free trade area. The EEA does not significantly affect trade in food and agricultural products, but it could mean that as many as five members of EFTA (Austria, Sweden, Finland, and perhaps Norway and Switzerland) could become EC members by 1995. The remaining EFTA members, Iceland and Liechtenstein, are not likely to apply for EC membership.

The EEA will be the world's largest and most affluent single market when established this year as it provides for the free movement of goods, services, and capital within the area. However, agricultural goods were excepted from the free movement of goods between the EC and EFTA members. Membership in the EC, which requires only that a country be European and have a democratic form of government, will mean lower market support for all of the former EFTA countries; these countries now have even higher farm prices than does the EC. Adoption of the CAP by EFTA countries over a 5-year transition period will likely lead to lower agricultural production levels in these new member states. Dairy could be the most sensitive agricultural sector in the EC-EFTA enlargement negotiations because it is one of the most highly protected sectors in both regions.

The integration of Poland, the CSFR (now two countries), and Hungary into the EC is of much more consequence to agricultural production and trade than the five EFTA candidates. These Eastern Europe countries harvest approximately 34 million acres of grain, compared with less than 10 million acres for the EFTA countries. Their population of 64 million is twice that of the five EFTA candidates. And the agricultural population in the Eastern Europe countries represents 17 percent of their total population but less than 5 percent in EFTA countries. CAP prices are significantly higher than current agricultural prices in Poland, the Czech and Slovak Republics, and Hungary, but lower than prices in

the EFTA countries. Therefore, under the CAP, the Eastern Europe countries will experience much greater productivity compared with EFTA countries, and will likely become net agricultural exporters. EC inclusion of EFTA countries could be completed by 1995 because these countries have already adopted EC legislation and have had free trade with the EC in most nonagricultural goods since 1973. EC integration could be more difficult for Poland, the Czech and Slovak Republics, and Hungary because they will represent a budget drain to the EC due to low value-added tax contributions to the EC budget and high CAP payments to their farmers. Nevertheless, anticipation of entry into the EC has prompted some of these countries to adopt CAP-like policies such as internal price support and a variable levy system. Poland, the Czech and Slovak Republics, and Hungary would be very competitive in the cereal and meat sectors, which would add to current CAP surpluses and even larger EC exports of these commodities.

At Stake. The United States is the largest exporter of food and agricultural products to Europe, exporting $7.6 billion worth, including $6.77 billion to the EC, $0.54 billion to the EFTA countries, and $0.11 billion to Poland, the Czech and Slovak Republics, and Hungary in fiscal 1991. EC enlargement could hurt U.S. agricultural exports to the EC as trade barriers fall between new and old EC member states. Agricultural trade has already expanded significantly between the EC and its European neighbors. U.S. agricultural exports could also suffer if high CAP prices lead to even greater levels of surplus agricultural production in the EC being dumped onto world markets. But the United States could benefit from EC enlargement to include EFTA countries if there is an agreement on agriculture in the General Agreement on Tariffs and Trade (GATT) negotiations. If the Eastern Europe countries become EC members, the United States would likely face less competition from them in world markets under an agreement in the GATT.

Alternatives. U.S. policy responses will depend on the outcome of the negotiations between the EC and the applicant countries and on the outcome of the current GATT negotiations on agriculture. The United States has recourse to multilateral action in the GATT that covers trade damage issues when customs unions are formed or enlarged. The United States consulted bilaterally with the EC when it enlarged in 1973, 1981, and 1986, with some success. The United States could also act unilaterally by adjusting its production, stocks, and trade and targeting markets. However, an agreement on agriculture in the Uruguay Round may require a reliance on binding arbitration within the GATT that could preclude unilateral retaliatory action.

Agenda. The United States will be constantly alert as EC enlargement negotiations proceed and any infringement is perceived on U.S. rights within established treaties and agreements. The GATT already imposes international discipline on the effects on third parties in the formation and enlargement of customs unions. A GATT agreement in agriculture would assure the EC's implementation of CAP reform that would mitigate production increases in the new member states. A GATT agreement on agriculture also provides for improved access of U.S. agricultural exports to the EC market.

Information Sources. Two U.S. Dept. of Agriculture, Economic Research Service, reports: David Kelch, editor, *EC 1992: Implications for World Food and Agricultural Trade*, AGES 9133, Oct. 1991, and Daniel Plunkett, coordinator, *Western Europe Agriculture and Trade Report, RS 4-92*, Dec. 1992. Also see Robert Koopman and others, *European Economic Integration and the Consequences for U.S. Agriculture*, IATRC Working Paper 91-7, Sept. 1991.

United States Department of Agriculture

Economic Research Service

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April 1993

Issues for the 1990's: TRADE

EC Agricultural Policy Reform

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Issue. The European Community (EC) has adopted a significant reform of its Common Agricultural Policy (CAP) that could help the EC meet commitments called for in the Uruguay Round of negotiations under the General Agreement on Tariffs and Trade (GATT). The reform was spurred by the growth of EC expenditures for agriculture, continued surplus production, and the ongoing agriculture negotiations under the GATT (see chart). Changes in EC agriculture, brought about by CAP reform, could lead to lessening of tensions in the U.S.-EC agricultural trade relationship.

Context. Previous CAP policies increased agricultural output, changing the EC from a net importer to a net exporter of many major commodities. U.S. exports were displaced in EC and third markets. A stalemate between the United States and the EC in the agriculture negotiations had been a factor in preventing a conclusion to the GATT talks. Numerous other agricultural trade disputes, including the oilseeds dispute and the EC's ban on hormone-treated meat, have contributed to tensions in the U.S.-EC relationship. The reform contains changes in the policy mechanisms used to support the grains, oilseeds, protein crops, beef, sheepmeat, and tobacco sectors. These changes will be phased in over 3 years beginning in 1993. For arable crops and beef, producers will be compensated for reductions in support prices through increased direct payments. In addition, new supply control measures designed to reduce output and limit EC budget outlays will be instituted for arable crops, beef, tobacco, and sheepmeat.

Price reductions and supply control measures in the arable crops sectors will reduce production of grains, oilseeds, and protein crops. EC consumption will be encouraged by the lower prices. Lower output and increased domestic use should reduce the EC's supplies available for export. These changes in EC agricultural production, consumption, and trade will affect international and U.S. markets, and the EC's ability to make commitments in the GATT talks.

At Stake. CAP reform has important implications for the U.S.-EC trade relationship because of its impacts on the GATT negotiations. The negotiations aim to reduce internal support to agriculture, reduce subsidized exports, and improve import access. CAP reform will help the EC meet its commitments on reducing internal support. The EC could also meet export subsidy reduction targets for some commodities. A GATT agreement providing solutions to individual disputes and multilateral disciplines on export subsidies would alleviate much of the pressures on the U.S.-EC relationship.

An agreement in the GATT would also impose multilateral disciplines on the EC. The effectiveness of the CAP reform program depends on how it is implemented. Modifications to the reform could result in smaller reductions in internal support and subsidized exports. The EC has not yet determined what penalties will apply to producers who evade the set-aside and other supply control measures. Without sufficient penalties, the effectiveness of the reform could be lessened.

A GATT agreement would require the EC to adopt important agricultural policy changes beyond the scope of CAP reform. Not every agricultural sector is included in the CAP reform: changes in the dairy sector are minor, and no reforms have been implemented for sugar, wine, or fruits and vegetables. These products would be covered by an agriculture agreement in the GATT. CAP reform makes no changes to the highly protective import regime. A GATT agreement would include commitments to improve import access for farm products.

Alternatives. The United States has responded, both unilaterally and in multilateral forums, to market distortions caused by CAP policies. For example, the U.S. Export Enhancement Program was

designed to counteract EC export subsidies in traditional U.S. export markets. At the same time, the United States has actively sought an agreement on farm trade in the current Uruguay Round of the GATT.

Multilateral action: The United States can continue to seek a GATT agreement which would impose multilateral discipline on the EC's implementation of CAP reform, and require the EC to include import access commitments in its agricultural policy reform.

Unilateral action: In addition to or instead of multilateral negotiations in the GATT, countries have used unilateral approaches to resolve trade disputes. For example, Section 301 of the 1974 trade act authorizes the United States to take action against unfair trade practices of other countries. The United States has authority to expand its export subsidy program, as it has through the GATT triggers contained in the 1990 budget reconciliation act. The United States can likewise unilaterally alter its production and/or stockholding behavior to respond to EC production and trade.

Agenda. U.S. policy responses will depend on the outcome of the GATT negotiations, and on EC implementation of CAP reform. Some of the provisions of the reform may be modified to lessen the impact on EC production and exports. A GATT agreement in agriculture would impose international discipline on EC implementation of CAP reform. In addition, a GATT agreement would require the EC to provide improved import access for agricultural products, and to cover all commodities, neither of which CAP reform does.

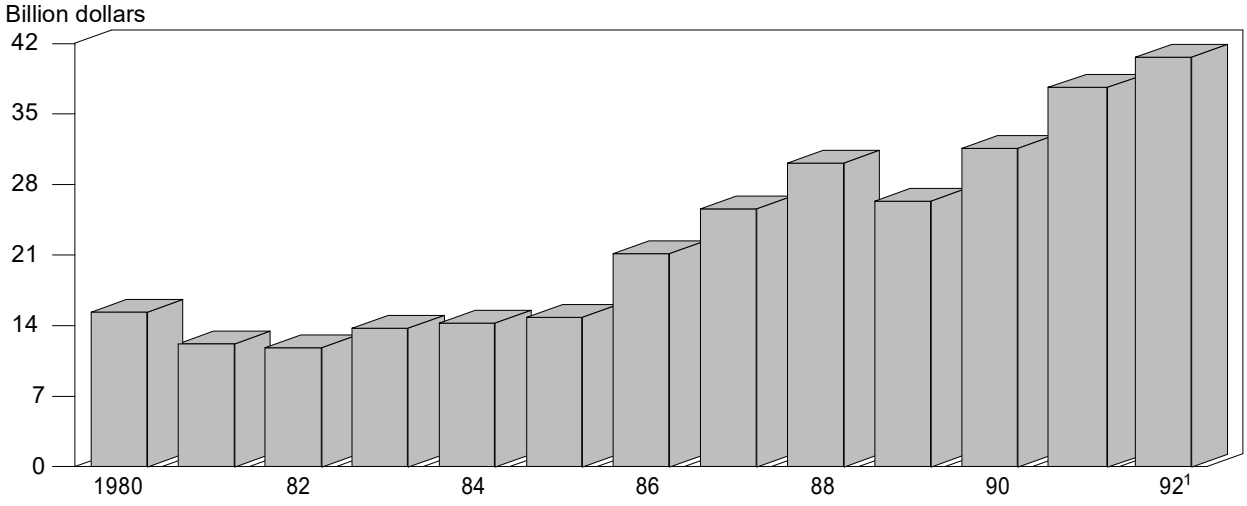
Information Sources. Two U.S. Dept. of Agriculture, Economic Research Service, reports: *Agricultural Outlook*, July 1992, and *Western Europe Agriculture and Trade Report*, Dec. 1992.

Transition to the new Common Agricultural Policy
Prices are lowered and direct payments increased over 3 years.

Policy mechanism	Unit	1991/92	1993/94	1994/95	1995/96
Cereals intervention price	ECU/t	155.0	117.0	108.0	100.0
Cereals payment	do.	NA	25.0	35.0	45.0
Oilseeds payment	do.	162.5	152.0	152.0	152.0
Protein crops payment	do.	NA	65.0	65.0	65.0
Set-aside payment	ECU/ha	Varies by country	207.0	207.0	207.0
Beef intervention price	ECU/t	3,430.0	3,258.5	3,087.0	2,915.5

Payments shown are based on EC average yields. Actual payments will depend on regional yields in each member country.
1 ECU (European Currency Unit) = $1.46. 1 hectare (ha) = 2.471 acres. t = metric ton. NA = not applicable.

EC expenditures on market support
EC agricultural spending increased steadily in the 1980's.



[1] Estimated. Source: EC Commission.

United States Department of Agriculture

Economic Research Service

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April 1993

Issues for the 1990's: TRADE

Relationships of Agricultural Trade and the Environment

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Issue. Liberalizing international trade and improving environmental quality are important, but sometimes conflicting, societal objectives. The issue is one of compatibility of agricultural trade and environmental objectives because environmental policies and regulations may alter cost structure and competitiveness. Thus, questions arise:

(1) Does freer trade harm the environment?
(2) How does the introduction of environmental policies affect agricultural production, farm income, and competitiveness?
(3) Can policies be designed that meet both agricultural and environmental goals?

Context. World trade and international competitiveness issues are increasingly measured against more recent concerns over the environment. Such environmental issues as water quality, soil productivity, deforestation, and protection of wildlife and biodiversity, as well as food and farmworker safety, are closely related to agricultural production. Policy issues surfacing in the General Agreement on Tariffs and Trade (GATT), the North American free trade talks, and EC-1992 negotiations, for example, suggest that environmental problems related to agriculture may be among the major agricultural trade issues of the 1990's.

At Stake. Links between trade and environment arise in several policy areas. Trade disputes between suppliers and importers increasingly stem from nations' differing standards for environmental and health protection. The United States has found itself on both sides of such issues, as recent trade disputes demonstrate. For example, there have been disagreements with Mexico regarding restrictions on tuna caught in dolphin-populated seas, with the European Community (EC) regarding its import prohibitions on U.S. meat produced with animal growth hormones, and with the EC over its wines containing residues of procymidone, a fungicide unregistered for U.S. use. U.S. concerns with a "circle of poison," the return of nationally banned chemicals in imported foods, also fit this category.

International efforts to integrate economies by liberalizing trade and investment might encourage production to move to where environmental restrictions are most lax, worsening overall environmental quality. Concerns have focused mostly on traditional "smoke stack" industries in the manufacturing sector, but agriculture is also involved. Agribusinesses investing overseas in such operations as slaughter plants and food processing can harm the environment. Also, changing incentives for crop and livestock production through changing trade barriers could worsen the environment, as in groundwater pollution, in some countries or regions while relieving it in others. For example, growing worldwide use of nitrogen fertilizer may generate pressure for regulations on its use patterned after those in the United States and the EC.

National and international efforts to reform agricultural policies, making them less "trade-distorting" and more "market-oriented," are influenced by the possibility that farm income support and environmental objectives can be jointly served. A GATT agreement on agricultural policy reform, for example, would likely give wide leeway to nations providing "internal support" through environmental programs. Assurances will be needed that environmental programs are not used to stifle trade, becoming nontariff barriers.

Alternatives. Policymakers must account for a full range of economic and environmental costs and benefits when considering multiple objectives, such as environmental quality, farm income, international competitiveness, and budgetary costs. Alternatives for addressing environmental and trade problems may be proposed at the national level, but many of these problems extend beyond national borders. Solutions would require agreements binding across enough nations willing to alter domestic policies to achieve change. Unilateral actions by any one country might be helpful, but bilateral, regional, and multilateral efforts will also be required to address problems that cross borders. There are significant difficulties in achieving such agreements, as recent GATT negotiations demonstrate.

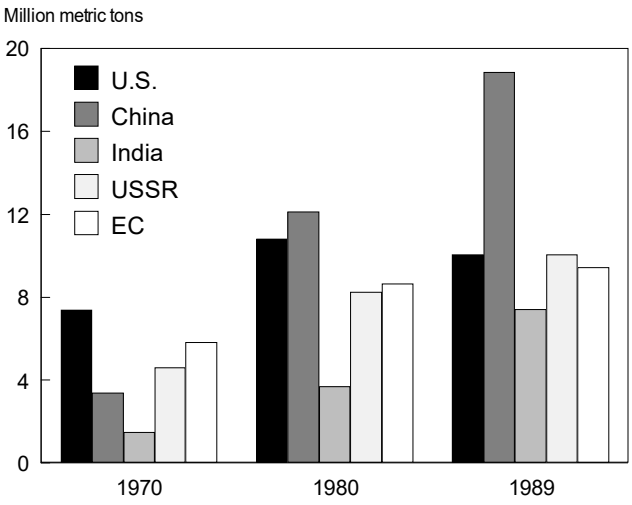
Environmental and trade issues could be addressed generally in the GATT, avoiding the need for specific international environmental agreements. A specific code could help define environmentally acceptable production and processing methods and acceptable trade sanctions. Or, an expanded interpretation of existing articles and codes would give nations the ability to protect the environment and still avoid using them to create nontariff barriers to trade. As another alternative, institutions that provide financing for international economic development, such as the World Bank and the U.S. Agency for International Development, could use more stringent environmental requirements as a condition for their loans.

Domestic agricultural and food policies could be affected directly. Traditional agricultural price and income support payment programs could be altered by requiring specific environmental practices. Or, new programs for environmental protection could be devised. For example, international trade in agriculture depends on reducing the risks of international transfer of pests and diseases, often through border treatments. These include fumigation with methyl bromide, an ozone-depleting chemical that the Environmental Protection Agency has recently proposed to phase out of use by the year 2000. Possible substitutions include nonchemical treatments such as irradiation, temperature manipulation, atmosphere modification, biological control, and pest- and disease-free production areas. Each alternative involves different economic costs that must be weighed against the potential gains from their use.

Agenda. There are two major aspects to the public policy problem, both of which involve analysis and political decisions. First, a determination must be made as to what extent trade contributes to environmental quality, and at what cost and benefit. Second, policies must balance agricultural goals such as food security, income growth, price stabilization, and competitiveness with environmental goals like cleaner water, less soil erosion, and safer food.

Information Sources. Contact authors of this paper.

Nitrogen fertilizer use
Usage levels are off in the United States and EC, but grow rapidly elsewhere.



United States Department of Agriculture

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April 1993

Issues for the 1990's: TRADE

Economic Realignments Affecting Trade: China

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Issue. Good harvests plus removal of consumer price subsidies on grains and edible oils in China's urban areas have depressed that country's wheat and cotton imports and spurred corn exports. This evolving production, consumption, and trade picture hurts U.S. agricultural exports to China and neighboring markets in the short term as China captures a share of some major U.S. agricultural markets in East Asia. However, China's transformation from a centrally planned to a more market-oriented economy stimulates income growth which bolsters long-term consumer demand for agricultural products. China, with a population of 1.17 billion annually growing at 1.4 percent and an expanding economy, could become a long-term major market for U.S. feed grain and oilseed exports. At issue is the stance the United States will take given adverse shortrun impacts on trade.

Context. U.S.-China trade has grown rapidly in recent years. Total U.S. imports from China increased from $1 billion in 1980 to $26 billion in 1992 (see table). The value of U.S. exports to China rose from $3.8 billion to $7.5 billion over that same period. U.S. agricultural exports to China fluctuated widely, ranging from a high of $2.3 billion in 1980 to a low of $57 million in 1986. Wheat accounted for more than 50 percent of the value of U.S. agricultural exports to China in the 1980's, although cotton exports were nearly 40 percent in the last 3 years.

The Government of China in 1992 largely eliminated direct price subsidies on urban consumption of grains and vegetable oils. The large food grain subsidies since 1955 had resulted in grain consumption of more than 200 kg per capita, accounting for 85 percent of protein intake despite rapid income growth in the 1980's. The increased prices in grain and oil reduce per capita grain consumption (especially rice) and increase meat product demand. Decreasing per capita food grain consumption could significantly reduce the need for grain stocks for food security reasons, making more grain, especially corn, available for export.

In the longer term, stronger meat demand means greater demand for animal feeds such as corn and soybeans. Agricultural trade will reflect how production adjusts to these changes in grain and meat consumption. Continuing a market-oriented agricultural policy would shift production away from China's traditional staples, particularly rice, and toward cash crops like vegetables and aquaculture. ERS projections show that domestic grain supplies will not keep pace with demand. As a result, larger wheat imports in the year 2000 would be required for food use, while corn and soybean imports would be needed to feed expanding livestock herds. Without a major shift in acreage, however, China should have a growing exportable surplus of rice.

The Chinese Government has taken measures to ease import restrictions in recent years in response to two foreign policy objectives: join the General Agreement on Tariffs and Trade (GATT) and ease tensions associated with trade surpluses with trading partners. In the 301 agreement reached in October 1992, China agreed to remove many of its nontariff barriers such as quotas, licensing requirements, high tariffs, and unscientific quarantine measures. However, to prevent too drastic a shift from grains to other crops, the government continues its procurement policy and guarantees negotiated prices for grains to assure a minimum acreage base. The government also continues to limit market access, especially for agricultural products. The government continues to be the sole agent for trade in

grains and essential raw materials. And, to control trade, it still subsidizes export enterprises, controls foreign exchange allocation, and fixes the exchange rate.

At Stake. In the short term, China's economic reforms are likely to have an adverse effect on U.S. agricultural exports to China. This could exacerbate the U.S. overall trade deficit with the country and increase trade tensions. Continued economic reforms would improve the chances of China's becoming a GATT member. Once a GATT member, China would have to gradually open its markets to all member countries and would be technically prohibited from using protective nontariff measures. U.S. agricultural trade would likely benefit.

The key consideration for the United States is how to react to the reforms in the face of shortrun trade problems and yet encourage the economic growth that will be the driving force behind future U.S. agricultural exports to China.

Alternatives. U.S. policies must address not only its short-term economic interests but also the political and regional security issues upon which long-term U.S. and Asian prosperity will depend. China's import demand for agricultural products depends on economic growth which is based in large part on access to the U.S. market. However, China does not offer equal access for U.S. products. This discrepancy in market access partly accounts for the bilateral trade deficit of $18 billion, or more than 20 percent of the total U.S. trade deficit in 1992. The U.S. trade policy choices revolve around the following alternatives:

- Encouraging China's economic reforms while maintaining diplomatic pressure to open markets.
- Denying China access to U.S. markets for selected commodities to encourage opening of China's markets.
- Attaching conditions to the renewal of most favored nation (MFN) status.

Implementation of either of the latter two alternatives could mean a large decline in China's foreign exchange earnings, severely restricting China's ability to import. China might reject any conditions attached to the renewal of MFN status and retaliate by further restricting U.S. access to the China market. Denying China's access to the U.S. market could hurt the more pro-reform, market-oriented coastal areas of South China and help hardliners to re-establish centralized control over these regions.

Agenda. The U.S. response to the issue of China and trade where the shortrun and longrun outcomes appear to diverge will involve both the executive and legislative branches of the U.S. Government. Decisions on GATT and MFN will be important.

Information Source. U.S. Dept. of Agriculture, Economic Research Service, *China Agriculture and Trade Report*.

Value of U.S.-China bilateral trade, 1980-92
Recent economic reforms in China may stall the comeback of wheat and cotton imports.

Item	1980	1982	1984	1985	1986	1987	1988	1989	1990	1991	1992
						Million dollars					
U.S. imports:											
Total	1,042	2,216	3,065	3,863	4,672	6,195	8,510	11,990	15,224	18,976	25,729
Agric.	133	170	191	197	204	237	279	319	271	328	379
U.S. exports:											
Total	3,817	2,911	3,004	3,808	3,077	3,469	5,021	5,755	4,807	6,287	7,470
Agric.	2,277	1,504	613	157	57	362	759	1435	814	722	545
Wheat	1,089	1,054	576	105	0	139	698	1,109	497	363	273
Cotton	701	178	4	2	--	--	25	259	277	319	186

-- less than $0.5 million. Source: U.S. Department of Commerce, Bureau of the Census.

United States Department of Agriculture

Economic Research Service

Agriculture Information Bulletin Number 664-19

April 1993

Issues for the 1990's: TRADE

Safety Net Policies and Food Security for Low-Income Importing Countries

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Issue. The United States supports the concept of food security for developing countries, as indicated in its GATT (General Agreement on Tariffs and Trade) proposal. If the current round of GATT negotiations successfully liberalizes agricultural policy and trade, then new questions arise about the U.S. role in helping provide a food safety net for low-income importing countries.

Economic problems of particular countries are not easily isolated from the international economy as interdependence grows among nations. In the GATT negotiations, the United States has generally argued for a shift to market-oriented agricultural policies. Some developing countries, mainly those with lower incomes that rely heavily on food imports, may be adversely affected by such reforms and are lobbying for some form of compensation or exemption from the total adoption of any GATT agreement.

Context. Agricultural policy reform has focused on ways to reduce subsidies that distort market prices and trade flows. U.S. policy, as articulated in recent farm legislation, has moved toward greater market orientation; this trend will likely continue. Food aid has played a major role in minimizing the disruptive effect of crop failures in low-income countries. Surplus U.S. Government grain was a major component of that aid, but these surpluses are declining as programs are reformed. If future U.S. aid funding were maintained at current levels and surplus grains were eliminated, the real level of U.S. food aid would decline.

Food imports, especially cereals, have become a significant share of imports of many developing countries, as stagnant domestic production and soaring demand have forced governments to spend an increasing proportion of their scarce foreign exchange on food. It is widely believed that trade and commodity policy reforms benefit the world society and many countries have adopted major policy reforms to increase domestic food availability and improve economic growth during the last decade. However, these reforms produced a perverse short-term effect in many developing countries; domestic price increases associated with these reforms have caused food prices to rise relative to the total income. As a result, low-income food importing countries are concerned that further reforms at home and abroad will result in higher food prices as they remove their own consumer subsidies and as agricultural surpluses in donor countries disappear. If higher and sharply fluctuating prices on world markets are the result of reforms, the ability of low-income countries to provide secure food supplies for their people could be threatened.

For people already close to the subsistence level, price increases can result in more extensive malnutrition. For countries with limited foreign exchange and inadequate food production capacity, a temporary sharp increase in the price of food imports forces them to either reduce food imports and accept increasing hunger or reduce imports of nonfood items, including those necessary for long-term economic growth. Inadequate supplies of food and declining household income could lead to increased political instability and violence within the country.

At Stake. The United States has legitimate interest in facilitating economic improvement in low-income countries. Important factors are humanitarian objectives and the concern that political instability in the developing world could threaten U.S. security. Consumers in low-income countries spend a large portion of their income on food. Thus, unstable and higher prices can result in a large reduction in their real income and food purchases.

Alternatives. A safety net concept suggests that both producers and consumers in low-income countries deserve some protection from external shocks and variability in an unregulated market. One alternative would be for all countries to develop a stocks acquisition and dispersal program to smooth the delivery of grain to the market. This would reduce the impact of yield variability on prices and stabilize the market for both importers and exporters. Other multilateral options include a financial aid facility to support emergency food imports or an import insurance scheme. These might prevent the import bill of developing countries from rising above an established normal level, protecting developing countries from short-term, unexpected, and expensive food imports. The financial aid facility could be associated with a supply buffer program to improve the availability of imports when world production falls. The main existing financial buffer mechanism, the IMF (International Monetary Fund) Compensatory Financing Facilities, finances fluctuations in the costs of cereal imports by developing countries. However, the IMF financing facility is generally contingent on a set of financial and policy gestures by the recipients. A U.S. option is to continue PL-480 (food aid) and the emergency wheat reserve. But the availability of grain and surplus commodities is likely to be lower as producers respond to reduced subsidies and more closely match expected production with expected commercial consumption.

Agenda. Buffer mechanisms, in addition to food aid, help to reduce the financial burden of food imports to low-income countries. However, these mechanisms may become inadequate and unreliable as markets liberalize. No new U.S. legislation directed specifically at this issue has been proposed.

Information Source. Trade data, Food and Agriculture Organization of the United Nations.

Imports of cereals

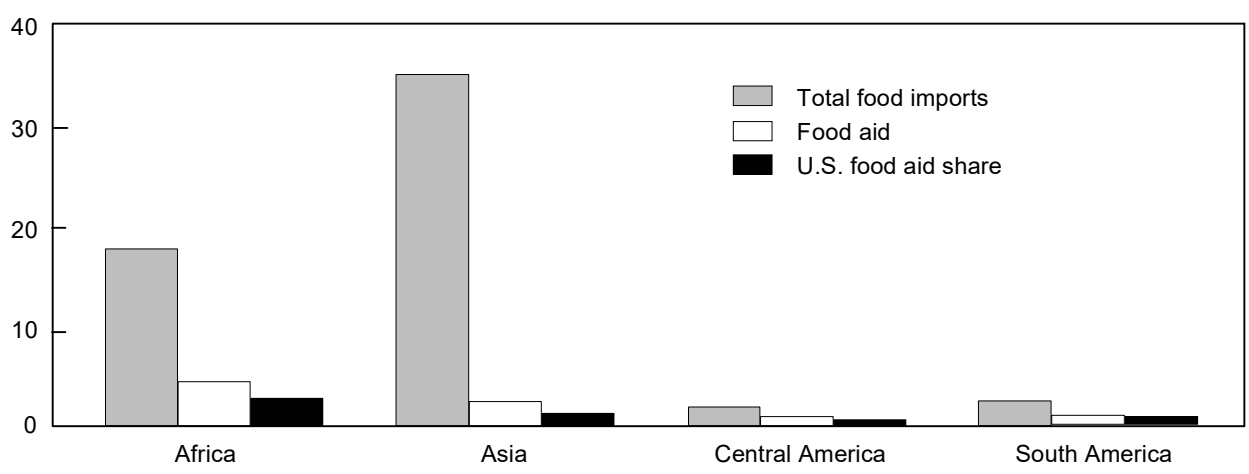
Developing country cereal imports account for a growing share of world imports.

Region	1975	1980	1985	1990
			Million tons	
World	150	207	181	187
Developing countries[1]	60	97	102	119
Low-income countries[2]	33	47	46	56
Africa	12	22	30	28

[1] Includes low-income countries.
[2] Countries with per capita income below U.S. $1,195 in 1990.
Source: Food and Agriculture Organization of the United Nations.

Total food imports, food aid, and U.S. food aid recipient regions, 1990

Africa receives the major portion of food aid.



Source: Food and Agriculture Organization of the United Nations.

United States Department of Agriculture

Economic Research Service

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April 1993

Issues for the 1990's: TRADE

Enterprise for the Americas Initiative

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Issue. Western Hemisphere countries are seeking trade liberalization that may eventually lead to a hemispheric free trade zone. The Enterprise for the Americas Initiative (EAI), announced on June 27, 1990, is a U.S. program supporting economic and trade reform underway in Latin America and the Caribbean (LAC). Objectives are to promote liberalized trade, reduce official debt, and increase foreign investment in LAC countries. The EAI trade objective indicates a U.S. willingness to consider free trade agreements with LAC countries beyond the recently negotiated North American Free Trade Agreement (NAFTA). Many of these countries are interested in such agreements to help consolidate economic reforms currently in place and expand access to the North American market.

Context. Trade liberalization in the Western Hemisphere, largely unsuccessful in the 1960's, revived in the 1980's, with the EAI giving added focus and direction to ongoing trade and investment liberalization in the 1990's. LAC regional trade agreements are also being renewed, in part to help stabilize institutions, encourage economic reforms, and protect the interests of parties to the agreement as other regional initiatives are being developed.

LAC countries faced economic crises during the 1980's resulting from failed import-substitution policies, excessive foreign debt, movement of assets to foreign countries, and massive inflation. These crises created an incentive to change economic and trade policies. Internal policy reform is needed in the LAC countries to help provide the economic and political stability necessary to fulfill the obligations of potential trade and investment agreements.

The EAI and NAFTA heightened the interest of other Western Hemisphere countries in potential trade agreements with the United States. The United States has signed 15 Trade and Investment Framework Agreements (TIFA's) with LAC countries, either individually or regionally, providing a forum for consultations on trade and investment issues. Only Mexico and Bolivia had signed such agreements prior to the EAI.

At Stake. Economic growth in LAC countries could increase their demand for U.S. exports. Liberalized trade in the Western Hemisphere is a key component in stimulating that economic growth. LAC countries depend on earnings from agricultural and mineral exports to pay for imports.

The United States is a important trading partner for LAC countries (see table). Important agricultural exports from LAC countries to the United States include coffee, cocoa, sugar, fruits, and vegetables. Certain U.S. exports compete with LAC products. Argentina, for example, competes with the United States in cereal grains.

Alternatives. There are several options for pursuing free trade in the Western Hemisphere including: (1) create a comprehensive Western Hemisphere Free Trade Agreement that countries could join, (2) create a network of bilateral agreements among countries within the Western Hemisphere, or (3) create a multilateral core agreement that would be supplemented by bilateral agreements.

A comprehensive free trade agreement, in principle, would eliminate barriers to multilateral trade among countries in the Western Hemisphere. Only those countries willing and able to meet the obligations of

the agreement could become members. Benefits from liberalized trade would accrue to all signatories rather than only to pairs of trading partners with bilateral agreements. This would be a more streamlined approach to free trade than a network of bilateral agreements that would require substantial time and resources from all participants to create and maintain.

Bilateral agreements, however, allow the obligations and provisions of an agreement to be tailored to the specific social and economic conditions of the prospective pair of trading partners. Many Latin American countries, for example, have a dual agricultural economy with a large-farm export sector and a small-farm sector producing food for domestic use. Removing trade measures or trade-distorting domestic measures on certain agricultural commodities produced by the small-farm sector could reduce incomes in that sector and displace rural workers that might not be absorbed elsewhere in the economy. Sensitive commodities may vary among pairs of trading partners.

A multilateral agreement with a comprehensive core applicable to all signatories and supplemented by bilateral agreements may provide the benefits of both of the former alternatives. The bilateral approach for agriculture, plausible in Latin American negotiations, would allow special treatment of agriculture that reflects a country's socioeconomic characteristics of production, or may deal with specific products or groups of products allowing for seasonal variations.

Agenda. The U.S agenda includes ratification of the NAFTA and further liberalization of trade with Western Hemisphere countries. The agendas of prospective partners will have to include controlling budget deficits and inflation, pursuing market-oriented economic policies, developing adequate infrastructure to support investment, and pursuing full membership in the General Agreement on Tariffs and Trade.

Information Source. Kenneth W. Forsythe, Jr. and Liana Neff, *The Enterprise for the Americas Initiative: Support for Western Hemisphere Economic and Trade Reform*, AIB-660, U.S. Dept. Agr., Econ. Res. Serv., Apr. 1993.

U.S. and LAC trade, 1988

The United States is a valuable trading partner for LAC countries, representing more than 35 percent of their total trade.

Item	Total value	Share
	Billion dollars	*Percent*
U.S. agricultural exports	40	To LAC (7)
U.S. agricultural imports	23	From LAC (29)
U.S. nonagricultural exports	282	To LAC (7)
U.S. nonagricultural imports	437	From LAC (5)
LAC agricultural exports	30	To U.S. (22)
LAC agricultural imports	9	From U.S. (32)
LAC nonagricultural exports	49	To U.S. (48)
LAC nonagricultural imports	52	From U.S. (37)

Source: U.S. Dept. Agr., Econ. Res. Serv., *World Agriculture Trends and Indicators, 1970-89*, SB-815, Sept. 1990. LAC does not include the United States, Canada, and Mexico.

United States Department of Agriculture

Economic Research Service

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April 1993

Issues for the 1990's: TRADE

Food Aid Needs

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Issue. Many poor countries are not financially able to import food when facing production shortfalls. The United States has shown a clear interest in providing food aid. But, current budget constraints and declining commodity surpluses raise the issue of how best to distribute available food aid and reduce poverty and hunger in low-income countries.

Context. Food aid was first provided to low-income countries in the 1950's when the United States faced pressure to dispose of accumulating grain surpluses. Food aid became a desirable policy choice for producers and exporters because stockpiled commodities had depressed markets, reducing prices and eroding the value of stored commodities. Surpluses have since been reduced, and most food commodities are no longer treated as if they were free goods for relieving hunger. But, the exporting countries continue to supply food aid, even when commodities are not in surplus.

The United States, the European Community (EC), Canada, Japan, and Australia are the major food aid donors, contributing nearly 12.5 million tons of cereal food aid in 1992/93 (July/June) (see table). The United States is the largest contributor, providing 57 percent of cereal aid in 1991/92, followed by the EC with 25 percent and Canada with 8 percent. The U.S. food aid program is a combination of grants and concessional sales. The EC and Canada provide all their food aid as grants. Food aid provided through multinational channels, such as the World Food Program (WFP), rose from 14 percent of the total in 1970 to 25 percent in 1990. Food aid has saved many lives during emergencies that result from production shortfalls and conflicts. The average annual volume of 12 million tons is less than half of the projected amount needed to meet minimum nutritional standards and about two-thirds of that required to maintain normal food consumption (see figure).

The major food aid donors are high-income food exporting countries, with limited participation by others. Food aid donors cite humanitarian relief as their basic distribution criteria, yet economic and political factors weigh heavily in allocation decisions. In some cases, food is given to needy people or to support development projects in countries with adequate supplies, while food shortages persist in the neediest countries. The commodity mix usually reflects the export profile of the donor and tends to vary with yearly fluctuations in availability. Aid allocations are often linked to historical ties between individual donors and recipients. As a consequence, the patterns of supply and distribution are suboptimal if measured only by a food needs criterion.

At Stake. Millions of people are hungry in a world that can produce enough food, but where budgets, surpluses, and political will are inadequate to meet the need. About 20 percent of the developing world's population suffer from food shortages. In Sub-Saharan Africa per capita food availability has declined, leaving many people vulnerable. While the number of people suffering from undernutrition in the developing world declined by 20 percent between 1970 and 1990, the number of undernourished Africans increased by 70 percent, from 100 million to 170 million. However, most undernourished people are in the Asia and Pacific region, numbering 528 million in 1990.

Alternatives. U.S. policy alternatives include relying primarily on bilateral agreements between the United States and the recipient country, or increasing food aid distributions through international institutions such as the WFP. Bilateral programs permit donors to include political and economic

objectives—longstanding aims of U.S. food aid legislation—as well as needs criteria in food aid allocations. They also generate support for food aid budgets from interest groups in donor countries. The growing role of international donors has reduced the role of politics in distribution by using needs criteria as a basis for food aid allocations. Multilateral mechanisms can encourage longer term commitments and include all developed countries, both food exporters and importers. Countries without food surpluses can be encouraged to donate cash that can be used to provide a more balanced commodity mix and reduce the dependence on surpluses available from the current donors. Multilateral food aid is distributed on a grant basis and therefore will not increase the debt burden of developing countries. Coordination through multilateral organizations has the potential to improve standardization and evaluation of efforts, reduce duplication, and cut administrative costs.

Volume of cereal food aid contributions
The United States is by far the largest food aid donor.

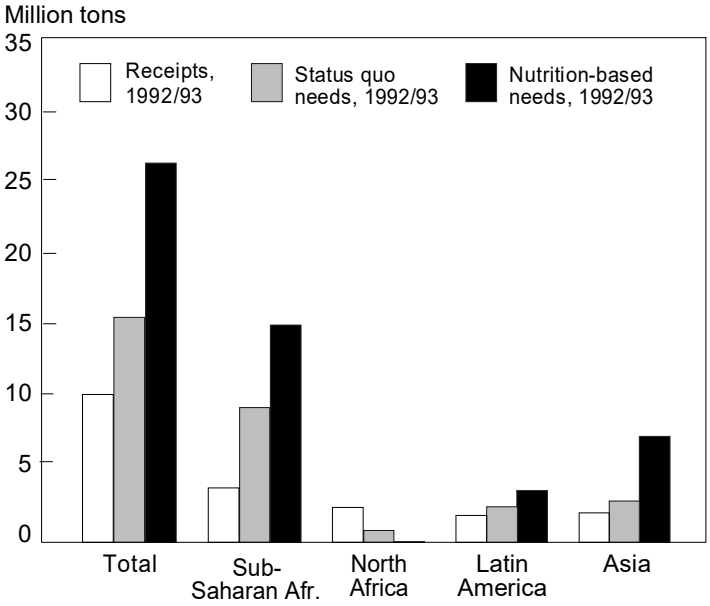
Country/region	1988/89	1989/90	1990/91	1991/92	1992/93
			Million tons		
Australia	0.4	0.3	0.3	0.3	0.3
Canada	1.2	1.0	1.1	1.0	1.0
European Community	2.2	3.3	2.6	3.1	3.3
Japan	.4	.4	.5	.3	.4
United States	5.3	6.0	6.9	7.0	7.5
Others	.8	.3	.5	.5	.5
Total	10.2	11.3	12.0	12.4	12.9

Note: July/June years. 1992/93 is estimated.
Sources: Food and Agriculture Organization of the United Nations and Economic Research Service.

Agenda. U.S. food aid budgets are proposed by the Executive Branch and approved by the Congress. The United States and other developed countries support long-term economic growth in low-income countries to stimulate trade and expand overseas markets for developed countries' products. Food aid is expected to continue to play a crucial role in alleviating shortages associated with emergencies and providing financial support for low-income countries. The level of support for U.S. food aid, however, will likely be tempered by the budget deficit and availability of surplus commodities.

Information Source. U.S. Dept. of Agriculture, Economic Research Service, *Global Food Assessment Situation and Outlook Report*, GFA-3, Nov. 1992 (annual).

Food aid received 1991/92 and food aid needs 1992/93
Needs outstrip food received, except in North Africa.



Note: 1991/92 data are actual food aid received by 60 developing countries. 1992/93 data are estimated needs based on historical consumption patterns (status quo) and on a minimum caloric requirement (nutrition-based).

United States Department of Agriculture

Economic Research Service

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Issues for the 1990's: TRADE

Trade Agreements: Liberalizing Multilateral and Regional Trade

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Issue. In 1993, Congress may vote on approving multilateral and regional trade agreements to reduce global or regional trade barriers. Proponents of these agreements stress their longrun positive effects on economic growth and employment; opponents cite sectoral adjustment costs and shortrun job losses. There is disagreement, even among those who favor trade agreements, on whether regional preferential arrangements are building blocks or stumbling blocks to further liberalizing global trade. Trading rules in these agreements will affect U.S. agricultural interests and influence farm income.

Context. Barriers to agricultural trade have multiplied since agriculture's exemption from the General Agreement on Tariffs and Trade (GATT) in 1955. Most barriers are not direct border measures, such as tariffs used to generate public revenues. Rather, they are nontariff barriers, such as domestic production subsidies used by industrialized countries to support rural incomes or by third world governments to achieve food self-sufficiency goals. As a result, while world consumption of grains and oilseeds increased by 400 million tons over the past decade, trade increased by only 29 million tons.

The United States advocates liberalized agricultural trade and has pursued this objective through multilateral negotiations (the current Uruguay Round of GATT) and regional groups (North American Free Trade Agreement (NAFTA) and the Enterprise for the Americas Initiative (EAI)). The U.S. goal in the Uruguay Round agricultural negotiations is to secure explicit commitments to reduce export subsidies and domestic support, and to improve market access for agricultural products so that countries will increasingly export commodities in which they have a comparative advantage. The United States hopes to achieve both economic and political objectives by liberalizing regional agricultural trade. Access to U.S. markets by EAI nations depends on their explicit commitment to sound fiscal and monetary policies and democratically elected governments. The U.S. position is that such commitments will increase regional prosperity and stability as well as trade flows.

At Stake. For decades, policymakers around the world had assumed that agricultural output was relatively unresponsive to price signals. They therefore concluded that trade-distorting agricultural policies caused only small efficiency losses. Subsequent research, however, has shown that trade-distorting policies do affect resource allocation decisions in the agricultural sector, producing large efficiency losses and constantly increasing costs for consumers and taxpayers. The total outlay from developed-country taxpayers and consumers on agricultural subsidies has been estimated at about $250 billion per year.

Policymakers and economists agree that a global multilateral agreement would produce the largest gains by means of both supply and demand effects. The efficiency gains resulting from numerous GATT signatories reducing domestic support and export subsidies and increasing market access would be substantial, as countries resume producing and exporting commodities most suited to their soil, topography, and climate. A GATT accord would also provide benefits to agricultural markets by expanding worldwide economic growth, thus spurring demand for food and agricultural products. A GATT agreement could inject $2 trillion into the world economy over a 10-year period, according to some economic estimates. Both U.S. agricultural exports and farm income are expected to rise with a GATT accord.

Regional trade arrangements also may spur trade and growth. Economic growth resulting from the further integration of the European Community through the 1992 Single Market Initiative could be as high as 33 percent. A NAFTA may spur less economic growth than European integration, but should increase exports of U.S. agricultural goods, especially grains and meat products. In addition, NAFTA and the EAI signal a U.S. effort to establish new political and economic cooperation with Latin American nations. The agreements encourage domestic economic reform in many Latin American countries, lock in the process of trade liberalization, and secure U.S. access to growing Latin American markets.

Alternatives. The United States has four alternatives: (1) sign no trade treaty, (2) negotiate only a multilateral agreement, (3) negotiate only regional agreements, or (4) pursue its current course of negotiating both multilateral and regional agreements. Opponents of trade agreements claim that treaties constrain a sovereign country's right to determine industrial, labor, and environmental policies and create costly adjustment problems. The most outspoken opponents are usually groups that seek to maximize the welfare of their members rather than the general welfare of a country.

Advocates of the second option point out that a multilateral trade agreement produces global welfare gains and protects democratically elected governments from pressure to alter trading rules by groups who seek shelter from competition. Trade reform, like any change in a free market system (changes in the business cycle, climate conditions, or demographics, for example), will alter input and commodity prices and consequently cause an adjustment in resource use. Some producers of highly protected commodities may lose income, but governments are still free to provide nondistortionary compensation to those who have lost income.

Proponents of regional accords find pragmatic arguments compelling. They argue that a smaller number of countries can agree on more significant reductions in trade barriers more quickly than in the global multilateral arena. They also point out that if a country trades more with its neighbors than with countries in other regions, a regional trade pact will likely create more intraregional trade than divert inter-regional trade.

The United States is pursuing the fourth option to capitalize on the best features of multilateral and regional agreements. U.S. policymakers continue to pursue agricultural trade reform in multilateral negotiations in the current Uruguay Round. The United States has just concluded negotiating an agreement with Mexico and Canada that would eliminate most trade barriers over the next 15 years. Additional regional trade pacts that the United States may negotiate with other Western Hemisphere countries will almost certainly create more trade—including agricultural trade—than they divert. These regional agreements do not diminish the U.S. commitment to the multilateral process. In fact, many provisions of the NAFTA and EAI are directly tied to the outcome of the Uruguay Round.

Agenda. The timetable for trade agreements negotiated under the current fast track authority granted by Congress is: (1) the President must notify Congress 90 calendar days in advance of signing a trade treaty, (2) any signed trade treaty must be submitted to Congress by June 1, 1993, and (3) Congress must then vote on the agreement, without amendments, within 90 session days. The President may ask Congress to extend the current fast track authority in order to (1) conclude negotiating side agreements to NAFTA on import surges, labor, and the environment, and (2) conclude GATT negotiations.

Since the EAI was proposed, the United States has established bilateral trade and investment councils with most Western Hemisphere countries. These councils meet periodically to identify and remove impediments to trade and investment flows between parties. No specific goal or timetable has been established for them.

Information Sources. Paul Krugman, "The Move Toward Free Trade Zones," *Economic Review of the Federal Reserve Bank of Kansas City*, Nov./Dec. 1991; International Agricultural Trade Research Consortium, "Reviving the GATT Negotiations on Agriculture," Commissioned Paper No. 8, Mar. 1991; and Dennis T. Avery, "Farmers Face Their Biggest Test Ever," *Wall Street Journal*, Nov. 9, 1992.

United States Department of Agriculture

Economic Research Service

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Issues for the 1990's: TRADE

Economic Realignments Affecting Trade: Republics of the Former Soviet Union

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Issue. Republics of the former Soviet Union began 1992 committed in varying degrees to economic reform. Successful reform means that market forces, not political decisionmaking, would mainly drive economic activity, eliminating inefficient policies and subsidies. Restructuring the republics' economies would change their production and trade of agricultural and other goods, with repercussions for international trade. U.S. agricultural exports to the republics would be affected.

Context. The former Soviet Union has been a large importer of grain and, to a lesser degree, soybean products since the early 1970's. The United States has been a main supplier. The Soviet leadership decided that the most direct way to improve the standard of living was to increase production and consumption of meat and other livestock products. Large grain imports were deemed necessary, not because domestic output had fallen, but because the rapid growth in livestock herds substantially raised domestic feed requirements. The Soviets succeeded in raising meat and other livestock output, but at a high cost, according to Economic Research Service analysts. The cost of meat production at the margin is very high, relative both to costs of domestically producing other foodstuffs and to world market prices for meat. Heavy subsidies to livestock producers have been necessary to support an uneconomically large growth in output.

At Stake. Export markets for U.S. agricultural products are at stake. Successful economic reform would likely change the volume and mix of Western (including U.S.) agricultural exports to the republics. U.S. exports of grain to the republics could fall, while exports of soybeans and soybean meal, certain meats such as poultry, and processing machinery could rise.

Successful economic reform in the republics should eliminate costly subsidies and distorted prices that have supported artificially high levels of production and consumption of livestock products. High-cost producers would have to cut back. Such already occurs in Russia, one of the fastest reforming republics. This republic could reduce its livestock herds by about 20 percent during 1992-94, say Russian sources. Smaller herd size will reduce need for feed grain and, thereby, the need for Western grain imports. Wheat imports in particular should drop. Perverse pricing policies have resulted in much of Soviet wheat output being inefficiently used as feed, contributing to the need to import wheat for food. Though corn imports would probably also fall, they should remain significant. Another effect of inefficient Soviet pricing policies is that Soviet mixed feed has suffered from a chronic deficiency of protein (which oilseeds provide). Reform could well mean that the republics increase soybean and soybean meal imports, at the expense of total grain imports.

As part of reform, consumers in the republics might change their meat consumption by substituting poultry for more expensive beef and pork. Increased imports of poultry could result. In addition, the inefficiency and backwardness of food storage and processing in the former USSR suggest a potential for exports of Western food processing machinery and technology to the republics, as well. On balance, certain U.S. agricultural interests might lose from reform in the new republics, but other agricultural interests might benefit.

Alternatives. Three alternatives can be identified for U.S. policy toward the republics' reform efforts: (1) opposition, because U.S. economic interests are perceived as being threatened, (2) neutrality, and (3) support. Arguments for support are that successful economic reform will make the republics more politically stable, more amenable to Western-style market capitalism (and perhaps also to Western political institutions), and richer. Through increased wealth and trade, the republics can then enrich the world. Losses suffered by specific economic interests in the United States need to be considered in light of the large benefits both to the republics and to the West as a whole.

Support does not necessarily require large aid programs, but rather policies that consistently promote the republics' economic restructuring (including their trade) along more rational economic lines. Any changes in the republics' structure of production and trade as a result of reform will be an inherent part of reform. Resisting the changes involves resisting reform.

The U.S. Government has actively promoted grain exports to the former Soviet Union during the past few years, with both good and bad effects perceived. Credit guarantees (GSM-102) and the Export Enhancement Program were the main instruments, both of which have lowered the real cost to the republics of importing U.S. agricultural goods. One can argue that subsidized U.S. agricultural exports have helped the republics during shortrun disruptions in the food economy. Also, these policies were adopted largely to counter export promotion by trade competitors, such as the European Community. Yet, some in the republics argue that big grain imports have not been necessary, have undercut domestic producers, and have contributed to the former Soviet Union's large hard currency debt.

Agenda. During the past 3 years, the United States has extended to the former USSR and its successor states around $5.5 billion in guaranteed credits to purchase U.S. agricultural goods, the bulk being grain. The credit guarantees dominate what is perceived as the U.S. financial effort to support reform in the new republics. Since the effectiveness of Western support for reform depends in part on how well it is coordinated, U.S. food export policies should be consistent with the overall reform assistance of the U.S. Government and international financial institutions.

Information Sources. Overview: U.S. Dept. of Agriculture, Economic Research Service, *Former USSR Agriculture and Trade Report*, RS-92-1, May 1992. ERS research on which this paper is partly based: W. Liefert, R. Koopman, and E. Cook, *Agricultural Trade Liberalization in the Republics of the Former USSR* (contact Liefert for review copy). Also: D.G. Johnson, "Possible Impacts of Agricultural Trade Liberalization on the USSR," *Comparative Economic Studies*, Vol. 32, No. 2, and S.R. Johnson and A.A. Nikonov, "Soviet Agrarian Reform and the Food Crisis: Neither Can be Ignored," *Choices*, 4th Quarter, 1991.

United States Department of Agriculture

Economic Research Service

Agriculture Information Bulletin Number 664-41

May 1993

Issues for the 1990's: TRADE

Humanitarian Aid Needs

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Issue. International food aid needs are expected to grow in the 1990's. Emergency needs have increased as a result of natural disasters such as the drought in southern Africa and continuing civil war in Liberia, Bosnia, and Somalia. Global political and economic changes, such as the fall of the communist system, are increasing demands on food aid availabilities. The United States has changed its domestic agricultural policies and no longer has large food stocks. How can the United States provide food aid at a time of growing needs?

Context. The United States provides international food aid through Public Law 480, (first enacted in 1954), also known as the Food for Peace program. In addition, assistance is provided through two other food aid programs: Section 416(b) of the Agricultural Act of 1949 as amended and the Food for Progress program. Title I of P.L. 480 finances sales of agricultural commodities under long-term concessional credit arrangements to developing countries with insufficient foreign exchange. Title II grants food commodities for distribution overseas by private voluntary organizations (PVO's), by international organizations, and, in the case of emergencies, by recipient governments. Title III grants food assistance to support development programs in least developed countries through government-to-government agreements. The Section 416(b) program provides a mechanism for donating excess commodities owned by U.S. Department of Agriculture's (USDA) Commodity Credit Corporation to help meet urgent food needs in other countries. The Food for Progress program allows USDA to donate food to support countries that are trying to introduce or expand free enterprise in their agricultural economies.

The United States provided substantial P.L. 480 shipments to India in the mid-1960's, assistance to relieve the recurring famines in Ethiopia and Sudan in the mid-1980's, and shipments to alleviate the worst drought of the century affecting the southern African countries in the early 1990's (see table). In the past, the United States was able to help meet these needs mainly through the sale or donation of government-owned stocks of commodities (mostly wheat) that were in need (see figure). Current U.S. policy tries to establish more of a balance between supply and demand, resulting in lower government stocks.

At Stake. Since 1974, P.L. 480 food aid has accounted for 5 percent or less of the value of total U.S. agricultural exports. As a result, the effects of P.L. 480 on exports are relatively slight, although for some commodities, such as soybean oil, food aid shipments account for a large share of exports. The ultimate beneficiaries of U.S. food aid are recipients. Even so, P.L. 480 shipments tend to boost U.S. farm prices, enhancing income for U.S. producers and lowering government deficiency payments. Exporters, processors, and the PVO's who distribute the commodities also benefit. Shipments of commodities under the food aid programs also benefit the U.S. maritime fleet since cargo preference provisions require that 75 percent of U.S. concessional shipments be on U.S. flag vessels. U.S. taxpayers pay the cost of the commodities, their processing, and most of the transportation. U.S. consumers are not likely to be greatly affected because P.L. 480 accounts for such a small share of total use. Producers in the recipient country may suffer if food aid shipments depress internal farm prices, but food aid law requires program decisionmakers to avoid programming in which the assistance results in substantial disincentives to production or marketing in recipient countries.

Alternatives. Some alternatives to the present programs include:

(1) Increase the food aid budget. This will maintain the volume of food aid provided when prices rise.

(2) Create a food fund reserve. The United States already has the 4-million-ton Food Security Wheat Reserve for use in meeting emergency humanitarian needs in developing countries. The reserve has been used when domestic supplies limited P.L. 480 availabilities. An alternative would be to hold funds in reserve to meet emergency needs.

(3) Change the mix of commodities to provide more bulk rather than processed commodities. This would enable the food aid budget to cover a larger volume of food by shifting the costs of processing to the recipient country. This would reduce U.S. employment in the processing sector, but raise it in the recipient country. It would also reduce the market development potential of food aid programming for value-added commodities, which are the most rapidly growing segment of U.S. agricultural exports.

(4) Eliminate the provision of commodities and provide cash assistance instead. This would not necessarily benefit U.S. agriculture but would perhaps enable recipient countries to obtain the maximum volume of desired commodities from the closest and cheapest sources. It would require significant revision of existing food aid legislation. The United States may have difficulty ensuring that such cash assistance would be used as food aid.

Agenda. If the GATT negotiations include food aid, then conclusion of the Uruguay Round trade negotiations may require changes in U.S. food aid policy. Food aid is part of the farm legislation that is renewed every 5 years. Appropriations committees annually approve the P.L. 480 budget, which is included in the USDA annual budget submission from the President to Congress. Tentative country allocations are included in the annual budget submission; others are made during the fiscal year after requests are received.

Information Sources. National Research Council, "Food Aid Projections for the Decade of the 1990's," report of an ad hoc panel meeting held on October 6 and 7, 1988; U.S. Dept. of Agriculture, Economic Research Service, *Global Food Assessment*, Situation and Outlook Report, GFA-3, Nov. 1992.

U.S. food aid shipments by destination[1]

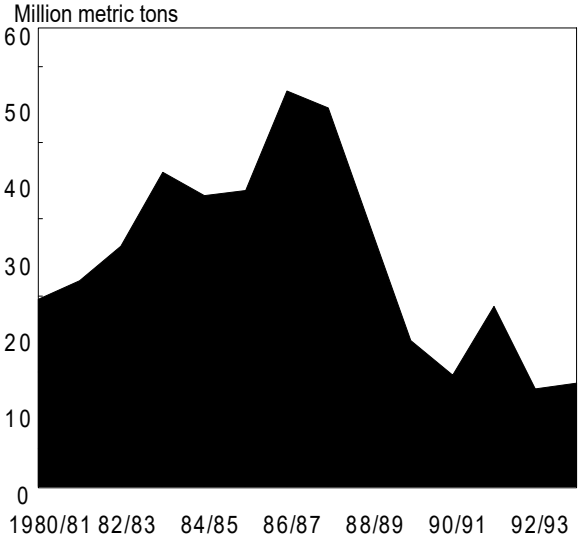
Food aid shipments in Latin America and Europe increased; however, Asia and Africa still receive over 70 percent of total.

Region	1968-70	1978-80	1988-90
		Million dollars	
Latin America	460	378	947
Europe	203	106	155
Asia	2,696	2,060	1,363
Africa	294	1,935	1,625

[1] Food aid includes PL 480 and Section 416(b); 1968-70 and 1978-80 also include shipments under the Commodity Import Program managed by the Agency for International Development.

U.S. wheat stocks

U.S. wheat stocks in the 1990's are likely to be much lower than in the 1980's.



United States Department of Agriculture

Economic Research Service

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May 1993

Issues for the 1990's: TRADE

Cotton Textile and Apparel Imports

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Issue. Rapid growth in U.S. imports of textiles and apparel during the past decade intensified cotton industry concerns that imports reduce demand for U.S cotton and incomes of cotton growers. Further, there is concern that imports reduce output and employment in textile and apparel industries. The domestic textile industry is the largest user of U.S. cotton.

As rapidly as imports grew in the 1980's, some argue that the rate of increase would have been steeper without the U.S. quotas on imports of textiles and apparel. Thus, tensions over imports rose as it became clear that trade liberalization in textiles and apparel was a high priority in the Uruguay Round negotiations of the General Agreement on Tariffs and Trade (GATT).

Context. As world cotton production expanded in the 1980's, textiles and apparel output rose in developing countries and the newly industrialized countries of Korea, Taiwan, and Hong Kong. Many developing countries have an advantage in textile and apparel production, especially labor-intensive apparel, because they have an abundant supply of low-cost labor. Government policies in some developing countries subsidize textile and apparel producers by ensuring them a reliable supply of competitively priced cotton. China, India, and Pakistan, for example, have successfully pursued a course of simultaneously expanding cotton production and exports of textiles and apparel.

Textile and apparel manufacturers in the United States and other developed countries are facing increased competition from low-cost foreign suppliers, even with quota protection provided through the Multifiber Arrangement (MFA). The MFA governs much of the world's trade in textiles and apparel by providing a framework for negotiating bilateral agreements (quotas) to regulate imports made from cotton, wool, manmade, and certain other fibers. The United States limits imports through bilateral agreements with more than 40 countries. A major goal of the Uruguay Round is phasing out the MFA.

U.S. imports of cotton textiles and apparel tripled during the past decade, and this growth has continued in the 1990's. In 1992, estimated imports accounted for 46 percent of U.S. retail consumption of cotton. The U.S. deficit in cotton textile and apparel trade in 1992 was a record, the equivalent of 4.9 million bales (480 pounds each) of raw cotton. A decade earlier, the deficit was the equivalent of one-half million bales.

At Stake. The economic well-being of U.S. consumers, textile and apparel manufacturers, and cotton producers would be affected by liberalization of world textile and apparel trade. If liberalization proceeds, U.S. consumers would benefit through lower domestic prices for textiles and apparel. However, U.S. output and employment in the labor-intensive apparel sector would continue to decline. There is considerable disagreement over effects of trade liberalization on the capital-intensive U.S. textile industry. Since domestic textile mills are the biggest users of U.S. cotton, analysts also disagree over the effects of trade liberalization on U.S. cotton growers.

Alternatives. One alternative is to maintain the MFA and quotas. Proponents of this alternative point to the record of the 1980's. They say if quotas were lifted, the U.S. market would be overwhelmed by imports, and cotton growers would lose a significant share of their biggest market, the

U.S. textile industry. The bottom line for those favoring quotas is the view that imports of cotton textiles and apparel substitute for U.S.-grown cotton at a high rate, if not pound-for-pound. As a result, they believe freer trade would significantly damage the U.S. textile and apparel sectors and cotton producers.

Another alternative is to promote freer trade. Proponents of freer trade view the tradeoff between cotton textiles and apparel imports and U.S. cotton as being far less than pound-for-pound. They point to the positive link between U.S. exports of raw cotton and imports of textiles and apparel: imports contain about 20 percent U.S. cotton on average. They believe that imports reduce consumer prices and expand the domestic market for cotton products, citing market growth and the doubling of U.S. retail consumption of cotton since 1980 as evidence. They also expect growth in textile exports to accelerate as U.S. mills gain greater access to foreign markets. In addition, they argue that the simultaneous liberalization of raw cotton trade and textile and apparel trade will result in larger total demand (exports plus domestic mill use) for U.S. cotton and stronger prices for growers.

Regional free trade agreements are another alternative. Under the North American Free Trade Agreement (NAFTA), the United States, Mexico, and Canada would phase out quotas and other barriers to trade among the three countries. MFA quotas on imports from outside North America could be maintained. Proponents of a NAFTA contend the agreement would benefit textile makers and cotton producers in the United States. The rules-of-origin agreed to by the United States and Mexico give preferential treatment to textiles and apparel made of yarn and fabric produced in North America. Opponents say that while U.S. textile mills and cotton producers might benefit from a NAFTA, labor-intensive apparel jobs would move to Mexico where labor costs are lower.

Agenda. The Uruguay Round of GATT negotiations has been underway for 6 years, and the outcome of the talks is still uncertain. Arthur Dunkel, Director General of the GATT, released the text of a proposed agreement, including textiles and apparel, at the end of 1991. The Dunkel text provides for the phaseout of MFA quotas over 10 years. The U.S. cotton industry and major textile and apparel manufacturing groups generally oppose the Dunkel text. There is less industry opposition to a NAFTA.

Information Source. U.S. Dept. of Agriculture, Economic Research Service, *The Cotton and Wool Situation and Outlook Report*, various issues.

U.S. trade in cotton textiles and apparel, domestic mill use, and retail consumption
Growing retail consumption partly offsets rise in imports.

Item	1980	1990	1991	1992
		Mil. 480-lb. bales		
Textile and apparel trade:[1]				
Imports	1.7	5.0	5.4	6.7
Exports	1.1	1.4	1.5	1.8
Deficit	.6	3.6	3.9	4.9
Mill use	5.7	8.6	9.1	9.7
Retail consumption:[2]	6.3	12.2	13.0	14.6

[1]Raw cotton equivalent. [2]Mill use plus deficit in textile and apparel trade.

United States Department of Agriculture

Economic Research Service

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July 1993

Issues for the 1990's: TRADE

Supply Variability and Grain Stocks Policies in a Global Market

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Issue. U.S. and world agricultural and trade policy reform will likely result in fewer market-distorting subsidies, cut crop production, and reduce grain stocks. But, reduced production and stock levels may result in greater price and supply variability in developed and developing countries.

Context. Price enhancement policies are being dismantled, trade barriers are being reduced, and efforts are underway to further reduce them. These changes have made protection of domestic agriculture and nationalistic self-sufficiency goals difficult to justify and costly to pursue. U.S. policy has pursued a market-oriented approach since 1985. This approach became apparent with the revision of nonrecourse loan rates now determined by formula as a percentage of a moving average price. Thus, in most years, the loan rate will be below the world price. Therefore, the rates now provide a flexible price safety net, rather than a fixed floor supporting price, and make the United States more responsive to market signals. The United States could accumulate large stocks again, but only if world prices were to fall significantly below U.S. loan rates. Such a development is less frequently expected because of the market-based formula for loan rates, the discretionary authority of the Secretary of Agriculture to reduce loan rates, and the provision of marketing loans that allow loan repayment at less than the loan rate. U.S. stocks are thus expected to average well below historical levels. Domestic and world markets are expected to be more susceptible to yield changes because of the closer relationship of consumption and farmers' expected production and the reduced size of government reserves.

The United States produces and sells a large share of the grain moving in the world market. Shocks such as yield variability, which may originate in the United States, likely contribute to domestic and world supply and price variability. As a result, yield variability could be a reason to intervene in the domestic market, if the intervention did not raise prices above longrun market-clearing prices or result in subsidies that caused the longrun income prospects for grain producers, domestically or internationally, to rise above normally expected income under market-oriented conditions.

At Stake. Reduction of market-distorting subsidies is generally considered beneficial to the global society; some believe freer trade will increase price stability. However, the Food and Agriculture Organization of the United Nations, the Organization for Economic Cooperation and Development, and others are concerned that unregulated free markets would leave the farm sector and consumers in all countries susceptible to increased risk from fluctuating yields. Developing countries are concerned about the potential for generally tighter markets and the effects of yield reductions that could drive prices higher, hurting their ability to import food. Food security is a primary concern in developing countries when rising prices prevent the very poor from obtaining food. And, political stability of governments becomes a problem in countries facing short food supplies, as consumers in those countries demand action by governments to bring about adequate supplies of food and stability in food prices. Potentially large price fluctuations hold important implications for consumers and producers in developing countries and for grain and livestock producers in the developed economies. Grain market volatility tends to exacerbate cycles in livestock production and adds to income uncertainty.

Alternatives. At question is whether some safety-net policies may be needed to prevent yield shocks from destabilizing production, prices, and consumption. Such policies would need to allow market prices to signal that a change in resource use was needed and thus alter the level of output, while reducing the market's reaction to short-term shocks. Past attempts to provide for market stability and developing-country food security objectives have taken several forms. These have included target stock levels that would meet food needs in most but not all years, a proportional buffer stock that

accomplished the same objective, price-triggered stock acquisition and dispersal programs to defend a particular price band, and quantity-triggered purchase and distribution rules based on total production. During the 1970's, some of these were suggested for use on both a unilateral and multilateral basis.

The major problem with proposed or implemented programs was that annual production, regardless of the cause of the production level, was allowed to enter the stocks program. Thus, more than just the effects of yield shocks entered the storage program. And, the programs were used to raise prices rather than remove the market-destabilizing effect of only the yield shock. Programs tended to rely on excess capacity generated by subsidies to gather supplies into government stocks. While such alternatives could be reconsidered, they appear to be impractical when applied alongside policies designed to let prices signal the need for changes in resource use, production, and consumption.

Rules for prior unilateral stock accumulation programs and supply stabilization schemes probably overcompensated for yield shocks. Actual wheat stocks reached far greater levels than would accumulate under a yield-shock-only program (see figure). Keeping in mind that yield shocks are not the result of economic planning, we see that a market-oriented alternative might permit a stocks program that dealt only with the yield. If managed by a crop yield change rule, rather than a price rule, and implemented on a unilateral or multilateral basis, such a program could provide minimal interference with the function of prices in guiding the use of resources and stabilize the market for food and feed grains. Market prices and production could be free to respond to longer term real changes in demand without supply distortions.

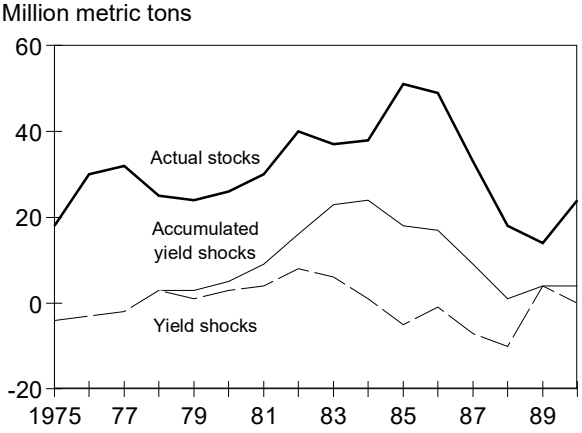
An alternative could be a global free market that would allow the market to allocate between consumption and stocks. Producers and consumers could place greater reliance on futures markets as a means for reducing the effects of price variability in a free market setting. However, in some countries, food security becomes such a large issue that governments feel compelled to hold stocks. There is continuing support for market-oriented policies that allow prices to signal the need for more or fewer resources to produce specific commodities. But, how to achieve market orientation and meet concerns of developing countries about stable food supplies remain at issue.

Agenda. Review of the objectives of current stocks programs and evaluation of unilateral or multilateral alternatives to the nonrecourse loan would have a high priority for both the domestic and developing-country markets as countries reduce trade barriers. Although the United States is a major player, this issue will also be addressed by other countries and organizations.

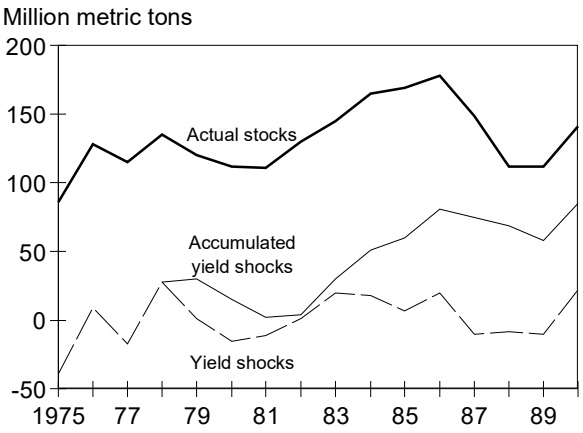
Information Source. Robert D. Reinsel, *Managing Food Security in Unregulated Markets*, Westview Press, Boulder, CO., Jan. 1993.

Wheat stocks and potential stocks given yield deviations

U.S.: *Historical stocks exceeded those produced by yield shocks only.*



World: *Yield shocks worldwide also accumulate to less than actual stocks.*



United States Department of Agriculture

Economic Research Service

Agriculture Information Bulletin Number 664-62

August 1993

Issues for the 1990's: TRADE

Agricultural Export Assistance and High-Value Product Exports

Stephen A. MacDonald

Mark E. Smith

Issue. At issue is whether Federal assistance for agricultural exports should be targeted to high-value product (HVP) exports. Such exports may offer more opportunities for employment and income than traditional bulk exports such as grain. The United States provides an array of tools to boost agricultural exports, including programs to help U.S. exporters compete in terms of price (such as the Export Enhancement Program, or EEP), to influence consumer tastes and preferences abroad (such as the Market Promotion Program, or MPP), to help foreign importers obtain credit to purchase U.S. commodities (the export credit guarantee programs), and to provide U.S. farm products as food aid. Except for the MPP, these programs primarily assist bulk exports.

Context. HVP's have accounted for much of the growth in world trade in the last decade, and prospects remain stronger for HVP's than for bulk. HVP's now comprise 80 percent of world agricultural trade and include intermediate products (flour, livestock feed, and animal byproducts used as inputs for further processing); consumer-oriented products, both processed (chiefly meat and dairy products) and unprocessed (fresh fruits and vegetables); and other products, including breeding stock, seeds, and tobacco products.

Other countries have pursued strategies emphasizing value-added exports. For example, during 1986-90, the European Community spent an annual average of $10 billion each year in agricultural export subsidies, of which 69 percent were for HVP's. In contrast, the HVP share for most U.S. agricultural export programs was substantially less (see table). U.S. agricultural export assistance has traditionally emphasized bulk commodities, reflecting the focus of domestic support programs and the trading environment for commodities such as grains, oilseeds, and cotton. The costs of U.S. domestic farm programs can vary with export demand, so managing domestic programs has caused the U.S. Government's interest and role in overseas marketing of bulk products to be quite different than that for HVP's. Thus, only the relatively small Market Promotion Program has emphasized HVP's.

The Omnibus Budget Reconciliation Act of 1990 requires the Secretary of Agriculture to consider boosting funding for commercial export programs since a General Agreement on Tariffs and Trade (GATT) agreement on agriculture did not enter into force by June 30, 1993. Export subsidies may have to be reduced if a GATT agreement is reached. Each case would require addressing the mix between assistance for bulk products and HVP's.

At Stake. The distribution of Federal benefits differs depending on whether bulk or HVP exports receive assistance. Greater exports, both bulk and HVP, benefit producers, processors, shippers, handlers, and exporters. Input suppliers realize indirect benefits. However, Economic Research Service (ERS) research shows that farm producers capture only 20 percent of the benefit from HVP exports, compared with 38 percent from bulk exports. A greater share of benefits from U.S. Department of Agriculture (USDA) spending accrues to those outside the production sector when HVP exports are assisted. The government, which pays the cost of export assistance, realizes some offsetting savings when certain bulk commodities are assisted. For example, if greater exports boost wheat prices by one penny per bushel, government spending on deficiency payments to producers can be reduced by $15-20 million.

Alternatives.

(1) Maintain current practices. The current policy mix for commodity export assistance has helped both bulk and HVP exports. U.S. HVP exports have climbed 98 percent since the mid-1980's, boosted by U.S. macroeconomic policies, USDA-sponsored market promotion, and bilateral arrangements such as the U.S.-Japan Beef and Citrus Agreement. At the same time, bulk exports have benefited from lower loan rates, U.S. macroeconomic policies, and USDA export assistance. USDA determines export assistance levels for individual commodities under each export program, with flexibility to respond to changes in the trading environment.

(2) Expand export assistance for HVP's. HVP exports may benefit the overall economy more than bulk exports. Depending on resource availability, ERS research has shown that $1.00 of HVP exports stimulates another $1.63 in direct and indirect supporting activities, compared with $1.08 from bulk commodities. However, with limited government resources, increased expenditures for HVP's could reduce assistance for bulk products, perhaps lowering farm prices for some bulk commodities and raising related costs under domestic farm support programs. Further, because some HVP's are branded products, taxpayer expenditures would benefit stockholders of participating corporations. Questions may then arise as to why no assistance is made for other manufactured goods. HVP promotion is operationally more complicated than that for bulk commodities.

(3) Reduce expenditures for HVP exports. Targeting assistance to bulk commodities will focus benefits on producers and may also increase farm prices and achieve taxpayer savings under domestic farm support programs. While bulk commodity exports may generate less economic activity, the cost of EEP bonuses is much less for bulk commodities than for HVP's. For example, the average 1992 bonus for wheat ($41 per ton, product weight) was less than half that of flour.

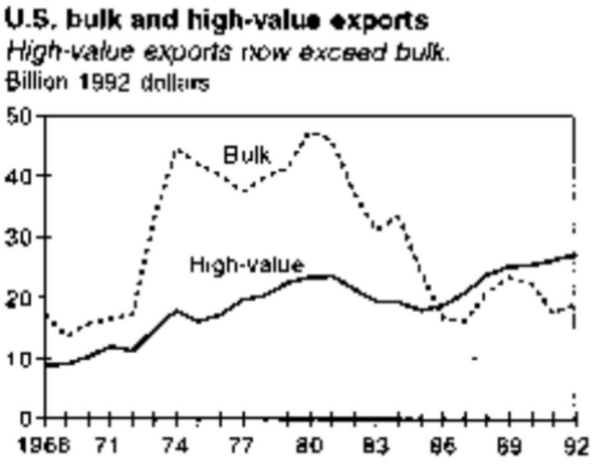
Agenda. Various legislative proposals have addressed the level of export assistance for HVP's. Pending the outcome of the GATT negotiations, the level and implementation of export subsidies may change. The U.S. Secretary of Agriculture has the authority to decide the amount of assistance for specific commodities under specific programs.

Information Sources. Two U.S. Department of Agriculture, Economic Research Service, reports: Gerald Schluter and William Edmonson, *Exporting Processed Instead of Raw Agricultural Products*, Staff Report AGES 89-58, Nov. 1989, and *High-Value Agricultural Exports: U.S. Opportunities in the 1980's*, FAER-188, Sept. 1983.

Share of U.S. Government farm export assistance to HVP's
Most export programs assist bulk products.

Program	1989	1990	1991
		Percent	
Price assistance*	16	16	13
Export credit guarantees	30	24	24
Market Promotion Program	76	72	79
Food aid	38	36	37

*Includes assistance under the Export Enhancement Program, the Cottonseed Oil and Sunflowerseed Oil Assistance Programs, and the Dairy Export Incentive Program.



United States Department of Agriculture

Economic Research Service

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September 1993

Issues for the 1990's: TRADE

Grain Cleanliness in the World Market

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Issue. With limited information on which to base separation of fact from opinions, there are several viewpoints on grain cleaning: (1) the United States is losing its competitive position in world grain markets because of cleanliness problems, (2) the cleanliness of U.S. grains could be improved by changing the U.S. grain grades and standards, (3) current grading standards work well and altering regulations on grain cleanliness will increase marketing costs, reduce profits, and diminish U.S. competitiveness, and (4) cleanliness is not as important as intrinsic quality characteristics in importers' grain buying decisionmaking and better information on the end-use characteristics of U.S. grains would enhance U.S. quality competitiveness.

Context. The United States has maintained strong competitiveness in the world coarse grain market, as indicated by world corn trade market shares (see figure). In contrast, the U.S. share of world trade in soybeans and wheat has declined. Foreign buyers sometimes perceive a cleanliness problem with U.S. wheat because it has a higher average dockage level than wheat from Canada and Australia (see figure). In soybeans, the perceived cleanliness problem relates to the amount of foreign material present in U.S. beans. The average foreign material content of U.S. No. 2 soybeans exported since 1985 has ranged from 1.6 to 1.8 percent, slightly below the 2-percent maximum for grade No. 2.

At Stake. The United States faces increasing competition for wheat and soybean markets from other exporting nations. It is possible that the U.S. market share could be adversely affected by the cleanliness issue. The 1990 farm act directed the U.S. Department of Agriculture to study the costs and benefits of cleaning grain for export markets. The Economic Research Service, in cooperation with the Federal Grain Inspection Service, is conducting such studies for wheat, corn, soybeans, sorghum, and barley. The recently completed study on wheat found that price, not dockage content, was the most important criterion of the import purchasing decision made by many foreign buyers. Buyers in most importing countries regard intrinsic characteristics (especially protein quality, protein quantity, and sprout damage), test weight, and moisture content to be more important than physical cleanliness. The study indicates that exporting cleaner wheat would require mechanical cleaning to meet competitors' cleanliness levels and that tighter standards would produce a net economic loss. Costs of cleaning all export wheat would likely exceed the domestic and international benefits by at least $8 million. However, the industry may benefit from cleaning a sufficient quantity of wheat to meet the demands of buyers in cleanliness-conscious niche markets.

Alternatives. Alternatives for addressing wheat cleanliness and other grain quality issues include:

(1) Continue the current U.S. grain grades and standards without modification. This approach relies on contract specifications to facilitate transactions between U.S. exporters and foreign buyers. Contract specifications to control dockage content would require payment of compensating premiums to offset added cleaning costs. Foreign buyers could specify cleaner wheat and negotiate the requirements and the price in the contract.

(2) Change U.S. grain grades and standards to promote cleanliness. Different grade limits for dockage at each U.S. grade could be set, with U.S. No. 1 being the "clean wheat" grade meeting the cleanliness standards of containing dockage not to exceed, for example, 0.3 percent. Foreign buyers could then

pay a higher price for wheat grading U.S. No. 1. Tightening cleanliness standards for all wheat to satisfy a limited number of cleanliness-conscious niche markets may be unwarranted.

(3) Change U.S. grain grades and standards to include important intrinsic characteristics. Even though cleanliness may be an important quality criterion for some foreign buyers, it is not very important for most. Thus, advocates argue that U.S. wheat standards should include additional intrinsic quality factors to enhance U.S. quality competitiveness. The feasibility of changing the standards depends upon development of rapid, economical tests to measure important intrinsic characteristics.

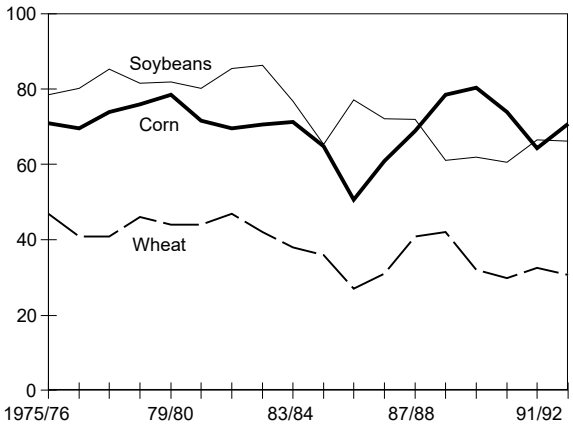
(4) Use mechanical cleaning selectively for niche markets. Cleaning wheat for special markets could benefit the U.S. wheat industry if buyers in these niche markets were willing to pay a premium for clean wheat and if the costs of segregating clean wheat throughout the marketing system were minimal. Buyers in seven markets indicated a willingness to pay premiums for cleaner U.S. wheat. About 6 million metric tons would need to be cleaned to satisfy the demands of those buyers, and the net gains from cleaning wheat for those targeted markets were estimated to total $8-$10 million.

(5) Accelerate implementation of a market (outreach) program. Another alternative would be to accelerate implementation of a market information program that (1) conveys essential quality characteristics desired by end users to domestic producers, plant breeders, handlers, and exporters, and (2) familiarizes foreign buyers with the quality characteristics of U.S. wheat classes and varieties. This program would address the difficulties encountered by foreign buyers in obtaining information on the end-use characteristics of U.S. wheat.

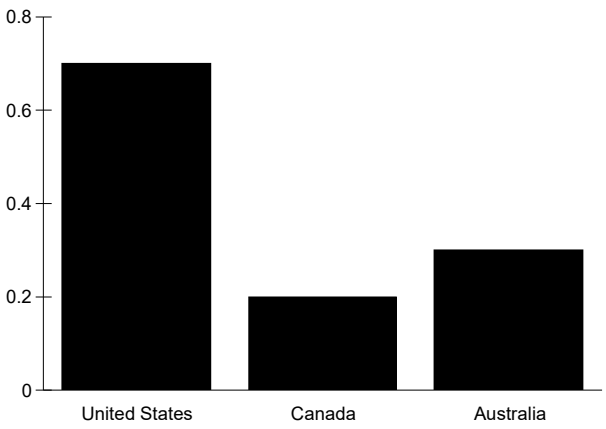
Agenda. The USDA grain cleaning studies will be transmitted to Congress to help in deliberations, possibly in the 1995 farm bill debate, about the cleanliness of U.S. grains and its relationship to competitiveness in the world market.

Information Sources. U.S. Dept. of Agriculture, Federal Grain Inspection Service, *U.S. Grain Exports: Quality Report*, annual. Contact the authors about forthcoming U.S. Dept. of Agriculture, Economic Research Service, reports on the costs and benefits of cleaning wheat, corn, barley, sorghum, and soybeans.

U.S. market share of world trade
Soybean and wheat shares have declined, but the corn share has rebounded.
Percent



Average dockage content of wheat exports
U.S. dockage level is more than the Canadian and Australian levels combined.
Percent



United States Department of Agriculture

Economic Research Service

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November 1993

Issues for the 1990's: TRADE

Trade Competitiveness of U.S. Agriculture

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Issue. A stated aim of the Clinton Administration is to promote U.S. trade competitiveness in a more open international trading environment. The issue for U.S. agriculture is how the sector can increase its longrun competitiveness in world markets and contribute to real growth of the national economy without incurring excessive adjustment costs.

Context. The United States is the world's leading agricultural exporter, averaging 17 percent of the global market for agricultural goods during the past three decades. The U.S. share reached 20 percent in 1981. Modern technology and abundant natural resources relative to the size of the domestic population largely explain U.S. dominance. Currently, the United States has three times as much arable and permanent cropland per capita as the rest of the world. This resource advantage is increasing. Since 1970, cropland per capita in the rest of the world has declined 1.6 times faster than in the United States. Advances have also resulted from more rapid gains in U.S. productivity of major types of farm inputs (agricultural machinery, chemicals, and labor) compared with the rest of the world.

The detailed trade record shows that the United States has an advantage in many but not all subsectors. U.S. advantages exist in coarse grains, wheat, soybeans, and many high-value commodities. The United States imports rubber, coffee, tea, cocoa beans, raw silk, bananas, and various spices and vegetable fibers because they are not grown domestically. These products are imported because they are not grown domestically. The United States also imports rice, cotton, and assorted meat and livestock products that compete with home-grown production.

At Stake. The competitiveness of U.S. agriculture and the sector's ability to contribute to national income and domestic environmental protection are at stake. The structure of U.S. and world agriculture will undoubtedly be altered as a result of foreign economic development, changes in the rules of international trade, shifts in domestic policy, and new developments in technology. The United States stands to benefit from increased demand for grains and oilseeds in the developing countries and from emerging markets for processed and convenience foods in developed countries. Economic development in countries in Central Europe and the former Soviet Union may eventually generate competition for U.S. farmers in some bulk commodities, but create opportunities for domestic producers of high-value, processed commodities.

The rules of international trade, in the midst of change, will affect U.S. competitiveness in agriculture. The Uruguay Round of the General Agreement on Tariffs and Trade (GATT) aims at liberalizing global agricultural markets. The current round has launched a process whereby agricultural subsidies are likely to be successively reduced in future years. Bilateral trade arrangements, such as the proposed North American Free Trade Agreement, may also shape the structure of world agriculture. On the domestic front, recent U.S. farm legislation has attempted to render domestic agriculture more competitive in global markets by tying loan rates to longrun movements in world prices.

Discovery and commercialization of industrial uses for existing and new agricultural products offers another way to expand U.S. agricultural markets abroad. Such industrial uses also create domestic employment in industries manufacturing value-added commodities. The demand for research-based, environmentally benign products derived from agriculture is large, especially if global markets remain open and patent protection is provided. Cornstarch derivatives can be used as a raw material in the manufacture of biodegradable plastics and water-absorbing materials. Biotechnology research has identified ways that a variety of plants and animals can be used to provide modern medicine with high-value drugs and biochemicals. The Clean Air Act of 1990 has increased the demand for oxygenates, such as corn-based ethanol.

Alternatives. A major determinant of future U.S. competitiveness will be policies for U.S. agriculture that promote domestic economic efficiency, economic growth abroad, new developments in technology, and open international markets. Depression-era farm legislation attempted to protect farmer income through commodity price-support and land set-aside programs. One upshot of these programs was that they rendered U.S. agriculture less competitive in world markets. Within the last decade, U.S. farm policy has shifted toward a more open-market orientation. The 1985 farm act effectively lowered loan rates and target prices and froze payment yields. The 1990 farm act and the 1990 budget reconciliation act required loan rates to correspond even more closely to world market prices, and its triple-base provision increased farmer decisionmaking flexibility concerning product mix. U.S. agriculture that is market-oriented can exploit its natural competitiveness and take advantage of economic opportunities. During the 1960's, for example, handsome payoffs were realized when domestic resources moved into soybean production in response to expanding international market opportunitites.

The use of foreign development assistance is controversial. Over three-fourths of the world's population resides in developing countries. People in these countries have a high propensity to spend increased income on agricultural commodities the United States exports, making developing countries an expanding market for U.S. agriculture. Some believe that the United States should not assist these countries to improve their productive capacity in agriculture because it conflicts with the U.S. comparative advantage in agriculture. Others argue otherwise because growth in labor-intensive agriculture is the primary means for developing countries to increase their incomes.

There is less controversy about the role of the U.S. Government in supporting domestic education, scientific research, primary infrastructure, and other areas where the private sector underinvests. A well-trained labor force in agriculture is necessary to retain competitiveness in world agricultural markets. The returns to public education is very high, with benefits extending beyond the individual producer to society as a whole. Government funding for basic and applied agricultural research helps keep the United States at the cutting edge of modern technology. Scientific inquiry generates nonrival inputs, such as technological instructions, that can be accumulated at relative little costs, enhancing the productivity of innovative American farmers. Finally, improvements in the transportation and communication infrastructure are vital because marketing, just as efficient production, is an important component of U.S. trade competitiveness in agriculture.

Agenda. A principal aim of government is to create an environment that encourages needed resource adjustments without creating lasting market distortions. In today's increasingly dynamic and interdependent global market, policy impacts permeate throughout the U.S. agricultural sector and the domestic economy. It is important that policymakers take a longterm perspective and evaluate how programs, designed to achieve specific objectives, affect the overall domestic economy and trade competitiveness of U.S. agriculture. Government interventions that enable the market to function more efficiently can easily be justified. Preserving the status quo may induce economic loss if it thwarts efficient operation of the market. Movement toward productive markets engenders more rapid economic growth, added employment, and increased commodity trade.

Information Sources. Willard W. Cochrane and Harald von Witzke, "The Long, Slow Slide into Economic Mediocrity," *Choices*, 3rd Quarter, 1992. John W. Mellor, "Agricultural Development in the Third World: The Food, Poverty, Aid, Trade Nexus," *Choices*, 1st Quarter 1989. Robert Paarlberg, "The Mysterious Popularity of EEP," *Choices*, 2nd Quarter 1990. *The Economist*, "Grotesque: A Survey of Agriculture," Dec. 12, 1992. U.S. Dept. of Agriculture, *New Crops New Uses New Markets: 1992 Yearbook of Agriculture*, U.S. Government Printing Office, 1992. Thomas L. Vollrath, "U.S. Farm Trade Complements World Trade," *FoodReview*, Vol. 15, Issue 1, Jan.-June 1992. U.S. Dept. of Agriculture, Economic Research Service, *The Basic Elements of Agricultural Competitiveness*, MP-1510, Mar. 1993.

United States Department of Agriculture

Economic Research Service

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February 1994

Issues for the 1990's: TRADE

Private and Public Financing of Agricultural Research and Development

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Issue. The public agricultural research system must face the demands of an expanding constituency, which includes not only farmers, but also input suppliers, food processors, distributors, and environmental and consumer advocacy groups. It must meet these demands while operating within its current fiscal constraints. But how and to what extent should public institutions coordinate research efforts with the private sector?

Context. Research expenditures by the U.S. Department of Agriculture (USDA) have declined relative to those of the private sector and State agricultural experiment stations (SAES) (see figure). USDA research expenditures have remained about the same, while private industry investment has risen. Private industry invests over $3 billion annually in food and agricultural research and development (R&D), more than the Federal Government and SAES combined. The public sector allocates about 40 percent of its agricultural research funding to basic research in agricultural sciences, while the private sector invests less than 10 percent of its funding in basic research.

At Stake. The U.S. public agricultural research system remains the largest in the world, but other countries are closing the R&D funding gap (see table). Continued technical progress in the food and agriculture sector is a contributing factor towards limiting increases in food prices, maintaining the international competitiveness of U.S. agriculture, protecting the environment, and guaranteeing a safe food supply. Future U.S. comparative advantage in agricultural production will depend less on our abundant natural resource base and more on our abilities make productive public and private investments in innovation. A lag of several years exists between beginning research projects and the adoption of new technologies. The future availability of agricultural technologies depends on research policy decisions made today.

Numerous studies have found a relatively high rate of return on investment in public agricultural R&D. Because the private sector measures the profitability of innovations rather than their benefits to society, the private sector tends to underinvest in basic agricultural research. The private sector also has less incentive to conduct research in areas that are not directly profit-oriented, such as rural development, food safety, or environmental protection.

The longrun beneficiaries of agricultural R&D are consumers, who gain through lower food prices. Early adopter farmers benefit from technical change in the short run through falling per unit production costs. These early benefits may be eroded as widespread adoption leads to more production and falling output prices in the long run. Individual SAES concentrate a greater proportion of their research on farm-level cost reductions than USDA. USDA has increasingly emphasized research to expand demand for agricultural commodities. USDA also plays a central role in defining research issues of national priority such as global climate change or foreign market development, which individual State governments may be less willing to fund.

Alternatives. Possible research policy options are to:

(1) Conduct a national needs assessment to define national research priorities and determine the appropriate level of public investment. Such an assessment would also examine the division of research effort between private industry, USDA, and SAES.

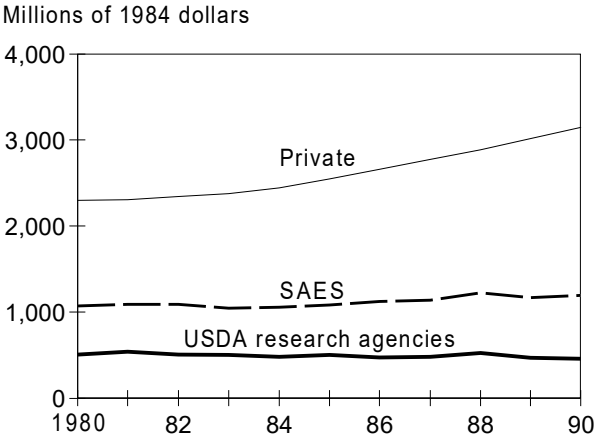
(2) Provide greater incentives for private firms to invest in R&D. Incentives to invest are affected by: intellectual property rights, regulation of biotechnology, R&D investment tax policies, antitrust policies toward cooperative research ventures, and the cost of corporate borrowing. Additional incentives may be provided through the Small Business Innovative Research program and joint public-private R&D ventures, called Cooperative Research and Development Agreements (CRADA's). CRADA's, authorized by the Technology Transfer Act of 1986, are formal agreements between public agencies and private firms to conduct joint R&D projects. USDA has over 200 CRADA's with private firms, more than any other government agency.

(3) Expand public research where the private sector is less likely to invest, such as basic science. Other research areas include nutrition, rural development, and natural resources and the environment. USDA research funding in these three areas declined 12 percent between 1978 and 1989.

Agenda. Agricultural research policy will be guided by USDA budget appropriations for its research agencies and Competitive Research Grants Office. Legislation designating priority issues for public R&D may undergo examination as part of the 1995 farm bill. Private sector research will be affected by legislation governing intellectual property rights, R&D investment tax credits, and cooperative research ventures.

Information Sources. Assessments of U.S. agricultural research policy are provided in Vernon Ruttan, *Agricultural Research Policy*, Minneapolis: University of Minnesota Press, 1982, Rockefeller Foundation, *Science for Agriculture*, New York: The Rockefeller Foundation, 1982. U.S. Congress, Office of Technology Assessment. *An Assessment of the U.S. Food and Agricultural Research System*, Washington, DC: U.S. Government Printing Office, 1981, and Kenneth Dahlberg, *New Directions for Agriculture and Agricultural Research*, Totowa, NJ: Rowmand & Allanheld, 1986.

Agricultural research and development expenditures, 1980-90
Private research expenditures have risen more sharply than public funding.



Source: Wallace E. Huffman and Robert E. Evenson, *Science for Agriculture: A Long-Term Perspective*, Ames: Iowa State University Press, 1993.

International comparison of public agricultural research expenditures
The EC public agricultural research system has nearly closed the R&D funding gap, and Japan and Latin America have more than doubled their public expenditures.

Country/ region	Research expenditures		Percent of U.S. expenditures	
	1961-5	1981-5	1961-5	1981-5
	Millions of 1980 dollars/year		----------*Percent*----------	
United States	884.7	1,423.9	100.0	100.0
E.C.	553.2	1,406.5	62.5	98.8
Japan	404.4	1,021.6	45.7	71.7
Latin America	211.8	678.9	23.9	47.7
Canada	148.8	421.4	16.8	29.6
Australia/N.Z.	161.1	312.7	18.2	22.0

United States Department of Agriculture

Economic Research Service

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April 1993

Issues for the 1990's: ENVIRONMENT

Registration of Pesticides Used To Produce Food

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Issue. Regulation of pesticide products by the Environmental Protection Agency (EPA) is governed by two statutes: the Federal Food, Drug, and Cosmetic Act (FFDCA), which establishes tolerances for pesticide residues on food and feeds, and the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), which regulates the sale and use of pesticides through its registration process to prevent unsafe health and environmental risks. Several issues have unified consumer interest groups, environmentalists, agribusiness, and farmers in calling for changes in the registration process, although solutions offered by each group differ significantly. These issues include (1) the application of the Delaney, or zero-risk, standard in judging the safety of pesticide products, (2) the different regulatory treatment received by old and new pesticide products, (3) the lengthy time lag and high costs associated with the registration process, (4) research and development (R&D) incentives to develop safer pesticides, and (5) the registration of pesticides for minor uses.

Context. EPA, in granting a pesticide registration, specifies how a pesticide may be used. The specification takes into consideration exposure levels for farmworkers and consumers (human health issues include cancer and other illnesses) as well as environmental damage and wildlife protection. One of the most contentious elements of FFDCA is the Delaney, or zero-risk, clause that prohibits use of a pesticide if there is scientific evidence that it causes cancer and concentrates in processed foods. Since 1988, the EPA has chosen to implement a *de minimis* risk standard that permits the use of a potentially carcinogenic pesticide product if the risk is negligible. Negligible risk is expressed in terms of probability that an individual will experience cancer from exposure to a substance over a lifetime. For example, accepting a risk estimate of one in a million indicates that one out of a million individuals exposed daily over a 70-year lifetime will develop cancer.

In 1988, Congress required the EPA to reregister pesticides registered before November 1984 to ensure compliance with current health and environmental risk standards. Advances in technology have generated problems with the registration process itself. New products are scrutinized more than older pesticides because regulators demand state-of-the-art testing. Over time, testing has increased scientists' ability to measure residues and the biological functions most affected. Improved testing techniques in conjunction with the zero-risk standard raises the possibility of a regulatory paradox: that a new and weakly carcinogenic pesticide product could be denied a registration, while pesticide products already registered and potentially posing higher health risks remain on the market, at least in the short term. Other consequences of the more data-intensive registration process revolve around the high cost imposed on pesticide manufacturers and time lag during which society cannot realize the benefits of possibly safer and more effective pesticides.

At Stake. The reregistration of pesticides will potentially have far-reaching, but currently unmeasured, effects on production and marketing systems as well as on the environment, worker safety, and food residues. These effects will be manifested in the cost, availability, and physical appearance of a wide variety of food products. The elimination of currently registered products or the introduction of new products could result in significant changes in the type, amount, and timing of pesticide applications as well as changes in producer and consumer costs. Benefits and costs from changing the registration process will not likely apply evenly throughout the agricultural sector. If farmers with the worst pest problems become much less productive and total agricultural production

declines, farmers with modest pest problems may benefit from commodity price increases. Consumers who are willing to trade off higher prices for less pesticide exposure may benefit at the expense of consumers who care only about prices. An industry that develops alternatives to pesticides may benefit at the expense of the pesticide industry.

Consumer and environmental groups supporting the implementation of the Delaney standard argue that the negative human health and environmental effects are still not clearly understood or accurately measured. The food and agribusiness sector supports negligible risk standards, arguing that existing standards are excessive given the level of risk and that the pesticides generate better quality food in larger quantities. And, some argue that imposing strict health and environmental standards on American producers hurts U.S. export competitiveness when farmers in competing nations are subject to less stringent controls.

Fruit, vegetable, and specialty crop producers argue that their productivity is especially at risk. Some predict that the zero-risk standard and registration process costs would force chemical manufacturers to drop registrations for fruits and vegetables, which are considered minor-use crops. Fruit and vegetable growers claim they have few good substitutes for existing chemicals. The increasing data demands for registration may create deterrents for chemical manufacturers to carry out R&D. If pesticide manufacturers consider the costs of registration to be fixed costs, a large fixed cost could make the business of developing low-volume products unprofitable.

Alternatives. Several changes to the EPA's current registration process are being debated. Some consumer and environmental interest groups favor the Delaney clause in the registering of pesticide products even if meeting this standard disrupts current production practices. They believe that all cancer risk from synthetic chemical use on food products should be eliminated to protect consumer health and the environment. Many farm and pesticide interest groups favor replacing the Delaney zero-risk standard for pesticide residue with a *de minimis* or negligible risk standard. Using some form of a negligible risk standard would allow the EPA to concentrate on higher risk products which may potentially represent the greatest threat to health and environment and allow those products which pose a negligible risk to remain on the market. Some consumer groups oppose the negligible risk standard because it permits the use of pesticides with a known, albeit small, health risk. Government agencies have discussed, with no agreement so far, incentives for companies to develop lower risk pesticide products. Incentives proposed by the EPA include changing labeling standards to permit producers of lower risk products to indicate this in their advertising, streamlining the registration process for targeted products, waiving fees, reducing data needs, and giving higher priority to lower risk pesticide products. The USDA and pesticide producers favor changing the methodology used to estimate risk in establishing tolerance levels; instead of estimating pesticide risk to humans from laboratory tests, the EPA would use data measuring residues found on food products.

Agenda. A challenge by consumer groups to the EPA's application of the *de minimis* exception to the Delaney clause was upheld in the U.S. Court of Appeals in July 1992. A Justice Department petition to the Court of Appeals for a rehearing was denied in October 1992. This ruling could force the EPA to impose the Delaney standard in registration decisions. Doing that, EPA stated, would affect 35 chemicals used on 80 crops. Several alternative bills proposing changes in the existing registration process are pending before Congress.

Information Sources. National Academy Press, *Regulating Pesticides in Food: The Delaney Paradox*, Committee on Scientific and Regulatory Issues Underlying Pesticide Use Patterns and Agricultural Innovation, Board on Agriculture, National Research Council, 1987. Also, three Congressional Research Service publications: Donna U. Vogt, *The Delaney Clause: The Dilemma of Regulating Health Risk for Pesticide Residues*, 92-800 SPR, 1992; Vogt, *Proposed Changes to Policies Governing Pesticide Residues in Foods*, 92-179 SPR, 1992; and Jasper Womach, *Pesticide Policy Issues: Debating FIFRA in the 102d Congress*, IB91055, 1992.

United States Department of Agriculture

Economic Research Service

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April 1993

Issues for the 1990's: ENVIRONMENT

Improving Water Quality through Policy Reform

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Issue. Agriculture is a major source of sediment, nutrients, salts, animal wastes, and pesticide residuals entering U.S. water supplies. These materials impair water quality in some areas of the country (see charts). Most other major sources of pollution are already controlled through regulation, so improvements in many areas will likely have to come by reducing agricultural discharges. Ideal policies would reduce agricultural pollution in a way that farmers and consumers alike view as equitable and efficient.

Context. The 1972 Federal Water Pollution Control Act outlined the goals for surface water quality. So far, the emphasis in this legislation and subsequent amendments has been on controlling pollution coming from clearly identified points (point sources). Agriculture and other nonpoint sources have been dealt with only as a secondary problem, largely through voluntary State management programs. However, programs must address agricultural pollution sources if national water quality goals are to be achieved. The 1990 Coastal Zone Act Reauthorization Amendments required technology-based management measures for farms in coastal zones. Agriculture's effect on ground water quality is addressed in Environmental Protection Agency's (EPA) Chemicals in Groundwater Strategy and in U.S. Department of Agriculture's (USDA) Water Quality Program. Some States also have programs for protecting water resources from agricultural pollution. Most Federal and State programs emphasize voluntary approaches. The 1985 and 1990 farm acts introduced USDA programs aimed at protecting or improving water quality. Such programs are likely to remain an important part of USDA's conservation activities. The issue becomes one of identifying which policy actions to pursue for achieving water quality goals.

At Stake. Who will bear the cost of cleaner water? Voluntary measures and stronger controls are the two most commonly considered approaches to reduce agricultural nonpoint source pollution. Most farm groups favor the voluntary approach, supported by research, education, technical assistance, and cost-sharing. This approach is appealing because the characteristics of agricultural pollution make it difficult, if not impossible, to identify individual or point sources of pollutants. In addition, it is difficult to predict the water quality benefits from adopting alternative management practices. Supporters of this approach believe that producers should not be forced to change practices and incur possible income losses unless conclusive evidence exists that their farm is a problem and that the actions taken will produce cleaner water. The voluntary approach would have minimal economic effects on producers, but would force water users to bear the costs of polluted water. This approach also implies that more progress towards meeting water quality goals would require increased controls on point sources, despite greater costs.

Environmental groups favor stronger controls on agriculture. Point-source pollution control policies have traditionally followed the "polluter pays" principle. Doing so would require that farmers bear some of the costs for their actions. Marginal costs for reducing most agricultural pollutants are lower than for a like reduction in pollution from point sources, economic analysis shows. Stronger actions might also be warranted since farmers already benefit from a number of commodity programs that can create incentives to increase chemical use and to produce crops by farming marginal land. Requiring farmers to alter their management practices will generally increase costs, especially for those growing input-intensive crops or those farming on marginal land. Some land may even be forced out of production. Consumer prices could rise and trade could suffer, particularly if other countries ignore the environmental costs of their agricultural systems.

Alternatives.

Continue current programs (status quo). Avoid further regulations under the Clean Water Act and continue to rely on volunteerism supported by publicly funded research, education, technical assistance, and cost-sharing. Adverse effects on producers are minimized under voluntary programs. However, there are no guarantees that voluntary changes in management necessary to improve water quality will occur, especially if those changes indicate lower incomes.

Shift more heavily towards compliance measures. USDA's commodity and other income-support programs offer payments contingent on farmers adopting environmentally sound management practices. Conservation compliance has already been adopted for the control of soil erosion. However, such an approach misses nonprogram crops. And, such incentives have declined recently and could decline further because of proposed trade agreements which limit support payments and possible budget-saving cuts in commodity program expenditures.

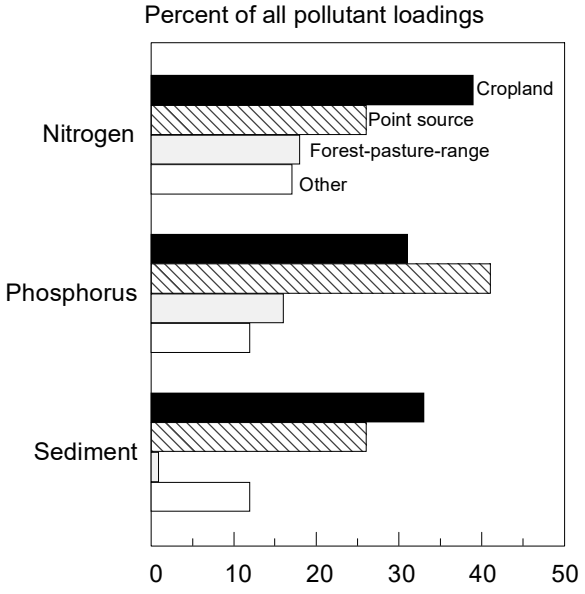
Introduce environmental taxes under the Clean Water Act. Input fees or taxes have been suggested as a way to reduce chemical use. Several States have taxes on nitrogen fertilizer. Taxes could reduce the amount applied, with the revenue to be used for research or refunded to those who adopt nutrient management strategies. Taxes based on potential environmental effects could also be applied to certain management practices.

Adopt the Coastal Zone Management Act (CZMA) strategy. The CZMA calls for a technology-based approach in which States identify a list of approved best management practices (BMP's). States can use voluntary or regulatory means to see that appropriate practices are adopted. USDA and EPA cooperated in identifying the approved BMP's. This strategy has not yet been implemented, so it is unclear how successful it might be. Enforcement may be particularly difficult.

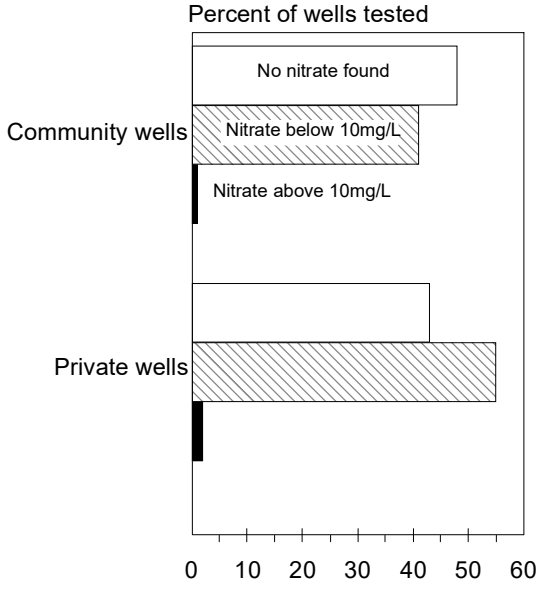
Agenda. Two pieces of prospective legislation can have a significant effect on agriculture's role in meeting national water quality goals. The Clean Water Act is up for reauthorization in 1993; preliminary work on major issues has been in progress for the past year. The 1995 farm bill debate will offer another forum for debate and, ultimately, legislative provisions.

Information Sources. Bulletins from the Environmental Protection Agency: *Water Quality Inventory*, *Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters*, *Pesticides in Well Water Survey*, and *Chemicals in Ground Water Strategy*.

Sources of surface water pollution
Runoff from agricultural land is the single largest source of the Nation's surface water pollution.



Nitrates in U.S. drinking water wells
The nitrate levels in most wells are below 10 milligrams per liter, which does not pose a human health risk.



United States Department of Agriculture

Economic Research Service

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April 1993

Issues for the 1990's: ENVIRONMENT

Endangered Species Preservation and Western Water Allocation

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Issue. Many endangered, threatened, and declining species depend on riverine ecosystems that have been altered by development of surface water supply systems to provide irrigation water in the Western United States. Conflicts arise from the mutual dependence of fish and agriculture on over-allocated western river systems. Activities to protect fish species could reallocate irrigation water for habitat improvement, thus potentially imposing financial losses on agricultural producers.

Context. Early applications of the Federal Endangered Species Act (ESA) involved "yes or no" decisions on proposed development projects. In contrast, the current generation of ESA actions, such as those for the spotted owl and sockeye salmon in the Pacific Northwest, involve integrating species preservation activities into existing regional economies. Recovery plans have been approved for only 56 percent of the 731 species officially listed as threatened or endangered under the ESA. Another 4,784 plant and animal species have been designated as candidates for protection.

Of 93 fish species listed as threatened or endangered, 67 are found only in western rivers, many of which have been developed for irrigation or hydropower. Surface water supply systems can harm fish in several ways. Dams block access to spawning grounds, alter timing and temperature of river flows, and create slack water in reservoirs that increases juvenile fish mortality. Diversions reduce the water volume remaining in rivers. Unscreened diversions and power-generating turbines create physical hazards. And, irrigation return flows can carry toxic chemicals and elements.

More than 50 percent of western irrigated lands, 21 million acres, rely on surface water from western rivers. Almost half of these receive water from projects developed by the Bureau of Reclamation (Reclamation). Under the ESA, Federal agencies are obligated to assist in endangered species conservation. Producers who depend on federally operated Reclamation projects, therefore, may be particularly vulnerable to water supply interruptions or reductions for fish conservation.

At Stake. Society places a high value on preserving those species threatened with extinction. However, recovery plans for endangered species increasingly must be reconciled with existing uses of land and water resources. Efforts to protect the large and growing number of endangered fish species in western rivers may affect agricultural economies that rely on low-cost, plentiful surface water supplies. Protection measures may reduce the quantity of water diverted for irrigation, increase power costs, and increase capital costs for diversion screens, fish ladders, and intake pumps.

The national value of crop production on wholly irrigated farms averaged $529 per acre in 1987, more than six times greater than the $83 per-acre average for nonirrigated farms. Crops produced on the 9.2 million acres irrigated with Reclamation water in 1990 were valued at $9.6 billion. While Reclamation will continue to provide water for irrigation, reductions in the quantity of water supplied may result in reduced irrigated acreage, reduced yields, and changes in crop mix. These, in turn, would likely reduce the net value of output.

Two examples indicate the potential effect of ESA listings on irrigated agriculture. Snake River sockeye and chinook salmon in the Pacific Northwest and Sacramento River chinook salmon in California were recently listed as threatened or endangered. Although formal recovery plans are not yet in place for

these species, conservation activities are underway and the range of potential recovery measures has been identified. Both examples involve modification of historical norms for river management, but with significant differences. Salmon protection in the Northwest likely will leave irrigation supplies intact, although irrigation costs would rise with a regionwide increase in power costs due to protection efforts. In contrast, many California irrigators are almost certain to face reduced water supplies in most years. Since 1987, Reclamation has modified Central Valley Project (CVP) operations for salmon protection. Reserving a portion of drought-reduced CVP supplies in 1992 for salmon further reduced water allotments to many farmers.

Alternatives.

ESA implementation. The ESA requires the Federal Government to issue regulations as necessary to conserve endangered species, and authorizes purchases of land and water resources to accomplish this goal. Further, the ESA requirement of Federal agency cooperation poses an important constraint on Reclamation project operations. In its 1992 *Strategic Plan*, Reclamation recently defined "conservation and enhancement of fish and wildlife resources" as one of 25 critical program elements, and stated that it will, "Pursue innovative and cost-effective approaches for... recovering and managing threatened and endangered species associated with Reclamation projects."

ESA reform. Two modifications to the ESA are being considered: (1) introducing an economic test to supplement the current biological test for official listing of a species and (2) expanding the focus of the law from individual species to a broader ecosystem perspective. Either modification could alter the allocation of water between agriculture and endangered species.

Legislative reform. Two existing approaches provide alternatives to relying solely on the ESA to protect species. In the Columbia River Basin, the Northwest Power Act (1980) mandated that fish and wildlife be treated equally with hydropower and other river uses. An interstate commission was created to implement the mandate. This approach, creating systemwide river management institutions, could be adopted for other western rivers. Reforming water allocation rules for Reclamation projects gives a second, project-by-project approach. For instance, the Central Valley Project Improvement Act (1992) expands CVP purposes to include fish and wildlife restoration and protection, and dedicates 1 million acre-feet of water to accomplish this. It also includes three provisions for encouraging irrigation water conservation: deregulation of water markets, subsidies for conservation investments, and increasing block rate structures for water prices.

USDA water conservation program development. Proactive measures, such as voluntary water conservation, may avert more stringent measures that could be imposed through the ESA. Current farm programs provide some alternatives. The 1985 and 1990 farm acts created new incentives for reducing soil erosion and wetland conversion through the Conservation and Wetlands Reserve Programs. A similar program could permanently retire western water rights to make water available for ecosystem protection in regions with protected fish species. Further, USDA programs, such as the Agricultural Conservation Program, provide Federal cost sharing of investments for irrigation water conservation. It may be possible to address the issue of endangered species in western rivers through these programs.

Agenda. Continued implementation of the ESA requires designation of critical habitat and development of recovery plans for many formally listed species. Over 100 western fish species designated as candidates for listing also require consideration. In addition, Congress must soon consider ESA reauthorization. A program to address species conservation could be developed in the 1995 farm act or incorporated into existing USDA water conservation programs.

Information Sources. Information on western irrigated agriculture: U.S. Dept. of Commerce, Bur. of the Census, *Farm and Ranch Irrigation Survey (1988)*, AC87-RW-1, May 1990. Information on the Reclamation program: U.S. Dept. of the Interior, Bur. of Reclamation, *1990 Summary Statistics,* 1991 or *Reclamation's Strategic Plan*, June 1992. Two reports describe ESA implementation: U.S. Dept. of the Interior, U.S. Fish and Wildlife Serv., *Report to Congress: Endangered and Threatened Species Recovery Program*, 1990, and U.S. Dept. of Commerce, National Marine Fisheries Serv., *Endangered Species Act Biennial Report: Status of Recovery Program, FY 1989-1991*, 1991.

United States Department of Agriculture

Economic Research Service

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Issues for the 1990's: ENVIRONMENT

Wetlands Protection Policy

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Issue. The many public benefits of wetlands include providing wildlife habitats and outdoor recreation; controlling pollution, soil erosion, and floods; and preserving the ecosystem. Recognition of these public benefits since the 1970's has reversed Federal policy from support of wetlands conversions to wetlands protection. The conflict between the objectives of conservation programs and private property rights will strongly influence the direction and content of future policies.

Wetlands protection policy has several specific issues to resolve. (1) Delineation and categorization: what lands are wetlands and therefore subject to regulation, and should different regulations apply to different quality levels of wetlands? (2) Scope: what land-use activities on wetlands should be regulated? (3) Compensation and acquisition: should landowners who are subject to regulations be compensated, and to what extent should the Federal Government protect wetlands by direct purchase or by easements (formal agreements to pay landowners for use restrictions)? (4) Restoration and mitigation: are wetlands restoration projects ecologically and economically feasible, and should a system be established for trading wetlands losses in one area with restorations elsewhere?

Context. The area now covering the 48 contiguous United States contained about 215 million acres of wetlands at the time of colonization, according to the best available estimates. About 80 million acres of privately owned wetlands and 12.5 million acres of federally owned wetlands are left today. Hence, about 57 percent of wetlands have been converted to other uses. Shifts into agricultural uses have accounted for the majority of conversions.

Three major laws have been passed to control wetlands conversions. Section 404 of the 1972 Clean Water Act requires permits for discharging dredge and fill materials upon wetlands. The Swampbuster provision of the 1985 Food Security Act established that any farmer who converts wetlands loses eligibility for price and income support payments, crop insurance, and related Federal assistance to farms. The Wetlands Reserve Program, passed under the 1990 farm act but not yet fully funded, calls for the restoration of up to 1 million acres of wetlands that were converted to cropland before 1985; permanent easements are to be placed on the restored wetlands. Under the reserve's pilot program, easement contracts covering 50,000 acres cost an average of $923 per acre.

Attempts to reform the implementation of Section 404 have grown into a lengthy public controversy. A 1989 wetlands delineation manual used by Federal agencies substantially increased the amount of land subject to regulations. Landowner complaints resulted in a revised 1991 manual, which substantially reduced the amount of regulated land. Because Section 404 is embedded in the Clean Water Act (which is currently up for reauthorization by Congress), the delay in achieving acceptable reforms in wetlands regulations is hampering implementation of other environmental policies.

Despite the efforts to protect wetlands under Section 404 and Swampbuster, critics have argued that the rate of wetlands conversion is still unacceptably high. They point out that Section 404 does not necessarily prohibit wetlands drainage and that Swampbuster does not work as a conversion disincentive since the recipients of farm program benefits do not own the majority of wetlands.

At Stake. The delineation controversy underscores the primary challenge to wetlands protection policy: reconciling the competing interests of those who can financially benefit by draining and planting or developing wetlands, such as farmers and urban developers, and those who benefit from the preservation of wetlands, such as environmentalists, the local community, or the Nation as a whole. The "taking clause" of the Fifth Amendment to the U.S. Constitution asserts that landowners cannot have their land taken away without just compensation. Any wetlands protection policy must choose some balance between public interests in wetland benefits and private property rights. Given fiscal problems at the Federal, State, and local levels of government, court decisions requiring full compensation could seriously threaten wetlands protection efforts.

Alternatives. To resolve the delineation question, modifications of the 1987 manual have been suggested as a compromise between the environmentalists' preference (the 1989 manual) and the property rights advocates' preference (the 1991 manual). Categorizing wetlands by quality and applying regulations commensurate with that quality could help to deflate the controversy regarding what lands should be subject to regulations. Furthermore, quality measures could guide the public's willingness to pay for protection, if compensation to property owners becomes necessary.

Easement contracts provide lump-sum or yearly payments to landowners who relinquish the right to plant or develop their wetlands. Alternatively, some Federal agencies, such as the Department of the Interior's Fish and Wildlife Service, directly acquire land. If compensation becomes the norm, substantial increases in the funding of land and easement purchases, such as those designated by the Wetlands Reserve Program, will be required to sustain wetlands protection efforts.

As recent proposals have suggested, the scope of Section 404 could be extended to regulate wetlands drainage and similarly harmful activities. Because ordinary agricultural practices would be exempt, the burden of the proposals falls mostly on developers, not farmers.

The concept of mitigation banking, a formal system for exchanging wetlands restorations and losses, could be used to implement a "no-net-loss" principle that intends to be both pro-environmental and pro-growth. When a wetland is lost to development, its equivalent could be restored elsewhere. This mechanism could protect against violating the taking clause while shifting the costs of conservation onto developers and landowners: an individual retains the right to convert a wetland but must replace it with a restoration in recognition of the public costs of the private decision. The ecological value of restored wetlands, however, does not necessarily match the value of natural wetlands.

Agenda. A series of recent executive and legislative initiatives has outlined reforms to wetlands regulation. The Bush administration's Comprehensive Wetlands Plan, the Hayes-Ridge bill (HR 1330), the Edwards bill (HR 4255), and the proposed DeFazio bill have a number of similarities, such as recommending that States become more involved in enforcing Federal wetlands protection laws. These initiatives become background for a new Congress and a new administration.

Information Sources. M. Carey, R. Heimlich, and R. Brazee: *A Permanent Wetland Reserve*, AIB-610, U.S. Dept. Agr., Econ. Res. Serv., Aug. 1990; U.S. General Accounting Office: *Wetlands Overview: Federal and State Policies, Legislation, and Programs*, GAO/RCED-92-79FS, Nov. 1991.

United States Department of Agriculture

Economic Research Service

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Issues for the 1990's: ENVIRONMENT

Environmental Concerns Associated With Livestock, Dairy, and Poultry Production

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Issue. The major water pollution control law, the 1987 revision of the 1972 Federal Water Pollution Control Act, expires in 1993. The reauthorization debates will consider water pollution attributed to surface runoff or seepage into ground water from agricultural activities, particularly livestock, dairy, and poultry production.

Elements of the debate include (1) defining the extent of pollution from livestock, dairy, and poultry production, (2) identifying technical solutions, (3) evaluating control alternatives, and (4) analyzing the costs and benefits of alternatives and their effects on the regional and international competitiveness of U.S. producers.

Context. A 1969 U.S. Department of Agriculture (USDA), Office of Science and Technology, report identified animal wastes from confined feeding operations as a major agricultural pollution problem. Since then, there have been large public expenditures on technology development, and demonstration and cost-sharing programs to reduce water pollution from livestock, dairy, and poultry production. The 1990 farm act authorized new water quality programs.

Public concerns over the contamination of streams and ground water from livestock, dairy, and poultry wastes is renewing interest in producer regulation. Of particular concern are degradation of streams from nitrogen, phosphorus, and pathogens and pollution of ground water from nitrogen. Environmental concerns are also expanding to include air quality problems associated with ammonia, methane, and odors, and other problems such as dust, insects, rodents, noise, and degredation of aesthetics. Earlier policies focused on controlling point source pollution from large cattle feedlots and other large livestock production facilities through the National Pollutant Discharge Elimination System (NPDES). Renewed interest and pressures are now focused on the control of nonpoint source pollution and associated effects on groundwater quality. One source of nonpoint pollution is runoff from agricultural land, including areas on which animal wastes are spread.

Differences in environmental regulations among States and countries, combined with diverse inherent natural resources, affect the regional and international competitive position of U.S. producers. The legislative challenge is to find ways to reduce the adverse environmental effects of livestock, dairy, and poultry production while maintaining both equity and competitiveness within domestic and international markets.

At Stake. Current regulations to control point source pollution are generally based on standards. Nonpoint source control programs are developed by States, are primarily voluntary, and are designed to support "designated uses." Coastal zone management regulations under consideration for control of both point and nonpoint source pollution are focusing on technology. Environmental requirements imposed on the livestock, dairy, and poultry industries will directly affect the economic viability and international competitiveness of these industries. There are ways to control the runoff from animal confinement sites as well as nonpoint sources at acceptable levels and solve other environmental problems. However, such controls impose costs on producers and eventually on consumers. Increased pollution control costs may force some producers to reduce or cease their production, or relocate to areas with less environmental stress. Such costs need to be evaluated in conjunction with benefits.

Liberalization of trade and investment through international agreements will reduce constraints on moving livestock products across national borders. The competitiveness of producers in such open markets may be affected when they compete with producers from countries with different environmental regulations or conditions.

Debate continues over the severity of nonpoint pollution associated with livestock and poultry. The Environmental Protection Agency (EPA) estimates that animal agriculture contributes about one-third to one-half of the nonpoint surface water pollution in the United States, primarily from improper land application of wastes from confinement sites and from grazing. This estimate, however, is not universally accepted. Neither the results of long-term technical research nor an adequate data base are available to definitively link specific agricultural activities and control measures with measured levels of water pollution.

Alternatives. Policy options to address environmental problems associated with livestock, dairy, and poultry production range from largely voluntary programs, which link farmers with technical and financial assistance to solve problems, to strict regulatory programs, where compliance with standards is required, with or without regard to cost.

It will be difficult to assess the effectiveness and enforceability of new standards and their potential effects on the location, size, and competitiveness of livestock, dairy, and poultry operations without compliance cost estimates and information to predict the effectiveness of proposed practices on water quality. Completed USDA, EPA, and other studies of livestock and poultry and water quality issues offer a wealth of information on technical and policy options, but little on effectiveness. Broad application of successful options identified can serve as a beginning point for action. Further studies are needed on the following:

(1) The costs and benefits of alternative handling and utilization technologies for reducing point source pollution from livestock, dairy, and poultry enterprises of varying size and in different geographic regions.

(2) The nature and extent of nonpoint source pollution associated with animal agriculture nationwide and the total cost of reducing nonpoint source pollution to meet current and proposed discharge standards.

(3) Enumeration and analysis of the waste-control policies and practices in other countries to determine their cost-effectiveness, and their effects on the competitive position of U.S. producers.

Agenda. The agenda for solving environmental problems associated with animal agriculture includes arriving at a consensus of the scope, severity, and location of the problem; identifying options for solving the problems; and then identifying the interregional and international impacts of controls or management options on producers, consumers, and society. While it has authority to deal with nonpoint source pollution under Section 319 of the 1987 Clean Water Act, EPA has chosen to allow States to pursue voluntary compliance. Congress could seek more stringent controls to deal with the perceived failures of the nonpoint source pollution control programs when the Clean Water Act is amended in 1993. Much of the responsibility for administering the Federal regulations has been transferred to the States and they may set standards higher than the Federal standards.

Information Sources. A.S. Malik, B.A. Larson, and M. Ribaudo, *Agricultural Nonpoint Source Pollution and Economic Incentive Policies: Issues in the Reauthorization of the Clean Water Act*, AGE-9229, U.S. Dept. Agr., Econ. Res. Serv., Nov. 1992. American Society of Agricultural Engineers, *National Livestock, Poultry, and Aquaculture Waste Management*, Proceedings of the National Workshop, July 1991. Other research and planning reports are available from other USDA agencies such as the Cooperative Extension Service, the Soil Conservation Service, the Agricultural Research Service, and the Agricultural Stabilization and Conservation Service and also the EPA.

United States Department of Agriculture

Economic Research Service

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May 1993

Issues for the 1990's: MARKETS

Federal Milk Marketing Orders: Minnesota-Wisconsin Price Hearing

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Issue. The Minnesota-Wisconsin (M-W) price is the basis for establishing minimum prices charged handlers under Federal milk marketing orders (FMMOs). The M-W price is an estimate of the average price paid for all manufacturing grade (Grade B) milk at about 166 plants and receiving stations in Minnesota and Wisconsin. The manufacturing grade milk market in Minnesota and Wisconsin has declined as Grade B milk production in that area has fallen. In May 1990, USDA's National Agricultural Statistics Service (NASS) notified the Agricultural Marketing Service (AMS), the USDA agency that administers FMMOs, that it would be unable to provide an accurate M-W price series much beyond mid-1992. However, NASS later indicated that it could continue to report the M-W price until a replacement is found. With less Grade B milk being obtained and priced by plants and receiving stations, confidence has eroded in the M-W as a reliable estimate of the competitive value of milk.

Context. Most milk produced in the United States is now Grade A, regardless of its final use. The M-W price is used to determine the base price for Grade A milk regulated under the 40 FMMOs, which is about 80 percent of all of the Grade A milk marketed in the United States. California, accounting for about 15 percent of milk marketings, is the only major producing area where the M-W is not the base price. California uses economic and product price formulas for pricing milk rather than the M-W price.

The M-W price was first used in FMMOs in 1961 and since 1975 has been the basis for establishing minimum class prices in all Federal order markets (see figure). Minimum class prices are set at or above the basic formula price. The Class III price for milk used to produce manufactured hard products such as butter, cheese, and nonfat dry milk is generally set equal to the basic formula price (M-W). Class II (soft products such as ice cream and yogurt) prices are formula-based. Milk used to produce beverage milk products (Class I) receives the highest price and is based on the M-W price plus a fluid differential that reflects the added cost of marketing and transporting milk for fluid use.

USDA announced in July 1990 and later Congress mandated in the 1990 farm act that AMS study possible replacements for the M-W price and hold a hearing on viable alternatives. AMS published the results of its study of M-W price alternatives in November 1991. At that time, the dairy industry was asked to propose alternatives. About 50 proposals were submitted. The USDA held a national hearing in June 1992 to review 10 selected categories. AMS received comments on the hearing record following its publication in June. The Department is now in the process of developing a recommended decision.

At Stake. The challenge for USDA is to find an alternative price that reflects supply and demand relationships. A replacement that includes Grade B milk may require another hearing in a few years because of declining Grade B production.

Alternatives. The June 1992 hearing limited its scope to replacement of the M-W price and considered no other proposed changes in how the M-W price is used in FMMOs. The proposals that the Secretary of Agriculture can consider under the rulemaking procedures of Federal orders may be categorized in six groups as follows:

(1) An expanded survey of Grade B milk prices. This method closely tracks historical M-W prices. Some groups proposed extension of the area to be covered by the price series beyond Minnesota and Wisconsin. A question still remains as to how long there will be sufficient Grade B milk to continue generating a reliable price estimate, as Grade B milk now accounts for only 7 percent of marketed milk, down substantially from 17 percent in 1978.

(2) A survey that includes both Grade A and Grade B milk used to produce manufactured dairy products. This new price series was developed to reflect prices paid for milk used in manufactured dairy products regardless of the grade of milk. The combined Grade A/B price has historically run about 72 cents per hundredweight (cwt) above the M-W price and could increase government spending for dairy programs, unless the differentials were reduced by an offsetting 72 cents per cwt.

(3) A formula based on the wholesale prices of manufactured dairy products. These proposals use the competitiveness in the wholesale market to formulate farm-level prices for milk. These formulas estimate the value of milk used in specified dairy products utilizing product prices, yield factors, and make allowances. Problems with these formulations may occur because yields vary seasonally and because they are dependent on deriving the cost of converting raw milk to manufactured products. In addition, make allowances would need to be kept current with updated yields.

(4) A formula based on the cost of producing milk. USDA's cost of production studies would be used in arriving at an alternative to the M-W price. Because USDA's cost of production studies are survey based, there may be an incentive for some producers to inflate costs to reach a higher minimum price. The resulting higher price and consequent increased production could boost the cost of USDA's support program.

(5) Use of the support price, currently $10.10 per cwt. This more drastic alternative would probably lower all minimum class prices, but market forces could be reflected in additional payments to producers, called over-order payments. This alternative provides producer groups more incentive to lobby for higher support prices.

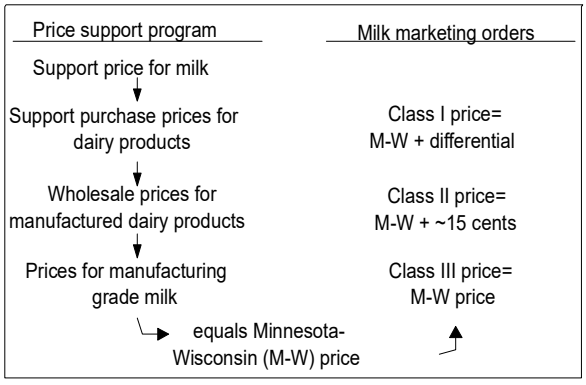
(6) A modification of certain alternatives. Proposals were received to use product-price formulas to update Grade B and Grade A/B prices from the previous to the current month. Other proposals would combine the Grade A/B price with a cost-of-production formula.

Agenda. A recommended decision on the M-W price series is currently being developed. The 1990 farm act requires that at least 30 legislative days be allowed for comments on the AMS recommended decision. USDA will issue a final decision that will require a vote of approval by producers/ cooperatives in the Federal orders. Due to the regulatory and legislative processes, a replacement to the M-W price likely will not be put into place before the end of 1993.

Information Sources. Two U.S. Dept. of Agriculture, Agricultural Marketing Service, bulletins: *Minnesota-Wisconsin (M-W) Federal Milk Marketing Order Hearing Record*, Docket No. AO-14-A66, ETC, June 1992 and *Study of Alternatives to Minnesota-Wisconsin Price*, Sept. 1991.

Federal milk marketing orders' link with Federal price support program

The Federal support price program determines minimum prices for nonfat dry milk, butter, and cheddar cheese. Processors determine what they can pay producers for manufacturing milk based on the prices they receive for manufactured products. The negotiated price paid for manufacturing grade milk in Minnesota and Wisconsin, the M-W price, is the basic formula price for classified pricing in Federal milk marketing orders.



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Issues for the 1990's: MARKETS

Federal Milk Marketing Orders

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Issue. The pricing, processing, and marketing system for milk within the Federal milk marketing order (FMMO) system has become increasingly complex. Proper pricing and pooling provisions, regional and individual producer equity problems, and the slowness of the rulemaking process are issues facing the U.S. Department of Agriculture (USDA) and industry during the 1990's.

Context. A Federal milk marketing order is a regulation issued by the Secretary of Agriculture that determines how milk is priced at the farm level. The order requires that milk receipts be pooled and paid to individual producers or cooperatives on a weighted average price or blend price. Pool plant provisions establish which producers can share in the marketwide blend price. The order also requires that first buyers not pay less than the minimum price for any class of milk based on how the milk is used. Processors may pay prices higher than those required by the order. These higher prices are referred to as over-order prices. Only Grade A milk is regulated by FMMOs. Milk used for fluid or beverage purposes is Class I, milk manufactured into soft products like yogurt and ice cream is Class II, and milk used to produce hard products such as cheese is Class III. Minimum Class I prices are based on the Minnesota-Wisconsin (M-W) manufacturing grade milk price (the minimum Class III price) plus a Class I differential partially based on the distance from the base point (Eau Claire, WI), the cost of converting Grade B milk to Grade A, and a return for the costs of operating balancing plants (plants which process surplus beverage milk and operate at capacity for only a portion of the year). (See *Federal Milk Marketing Orders: Minnesota-Wisconsin Price Hearing*, AIB 664-30.) Class II prices are formula-based. There are 40 Federal milk marketing orders pricing Grade A milk within their boundaries. Grade A milk accounts for 93 percent of total milk marketings, while 80 percent of the Grade A milk is regulated by FMMOs.

There is virtually unanimous producer and industry agreement for maintaining the FMMO system and classified pricing. However, there are some regional differences in position. For example, Upper Midwest producers believe that their own Class I differential is too low, that differentials in the South and Northeast are too high, and that market access is limited in distant markets.

At Stake. Proper class prices and appropriate pooling requirements could result in more efficient milk production and marketing. Properly set class prices could result in lower government costs and more equitable consumer milk and dairy product prices. Properly set class prices may help reduce excess Grade A milk supplies in some areas and reduce regional conflict. Slowness in the rulemaking process detracts from USDA's effectiveness.

Alternatives. Some suggested alternatives are:

(1) Leave the system as is. This is the preference of essentially all producers and the industry in Federal orders, except in the Upper Midwest.

(2) Institute a flat Class I differential (that is, the same differential in all regions). Even if minimum Class I prices are the same throughout the country, over-order prices would prevail in order to cover the costs of transporting milk. This alternative would probably work if the minimum differential were low and based on the added costs of producing and handling grade A milk for fluid uses. Set low enough,

the flat differential results in multiple-base-point pricing. Over-order prices would probably be higher in some regions than they are now and could become more variable. Some research indicates that the pricing structure may be close to the currrent effective Class I price structure.

(3) Multiple-base-point pricing. This alternative adds several areas with surplus fluid (beverage) milk supplies to the Eau Claire, WI, base. All bases would receive the lowest minimum Class I differential, with the minimum Class I differentials rising for producers farther away from the base points. This alternative could lead to more efficient pricing, production, and marketing. Depending on the requirements to pool grade A milk under Federal orders, over-order payments may increase and prevent effective Class I prices from declining appreciably. However, establishing additional base points would be a problem because no area wants its Class I differential lowered. Consumers in most base point areas, except the Upper Midwest, would pay less for beverage milk. This alternative would likely slightly reduce government expenditures.

(4) Increase Class II minimum differentials. This alternative is popular with producers. Producer incomes could increase or remain the same if such a change were made. The effects of the minimum differential change on over-order premiums determine the result. If over-order premiums remain the same, incomes rise; if the premiums disappear, incomes stay the same. Unchanged Class II over-order premiums could lead to excess milk supplies in some areas, since the effective milk price has increased. This could also lead to higher consumer prices for ice cream and other soft dairy products. This option could also raise government costs if the Federal Government purchases more dairy products because of increased grade A milk supplies. Over-order Class II prices exist in most Federal order markets.

(5) Merge FMMOs into fewer and larger orders. Merging Federal orders could increase the efficiency of FMMOs by bringing together handlers and producers who are in the same market. Because producer approval is needed to merge Federal order markets, the USDA has been reluctant to initiate hearings unless producers request them.

(6) Improving the rulemaking process. Streamlining the rulemaking process could speed up implementation of needed changes in the Federal order system. Some have suggested that the USDA may have to take a more active role in the rulemaking process.

Agenda. Because regional and individual equity problems exist and because the overall pricing, processing, and marketing system has become increasingly complex, the issues and alternatives will likely be debated throughout the 1990's. An agenda needs to be developed to address them.

Information Sources. Two U.S. Dept. of Agriculture, Agricultural Marketing Service, bulletins: *Federal Milk Marketing Order National Hearing Record*, Docket No. AO-14-A64, ETC., Sept.-Nov. 1990 and *Minnesota-Wisconsin (M-W) Federal Milk Marketing Order Hearing Record*, Docket No. AO-14-A66, ETC, June 1992; "The Recommended Decision on the National Federal Milk Marketing Order Hearing," *Federal Register* 56:58972, Nov. 22, 1991; and three U.S. Dept. of Agriculture, Economic Research Service, bulletins: *Federal Milk Marketing Orders-An Analysis of Alternative Policies*, AER-598, Sept. 1988, *U.S. Milk Markets Under Alternative Federal Order Pricing Policies*, Staff Report No. AGES 9068, Nov. 1990, and *Dairy Background for 1990 Farm Legislation*, Staff Report No. AGES 9020, Mar. 1990.

United States Department of Agriculture

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Issues for the 1990's: MARKETS

Dairy Price Support Program

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Issue. The level of the price support is likely to be at issue for the dairy price support program through the mid-1990s because the current support rate was a compromise among groups. U.S. dairy farmers feel the current support price has not provided adequate income, as shown by the exit rate of producers from the industry. The dairy industry believes that a higher support price would stabilize milk prices. Consumers and taxpayers, however, would pay more for milk and surplus products if the support price were raised. The current price support system does not affect long-term developments such as the changing structure of dairy farming, the loss of small farms, and the regional production shift from the Central United States toward the West and Southwest.

Context. The current dairy program adjusts the support price to accommodate changing domestic market conditions and to stabilize milk production and program costs. To ensure that manufacturing milk prices are no lower than the statutory minimum, the Commodity Credit Corporation (CCC) will buy butter, nonfat dry milk, and cheese at prices high enough to effectively support milk prices. Separate and apart from CCC support purchases, CCC funds are used to remove products from the domestic market by subsidizing exports under the Dairy Export Incentive Program (DEIP). If total CCC removals through the purchase program and the DEIP are projected to be less than 3.5 billion pounds on a milk-equivalent (ME) basis, the support price must be raised at least 25 cents per cwt. If government purchases are projected to be greater than 5 billion pounds (ME), then the support price must be reduced 25-50 cents per cwt. But, the support price cannot go lower than the current $10.10 per cwt. And, if purchases are estimated to be greater than 7 billion pounds (ME), then dairy producers are assessed to cover the added cost. Imports of dairy products from the international market are limited by import quotas to insulate the United States from the world market.

GATT chairman Arthur Dunkel proposed the reduction of export subsidies in terms of spending and quantities in the Uruguay Round of the General Agreement on Tariffs and Trade (GATT). The Dunkel proposal also limits each country's domestic support for agricultural programs. Completion of the Uruguay Round along the lines of Dunkel's proposal could constrain dairy support program options more than without a GATT agreement. The limitation on export subsidies would limit the United States' use of the DEIP or CCC direct sales to dispose of surplus dairy products. The domestic support provisions may prevent substantial increases in support prices or may allow price increases only when accompanied by production controls.

At Stake. The current program provides producers with a support program that stabilizes milk prices. The current support price appears to provide returns near the national cost of production. The legislation also constrains budgetary costs to a narrow range by assessing farmers for purchases estimated over 7 billion pounds (ME). In a world industry dominated by government-subsidized exports and production, the current U.S. dairy support program provides domestic consumers an adequate supply of milk products at prices near the estimated free market price. However, the current program does not obstruct structural change in the industry.

Alternatives. General classes of policy alternatives include:

(1) Continue current policies and programs (status quo). With small modification, the current program can accommodate anticipated requirements of the GATT, which remains unfinished at the time of writing.

(2) Increase the support prices in conjunction with some form of production control program. The challenge is to increase dairy farm income without boosting program costs, raising consumer prices, or violating international trade agreements. Simply raising the support price would bring surplus production and higher program costs because the domestic market is adequately supplied at current prices. A support price increase would have to be accompanied by a production control program. Under a voluntary production control plan, small-size farm operators would be more likely to reduce production or quit altogether, while large-size farm operators would take advantage of the higher support price to expand. Regardless, consumers would have to pay higher milk and milk-product prices.

(3) Decouple production from the subsidy payment. Continue the support program at a lower price as a safety net because of the price volatility in milk markets. In addition, this program would provide a subsidy to low-income producers. This proposal directly addresses the income, regional, and structural concerns of the dairy industry while maintaining control over program costs.

(4) Producer self-help program. Producers have suggested a program in which a producer board would assess producers and subsidize export of surplus products. This program would raise producer income and consumer prices, and lower government costs. This program may be inconsistent with current GATT proposals.

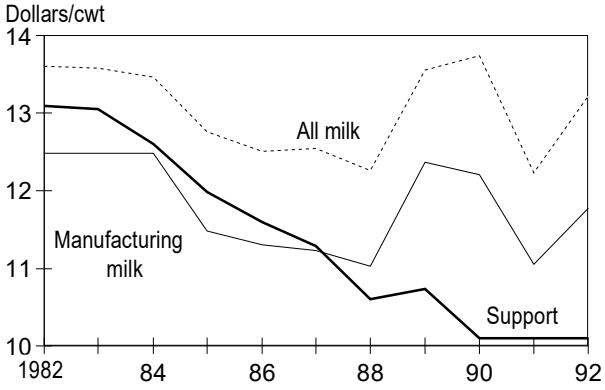
(5) Eliminate the price support program. Rely on market forces to allocate production, as done in most of U.S. animal agriculture and in most other U.S. industries.

Agenda. There is no legislation before Congress. However, arguments are being made to change the current program. If prices drop to the support level, some kind of legislation would likely be proposed.

Information Sources. U.S. Dept. of Agriculture, National Agricultural Statistics Service, *Milk Production*, various issues; two U.S. Dept. of Agriculture, Economic Research Service, reports: *Dairy Situation and Outlook Yearbook*, various issues, and *Provisions of the Food, Agriculture, Conservation, and Trade Act of 1990*, AIB-624, June 1991; and U.S. Dept. of Agriculture, Agricultural Stabilization and Conservation Service, *Milk Inventory Management Report*, 1991.

U.S. milk prices

Annual average milk prices became more dependent on market conditions as the support price was lowered in the 1980's.



United States Department of Agriculture

Economic Research Service

Agriculture Information Bulletin Number 664-33

May 1993

Issues for the 1990's: MARKETS

Federal Support for Nonprice Export Market Promotion

Karen Z. Ackerman (202) 219-0821

Issue. Federal support for export market development increased sevenfold from 1985 through 1992, encouraging greater private industry support. Concerns about Federal funding focus on the distribution of funds among generic and branded products and between large and small firms, as well as how long government support should last. Another issue is the extent to which advertising and other nonprice promotions boost exports.

Context. Nonprice promotions attempt to expand export demand for U.S. agricultural products by emphasizing product characteristics rather than reducing product prices. The Foreign Agricultural Service (FAS) administers two nonprice programs—the Foreign Market Development (FMD) program and the Market Promotion Program (MPP). Under the FMD, producer and processor organizations and, in some cases, importing country industry groups have joined FAS in conducting market development activities since 1955. The Targeted Export Assistance (TEA) program, authorized in the 1985 farm act to counter adverse effects on U.S. agricultural commodity exports of "unfair trade practices," was replaced by the Market Promotion Program (MPP) in 1991. The MPP, authorized in the 1990 farm act, features market development as a prime program goal, but gives priority to commodities whose exports were curbed by unfair trade practices.

Nonprice export market promotions take many forms, including trade servicing (such as articles in trade newsletters, public relations, and trade missions), technical assistance, and consumer promotions. The more traditional trade servicing and technical assistance activities are the prime focus of the FMD program, while consumer promotions (from instore demonstrations to media advertising) dominate MPP marketing strategies.

Funding for export market promotions comes from the U.S. Department of Agriculture (USDA), producer assessments, and other industry contributions. FAS currently requires producer organizations that participate in the MPP to contribute a minimum of 5 percent of the costs of MPP promotions. While the bulk of nonprice promotion activities are generic, FAS has directly contributed funds to a limited number of producer cooperatives and other private firms for branded promotions since the early 1970's. FAS may reimburse companies for no more than 50 percent of eligible promotion costs (with some exceptions). Producer organizations also may transfer MPP funds to companies to promote their products. About 40 percent of MPP expenditures go for branded promotions.

At Stake. Nonprice export promotion programs assist U.S. agricultural exports by changing potential purchasers' tastes and preferences in importing countries. The bulk of MPP funds are targeted to high-value products such as meats, fruits, vegetables, and grocery items. The MPP is the chief source of Federal support for many of these products. Exports of high-value agricultural products increased from $12.5 billion in 1985 to $23.2 billion in 1992, in part due to market promotion efforts. The programs, by contributing to increased exports, benefit agricultural producers and processors. Taxpayers and, to a lesser extent, producers and companies pick up the tab for nonprice export market development. Competition for global consumer dollars is fierce, and many governments support their producers' export promotion efforts.

Federal funding for nonprice export promotion climbed from $35 million in 1985 to more than $235

million in 1992 with the implementation of the TEA and the MPP (see chart). Higher Federal funding increased the number of participating organizations, but it also heightened concerns about accountability, industry contributions, allocations to large U.S. companies, and the traditional involvement of overseas companies. Legislators cut the fiscal 1993 MPP funding level by 25 percent, to $147.7 million, although FMD funding remained constant at about $37 million.

Alternatives. General policy alternatives are to:

(1) Continue programs as they are. Nonprice market promotions bolster U.S. exports. However, program effectiveness measures are complicated by the influences of exchange rates, relative prices, and changes in importer and exporter trade policies.

(2) Cease Federal support of nonprice export promotions. All funding would come from producer assessments and other industry contributions. Producer assessments and other industry contributions have been increasing, but Federal funding remains the chief source of support. Current market development efforts could not be maintained without Federal funding.

(3) Continue funding MPP and FMD programs with changes. Control the participation of large U.S. and foreign companies in branded promotions and limit the number of years for which a company or producer organization may receive Federal nonprice promotion funds. Limiting the number of years of Federal assistance may increase participation. Promoting branded products may raise consumer awareness of U.S. products more effectively than generic promotions, but may be perceived as financing activities that the companies should finance themselves.

Agenda. Several lawmakers have proposed changes to the MPP, including some of the alternatives discussed above. The MPP is part of farm legislation that is renewed every 5 years. Funding for both market development programs is approved in annual budget appropriations.

Information Sources. Foreign Agricultural Service, Commodity Marketing Programs, Marketing Operations Staff, (202) 720-4327, and Planning and Evaluation Staff, (202) 690-1198. Also, U.S. Agricultural Export Development Council (represents most market development program participants), (202) 682-4734.

Products receiving export market promotion funds[1]

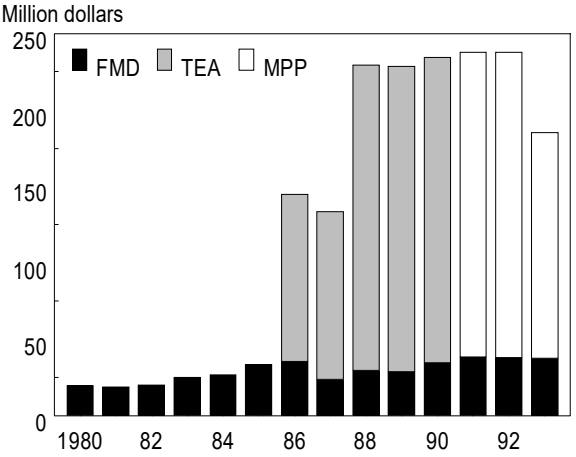
High-value products received the majority of TEA and MPP allocations.

Products	Average 1986-90	1991	1992	1993
	Million dollars			
Red meat, variety meats	8.9	13.6	13.0	10.4
Poultry and products	6.1	1.7	7.0	7.1
Fresh and processed fruit	47.6	69.0	68.7	47.2
Tree nuts	14.4	17.4	12.1	9.3
Fresh and processed vegetables	6.6	9.3	11.0	6.9
Soybeans and products	8.3	16.1	5.0	3.3
Raw cotton	9.1	18.4	15.8	10.3
Wood products	6.6	11.5	14.7	0.0
Grocery items	10.2	18.4	18.6	26.7
Other products	28.2	23.6	33.1	25.5
Total	146.0	199.0	199.0	146.7

[1]TEA and MPP allocations.

Market promotion funding

Federal funding rose by more than $200 million between 1985 and 1992 with the implementation of the TEA and the MPP.



Note: 1993 total is estimated.

Chart includes funding for USDA's Foreign Market Development Cooperator, Targeted Export Assistance, and Market Promotion Program.

United States Department of Agriculture

Economic Research Service

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May 1993

Issues for the 1990's: MARKETS

Commercial Export Assistance

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Issue. In an increasingly competitive trade environment, the level and method of agricultural export assistance are both trade and budget issues. Some question large Federal expenditures to assist agricultural exports, especially when commodity supplies are tight. Others question the way funds are spent. However, commodity groups point to large sums that foreign competitors spend to support their agricultural exports and protect their own markets.

Context. Competitors' funding of export price subsidies has increased dramatically since 1985. European Community (EC) restitutions to exporters rose from $7 billion in 1986 to $13 billion in 1991. The EC heavily subsidizes exports as part of its objective to protect high internal prices. Other grain exporters such as Canada meet price competition implicitly through private marketing boards. The U.S. Export Enhancement Program (EEP) allows U.S. exporters to match subsidized competition in targeted markets. The U.S. export credit guarantee programs (GSM-102 and GSM-103) provide government guarantees of repayment of private credit extended for the purchase of U.S. commodities. GSM-102 covers credit up to 3 years, and GSM-103 covers loans of 3-10 years. The market promotion programs support producer organizations and firms in their long-term market development efforts (See *Federal Support for Nonprice Export Market Promotion*, AIB 664-33).

Funding for commercial export programs has increased since 1985. EEP bonuses have fluctuated along with market conditions, ranging from a low of $286 million in 1986 to a high of $1 billion in 1987. Short-term credit guarantee program levels have remained stable at about $5 billion. An additional $500 million was made available annually for GSM-103 medium-term credit guarantees in 1986, and $200 million in credit guarantees were authorized in the 1990 farm act to aid emerging democracies.

At Stake. In the face of EC subsidies, the U.S. share of the world wheat and flour market, for example, has declined from 43.5 percent in the 1979/80 July/June marketing year to 32.1 percent in 1991/92. The EEP, by boosting U.S. exports, is credited with generating savings to taxpayers from lower government deficiency and storage payments and benefiting producers. EEP bonuses also put more pressure on the EC to revise its policy by causing higher EC budget outlays. Higher exports due to the EEP may raise domestic prices.

Credit guarantee programs may help maintain market share by assisting U.S. exporters to make sales in countries with foreign exchange constraints. They may increase Federal budget outlays if importers default and the U.S. Government must make payments to commercial banks.

Alternatives. Several factors could change export program funding levels.

(1) Phase down export subsidies with successful GATT. Since 1986, the United States has been participating in the Uruguay Round of multilateral trade negotiations under the General Agreement on Tariffs and Trade (GATT). If a GATT agreement is reached, export subsidies could be phased down, but not necessarily eliminated.

(2) Increase export program funding. Section 1302 of the 1990 Omnibus Budget Reconciliation Act required USDA to increase export program funding by $1 billion in fiscal 1994 and 1995 if no GATT

agreement had been reached by June 30, 1992. The additional funding can be applied to any of the commercial export programs. Higher EEP funding may increase exports, but, depending on the U.S. supply situation, may encourage imports of products similar to those sold under the EEP. An additional $1 billion in credit guarantees for fiscal 1994 and 1995 is also an alternative. However, credit guarantee recipients are required to be creditworthy. This requirement could limit increased funding for credit guarantees to many potential markets.

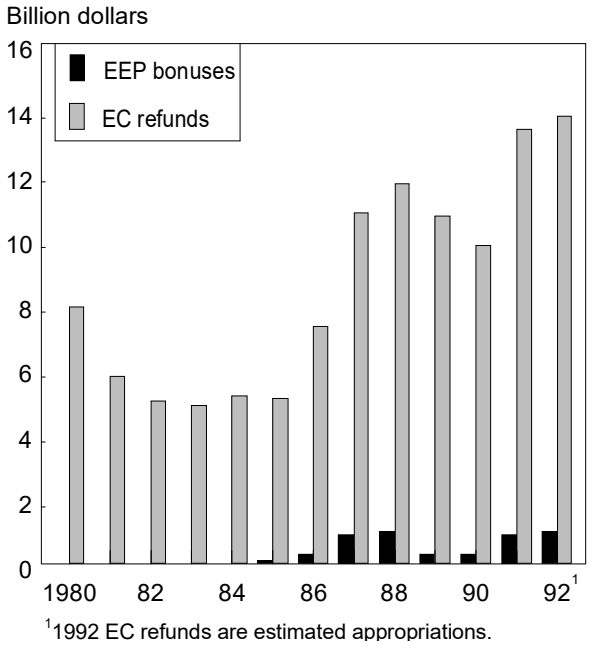
(3) Increase the EEP for high-value products. The EC highly subsidizes its exports of high-value products, including meats, poultry, dairy products, fruits, vegetables, tree nuts, wine, and all value-added products. Over 75 percent of EEP bonuses have assisted exports of wheat since EEP was implemented in 1985. About 15 percent have assisted high-value products. Raising that share could help counter the EC's subsidized exports. However, EEP bonuses for high-value products have been very large, sometimes accounting for 40 percent or more of the product price. Producers benefit less than processors do from increased high-value product exports.

Agenda. The GATT trigger provisions (Section 1302) of the 1990 Omnibus Budget Reconciliation Act will affect EEP program levels, as will annual appropriations. The EEP and credit guarantee programs are part of the farm legislation that is renewed every 5 years.

Information Source. Donald W. Street, Foreign Agricultural Service, Export Sales and Program Operations Division, (202) 720-5540.

EEP bonuses and EC export refunds

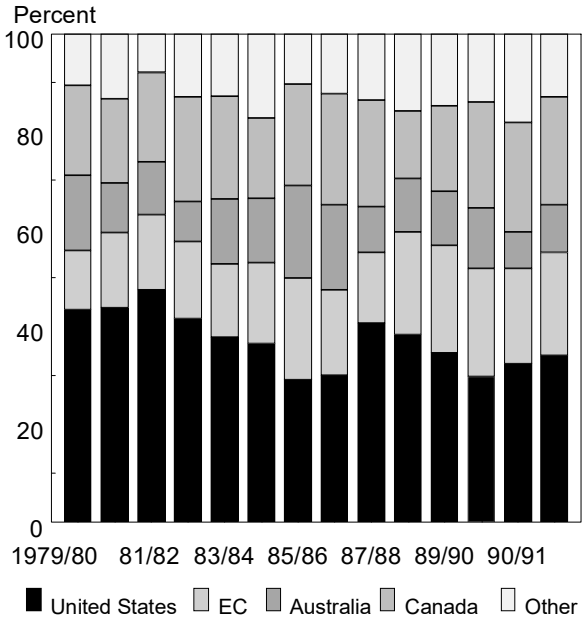
EC export refunds far exceed U.S. EEP bonuses.



[1]1992 EC refunds are estimated appropriations.

World wheat and flour market shares

The U.S. share declined from 43.5 percent in 1979/80 to 32 percent in 1991/92.



United States Department of Agriculture

Economic Research Service

Agriculture Information Bulletin Number 664-35

May 1993

Issues for the 1990's: MARKETS

Animal Welfare

Kenneth H. Mathews, Jr. (202) 219-0710
Kenneth E. Nelson (202) 219-1284

Issue. Animal welfare focuses on animal confinement and care, with care including everything from veterinary services performed by farmers, ranchers, and veterinarians and drug and chemical use in treatment and feeds to disposal of unwanted livestock. The basic concept of animal welfare is largely subjective and the two main protagonists, animal welfare activists and livestock producers, consider themselves most concerned with the well-being of animals. The issue is whether additional actions relating to animal welfare will be taken and what the costs/benefits of these actions will be.

Context. Laws, rules, and legislation for food animal welfare have existed for decades. Animal welfare activists focus on confinement raising of cattle, hogs, and layer chickens, where greater confinement leads to less natural movement by the animals and less human contact. Animal welfare groups charge that producers crowd, unnecessarily constrain, drug, and otherwise mistreat livestock. There are over 100 animal welfare groups in the United States. The profile for animal issue activists is white (93-97 percent), urban (73-88 percent), female (68-78 percent), 30-49 years old (48-57 percent), well-educated (66-82 percent had at least some college), with an income of over $20,000 (65-81 percent). The American Veterinary Medical Association posits that food animals are generally well cared for and that currently acceptable confinement and medical practices are humane and provide for improved food animal welfare.

At Stake. Over half of the $167 billion in U.S. farm commodity receipts in 1991 came from livestock production. These receipts do not include the additional billions of dollars in the animal byproducts industries that provide food, various medical byproducts (insulin, other organ and blood products, pig skin for burn patients, sutures, and heart valves), cosmetics, glues, leather products, and many other products. Costs of producing livestock products will likely increase if more constraints are imposed on animal agriculture. For example, eggs from free-ranging chickens cost roughly twice as much as eggs from caged layers. Some infer, citing research that demonstrates greater production from confinement with less feed, that well-provisioned, healthy livestock produce more output. Germany, Switzerland, the Netherlands, England, and some other countries are considering legislation to restrict or ban caged egg layers and some other forms of close confinement in livestock production. The legislation could restrict trade from countries whose animal production technologies are not similarly restricted.

Alternatives. These are the alternatives:

(1) The status quo, animal production technologies with no additional regulations.

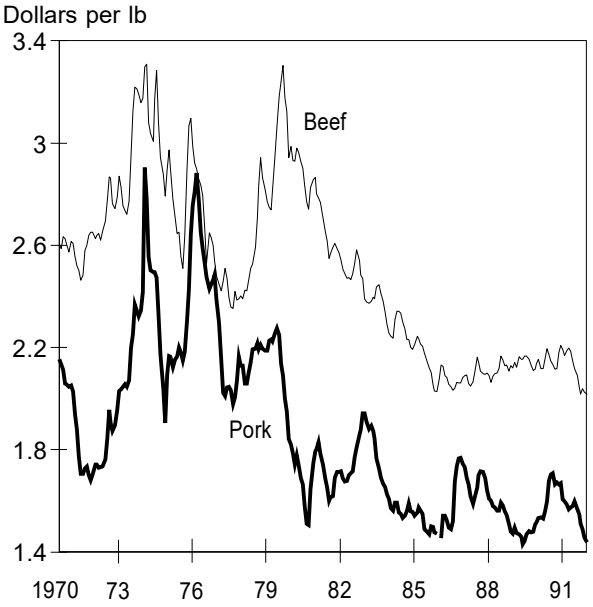
(2) Some additional animal production regulation (such as less confinement and/or more humane veterinary practices), which would raise consumer costs of food. The issue would be willingness to pay.

Agenda. Legislation affecting animal welfare has existed for some time and remains in effect. The Humane Society of the United States is concerned with the treatment and use of downers (animals that cannot walk), with the use of growth hormones and anabolic steroids, and with apparent economic trends in agriculture toward greater confinement of animals. The most recently passed legislation makes it a felony for anyone to break into livestock production or research facilities or otherwise

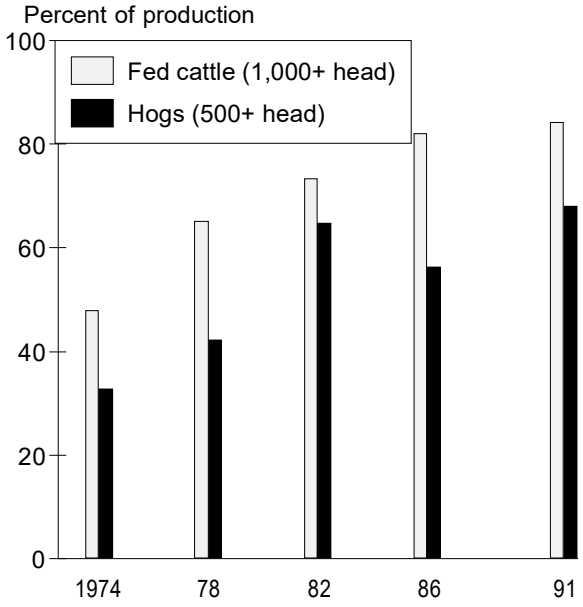
interfere with livestock production or animal research. Legislation restricting use and treatment of downers, especially in packing facilities, has recently been proposed, but failed. A bill proposed in Minnesota would tax imitation fur and use revenues collected to pay for damage to farmland caused by beaver populations not controlled by trapping.

Information Sources. American Veterinary Medical Association (708-925-8070), American Feed Industry Association (703-524-0810), Animal Welfare Information Center (301-504-5215), and the Humane Society of the United States (202-452-1100).

Retail price of choice beef and pork in real (1987) dollars
Decreasing real retail meat prices...



Trends in large-scale livestock production
...coincide with trends in large-scale confinement operations.



United States Department of Agriculture

Economic Research Service

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May 1993

Issues for the 1990's: MARKETS

Pricing and Use of Publicly Owned Rangeland

Kenneth H. Mathews, Jr. (202) 219-0710
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Issue. There are five main facets to the issue of publicly owned rangelands, predominately Forest Service (FS) lands and Bureau of Land Management (BLM) lands. First, do the fees charged by the Federal Government reflect market value of forage removed by grazing? Second, who should pay any differences between fees collected and costs of administering FS/BLM grazing programs? Third, what are the economic effects of raising the grazing fee base for or eliminating grazing from FS/BLM lands? Fourth, what environmental effects does grazing have on soils, wetland areas, and wildlife? Fifth, do permittees have property rights of any type to the public lands?

Context. The General Land Law Revision Act (1891) allowed setting aside forest reserves from the unreserved public domain; these lands later became FS (in 1905) and BLM (in 1934) lands. The public domain lands had been grazed by introduced livestock before 1891. Fees have been charged for grazing privileges since the 1906 grazing season when the Secretary of Agriculture set fees at a third of what comparable private grazing was worth. The fees were originally charged to protect forest reserves and finance range administration. The FS and BLM charged different fees until 1969, but, except for the National Grasslands, have charged the same fee since. Congress, in 1978, via the Public Rangelands Improvement Act (PRIA), took over fee structure responsibilities from the Secretaries of Agriculture and Interior. In 1985, the fee structure was set by Executive Order to follow the PRIA formula, but with a $1.35 per animal-unit-month (AUM) floor. Since the PRIA, much debate has focused on whether the current fee formula reflects or should reflect both the market value of public forage and permittees' ability to pay the fees. State and local governments receive a set share of fee receipts. A grazing fee base ($1.23) was set in 1969 as the difference between the costs to producers of raising cattle on private leased lands versus on public lands with free grazing. In other words, the base fee equalized the costs of raising cattle on public and private lands. This fee was to be updated according to annual changes in private land lease rates (forage value index—FVI).

At Stake. Incorporating permittee ability to pay (prices received for beef cattle and permitee production costs) produced a fee that is below the FVI-indexed fee base. Fee receipts are below costs of administering livestock grazing on FS/BLM lands. Permittees maintain that higher fees, reduced stocking rates, and/or elimination of grazing on FS/BLM lands would put many producers out of business and have severe adverse effects on local economies. The extent to which adverse economic effects occur depends on the degree to which permittees and local economies depend on public grazing lands for forage. Conservation and environmental interests charge that damage occurs to public lands from grazing and that grazing competition harms threatened, endangered, and other wildlife species. Permittees contend that, having "purchased" grazing permits that they consider costs associated with FS/BLM grazing, they have property rights to the public grazing lands beyond the privilege of grazing. Permittees support this view by their historical use of the public rangelands and the improvements they have made to the public rangelands. The Federal Government view that the grazing privilege granted to permittees does not translate into a property right has been upheld in the courts. However, grazing permits do enhance ranch sale and collateral values.

Alternatives. There are several policy alternatives:

(1) Leave the current fee formula and structure in place.

(2) Change the fee formula and/or structure. This alternative consists of three basic proposals: raise the fees by raising the base fee in the fee formula, change the structure of the fee formula, or provide fee-reducing incentives to provide good stewardship.

(3) Eliminate the fee formula and offer the public grazing lands to the highest bidder, subject to stewardship and other environmental constraints.

(4) Eliminate grazing on the public grazing lands.

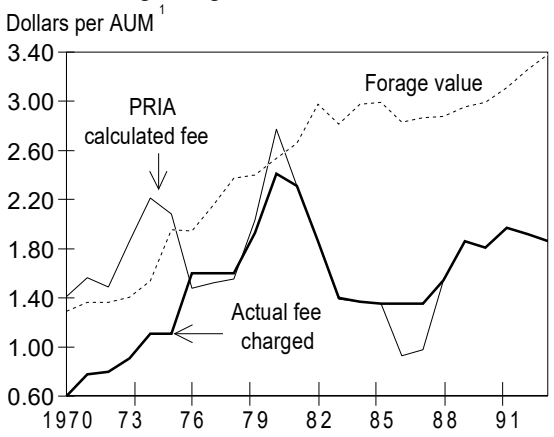
The value of forage from FS/BLM lands inferred from differences in costs of raising cattle on private versus public lands, assessments of lease rates for comparable private grazing lands, estimates of annualized values of purchased permits, competitive bidding, and subleases at rates higher than fees suggest that fees are below forage market value. The difference between fee receipts and livestock grazing program costs, along with some assessment of the difference between the fee and the market value of the forage on FS/BLM lands, is viewed by taxpayers, environmental groups, and others as a Federal subsidy to permittees. Environmentalists claim environmental damage from grazing, especially near wetland and desert areas where there is damage to habitat and wildlife species. Economic effects of higher fees or no grazing could be large locally, but small in the national view. Only 17.6 million of roughly 1 billion national AUM's come from FS/BLM lands.

Agenda. Grazing fee legislation has been introduced at least 6 times in the last 3 years, 3 times passing in the House, but then being narrowly defeated in the Senate. Alternatives aimed at providing incentives to permittees for good stewardship of the public grazing lands are being studied by U.S. Department of the Interior, U.S. Department of Agriculture (USDA), and university personnel.

Information Sources. Two Forest Service, Bureau of Land Management, reports: *Grazing Fee Review and Evaluation, 1986* and *Update of the 1986 Final Report, 1992*; two U.S. Dept. of Agriculture, Economic Research Service, bulletins: *A Theoretical Evaluation of Fee Systems for Private Grazing on Federal Lands*, AER-570, Jul. 1987, and *Estimating Forage Values for Grazing National Forest Lands*, AGES-8951, Oct. 1989; *Current Issues in Rangeland Resource Economics*, Oregon State University Extension Service Special Report 852, 1990; *Grazing Fees: How Much is Fair?*, New Mexico State University Agricultural Experiment Station Research Report 666, 1992; and *The Importance of Public Lands to Livestock Production in the U.S.*, New Mexico State University Agricultural Experiment Station Report 32, 1992.

Forage value and PRIA fee

Forage value outstripped the PRIA formula used to set grazing fees.



[1] AUM (animal unit month) is forage required for a 1,000-pound cow for 1 month.

Costs of Forest Service and Bureau of Land Management public grazing administration, 1990
Program costs attributable only to livestock grazing exceed fee receipts.

Cost category	Total rangeland program costs	Costs not attributable to livestock grazing	Costs attributable to livestock grazing	Fee receipts
		1,000 dollars		
Rangeland management	52,137	15,598	36,539	NA
Range improvements	21,668	6,205	15,463	NA
Total program	73,805	21,803	52,004	27,035
		Dollars per AUM[1]		
Cost per AUM	3.22	0.95	2.27	1.18

[1] AUM = Animal unit month. NA = Not applicable.

United States Department of Agriculture

Economic Research Service

Agriculture Information Bulletin Number 664-56

June 1993

Issues for the 1990's: MARKETS

Prorate Regulations in U.S. Citrus Industry

Boyd M. Buxton (202) 219-0884

Issue. Federal marketing orders for California/Arizona navel and valencia oranges have volume control provisions that allow for the regulation of weekly shipments of navel and valencia oranges to market during their marketing seasons. These provisions have been used infrequently for valencias, but extensively for navels. Volume control provisions are frequently criticized by consumer groups because they potentially raise prices and restrict free movement of oranges to market. Some growers and handlers also oppose them. Proponents of marketing orders argue that consumers benefit from a more orderly flow of oranges to market at more stable prices.

Context. Federal marketing orders are authorized under the Agricultural Marketing Agreement Act of 1937, as amended. Marketing orders are selected by the industry through a formal regulatory process, including a public hearing and a referendum. The provisions deemed essential for marketing fresh oranges are developed by industry representatives. When volume restrictions are considered necessary for orderly marketing, the Navel Orange Administrative Committee (which administers the order) recommends to the Secretary of Agriculture a specific volume to ship into the market. The Secretary evaluates the recommended volume of weekly shipments into the domestic fresh market (includes Canada) and can approve, modify, or not approve the recommended volumes.

Except for three seasons, volume regulations for California/Arizona navel oranges were approved by the Secretary of Agriculture until at least 75 percent of the crop had been harvested. Volume restrictions were approved until 52 percent of the crop had been marketed in 1984/85, 46 percent in 1991/92, and 26 percent in 1992/93.

The decision to not approve weekly volume controls for the remaining part of the 1992/93 season was based on the U.S. Department of Agriculture conclusion that volume controls were not necessary at that time to achieve the declared policy of the Agricultural Marketing Agreement Act of 1937. The decision was based on a thorough review of current market conditions, on USDA guidelines that encourage industries to shift their marketing programs toward market enhancement rather than volume restrictions, and on the moratorium on new Federal regulations in effect at the time.

Market orders and prorate provisions have important implications for the orange industry. In 1991/92, there were over 116,000 bearing acres of navel oranges in California and Arizona that were operated by 3,933 growers. About 150 handlers were involved in packing and marketing fresh navel oranges from the two States. In 1991/92, the farm value of the California/Arizona navel orange crop was $348.5 million. The farm value of valencia oranges was over $131 million.

At Stake. Not approving the use of volume controls early during the 1984/85, 1991/92, and 1992/93 seasons brought sharp criticism by a major portion of the California/Arizona navel orange industry. Some in the industry argue that weekly shipments and prices decline and become more variable when volume restrictions are not used. By some industry estimates, navel orange growers in California and Arizona lost millions in revenue due to not approving volume controls early in the 1991/92 marketing season.

Specific considerations raised in connection with the Secretary's decision to not approve volume restrictions include: changes in the week-to-week stability of navel orange shipments and prices, levels of fresh domestic shipments and prices, the level of grower revenue, and the market structure and marketing practices of handlers.

Alternatives. Alternatives under present legislation include whether or not to authorize volume controls and, if authorized, when to suspend them during the season. Although possible, it would be very difficult to justify reinstatement of volume controls once they are not approved in a given marketing season. The issue of marketing orders is broader than volume controls and includes consideration of other order provisions such as grades and size, research, market development, promotion, and packaging.

Agenda. The regulatory process begins with a Marketing Policy Statement prepared prior to the beginning of each marketing season in which the Navel Orange Administrative Committee (NOAC) develops a proposed marketing plan for the coming season. The administrative committee, operating under the direction of the Secretary of Agriculture, is made up of 11 members, including 6 growers, 4 handlers, and 1 nonindustry member. The committee is charged, in the rules and regulations of the marketing order, to provide "equitable marketing opportunity" for handlers.

The marketing policy statement includes a tentative shipping schedule for the season based on the committee's evaluation of the crop size and the demand conditions. Each Tuesday during the marketing season, the NOAC meets to decide on the quantity of oranges it will recommend shipping during the week beginning on the following Thursday at midnight. The weekly shipping recommendations must be approved by the Secretary of Agriculture. If approved, a share of this volume is prorated to each handler who is legally bound to comply with the hauling regulation.

Information Sources. Richard G. Heifner and others, *A Review of Federal Marketing Orders for Fruits, Vegetables, and Specialty Crops*, AER-477, U.S. Dept. Agr., Agr. Mkt. Serv., Nov. 1981; and two U.S. Department of Agriculture, Economic Research Service, reports: Peter K. Thor and Edward V. Jesse, *Economic Effects of Terminating Federal Marketing Orders for California-Arizona Oranges*, TB-1664, Nov. 1981, and Nicholas J. Powers, Glenn A. Zepp, and Frederic L. Hoff, *Assessment of a Marketing Order Prorate Suspension: A Study of California-Arizona Navel Oranges*, AER-557, June 1986.

United States Department of Agriculture

Economic Research Service

Agriculture Information Bulletin Number 664-58

October 1993

Issues for the 1990's: MARKETS

Foreign Investment in U.S. Agribusiness

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Peter DeBraal (202) 219-0425
Charles Handy (202) 219-0866

Issue. Foreign direct investment in U.S. agribusiness, from farm production inputs to retailing of farm products, more than doubled (in nominal terms) during the 1980's, reaching nearly $50 billion in 1991. Foreign investment in U.S. agricultural land alone increased 30 percent to $11 billion in the same years. These increases are part of foreign investment growth in all sectors of the U.S. economy, from $109 billion in 1981 to $408 billion in 1991. While adding investments in U.S. agribusiness, increased foreign ownership and control of resources is a public policy concern.

Context. Foreign investment in U.S. agribusiness includes the food processing and beverage industries, food wholesaling and retailing, textiles and clothing manufacturing, and wholesaling and retailing of farm inputs such as machinery and agricultural chemicals. Such investment grew from $21 billion in 1981 to $50 billion in 1991. The European Community is the leading investor, accounting for 80 percent of the total over the last decade. The United Kingdom is the largest single country investor, followed by The Netherlands and Germany. Japan ranks fourth, after investing rapidly in the late 1980's. Food processing accounts for the largest share of foreign direct investment in U.S. agribusiness.

Foreign investment in U.S. agricultural land increased from 12.7 million acres valued at $8.5 billion in 1981 to 14.5 million acres valued at $11 billion in 1992. Canada is the largest single country investor in U.S. agricultural land, followed by the United Kingdom. The EC as a bloc is the largest source of investment for land. Forestland constitutes the largest acreage of foreign investment, followed by pastureland. Maine, Texas, and California have the most area held by foreign investors, and Maine, Hawaii, and New Hampshire have the largest proportions of foreign-owned land.

Foreign direct investment in U.S. agribusiness can be viewed from several perspectives: (1) only slightly more than 1 percent of U.S. agricultural land and about 10 percent of the assets in the food manufacturing industry are foreign owned, (2) foreign investment is nearly balanced by U.S. investment abroad (see table), (3) sales from U.S. affiliates abroad exceed the sales from foreign affiliates in the United States, and (4) U.S., Japanese, and EC multinational companies are intertwined all over the world.

At Stake. The United States welcomed capital from abroad to sustain economic growth during the 1980's. The OECD (Organization for Economic Cooperation and Development) Code of Liberalization of Capital Movements, of which the United States is a participant, encourages the free flow of investment across national boundaries. Foreign capital for new projects creates new jobs and labor income in the United States, and outside capital may bolster existing businesses. Capital-surplus countries invest in the United States to earn a larger return on their investment than they could have at home. Foreign mutinational firms use direct investment to expand their markets beyond their countries' borders. The United States, with large and affluent markets, has often been a leading choice to expand foreign plants. But, this increased competition affects the economic stability of domestic firms.

Alternatives. In dealing with concerns about foreign direct investment, State versus Federal issues must be considered. The regulation of landownership is the prerogative of the States under the 10th Amendment to the U.S. Constitution. Twenty-eight States have some type of law that monitors or

restricts foreign ownership of real property. For example, Idaho restricts acquisition of State-owned lands, Indiana and others restrict the amount of acreage that may be held, and Minnesota and Iowa prohibit foreign ownership of land, with some exceptions. Federal laws, however, have focused on monitoring foreign landownership.

By law, investors must report on foreign ownership of U.S. agricultural land; the Agricultural Foreign Investment Disclosure Act of 1978 (AFIDA) requires the U.S. Department of Agriculture (USDA) to prepare an annual analysis of foreign ownership of U.S. agricultural land. The U.S. Department of Commerce, under the International Investment Survey Act of 1976, also collects data on foreign direct investment in the United States and conducts benchmark surveys, most recently in 1987. Congress has considered, but has not enacted, bills to provide an AFIDA-type monitoring of all foreign investments.

Foreign ownership of agricultural land appears to be a more sensitive issue than foreign ownership of agribusiness. Many city and State governments and chambers of commerce actively seek foreign investment in agribusiness.

Agenda. No proposed or pending legislation on foreign direct investment in U.S. agribusiness is before the U.S. Congress and there have been only minor changes in State legislation.

Information Sources. U.S. Dept. of Commerce, International Trade Administration, *Foreign Direct Investment in the United States*, annual reports; Japan Economic Institute, *Japan's Expanding U.S. Manufacturing Presence*, annual reports. Four U.S. Dept. of Agriculture, Economic Research Service, reports: J. P. DeBraal, *Foreign Ownership of U.S. Agricultural Land, through December 31, 1992*, SB-853, May 1993; C. Bolling, *The Japanese Presence in U.S. Agribusiness*, FAER-244, June 1992; C. Bolling, *EC Presence in U.S. Agribusiness*, FAER-245, Sept. 1992; and D. Aiken, *State Laws Relating to the Ownership of U.S. Land by Aliens and Business Entities, December 31, 1989*, AGES-9111, Mar. 1991.

Two-way foreign direct investment
Foreign direct investment in U.S. agribusiness grew rapidly, but this activity was nearly balanced by U.S. investment abroad.

Category	1987	1988	1989	1990	1991
			Million dollars		
Foreign direct investment in the United States:					
All industries	263,394	314,754	368,924	396,702	407,577
Agribusiness	36,086	42,447	48,887	48,536	49,998
Agricultural land[1]	9,346	9,480	10,371	10,646	11,115
U.S. investment abroad:					
All industries	314,307	335,893	372,419	424,086	450,196
Agribusiness	25,971	27,484	35,343	40,152	45,727

[1]Included in agribusiness.
Source: U.S. Dept. of Commerce, *Survey of Current Business*, Aug. 1992, and U.S. Dept. of Agriculture (see J. P. DeBraal in *Information Sources*).

United States Department of Agriculture

Economic Research Service

Agriculture Information Bulletin Number 664-61

June 1993

Issues for the 1990's: MARKETS

Generic Commodity Advertising and Promotion

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Issue. Congress has authorized the collection of assessments from growers to support generic advertising, promotional, and research programs to expand producers' sales and earnings. Some State and Federal fruit, vegetable, and milk marketing orders also provide for advertising and promotion. Many questions remain unanswered about the effects of these programs on sales and producer net returns, the distribution of returns between producers and marketers, and intercommodity competition.

Context. Advertising includes radio, television, newspaper, magazine, and billboard messages usually directed at consumers. Promotion includes buyer seminars and product booths at trade shows, point of purchase pamphlets and posters, and direct contacts with existing and potential commercial buyers. Both generic advertising and promotion seek to expand demand for a commodity produced by many producers. Brand advertising and promotion, by contrast, aim to expand sales of a firm's own product.

Federal programs to authorize generic advertising started in the mid-1950's. Congress has authorized stand-alone programs for 17 commodities, 13 of which are currently funded (see table). In addition, Federal marketing orders provide for producer-assessed industry financing of advertising and promotion for certain commodities. Collections from producers for generic advertising and promotion under Federal programs increased tenfold from about $44 million in 1982 to about $450 million during 1992. Some of these funds support research for developing new varieties and products more desirable to consumers and for developing cost-reducing production and marketing techniques. The U.S. Department of Agriculture's (USDA) Agricultural Marketing Service (AMS) oversees the industry boards responsible for administering the programs.

At Stake. The minimum investment in advertising and promotion required to effectively expand the demand in regional, national, and overseas markets is too large for most individual producers to undertake. Moreover, the benefits of an individual producer's commodity advertising or promotion efforts would likely be shared by other producers who would be free-riders (that is, they benefit without contributing to the costs). Collective funding of generic advertising and promotion using a per unit assessment overcomes problems of large investment and free riders and helps assure that producers share the costs in proportion to benefits received.

Can producers expand sales as more commodities are advertised and promoted? Generic advertising likely does not expand total domestic demand for food commodities because per capita food consumption is relatively constant. Individual producer groups though may gain by advertising to offset a potential sales loss from a rival's advertising or to increase market share. Generic advertising and promotion might help new products gain acceptance or established products to enter new markets including foreign markets.

Who pays for and who benefits from generic advertising and promotion are frequently at issue. For example, advertising programs that successfully expand sales benefit marketers by increasing the volume they process and handle. For this reason, some producers argue that marketers should contribute to the programs. Marketers maintain that competition assures that benefits are passed back to producers. Some of the programs allow producers to request and receive a refund of their

contributions. Because of the free-rider problem, some grower groups support no refunds. Refunds are not currently allowed for cotton, eggs, beef, dairy, pork, honey, wool, and mohair.

Alternatives. Specific policy alternatives include:

(1) Do not change the legislation authorizing generic advertising and promotion (status quo).

(2) Require periodic independent evaluations of such programs.

(3) Eliminate or reduce refunds for all commodities.

(4) Require advertising messages where applicable to contain nutritional information about the commodity. Many advertisements today contain such information.

Regular and systematic evaluations might lead to more effective use of producers' funds or elimination of ineffective programs. Although evaluations have been conducted for several of the programs, the law requires them only for dairy. Eliminating or reducing refunds would help assure financial support for the programs, but it would be objectionable to producers who feel that they do not benefit. Requiring that generic advertising and promotion messages contain nutritional information would respond to increased public awareness about nutritional issues, but it might limit the ability of producers to manage the use of their advertising and promotion monies. Procedures also might be established to assure broader representation on governing boards or to make it easier for producers to call for a referendum on whether to continue a program.

Agenda. More producer groups are likely to seek legislation for commodity advertising and promotion programs. The questions of who gains and by how much become more important as more and more groups advertise. Congress or USDA thus might face greater pressures to establish more uniform policies across commodities regarding evaluation, referendums, refunds, nutritional messages, and general oversight of these programs.

Information Source. Noel Blisard and James Blaylock, *Generic Promotion of Agricultural Products: Balancing Producers' and Consumers' Needs*, AIB-565, U.S. Dept. Agr., Econ, Res. Serv., July 1989.

Net collections for research and promotion by commodity, 1991[1]
Collections exceed $450 million.

Commodity	Collections
	Million dollars
Beef	79.90
Cotton	42.60
Dairy	219.59[2]
Eggs	7.64
Fluid milk	[3]
Honey	2.40
Limes	[3]
Mohair	0.70
Mushrooms	[3]
Pecans	[3]
Pork	29.90
Potatoes	5.75
Soybeans	40.00
Watermelons	0.75
Wool	6.20
18 fruit, vegetable, and nut Federal marketing orders	16.07[4]

[1]Collections less refunds from March 1991 to March 1992. Research expenditures are a small share of net collections. Two programs, wheat and flowers and plants, are not listed because they are currently inactive.
[2]Includes the national program and 66 State and regional programs (three of which are operated under Federal marketing orders).
[3]Program recently or not yet implemented.
[4]Planned expenditures during the 1992/93 marketing season.

United States Department of Agriculture

Economic Research Service

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Issues for the 1990's: TECHNOLOGY

Alternative Fuels: Ethanol

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Issue. Alternative fuels such as ethanol contribute to at least two U.S. policy goals: improving environmental quality and enhancing farm income. Using ethanol-blended fuels reduces carbon monoxide emissions in motor vehicles. Ethanol also creates markets for farm commodities, particularly corn. But, ethanol is costly to produce and depends on Federal and State incentives to compete with its nonrenewable competitors. The issue involves the tradeoff between the current and future cost of incentives and the value of alternative fuels toward meeting policy goals.

Context. The Clean Air Act Amendments of 1990 (CAA) create an opportunity for expanding the use of alternative fuels. However, alternative fuels are relatively costly to produce, so they represent less than 1 percent of U.S. transportation fuel use. The demand for the best known alternative fuel, ethanol, is enhanced by a mix of Federal and State incentives. While currently producing about 900 million gallons of ethanol per year, the ethanol industry continues to depend on Federal and State incentives to remain viable. An income tax credit of 54 cents per gallon of alcohol is allowed to blenders of alcohol and gasoline for use as a fuel. Or, a 5.4-cent-per-gallon exemption from the Federal excise tax on gasoline is allowed on the sale of 10-percent alcohol and 90-percent motor fuel blends. The 10-percent blend requirement translates into an incentive equal to 54 cents per gallon of ethanol. In addition, a "Small Producers Credit" equal to 10 cents per gallon is available to producers with annual production capacity of up to 30 million gallons.

At Stake. Using ethanol-blended fuels rather than conventional gasoline can reduce air pollutants like carbon monoxide, creating economic benefits by cutting health care costs. While use of 10-percent ethanol blends, which are more volatile than gasoline, may contribute to the ozone problem, there is limited information regarding the effects of different ethanol blends on fuel volatility. For example, neat ethanol (100-percent ethanol) is less volatile than gasoline. Blending ETBE (ethyl tertiary butyl ether), manufactured from ethanol, with gasoline also reduces fuel volatility and ozone problems.

Increasing ethanol production also creates markets for farmers and can increase farm income. Ethanol production, expanding from an expected 1.2 billion gallons per year to 2 billion gallons per year in 1995, could increase farm income by about $170 million. A 5-billion-gallon per year production level could increase farm income by $1 billion or about 2 percent of 1991 net farm income. When government set-aside requirements are relaxed to soften the effects on corn prices, an increase of ethanol production to 2 billion and 5 billion gallons per year could reduce annual government deficiency payments by $7 million and $900 million, respectively. The $7 million decrease in deficiency payments reflects the smaller corn price impacts due to relaxed set-aside requirements.

Added ethanol production could also increase U.S. exports. Over 90 percent of all U.S. corn gluten feed (CGF), an ethanol byproduct livestock feed, is exported to the European Community. Total 1991 CGF exports exceeded 6 million tons with a value in excess of $800 million. Ethanol production climbing from 1.2 billion gallons to 2 billion gallons per year could spur CGF exports by 2 million tons per year, increasing the total value of U.S. CGF exports by $200 million, which was 0.5 percent of total U.S. agricultural exports in 1991.

However, tax exemptions also distort the allocation of resources throughout an economy. If markets reflected all costs, these distortions would create a burden to society, with no economic justification for supporting Federal assistance to ethanol. However, market failures do exist. For example, the price of gasoline does not fully reflect the true costs to society, including air pollution, of petroleum use. In addition, farm commodity programs distort agricultural production decisions. Because such distortions exist, incentives for ethanol may improve the overall welfare of society, depending upon true costs and benefits of gasoline and its alternatives.

Alternatives. Several public policy choices relate to ethanol production:

Relax minimum blend requirements. The minimum 10-percent blend requirement for receiving the Federal excise tax exemption could be relaxed to provide the flexibility required to meet regional demands under the Clean Air Act. While the use of 10-percent ethanol blends is more volatile than gasoline and may contribute to the ozone problem, there is limited information regarding the effects of different ethanol blends on fuel volatility. The national energy strategy bill provides added, but still limited, flexibility in the tax treatment of ethanol-blended fuels.

Relax set-aside requirements. Increases in the cost of producing ethanol or increases in consumer food costs because of higher corn prices could be mitigated if the set-aside requirements associated with current farm programs were relaxed. In 1991, for example, almost 30 million acres of cropland were idled under annual Federal acreage reduction programs, about 7.5 million of them idled under the corn program. The idled corn acres alone represent almost 2 billion gallons of potential ethanol.

Encourage research and development of ethanol byproducts. Development of ethanol byproducts is the most potentially profitable area of research. The price of ethanol is tied to other energy sources, feedstock (corn) costs are dictated by alternative uses, and production cost reductions are limited by the physical process involved in ethanol production. Byproduct revenues are not bound by these restrictions. High-value, low-volume ethanol byproducts, such as citric acid or sorbitol, may be removed as technology becomes available. Converting carbon dioxide, currently a low-value ethanol byproduct, into acetic acid could considerably reduce ethanol production costs.

Expand current levels of research and development in biomass conversion. Near- and long-term ethanol research and development have a different focus. While near-term efforts have focused on the ethanol production facility itself, in the long term, the industry must adopt technologies that use a broader set of feedstocks. An active research area involves breaking down a variety of biomass materials into sugars that can then be fermented into ethanol. Breakthroughs in biomass pretreatment and conversion allow higher ethanol yields from grains by converting the fiber portion of the grain into ethanol. Crops such as energy sorghum and switchgrass, as well as cellulosic material such as bagasse, corn stover, or wheat straw, may be converted into ethanol. These technologies could reduce operating and capital costs to less than 80 cents per gallon.

Agenda. The CAA creates an opportunity for expanding the use of alternative fuels. Questions remain about the role of ethanol in meeting CAA requirements and whether alternative fuels can compete in price with nonrenewable alternatives. The future of renewable alternative fuels depends on policy initiatives that encourage the research and development of technologies that can reduce production costs and the cost of Federal and State incentives.

Information Sources. Three U.S. Dept. of Agriculture, Economic Research Service, reports: Neil Hohmann and C. Matthew Rendlemann, *Emerging Technologies in Ethanol Production*, AIB-663, Jan. 1993, Robert House, Mark Peters, Harry Baumes, and W. Terry Disney, *Ethanol and Agriculture: Effect of Increased Production on Crop and Livestock Sectors,* AER-667, May 1993, and Margot Anderson, *Ethanol Production, Corn Gluten Feed, and EC Trade*, AIB-677, July 1993. Call authors (Hrubovcak and Hohmann) for ethanol information relating to the environment, agriculture, and trade.

United States Department of Agriculture

Economic Research Service

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April 1993

Issues for the 1990's: TECHNOLOGY

Regulating Bio-Engineered Foods

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Issue. Use of biotechnology can increase the quality and quantity of food. Although biotechnology is being used to develop many food products, there may be delays in providing such products to consumers. Concerns have been raised about effects of biotechnology on food and environmental safety, and the structure of the agricultural industry. Adequacy of laws and regulations covering agricultural biotechnology to protect public interests has been questioned. The General Accounting Office has identified potential conflicts of oversight jurisdiction between government agencies as an impediment to safe development and marketing of biotechnology products. The U.S. Department of Agriculture (USDA) is devising a management strategy to institute a clear regulatory authority and review process.

Context. Biotechnology can be broadly defined as the use of living organisms to solve problems or to make useful products. This definition includes traditional plant and animal breeding methods, and bioprocessing, such as fermentation. The new biotechnology is the application of cellular and molecular biology to meet human needs, a definition that includes use of monoclonal antibodies, cell culture, biosensors, antisense, and genetic engineering (recombinant DNA and cell fusion) technologies. Biotechnology can be used to increase a plant's ability to control pests and disease, tolerate environmental stress, and enhance food quality, such as flavor, texture, shelf-life, and nutritional content. Biotechnology can be used for animals to promote growth and develop vaccines. Other uses include increasing food processing efficiency and developing more effective diagnostic techniques for testing food safety.

Many bio-engineered food products are being developed. Commercial success of these foods will depend on industry and farmer profits, public acceptance of biotechnology products (consumer demand), and the regulatory environment. Lack of confidence in the effectiveness and timeliness of existing safety regulations has caused delays and additional costs. Consumers, biotechnology industry representatives, researchers, environmentalists, agricultural producers, and food processors have expressed concern about current regulatory policies. Confusion exists over which agencies will exercise jurisdiction over the many elements of developing, testing, and marketing bio-engineered foods. Primary agencies involved are the Food and Drug Administration (FDA), the Environmental Protection Agency (EPA), and the USDA.

At Stake. Many technologies have helped increase productivity and cost efficiency in agricultural production, as well as provide consumers with a cheaper, higher quality, and more diverse food supply. Such benefits may not be realized with agricultural biotechnology unless public concerns are addressed and a well-articulated regulatory policy is established. There will be no market for the products of biotechnology without public acceptance of the products.

Delays in resolving intellectual property rights (patent) issues and in establishing clear regulations for field testing and product marketing could be costly. Firms have already invested over $1 billion in agricultural biotechnology, and Federal investment is expected to be about $600 million between 1991 and 1993. Lack of international harmonization in patenting and regulating bio-engineered food products could restrict international trade and harm U.S. competitiveness. Companies may reduce investment if the regulatory environment remains uncertain.

Use of biotechnology could variously affect food safety. Biotechnology methods can be used to develop quicker and more efficient techniques for detecting and reducing microbial contamination and concentrations of allergens and toxins in foods. However, use of biotechnology may cause unintended changes in the concentration in foods of allergens, toxins, and nutritional content. Traditional breeding methods pose a similar risk. Ethical concerns have been raised about the transfer of human and animal genes into plants and animals different from the host species (transgenics).

Dependence on pesticides and fertilizers might be reduced if plants were developed to resist pests and disease, and to more efficiently use soil nitrogen. In addition, plants developed with the ability to withstand such environmental stress as drought might prove less demanding on natural resources. One environmental concern is that adoption of herbicide-resistant crops may encourage continued use of chemicals, albeit less harmful chemicals in some cases. Another concern is that genetically engineered crops and animals, in competing with indigenous populations, may strain biodiversity and disrupt the ecological balance.

There are many issues associated with the introduction of foods produced using biotechnology, but most of the concerns would be relevant for any new agricultural technology. A technology resulting in significant changes in costs or production can cause structural changes in agricultural industries and regional shifts in production and income, as well as potentially affect environmental and food safety.

Alternatives. Clear, definitive regulatory policies for patenting, field testing, and ensuring food and environmental safety of agricultural biotechnology could reduce costs of commercializing bio-engineered foods. Biotechnology researchers and regulators generally acknowledge that biotechnology techniques are not inherently risky. Therefore, science- and risk-based regulations focusing on products of biotechnology could ensure adequate oversight.

There are several recent developments in the reformulation of regulatory policy. The FDA and the USDA's Food Safety and Inspection Service (FSIS) are establishing food safety policies for transgenic animals. The FDA has announced that food from new plant varieties developed using biotechnology will be regulated the same as food from plant varieties developed using traditional methods. USDA's Animal and Plant Health Inspection Service (APHIS) has streamlined the permit process for the field testing of certain crops for which some scientific assurance of safety exists. These decisions could reduce delays in commercialization and lower costs of product development, but only if the public, industry, and scientific community have confidence in the regulatory process.

Agenda. Agencies responsible for regulating bio-engineered foods and restructuring regulatory policy need to coordinate efforts to establish unified regulatory policies and to respond to public concerns. Efforts should include the public, industry, agricultural producers, academics, and the international community. International trade agreements need to resolve patent issues. If concerns are addressed in an open and accessible decisionmaking process, confidence in the regulatory system could be enhanced and agricultural biotechnology products would be developed to accommodate global needs.

Information Sources. Office of Technology Assessment (OTA), *A New Technological Era for American Agriculture*, Aug. 1992; Purdue Agricultural Experiment Station, *Agricultural Biotechnology: Issues and Choices*, edited by Bill Baumgardt and Marshall Martin, 1991; U.S. Government Printing Office, *Biotechnology for the 21st Century*, a report by the Federal Coordinating Council for Science, Engineering and Technology (FCCSET) Committee on Life Sciences and Health, Feb. 1992; and General Accounting Office, *U.S. Department of Agriculture: Improving Management of Cross-Cutting Agricultural Issues*, GAO/RCED-91-41, 1991.

United States Department of Agriculture

Economic Research Service

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May 1993

Issues for the 1990's: COMMODITY PROGRAMS

The Distribution of Direct Government Payments

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Issue. The Federal Government paid farmers $5.8 billion in direct cash payments in fiscal year 1992. Most participants receive small payments. But, a small number of producers—many of whom have relatively high net incomes—receive a large share of payments. This distribution of payments is an inevitable result of commodity programs designed to support income and control the supply of covered crops where payments are largely determined by production. Unlike 60 years ago when income support programs were initially designed, average farm operator household income is similar to that of all U.S. households and farmers have significantly higher average net worth, raising questions about the equity of commodity programs. Ways to target program benefits to reduce the share of government payments going to high-income farmers and to limit the amount of any single farmer are a continuing part of the farm policy debate.

Context. About a third of all U.S. farms receive Federal direct cash payments. Direct payments are paid under a variety of farm programs, but the bulk of payments are deficiency payments made under the commodity programs. Deficiency payments go to producers of feed grains, wheat, cotton, and rice who are eligible and choose to participate in the commodity programs. Deficiency payment amounts are based on the participating farmer's total covered production and the relationship between the higher of either the Commodity Credit Corporation (CCC) loan rate or market prices and a target price set by Federal policymakers. If the target price exceeds the market price, the producer receives a cash payment equal to the difference between the two prices times the amount of covered production. Larger farms generally have larger total production and net farm income. Because deficiency payments are based on production, large producers with high net income tend to receive larger payments than do small producers.

In 1991, half of the recipient farms received a payment of $4,400 or less; three-quarters received less than $11,484 (see figure). But the 5 percent that received the largest payments collected 31 percent of total payments made. Over 80 percent of the payments went to producers in the Lake States, Corn Belt, Delta States, and Plains.

Current law limits annual deficiency payments to a maximum of $50,000 per "person." But an individual may receive payments as three "persons"—directly, and by qualifying as, at most, two other "persons" under the statute. The maximum annual payment to an individual is $100,000. However, some other cash payments are excluded from these limitations, and several individuals (such as operator, spouse, children, partners, and others) may be involved in a single farming operation, pushing total payments to the farm well above $100,000.

Effects of farm programs extend well beyond payment recipients. Not only do farm programs provide more income to eligible participants, but, over time, this income has been capitalized into farmland values. Thus, the income and wealth of certain individuals, businesses, and farm-based communities are significantly affected by these programs. Commodity programs change the cost structure of livestock and poultry production where feed is purchased, and programs are linked in complicated ways to consumer food costs and agricultural exports. Because participation in these programs is voluntary, the effects of programs may vary due to changing participation rates.

At Stake. The current Federal budgetary pressure focuses attention on the cost and regressiveness of existing farm programs. However, there is no consensus on how to restructure the programs. Because over 16 percent of U.S. farm output is exported and many international competitors also

support their farming sectors, the effect of changes in U.S. domestic farm programs on international trade is an additional factor which must be considered. This issue affects the incomes of individuals, the capitalized value of commodity acreage bases, the economic base of communities, the Federal budget, and the operation of programs.

Alternatives. One set of options for revising commodity programs involves retaining the current program structure but excluding those producers from eligibility who are defined as "well-off." During the 1990 farm bill debates, congressional representatives and officials of the U.S. Department of Agriculture, Office of Management and Budget, and Congressional Budget Office discussed options that included limits based on farm size and a limit based on adjusted gross income as defined for tax purposes. The President's budgets for 1992 and 1993 recommended that payments be limited based on the level of off-farm income of $125,000 and $100,000 for those years. The current administration has also proposed to target payments based on off-farm income of $100,000. Another option is to preclude an individual from qualifying to receive payments as more than one person. While these options can reduce or eliminate payments to the highest income farms, it may be difficult to prevent producers from reorganizing their activities to avoid the limits.

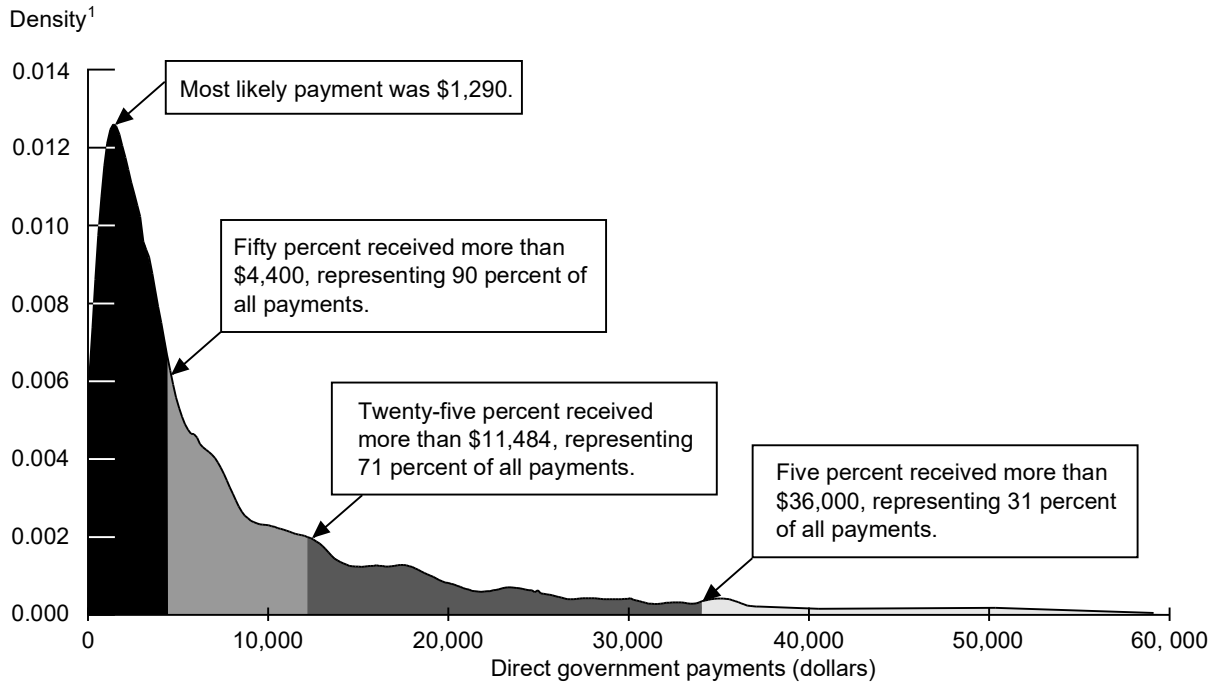
Another option builds directly on actions taken in the 1990 farm act to gradually reduce the role of commodity programs in production decisions. Such an option might reduce some combination of target prices, loan rates, and base acreage eligible for payments. This would likely lead to a reduction in participation in programs and change payment distribution, since some categories of farms would find it more profitable not to participate.

Agenda. Resolution of the international trade negotiations, public pressures to reduce the Federal budget deficit, and the upcoming farm bill debates will all lead to discussions on ways that farm programs can be changed to target payments to those most needing assistance.

Information Sources. Two U.S. Dept. of Agriculture, Economic Research Service, reports: Mary C. Ahearn and others, *The Economic Well-Being of Farm Operator Households, 1988-90*, AER-666, Jan. 1993 and Mary C. Ahearn and Janet Perry, "Change Proposed for Farm Payment Limits," *Agricultural Outlook*, Apr. 1993.

Distribution of direct government payments, by payment size, 1991

Most farms receive relatively small payments.



[1] Density describes the number of observations at a given level of payment.

United States Department of Agriculture

Economic Research Service

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May 1993

Issues for the 1990's: COMMODITY PROGRAMS

Government Support for the U.S. Tobacco Industry

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Issue. The tobacco price support-production control program limits production, using quotas and allotments, and guarantees growers minimum prices. The program is mostly self-supporting in that growers and tobacco buyers pay assessments to cover Federal losses in operating the price support program. Only administrative and some other miscellaneous costs are borne by the U.S. Treasury. The primary effect of the program is that it raises prices of leaf (thus tobacco product prices) and controls production. Consumer prices are slightly higher and consumption lower than without a program. Should price supports be lowered so that U.S. tobacco becomes more competitive in world markets? Should the U.S. Government administer a Federal tobacco program that costs taxpayers even small amounts, given the strong association between tobacco use and illness? Should Federal tobacco product excise taxes be raised sharply to partially fund health care reform?

Context. Government programs influencing the supply and price of U.S. tobacco began with the Agricultural Adjustment Act (AAA) of 1933. The 1938 AAA authorized marketing quotas and the 1949 AAA authorized price supports. These acts remain as the foundation of current programs despite numerous amendments.

Several laws enacted in the 1980's substantially altered the tobacco program. Two with especially important effects on the tobacco industry continue to generate debate. The first law, the No Net Cost Tobacco Program Act of 1982, was mandated by the Agriculture and Food Act of 1981. Price support eligibility required producers (also manufacturers in later legislation) to pay assessments into a Commodity Credit Corporation account to cover program losses. This law sharply limited, but did not eliminate, government expenditures associated with the tobacco program. Net Federal Government expenditures on tobacco in recent years have ranged between $25 million and $50 million. The U.S. tobacco crop is valued at about $3 billion. The second law, the Tobacco Program Improvement Act of 1985, modified price supports and production controls. Price supports were reduced in the mid-1980's and a new formula was adopted for setting future supports and production quotas. These measures were designed to make U.S. growers more competitive in world markets. Despite the changes, U.S. price supports are rising and cigarette manufacturers are substituting cheaper foreign-grown tobacco for U.S.-grown leaf.

U.S. tobacco and tobacco products have been exported for many years. The United States has never imposed import quotas on tobacco. A successful General Agreement on Tariffs and Trade would expand exports of U.S. leaf and cigarettes by reducing subsidies and removing trade barriers in competitor countries. The domestic program would not have to be modified.

At Stake. Views conflict on whether the Federal Government should administer a tobacco program that costs taxpayers even a small sum or whether current procedures for determining price supports and production levels are appropriate. Despite small outlays and the price-enhancing, production-curtailing effect of the Federal tobacco program, some health organizations and members of Congress object to any Federal support of a commodity that has a very strong statistical association with lung cancer, heart disease, and other serious illnesses. Changes are of keen interest to health advocates because of the statistical relationship between tobacco use and poor health.

Changes in the tobacco program affect incomes of tobacco growers and input suppliers, and purchase levels and strategies of tobacco companies. Proponents of the program generally agree that 1985 program provisions worked well during the late 1980's and early 1990's. However, there is growing concern that U.S. tobacco may again be over-priced in the world market. Price supports have risen

and there has been a rapid shift in the United States to discount-brand cigarettes. This shift is causing cigarette manufacturers to shift to cheaper foreign-produced leaf and stems. This shift, coupled with growing production of improved leaf overseas and technological advances that permit the manufacture of high-quality cigarettes with less leaf, raises questions about whether the current support program should be modified. There is debate about whether U.S. price supports should be lowered or if other changes such as limiting use of imported leaf in cigarette blends should be adopted to capture a greater share for the U.S. market. There are concerns about whether new legislation should be sought given the considerable opposition to support for tobacco of any kind.

Alternatives.

(1) Continue current program. Production would likely decline gradually and size of operating units would increase. Choosing this alternative might eliminate the need for congressional debate and could block modifications such as shifting to grower and/or manufacturer payment of all Federal program administrative and other costs associated with the tobacco price support program.

(2) Modify the program by reducing price supports 25-30 cents per pound. Total production would likely increase because of increased use of lower priced leaf. Less efficient producers would quit. Quota rental rates would decline. Imports would decline and exports increase.

(3) Modify program by limiting imported leaf use in U.S. manufactured cigarettes. Total production would increase or production decreases would be curtailed depending on how much imported leaf was permitted. Imports would decline or growth would be curbed.

(4) Eliminate the tobacco program. Some U.S. growers would go out of business. U.S. production would likely expand. Land prices would decline because quota values would be lost. Leaf costs would decline and cigarette and other tobacco product prices would likely be slightly lower. Imports would fall and exports would rise. Consumer prices might decrease and consumption of tobacco products increase.

Agenda. The tobacco program, under permanent legislation, is not subject to reauthorization in the 1995 farm bill. Whether legislation will be sought by growers or opponents of the tobacco program to modify the tobacco program or to eliminate it is uncertain. Growers may seek legislation because of increasing imports and prospects for declining U.S. marketing quotas and increases in no-net-cost assessments. Despite relatively low net government outlays on tobacco, it is uncertain if opponents of the tobacco program will seek legislation. However, it is almost certain that Congress will consider bills to raise the cigarette excise tax from the present 24 cents per pack of 20.

The administration is considering proposing increases in cigarette taxes of $1-$2 per pack to help finance national health care. Proponents claim a big jump in the Federal cigarette excise tax to help finance health care costs is justified because of the strong statistical association between smoking and various diseases. Opponents argue that a big jump in cigarette excise taxes places an unfair tax burden on cigarette smokers. Also, a jump in cigarette excise taxes would reduce U.S. consumption as much as one-third and would result in loss of jobs and income throughout the Nation and especially in tobacco growing areas.

Information Sources. U.S. Dept. of Agriculture, Economic Research Service, *Tobacco Situation & Outlook Report*, various issues. *Tobacco Programs of the U.S. Department of Agriculture: Their Operation and Cost*, CRS Report for Congress, 92-480 ENR, Library of Congress, June 8, 1992.

U.S. cigarette use

Domestic cigarette consumption has declined as cigarette exports have climbed.

Year	Consumption	Exports
	Billion cigarettes	
1984	600.4	56.5
1985	594.0	58.9
1986	583.8	63.9
1987	575.0	100.2
1988	562.5	118.5
1989	540.0	141.8
1990	525.0	164.3
1991	510.0	179.2
1992[1]	498.0	205.6

[1]Preliminary.

United States Department of Agriculture

Economic Research Service

Agriculture Information Bulletin Number 664-42

May 1993

Issues for the 1990's: COMMODITY PROGRAMS

Commodity Program Entitlements: Deficiency Payments

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Issue. Federal budgetary outlays for commodity income and price support programs are expected to be sharply higher in 1993. This will bring farm program spending under closer scrutiny as Congress and the executive branch look for ways to reduce the budget deficit. Deficiency payments, which compensate farmers for differences between target prices and market prices for grains and cotton, account for more than one-half of commodity program spending. A number of options to reduce outlays for deficiency payments are being suggested by policymakers. Economic implications for agriculture may differ by option.

Context. Deficiency payments are entitlements; that is, spending is determined by rules that define eligibility and govern benefit levels rather than by the annual appropriations process. USDA and Congress have no control over deficiency payment outlays once annual programs are announced. Outlays under an announced program are determined by the extent of participation in the program and the market price level.

Producers of wheat, corn and other feed grains, cotton, and rice are eligible for deficiency payments whenever the target price for the commodity exceeds the average market price during a specified time period. To be eligible for deficiency payments and other program benefits, producers must participate in any acreage reduction program (ARP) in effect for the commodity.

The deficiency payment to a producer equals the deficiency payment rate for the commodity (target price minus market price) multiplied by the farm's program production (per acre program yield for the farm times payment acres). Under current law, payment acres generally equal 85 percent of the farm's established acreage base for the crop, less any land that must be idled to comply with the ARP.

The unpredictable nature of entitlement spending is illustrated by forecasts for fiscal 1993. Commodity program outlays for 1993 were forecast at $11.7 billion by the Office of Management and Budget in early 1992; by January 1993, the forecast had risen to $17.1 billion. The increase was due in part to larger deficiency payments for corn and cotton, as market prices were lower than had been expected. Commodity program outlays in fiscal 1993 likely will be the largest since 1987 and 75 percent more than fiscal 1992 outlays.

At Stake. Farm income is affected by deficiency payments. Income from production of program crops will decline if deficiency payments are reduced. Deficiency payments are expected to exceed $9 billion in fiscal 1993, an amount equal to 30 percent of cash market receipts from grain and cotton crops. Since deficiency payments are regionally concentrated, cuts in payments can affect rural communities.

Alternatives. Government could act to reduce deficiency payments in various ways. Some actions may be done administratively; others would require legislation. Deficiency payment rates may be lowered by a legislated reduction in target prices or by administrative actions to raise market prices. Administrative actions include raising ARP requirements and price supports (loan rates) to the higher end of their allowed ranges. Higher ARP's raise market prices through cuts in production and also

reduce the amount of acres eligible for deficiency payments. Higher loan rates lower deficiency payment rates when U.S. market prices are at or near loan rate levels. However, raising loan rates above world prices would make U.S. commodities less competitive, may increase Commodity Credit Corporation outlays for marketing loans, increase the costs of export promotion programs, and lead to costly stockbuilding in the United States. Higher ARP's also would cut the U.S. export market share and increase the costs of export programs.

Acreage eligible for deficiency payments also may be reduced by legislation to expand the provision in the Omnibus Budget Reconciliation Act of 1990 that made 15 percent of each program crop acreage base ineligible for deficiency payments. This change was intended to reduce program spending and to increase producers' planting flexibility. A producer is permitted to plant any program crop or oilseed on unpaid base acreage and by doing so maintain the base for future program benefits. The 15-percent unpaid base acreage is commonly called "normal flex acres" or NFA.

Reducing deficiency payments either by cutting target prices or by increasing the NFA percentage has fewer economic side effects than other options discussed above. The effect of a percentage cut in target prices on deficiency payment rates, and thus outlays, is difficult to predict. For example, a 3-percent cut in target prices would lower the payment rate by 10 percent when the commodity market price is 70 percent of the target price, and by 30 percent when the market price is 90 percent of the target price. Because the ratio of market price to target price may vary substantially across commodities, a general reduction in target prices may be an unwieldy option for achieving a specified cut in deficiency payments.

Reducing payment acres by raising the NFA percentage may be a more straightforward method for attempting a specified cut in deficiency payments. Moreover, deficiency payments would be smaller under this option, compared with the target price option, in the event of an unexpected drop in market prices: the additional deficiency payment rate would be paid on a smaller quantity. This option would enhance market orientation of U.S. crop production as market prices would guide farmers' planting decisions on a larger acreage. However, ARP participants may shift to production of nonprogram crops on the unpaid base acres, thereby lowering prices of nonprogram crops.

From the taxpayers' standpoint, the potential for large deficiency payment outlays is present each year due to the entitlement status of the payments. This potential would exist, though to a lesser degree, even if target prices were reduced or payment acres were cut further through an increase in the NFA percentage. An unanticipated drop in market prices would raise deficiency payment rates and outlays above forecasts. Either of the options would reduce payment outlays from the level they otherwise would be, but there would be no guarantee that they would stay within budgeted amounts. This could lead to a proposal to end entitlement status and limit outlays to an appropriated level.

Agenda. The Clinton administration has proposed that the NFA percentage be increased to 25 percent beginning in 1996. This issue will be debated at both the executive and legislative levels.

Information Source. Congressional Budget Office, *Reducing the Deficit: Spending and Revenue Options*, Feb. 1992.

United States Department of Agriculture

Economic Research Service

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Issues for the 1990's: COMMODITY PROGRAMS

Acreage Reduction Programs

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Issue. Because government-set target prices for wheat, feed grains, rice, and cotton exceed market prices, acreage reduction programs (ARP's) are needed to limit Federal budget outlays and to prevent the buildup of surplus government stocks. However, by reducing production and raising market prices for grains and cotton, ARP's make these U.S. commodities less competitive in world markets. The tradeoff between competitiveness in global markets and limiting government exposure remains an issue.

Context. The precedent for idling acreage was set in the 1930's and was heavily used in the late 1950's, the 1960's, and sporadically in the 1970's. ARP's were authorized by the Agriculture and Food Act of 1981 to replace acreage "set-aside" programs used in the 1970's. In contrast to set-asides, ARP's allow the government to implement acreage control by idling land on a commodity-specific basis. Although participation in ARP's is voluntary, producers must participate to be eligible for program benefits, such as deficiency payments. Deficiency payments, which are based on the difference between the target price for a program crop and its average market price during a specified time period, constitute the bulk of government spending on program crops. ARP's limit deficiency payment outlays by cutting the acreage eligible for payments and the deficiency payment rate (by raising market prices).

There was little initial debate over the use of ARP's to cut production of grains and cotton. Rising target prices and high price supports under the Agriculture and Food Act of 1981 caused U.S. production of program crops to far exceed market demand. The result was massive stocks accumulation in the United States and escalating government costs.

The Food Security Act of 1985 set U.S. agriculture on a more market-oriented course. For example, price supports were reduced. This action allowed U.S. market prices to fall toward world price levels. However, this caused larger differences between target prices and domestic market prices, which intensified the need for ARP's to limit government outlays for deficiency payments.

Several developments have brought into question the regular use of ARP's to reduce production. They include the drawdown of grain stocks from the high levels of the mid-1980's and the removal from production of 23 million acres of grains and cotton base enrolled in the 10-year Conservation Reserve Program (CRP). In addition, the Omnibus Budget Reconciliation Act of 1990 (OBRA) made 15 percent of each program crop acreage base ineligible for deficiency payments. The 15-percent unpaid portion of base acres is known as "normal flex acres" or NFA. The NFA provision makes the added taxpayer costs of smaller ARP's less burdensome. These developments allowed USDA to implement smaller ARP's in recent years. As a result, cropland idled under annual programs declined from an average of 53 million acres in 1986-88 (one-fourth of the program crop base) to 19 million acres in 1992.

Increased focus on the effects of ARP's has been associated more recently with the "GATT triggers" in the 1990 OBRA. Under this provision, USDA may waive minimum ARP requirements mandated for 1993-95 crops if the United States had not entered into a General Agreement on Tariffs and Trade (GATT) agreement by June 30, 1992. Because there was no agreement by that date, the Secretary of Agriculture has additional discretionary authority in setting ARP levels.

At Stake. Program crop producers, taxpayers, and consumers are directly affected by ARP's, as effects ripple throughout the economy. The tradeoffs are illustrated by a study conducted by the Economic Research Service in early 1992. The short- to intermediate-term effects of ARP's were measured by comparing a scenario of "high ARP's" (10 percent for the grains and 15 percent for cotton) to a scenario of zero-percent ARP's for all program crop commodities.

The ERS study indicated total annual plantings of program crops could average 13-14 million acres larger during 1993-95 under zero-percent ARP's, compared with the higher ARP case. U.S. exports of grains and cotton would be larger under zero-percent ARP's, and market prices would be lower. Domestic consumers would benefit as they could buy more at lower prices, but government outlays for deficiency payments would be several billion dollars more each year.

U.S. net farm income, while greater under the zero-percent ARP case, would rise less than deficiency payments. Income from production of program crops would be larger, while income from nonprogram crops, such as soybeans, would be smaller due to lower prices. Net income from livestock production would be higher under zero-percent ARP's, mainly due to lower feed costs. Livestock production would expand slightly and meat prices would be lower. Agribusiness and local economies would benefit from higher levels of production and marketings under zero-percent ARP's.

Alternatives. The Food, Agriculture, Conservation, and Trade Act of 1990, which covers crops produced through 1995, links ARP percentage levels for a program crop commodity to its estimated ending stocks-to-use ratio for the marketing year. The stocks-to-use ratio is an indicator of surplus; generally, the larger the ratio, the higher the required ARP percentage.

Without the GATT triggers, USDA has limited discretion in setting ARP requirements under provisions of the 1990 farm law. For example, the ARP for wheat may be 10-20 percent if the estimated stocks-to-use ratio is more than 40 percent; the ARP may be 0-15 percent if the estimated ratio is 40 percent or less. The GATT triggers allow USDA to implement zero-percent ARP's during 1993-95, without regard to stocks-to-use ratios.

A focus solely on the Federal budget deficit would support setting ARP levels at the high end of the permitted range. However, some argue that the economic costs of using ARP's to limit government spending on farm programs are too high. They say that productive resources are left idle, export market share is lost, and costs of export programs are greater. Supporters of this view suggest other options for cutting farm program spending, such as an increase in the NFA percentage or a reduction in target prices.

Agenda. Without a GATT agreement, USDA has wide discretion in setting ARP levels for 1993-95 crops. The 1995 farm bill can be expected to set ARP policy for the rest of the decade. Another factor is that CRP contracts will begin to expire in 1996. Most of the enrolled program crop base could be returned to production and be eligible for deficiency payments, unless there are incentives to the contrary. Nevertheless, the case for using ARP's would weaken if one or more of the following occurs: target prices are reduced or further cuts in payment acres are made, a GATT agreement is reached with a concomitant rise in U.S. exports, research on new uses of farm products leads to an expanded acreage of alternative crops, and food safety or water quality concerns lead to a substitution of land for yield-boosting chemical inputs.

Information Source. U.S. Dept. of Agriculture, Economic Research Service, *The 1990 Farm Act and the 1990 Budget Reconciliation Act*, MP-1489, Dec. 1990.

United States Department of Agriculture

Economic Research Service

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June 1993

Issues for the 1990's: COMMODITY PROGRAMS

Government Support for the U.S. Sugar Industry

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Issue. The U.S. sugar program maintains a high domestic price by restricting supply on the domestic market with import quotas (enforced by high tariffs for imports above the quotas) and standby controls on sales of domestic sugar. This program supports sugarbeet and sugarcane grower prices through high consumer prices. Indirect benefits go to sugarbeet and cane processors, and producers of sugar substitutes. Costs and benefits of the program are often debated, particularly as farm acts expire.

Context. Many other countries also insulate their domestic sugar markets from the world market. The widespread government intervention increases the volatility of the world price and tends to cause persistently low world prices, although recent global trends in privatization and liberalization have reduced world price volatility.

The U.S. Government controlled the U.S. sugar market with domestic production quotas and import quotas under the Sugar Act from 1934 until the act expired in 1974. The 1981 farm act instituted a minimum nonrecourse loan rate for sugar, which rose from 16.75 cents a pound in 1981 to 18 cents in 1985, a level maintained in the 1985 and 1990 farm acts. Loans go to processors who in turn agree to pay minimum prices to growers of sugarbeets and sugarcane. By law, the government must try to keep sugar prices high enough so that processors do not forfeit their stocks to the Commodity Credit Corporation. Import quotas are used to limit imports to the United States in order to maintain prices at levels sufficiently high to avoid forfeitures.

To guarantee quota-holding countries a minimum market share, and to maintain supplies of raw cane sugar for domestic refiners, the 1990 act includes a provision that would allow for domestic marketing allotments (limits on the amount of domestically produced sugar that can be sold) if imports are likely to fall below 1.25 million tons. Separate allotments would be announced for the beet and cane sugar segments of the domestic industry if allotments were announced. Any shortfall could not be made up by the other segment, but would have to be given to imports.

The current Uruguay Round negotiations of the General Agreement on Tariffs and Trade (GATT), if successful, could lower the high duty (currently 16 cents a pound) by 15 percent, but it is unlikely that much over-quota sugar would be imported even at the lower level given current and likely world prices. The proposed North American Free Trade Agreement (NAFTA) would largely preserve the status quo for the first 6 years; thereafter, Mexico could gain increased access to the U.S. market.

The sweetener market in the United States is both a high-volume and high-value market, with broad participation of U.S. agriculture. Annual U.S. beet and cane sugar sales of about 9 million tons, raw value, have a value of about $4.5 billion. Corn sweetener sales of over 6 million tons have a value of over $3 billion. There are about 12,000 sugarbeet farmers in 14 States. There are about 1,000 sugarcane farmers, although over half of U.S. sugarcane is grown by large integrated processing companies that grow their own cane. Corn sweeteners currently use about 8 percent of the corn grown by the Nation's 625,000 corn farmers.

At Stake. Beneficiaries of the program include U.S. sugarbeet and sugarcane growers and processors, and producers of alternative sweeteners, mainly corn processors. Countries that import world-priced sugar also gain since the extra U.S. sweetener supply induced by the U.S. sugar program lowers U.S. import demand, which lowers the world price. Foreign producers of sugar-containing

products who can export to the United States benefit too, since their products are more competitive. Effects on the 40 quota-holding countries that receive the U.S. price (a premium above the world price) vary by country, since the higher price is offset by a smaller volume. Those who would benefit if sugar prices received less support include consumers, U.S. sweetener buyers, cane sugar refiners (whose volume would expand as imports rose), and countries exporting to the world market. Studies have estimated the U.S. consumer cost at as high as $3 billion a year. The net social cost has been estimated to range from $500 million to $1 billion.

Alternatives.

(1) Continue current program. Except for cane producers in Hawaii and beet producers in California, most producers would continue to expand, and consumption would likely continue trending up slowly. If U.S. production continues to expand, as is likely, imposition of domestic marketing allotments is possible.

(2) Lower loan rates. Lower loan rates would affect production in Hawaii and California the most. Production in other States would be more likely to be maintained or even increased, depending, of course, on how much prices declined. Consumption would rise marginally faster, in part because lower priced sugar would be more competitive with alternatives such as high fructose corn syrup.

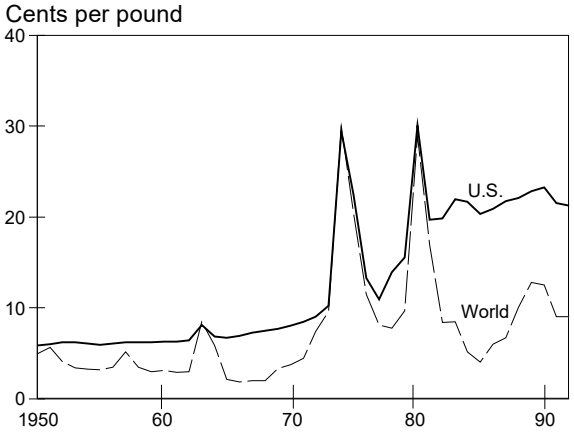
(3) Drop price supports; switch to direct income support. Under this alternative, the program could be targeted more directly to sugarbeet and sugarcane growers, and not have to involve processors as it does now. The U.S. market price for sugar would be the unsupported price, as in Canada.

(4) Eliminate the sugar program. Some U.S. producers would likely go out of business. Production would likely decline and U.S. consumers should see lower prices, but would be more dependent upon foreign producers for supplies and subject to historically more volatile world prices.

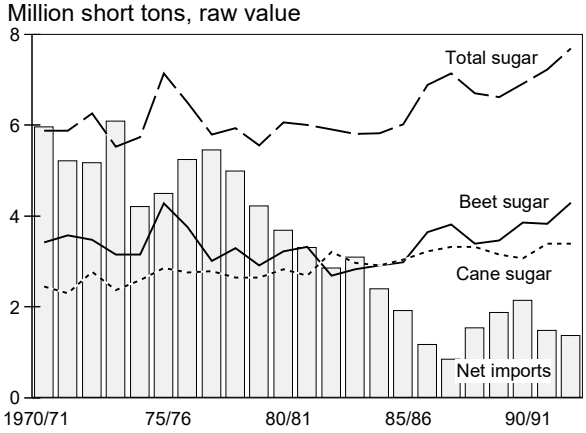
Agenda. The support program and loan rate in the 1990 farm act cover the 1991/92-1995/96 sugar crops. The tariff-rate quota system is implemented under permanent authority of the Harmonized Tariff system. We can expect the sugar program to be part of the debate when a 1995 farm act is developed. Some groups may propose legislation to eliminate the provision for domestic marketing allotments before the next farm bill.

Information Sources. Two U.S. Dept. of Agriculture, Economic Research Service, reports: *Sugar and Sweetener Situation and Outlook Report*, quarterly, and R. Barry, L. Angelo, P. Buzzanell, and F. Gray, *Sugar: Background for 1990 Farm Legislation*, AGES 9006, Feb. 1990. Also see: Library of Congress, *Sugar Policy Issues*, CRS Issue Brief, May 27, 1992.

World and U.S. raw sugar prices
Reflecting U.S. policy, U.S. sugar prices have been relatively stable since the early 1980's, whereas world prices remain more volatile.



U.S. sugar production and net imports
Growth in domestic sugar production has led to greater self-sufficiency and reduced import needs.



United States Department of Agriculture

Economic Research Service

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April 1993

Issues for the 1990's: FOOD AND NUTRITION

Chemical Inputs and Food Safety

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Issue. Some consumer and public interest groups perceive the use of chemical inputs, especially pesticides, in food production and processing as jeopardizing the safety of the U.S. food supply. The public choice issue raised by food safety concerns is who determines what are acceptable levels of risk and safety and how those determinations ought to be made. The opinions of risk assessment experts significantly differ from those of the public over this issue. Risk assessors rank the health risks from chemical residues in food products as negligible because residues are generally so small that they are unlikely to threaten even the most susceptible and most exposed individuals with a significant risk of cancer or other diseases. However, scientists do not unanimously agree on risks. When scientists debate the significance of animal-test results' applicability to human health, they reveal that there is uncertainty in risk assessments. This uncertainty may intensify public concern.

Context. Pesticide residues on food contribute between 0 to 6,000 (best and worst case scenarios) cases of cancer in the United States each year, according to the Environmental Protection Agency (EPA). In contrast, between 6.5 million and 33 million cases of food-borne illness arise annually from micro-organisms, resulting in about 9,000 deaths. But the public perceives chemical residues to be a bigger threat to health and the environment, household surveys indicate.

Several factors contribute to this popular perception. First, recent highly publicized public health questions, such as whether the growth regulator daminozide (Alar) should be allowed in apple production, have focused attention on chemical inputs. Second, that some government monitoring programs are relatively limited and test only a small proportion of food products for pesticide residues, and are not statistically based, produce some public skepticism of the government's ability to effectively enforce consumer-oriented regulations. The potential use abroad of pesticides not approved for domestic use and the difficulty monitoring all pesticides heighten consumer concerns over the inspection process for food imports. Third, consumer concern over pesticide use is not limited to food safety. Because pesticides can persist in various forms for long after their intended use and in unanticipated media such as drinking water supplies, their effect on the environment, water quality, worker safety, and the long-term productivity of agriculture is uncertain. Finally, consumers tend to react quickly when presented with new information about health risks from pesticide exposure, especially if that risk involves cancer. However, the assessment of risk and determination of exposure are extremely difficult. Scientists still debate the proper method for assessing risk and exposure, while policymakers debate how to make the political, economic, and ethical tradeoffs implicit in setting standards for "acceptable risk."

At Stake. Agribusinesses, farmers, and environmental and consumer groups are pressuring Congress to resolve a host of pesticide issues. A central issue in the food safety debate involves the way that EPA licenses pesticide products and carries out its responsibilities as mandated by the Federal Food, Drug, and Cosmetic Act (FFDCA) and the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). The Delaney Clause of the FFDCA imposes a zero-risk standard by prohibiting approval of cancer-causing pesticides that concentrate in processed foods. Animal studies are sufficient to demonstrate carcinogenicity under the Delaney Clause. The Clause does not permit consideration of benefits generated by the use of chemical inputs. However, in implementing the registration process, EPA has adopted a *de minimis* or negligible risk standard rather than the zero-risk

standard. Pesticide producers and farmers generally support EPA's use of a negligible-risk standard. However, a 1992 court decision, won by a coalition of consumer groups and labor organizations, could require EPA to implement the zero-risk standard in registration decisions. Adopting a zero-risk standard could significantly affect agriculture because many widely used pesticides and their alternatives could lose registrations. Farmers could face pest problems solved by existing pesticides. Because pesticides are an integral part of agriculture, changes in pesticide regulations could influence production practices, availability, prices, and safety of food.

Alternatives. Congress and the Bush administration developed legislative initiatives addressing the use of chemical inputs in agriculture. These initiatives address the following issues. First, the proposed alternatives replace the Delaney Clause with a negligible-risk standard. Significant differences emerge in how "negligible" is defined, whether by a narrative definition allowing for case-by-case consideration or by a specific numerical criterion ensuring a more rigid interpretation of the risk levels. Second, some argue for the consideration of benefits as well as risks in setting pesticide tolerances, even when chemicals are carcinogenic and concentrate in processing. Benefits from the application of chemical inputs include greater food production, improved cosmetic quality of food products, and lower production costs. Third, should Congress impose national uniformity for tolerances on States, or continue to permit States to establish more stringent control measures? National uniformity would facilitate interstate commerce but would prohibit States or other jurisdictions from experimenting with alternative approaches and responding to local pressure for more restrictions on pesticide residues.

Other important pesticide-use issues debated but left unresolved during the 102d Congress include: (1) the international harmonization of pesticide residue standards to facilitate trade, (2) greater regulation of the export of pesticide products not registered by the EPA, and (3) stricter controls of pesticides found to pollute ground water. Consumer and environmental groups generally favor the zero-risk standard, consideration of risks only (excluding benefits), and States' ability to impose tighter controls over pesticide use. They argue that any relaxation of standards puts consumers and the environment at risk, that there is still significant uncertainty involved in the science and technology of pesticide testing, and that cumulative effects of combinations of pesticides are unknown. In the absence of certainty, these interest groups argue for the safest course. Agribusinesses and farmer interest groups generally support a negligible-risk standard, benefit/risk methods of assessment, and national uniformity in tolerance levels for pesticide residues.

Agenda. Recent court decisions may force EPA to impose a zero-risk standard. Pesticides that do not meet the standard may have to be taken off the market. EPA has stated that strict implementation of the Delaney Clause would affect 35 chemicals used on 80 crops. EPA is considering further appeals of the court ruling. Several bills intended to directly affect food safety and pending in Congress could significantly change the pesticide registration process. The key issues addressed by the bills include: replacing the Delaney Clause with one of several possible negligible-risk standards, considering productivity benefits as well as risks when setting pesticide residue tolerances, allowing Federal pre-emption of State tolerances, streamlining the process for canceling and suspending registrations of cancer-causing pesticides, and banning exports of pesticides not registered in the United States. While these bills address the scientific aspects of food safety, their ability to increase consumer confidence in the food supply is unknown.

Information Sources. Carol S. Kramer, "Food Safety: The Consumer Side of the Environmental Issue," *Southern Journal of Agricultural Economics*, Vol. 22, No. 1, July 1990, pp. 33-40.

United States Department of Agriculture

Economic Research Service

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June 1993

Issues for the 1990's: FOOD AND NUTRITION

Food Sector Regulation: Organic Labeling

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Issue. Consumers rely on labels to identify organic foods. But, although nearly half the States have laws pertaining to organic labeling, there is no national definition of the term "organic". Thus, farmers and processors are producing products labeled organic using differing standards. Furthermore, many products grown with organic methods and labeled organic are not certified by any State or private certifying agent. This situation confuses consumers who want to know what they are buying. The 1990 farm act makes organic product definition and certification mandatory. The definition of organic that is adopted will have a strong effect on the organic food industry.

Context. With annual sales of over $1 billion (but still less than 1 percent of food sales), the organic food industry has become a noticeable component of our food system. Demand for organic foods is rising; sales are increasing through natural food stores and new chains of gourmet/health food supermarkets. Total demand is likely to be affected by the degree of consumer confidence in the organic label. At the present time, producers apply the organic label according to differing production requirements. Also, processed foods labeled organic contain varying proportions of organically produced ingredients. Many consumers associate organic with residue-free, but that is not guaranteed. The organic community generally prefers the image of organic to relate to production methods employed that are good for the environment. The 1990 farm act established a National Organic Standards Board (NOSB), which is responsible for making recommendations to the Secretary of Agriculture by October 1993 on national standards and policies for the production, marketing, and labeling of organic foods.

At Stake. Because organic products differ from conventional products by production practices that are unobservable at the point of purchase, consumers need a credible means to identify organic foods. To the extent consumers are willing to pay higher prices for organic products, there is occasionally a temptation to mislabel nonorganic products as organic. The Food and Drug Administration investigates intentional mislabeling, but with no legal definition of organic, investigations can be made only on a case-by-case basis. The establishment and monitoring of national standards for organic labeling will reduce the incentive for fraud, facilitate interstate commerce, help consumers make educated decisions when paying a price premium for organic products, and enable organic producers to differentiate their products from conventional products in the marketplace. However, there must be a balance between consumer and producer interests. Strict standards and an adequate level of monitoring for compliance would instill consumer confidence and likely expand demand, while strict production requirements, expensive testing, considerable paperwork, and costly certification fees would discourage producers from farming organically and limit production. There is a concern by the conventional food industry that the promotion of the organic label could cause consumers to question the safety of conventional products.

Alternatives. The NOSB must consider many options, including a specific definition of organic, in developing its recommended policies and standards for labeling organic products. For example:

(1) Should a USDA organic seal be established?

(2) What restrictions will apply to the organic label? Will labels be required on individual produce

items, or will a general label on a produce bin be sufficient?

(3) How must labels differ to illustrate varying proportions of nonorganic ingredients in processed products?

(4) What labeling restrictions will apply to wine made from organically grown grapes that contain sulfites from natural sources?

(5) What records will be required to demonstrate that the integrity of the organic product has not been compromised from farm to retail level?

(6) How will botanical pest controls, synthetic inert ingredients, genetically engineered inputs, and other inputs be regulated?

(7) If residue tolerance levels are set, at what level will they be set, and what will testing requirements be? Some argue that, by establishing residue tolerance levels lower than those allowed by EPA, an implicit food safety claim would be made.

(8) What requirements will be specified for segregated conventional and organic production within the same farming operation?

(9) Will an organic grower whose crops have been subjected to spray drift from neighboring conventional farming operations be decertified and, if so, for how long? Can legal recourse be sought by organic growers if economically harmed by spray drift?

(10) For how long will an organic grower whose farm had been subjected to a government emergency spray program be prohibited from selling the crops as organic? Will growers be expected to seek permission to substitute organic pest treatments for those mandated by government emergency spray programs?

(11) How will organic standards regulate synthetic feed supplements, pesticide use on feed crops, drugs used to treat sick animals, and livestock living conditions?

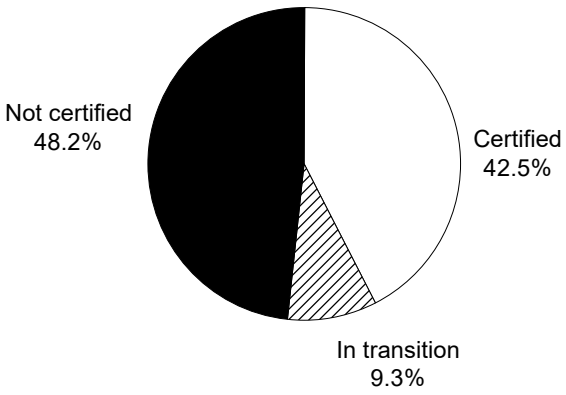
(12) How can harmonization with foreign country standards forestall an interruption in trade?

(13) How can monitoring of certifying agents for compliance be made cost effective?

Agenda. The NOSB is developing the standards and policies it will recommend to define organic so that USDA can implement the National Organic Production Program. Working committees have been established, and public comments have been solicited. After the NOSB presents USDA with its recommendations, USDA will develop draft regulations (which will also be available for public comment) and then issue final regulations.

Information Source. U.S. Senate, Committee on Agriculture, Nutrition, and Forestry, *Report of the Committee on the Food, Agriculture, Conservation and Trade Act of 1990*, U.S. Government Printing Office, 1990.

Certification of U.S. organic growers
Nearly half of U.S. organic growers are not certified.



Source: Study by University of California at Davis (results published in *Organic Times*, Summer 1991).

United States Department of Agriculture

Economic Research Service

Agriculture Information Bulletin Number 664-46

June 1993

Issues for the 1990's: FOOD AND NUTRITION

Food Sector Regulation: Nutrition Labeling

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Issue. Federal regulations issued in January 1993 will make nutrition labeling mandatory for most processed foods by spring 1994. Nutrition labeling may cause changes in food consumption patterns or product reformulation. How well consumers understand and apply the information on the new labels to choose a healthful diet will strongly depend on the success of public and private nutrition education activities. Critics question whether consumers will really use and benefit from the new labels. Timely assessment of the effect on consumer behavior and adequate oversight of industry implementation will also be important.

Context. Nutrition labeling is currently voluntary, becoming mandatory when a nutrition claim is made or, for FDA-regulated foods, when nutrients are added. USDA regulates labeling on meat and poultry products (more than 2 percent meat/poultry by cooked weight or more than 3 percent by raw weight); FDA regulates labeling on other products. Approximately 40 percent of FDA-regulated products and 4 percent of USDA-regulated products contain nutrition information. On November 8, 1990, Congress passed the Nutrition Labeling and Education Act (NLEA), making nutrition labeling mandatory for FDA-regulated processed foods, and voluntary for raw seafood and produce. In the interest of harmonization, USDA developed parallel regulations for meat and poultry products, published jointly with FDA's in January 1993. FDA regulations become effective May 1994, while USDA's become effective July 1994, although new labels will likely appear before then. The regulations change the required nutrients, define nutrient content claims (such as "light" and "reduced"), and list permissible health claims for FDA-regulated foods. Foods produced at the retail level, served in restaurants and other institutions, or in small packages, are exempt, provided a nutrition claim is not made. Small manufacturers are also exempt, with an estimated minor effect on the proportion of labeled processed meat and poultry products.

At Stake. The nutrition labeling efforts were based on the premise that consumers will use the new labels to change their food choices and, in particular, eat less fat. Using a model that estimates declines in mortality from coronary heart disease and cancer associated with reductions in fat intake, USDA and FDA estimated health benefits for the joint nutrition labeling regulations at over $6 billion over a 20-year period. There is much controversy, however, about the benefits consumers will actually derive from mandatory nutrition labeling. Critics question the assumptions that consumers will (1) read the labels, (2) change consumption and nutrient intake, and (3) experience less chronic disease. There are no hard data to support these assumptions, although a shelf-labeling experiment did show changes in food purchases. The benefits estimated above are conservative, and do not include (1) health savings associated with reduced cases of coronary heart disease, cancer, and other diet-related diseases, (2) any effects the NLEA's nutrition education efforts may have on label use and nutrient intake, and (3) benefits by consumers who do not read nutrition labels but who may benefit if manufacturers reformulate their products to improve their nutritional value. In addition, the estimates do not take into account nonconsumption benefits of mandatory nutrition labeling, such as increased consumer confidence in the quality of food and in the food industry. Costs of the joint nutrition labeling were estimated at $1.6-2.6 billion over a 20-year period. To minimize the burden on industry, manufacturers may use databases, rather than chemical analyses, to compute the nutrient content of foods.

Alternatives. Decisionmaking is required in the following areas:

(1) Development of nutrition education efforts. What should they address, and how should they be coordinated, funded, implemented, and monitored?

(2) Monitoring and evaluation of small business exemption. What will be the experience in practice, with respect to the burden on small businesses and information available to consumers?

(3) Changes in coverage. Although foods prepared away from home represent an increasing proportion of foods consumed, many are exempt from mandatory labeling (such as foods prepared at the retail level, or served in restaurants). If better databases become available, what would be the costs, benefits, and feasibility of mandating nutrition labeling for these foods?

(4) Determining the effectiveness of voluntary compliance. According to the NLEA, if compliance with FDA's voluntary nutrition labeling program for raw produce and seafood is low, it becomes mandatory. FDA must present a report every 2 years, beginning in May 1993, regarding the level of compliance with the voluntary nutrition labeling program. Results of the first survey of 2,000 stores, undertaken in December 1992, suggest that compliance is substantial, and there is currently no need to mandate nutrition labeling for raw produce and seafood. Similar USDA regulations stipulate that if participation is not significant in the voluntary program for raw meats, USDA will initiate proposed rulemaking to determine whether it would be beneficial to make it mandatory. USDA will issue its first report May 1995.

(5) Determining the level of reference values. FDA may initiate rulemaking after November 1993 to change the reference values (or daily value–DV) used on the new labels for comparing nutrient levels in foods. Should the new levels represent a minimum to protect against deficiencies, or a higher level, protective against chronic diseases? How will this affect product formulation? What mechanism is necessary for regularly updating the reference values, as new evidence for nutrient requirements becomes available and as population changes?

(6) Adjusting to changes in information and techniques. As new information becomes available, how will it be incorporated into the labels? Who decides what changes should be made, and when?

(7) Harmonization with other countries. Other countries may view the new regulations as a barrier to trade. To what extent will the new regulations affect international trade? Should the regulations be modified to be more consistent with other countries and facilitate trade?

(8) Determining the effect on product innovation. Will nutrient content definitions (such as "reduced fat") hamper product reformulation, and reduce manufacturers' incentives to reformulate? Will restrictions on allowable health claims discourage manufacturers from making product innovations in different areas of potential nutrition interest?

Agenda. USDA and FDA will soon define the term "healthy" and focus on educating consumers on using the new labels to change consumption patterns. First reports on compliance with the voluntary nutrition labeling programs are due in May 1993 (FDA) and May 1995 (USDA). FDA may initiate rulemaking after November 1993 to change nutrient DV's. USDA also plans to issue regulations about health claims, publish the codified language, and review its standards of identity to provide manufacturers with greater flexibility. Monitoring consumer use and understanding of nutrition labels, and changes in consumption patterns will be necessary to evaluate effects of label reforms.

Information Sources. *The Federal Register, Jan. 6, 1993* (2 books); also on computer diskettes, available from the Government Printing Office, and on the Federal Bulletin Board. Two U.S. Dept. of Agriculture, Economic Research Service, articles: B. Frazao and L. Lynch, "New Nutrition Labels for Consumers," *Agricultural Outlook*, July 1991 and E. Frazao and L. Lynch, "Food Labeling Regulations Changing," *Food Review,* Vol. 14, Issue 4, Oct.-Dec. 1991.

United States Department of Agriculture

Economic Research Service

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May 1994

Issues for the 1990's: FOOD AND NUTRITION

Evaluation of Nutrition Education Policy

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Issue. The U.S. Department of Agriculture (USDA) is the lead government department charged with providing nutrition education information. With a growing consensus on the link between diet and health on one hand and expansion of educational programs on the other, it is becoming increasingly important for USDA to critically assess and evaluate its nutrition education activities.

Context. Broad legislative authority for providing nutrition education and information by USDA originated in early acts of Congress, providing statutory sanctions for extension activities, such as the Organic Act of 1862 and the Smith-Lever Act of 1914, and more recent enactments, such as the National Agricultural Research, Extension, and Teaching Policy Act of 1977 and its 1981 and 1985 amendments. In addition, statutory authority is given by specific program enactments, creating nutrition education components in existing programs, such as the Special Supplemental Food Program for Women, Infants, and Children (WIC). Consequently, a minimum of five different USDA agencies conduct hundreds of nutritional education/information activities. One of USDA's most visible nutrition education efforts relates to the *Dietary Guidelines for Americans*, which was developed in cooperation with the Department of Health and Human Services. In 1991, an Ad Hoc Committee, appointed by the Human Nutrition Board of Scientific Counselors, recommended that evaluation activities expand beyond descriptive and qualitative assessments to more quantitative assessments that would result in obtaining positive, measurable changes in target groups' nutrition-related knowledge, attitudes, and/or behavior. Survey results, reports of food intake, and measures of health status would quantify the research.

At Stake. USDA support for nutrition education rose from $132.7 million in FY 1986 to $212.4 in FY 1992, an increase of approximately 60 percent. This represents an increase of approximately 19 percent in real dollars. Most of the funds for these activities are distributed to and managed by State agencies. As money on food assistance and nutrition education increases, it becomes increasingly important for USDA to objectively assess program effectiveness. USDA spent approximately $33.5 billion on food assistance in FY92. Effective nutrition education would help ensure that those funds actually contribute to recipients' health.

Alternatives. The Ad Hoc Committee cited a number of reasons why USDA agencies were not focusing more attention on quantitative/impact evaluations. In some instances, evaluation efforts were narrowly viewed as being program specific and frequently focusing on operational measures of performance, such as the number of clients contacted or brochures circulated, in keeping with the parent agency's management information needs. Other limitations cited were inadequate resources and staff expertise in communications and evaluation. Policy alternatives to address evaluation include:

(1) Status quo with little change in emphasis on program evaluation.

(2) Increase evaluation activities via increased funding or reallocation of program dollars. A redirection could strongly encourage agencies to provide measurable indicators.

(3) Alter program regulations. Currently, State and local agencies have considerable autonomy in terms of evaluation methodology employed. USDA agencies could require more objective evaluations

in programs that rely on State and local agencies to carry out program implementation. For example, they could require that all evaluation efforts conform to some minimum criteria and/or produce specified measures.

(4) Improve interagency cooperation and evaluation. It has been argued that agencies must move beyond their individual mandates and begin to develop cooperative, cross-cutting programs and activities capitalizing on the unique expertise in each agency. Improved cross-program coordination would contribute to the development of enhanced evaluation methodologies and educational materials. Cross-program evaluations could be designed to improve overall program assessments, and thus Department-level planning and program implementation.

Agenda. Although nutrition education may be a legislatively mandated component for certain USDA programs, no specific legislation exists that provides guidance on how the agencies should document the overall effect of their respective programs; none is expected. However, USDA agencies could specify evaluation in program regulations.

Information Sources. Annual Reports to Congress on USDA Human Nutrition Research and Education Activities, from 1986-91; Ad Hoc Committee Report to Human Nutrition Board of Scientific Counselors to Review Education Programs for USDA Nutrition Education Programs and Materials, Oct. 1991.

A daily food guide

Food group	Suggested daily servings from entire group
Milk, yogurt, and cheese	2-3
Meat, poultry, fish, dry beans and peas, eggs, nuts, and seeds	2-3
Vegetables	3-5
Fruits	2-4
Breads, cereals, and other grain products	6-11

Source: The USDA Food Guide in *Preparing Foods and Planning Menus Using the Dietary Guidelines*, HG-232-8.

United States Department of Agriculture

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September 1993

Issues for the 1990's: FOOD AND NUTRITION

Food Safety: Microbial Risks and Costs

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Issue. An estimated 6.5 to 33 million people in the United States become ill and 6,000 to 9,000 die each year from foodborne microbial pathogens. Meat, poultry, dairy, and seafood products are the foods most likely to contain contaminants. Microbial foodborne disease causes an estimated $2.5 billion to $3.4 billion in medical costs and reduced productivity to be spent each year for four major bacterial diseases and $2.6 billion each year for parasitic diseases.

Context. The U.S. food industry employs over 12 million people in processing and marketing products. Domestic food sales total $479 billion, of which $267 billion in sales are of meat, dairy, poultry, eggs, and seafood products. Sales of U.S. food abroad total $42 billion, of which $9 billion are animal and seafood products. The United States imports over $24 billion worth of all foods, including $9 billion worth of animal and seafood products. The National Academy of Sciences recommends that improvements be made in U.S. food safety.

Responsibility for ensuring food safety is currently shared among producers; processors/marketers; Federal, State, and local government agencies; and consumers. However, each group has limited information about the microbial safety of the food it sells, inspects, or buys since microbial contaminants cannot be detected by sight or touch and may escape government inspection using those techniques. The Federal inspection program and some processors have substantially increased the extent of laboratory testing for microbial contaminants, but overall data are still very limited.

In 1992, the Food Safety and Inspection Service (FSIS), which regulates meat and poultry inspection, issued a mission statement emphasizing a public health orientation and risk-based allocation of resources using the best science and technology. However, the system of inspection that has evolved under the current laws (the Federal Meat Inspection Act and the Poultry Products Inspection Act) includes many of the sight and touch inspection techniques that do not detect microbial contamination. Implementing a risk-based allocation of resources involves developing a database to better determine which specific pathogens (bacteria, parasites, viruses, fungi) cause the greatest costs and to identify which foods are associated with each pathogen.

Globalization of markets is expanding consumers' exposure to risky foods and focuses attention on the reliability of foreign inspection. Consumers are often unaware of the risks, do not take the risks seriously, or feel they can control the risks through cooking and good sanitation practices. However, safe food handling is not 100-percent effective in reducing risks.

The demand for safer food may be rising due to increases in income, in individual health awareness and responsibility, and in the pool of individuals at high risk for foodborne disease (the elderly, cancer patients, AIDS patients, and those with organ transplants).

Scientific information is attributing more human disease to contaminated food and is improving our ability to identify high-risk foods, production and preparation practices, and consumers. Modern technologies increase our capacity to reduce microbial disease risks, but also create new risks. For example, refrigeration prevents most bacterial pathogens from growing except cold-resistant ones, such as Listeria, which have time to grow during refrigeration.

At Stake. The tradeoffs between costs and benefits of most interventions to improve food safety are uncertain, yet such knowledge could provide valuable information for regulatory decisionmaking. Producers, government, consumers, and taxpayers could save several billion dollars each year if foodborne illness were reduced. Further, surveys suggest that some consumers, if informed about risks, will pay a premium for safer food products. Benefit-cost analysis found that public health benefits from reduced microbial contamination were greater than the costs of irradiating pork and chicken.

Alternatives.

(1) Continue the existing, legislatively based inspection system for meat and poultry.

(2) Augment or replace current FSIS inspection of meat and poultry that is based on sight and touch with more laboratory testing or other techniques to detect microbial contaminants and chemical residues at various points in the food production/marketing process. This approach could require new legislation.

(3) Consolidate all government food-inspection activities into one agency to simplify tracing contaminated food to its origin and implementing pathogen-control regulations at the most cost-effective point from farm to kitchen. Inspection activities are presently divided among the Animal and Plant Health Inspection Service, the Federal Grain Inspection Service, the Agricultural Marketing Service, and FSIS in the U.S. Department of Agriculture (USDA), the National Marine Fisheries Service in the Department of Commerce, and the Food and Drug Administration.

(4) Label all consumer packages of raw meat, poultry, seafood, and other foods likely to contain pathogens with safe handling and cooking instructions.

(5) Educate and raise public awareness through media campaigns, school curricula, training programs, and other projects about foodborne disease risks and safe food handling.

Agenda. Changes to the two laws that authorize USDA inspection may be proposed, which could lead to the adoption of any or a combination of the above options. Costs and benefits of specific regulations may be examined, such as those to ensure temperature control of pathogens by processors and retailers and new regulations to require safe food handling labels. Research continues on the best methods to estimate the value of food safety and cost effective interventions.

Information Sources. Tanya Roberts, "Human Illness Costs of Foodborne Bacteria," *American Journal of Agricultural Economics*, vol. 71, 1989. Nancy H. Bean, Patricia M. Griffin, Joy S. Goulding, and Cecile B. Ivey, "Foodborne Disease Outbreaks, 5-Year Summary, 1983-1987," Centers for Disease Control, *Morbidity and Mortality Weekly Report,* Mar. 1990. National Academy of Sciences, National Research Council, *Poultry Inspection: The Basis for a Risk-Assessment Approach*, Washington, DC: National Academy Press, 1987. Eileen van Ravenswaay and Sharon Bylenga, "Enforcing Food Safety Standards: A Case Study of Antibiotic and Sulfa Drug Residues in Veal," *Journal of Agribusiness,* 9: 39-53, 1991. Tanya Roberts and Peggy Foegeding, "A Survey of Estimated Risks of Human Illness and Costs of Microbial Foodborne Disease," *Journal of Agribusiness*, 9: 5-24, 1991. J.V. Bennett, S.D. Holmberg, M.F. Rogers, and S.L. Solomon, "Infectious and Parasitic Diseases," *Closing the Gap: The Burden of Unnecessary Illness*, 1987. W.E. Garthright, D.L. Archer, and J.E. Kvenberg, "Estimates of Incidence and Costs of Intestinal Infectious Diseases in the United States," *Public Health Report*, 103 (2):107-116, 1988. Seung-Youll Shin, James Kliebenstein, Dermot J. Hayes, and Jason F. Shogren, "Consumer Willingness to Pay for Safer Food Products," *Journal of Food Safety*, 13:51-59, 1992. S.D. Moss, R.L. Degner, and J.A. Zellner, "Consumer Attitudes toward Food Safety and Willingness to Accept Selected Bacterial Control Measures for Fresh Chicken," FAMRC Technical Report 91-1, Florida Agricultural Market Research Center, University of Florida, 1991.

United States Department of Agriculture

Economic Research Service

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Issues for the 1990's: FOOD AND NUTRITION

Pesticide Use and Fresh Produce Grades

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Issue. Federal grade standards for fresh fruits and vegetables have been criticized for specifying unnecessarily stringent requirements for external appearance. Critics, who believe this leads to greater use of chemical pesticides, allege that the emphasis on outward appearance hampers efforts to develop and establish markets for produce grown with no or fewer pesticides.

Context. Grading applies official standards to determine which grade designation is assigned to each particular item or lot. Federal grades play an important commercial role by helping buyers and sellers exchange information about produce quality. For example, more than three-fourths of the commercially traded potatoes, apples, pears, and sweet cherries are graded. Use of a single set of standards helps buyers and sellers compare offers and bids of several opposite parties. Buying by Federal grades also gives the buyer a basis for seeking redress if the produce does not meet standards for the grade specified in the contract. Sixty-four fresh vegetables (excluding seed potatoes and onion sets) and 25 fresh fruits (omitting duplicates for State-specific standards) have Federal grade standards.

Grade standards for fresh produce emphasize external attributes such as cleanliness, color, surface defects, and shape as well as internal attributes such as maturity and decay. Grade standards pertain to readily observable attributes to enable wholesale and retail buyers to enter into transactions without seeing the produce before delivery. Federal grades provide a convenient way to describe product attributes without having to specify separately each attribute. External attributes covered by grade standards may reveal much about internal quality characteristics, including extent of decay.

Critics of existing grade standards contend that grades convey information about many product attributes, but not about use of pesticides in producing and packing, or their residues. The grades consequently do not help consumers choose or express preferences for produce grown and marketed with reduced use of pesticides, or produce known to be low in pesticide residues. A grading system that describes appearance but does not consider pesticide use and residues may lead growers and packers to apply more pesticides than they would if consumers' preferences regarding pesticides were fully communicated in the grades and standards.

Little evidence is available regarding effects of grades on pesticide use. Pesticides may limit quality degradation for some produce items. However, many pesticides increase yield as well as quality (as measured by grades) and the effects are not easily separated. The Environmental Protection Agency (EPA) sets safety standards for pesticide use and residues in food, and the Food and Drug Administration (FDA) monitors pesticide residues and enforces compliance.

At Stake. Consumer preferences, satisfaction, and safety of food products are ultimately at stake. Reducing pesticide use would in some cases increase the share of produce with blemishes and other appearance defects, and reduce per acre yields. Higher prices resulting from higher production costs and reduced production would elevate consumer food expenditures. Acceptability of blemished produce to consumers is a key unknown. Results of several surveys suggest that consumers are willing to accept some types of surface defects, but not all.

Alternatives. Specific policy alternatives include:

(1) Make no change in standards (status quo).

(2) Establish lower standards in external appearance.

(3) Modify standards to include information about pesticide use during growing and packing, and their residues.

(4) Add a pesticide testing and monitoring program separate from grades and standards and FDA's efforts.

Some consumers might experience shortrun difficulties obtaining produce with desired appearance attributes if standards for external appearance were lowered. This would not preclude marketers from developing alternative mechanisms, including expanded use of brands and business contracts specifying attributes, to deliver produce with appearance attributes that consumers desire. Higher prices for such produce likely would eventually be passed back to growers, encouraging pesticide use to limit appearance defects. Consequently, pesticide use might not change much. Those growers and marketers who can use brands to help consumers identify produce with desired attributes probably would gain market share.

Grade standards that help consumers choose produce with lower pesticide residues than EPA deems safe could be based on: (1) measuring and reporting pesticide residues or (2) monitoring pesticide use from the field through marketing. Either approach would cost more.

A pesticide testing or monitoring program might be separate from the existing grading program. Such a program could be voluntary like the organic produce certification program. A voluntary program would avoid testing or monitoring costs for any produce not covered. Consumers who are satisfied with the existing grading standards and EPA's pesticide tolerances would be spared the added costs. Some retailers now are testing produce for selected pesticide residues. These testing efforts are not uniform, which might confuse consumers.

The extent to which a pesticide testing or monitoring program would change the composition of fresh produce purchases depends on consumers' sensitivity to health and environmental risks, price differences, and product quality differences. Such a program might enable those consumers who are most concerned to lower or avoid use of commodities produced under practices relying on pesticides. Some consumers might willingly pay more for pesticide-free produce or produce grown and marketed with reduced pesticides purely for reducing environmental risks. However, if the program were voluntary, many consumers who prefer visually attractive produce but are sensitive to higher prices would likely continue to buy produce which is not tested or monitored for pesticides and which sometimes contains pesticide residues within EPA's tolerances.

Agenda. The 1990 farm act requested the Department of Agriculture to explore whether high standards for outward appearance encourage pesticide use. The Agricultural Marketing Service (AMS), which has administrative authority to specify and modify grades and standards, has held public meetings soliciting views of advocates, industry, and scientists on grades and pesticide use. AMS also has contracted with an independent firm to study this issue for selected commodities.

Information Source. Contact authors of this paper.

United States Department of Agriculture

Economic Research Service

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August 1993

Issues for the 1990's: FOOD AND NUTRITION

Changes in the Food Stamp Delivery System

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Issue. Decisions concerning the structure of the Food Stamp Program (FSP) affect program participation and benefits and, thus, budget outlays. These decisions include the form and level of benefits, eligibility criteria and verification procedures, the payment and benefit delivery mechanism, and employment and training requirements. Current issues involving possible FSP structural change include: (1) eligibility criteria for the FSP, (2) the appropriate level of food assistance, and (3) alternatives to the coupon system for delivering FSP benefits.

Context. The Food Stamp Program provided $20.9 billion in benefits to an average of 25.4 million participants per month in FY 1992. Since 1988, participation has grown rapidly, with recipients increasing by slightly more than a third. During an average month in 1992, about 10 percent of Americans were enrolled, a historic high. While the Federal cost of operating the program has fallen to about 7 percent of the provided benefits, compared with 10 percent in the late 1980's, rapidly increasing FSP participation has created pressures on administrative facilities, making it more difficult to monitor for losses or diversion of benefits.

At Stake. Alternatives to the coupon system, such as a special "credit card" system or government checks, are designed to lower the administrative cost, at least in the long run. These alternatives may also reduce the stigma associated with coupons which would encourage currently eligible nonparticipants to enroll, increasing budget outlays. The alternative methods of delivering FSP benefits also provide a means to reduce fraud associated with coupons. Proponents of the current system, however, claim that coupons directly link the program to food and that food stamps help low-income households budget for food.

Alternatives. Benefits are currently paid to recipients via coupons redeemable at authorized food stores for certain food items. Retailers treat coupons as cash and are paid through the banking system. Two alternatives have been suggested. One alternative is an electronic benefit transfer (EBT) system, which credits benefits to an account set up for the recipient. Payment at the checkout line is made by the recipients using a plastic card and an individual password. EBT is an operational alternative authorized in the Food Stamp Act. A second alternative is to "cash-out" the FSP by providing benefits such as cash (government check) instead of coupons. Cash-out is currently authorized for only a limited time in certain demonstration projects and in related assistance programs in some U.S. territories.

EBT has gained widespread support. Demonstration projects have shown this technology to be feasible, but with high initial capital costs. EBT automates many of the auditing functions done manually in the coupon system, and therefore can be more easily adapted to a growing caseload. Regulations permit Federal funding EBT systems up to the current level of Federal administrative costs. States must shoulder any additional costs.

Cashing out is more controversial. This reform would distance the FSP's association with food. Evidence from recent demonstration projects suggests that cashing out reduces household food expenditure, but the extent remains uncertain. There is some evidence that cash-out reduces the availability of a few nutrients due to changes in household food supplies. It is not clear, however, that

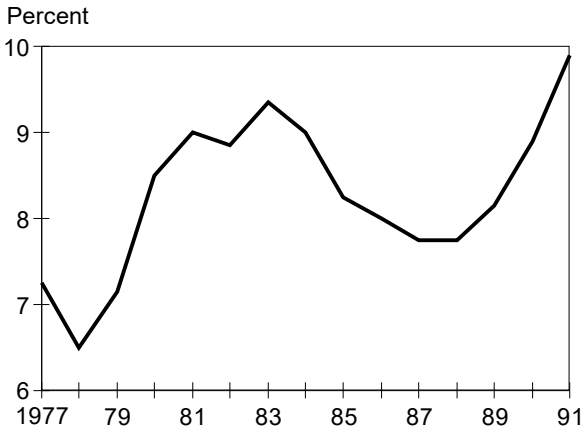
households receiving checks are at a significantly greater nutritional risk. More work is needed to assess effects on administrative costs, the retail community, and participation rates.

Agenda. Maryland has implemented a statewide EBT system. Other demonstrations are underway in Pennsylvania, New Mexico, New Jersey, Iowa, and Minnesota. South Carolina, Texas, and Wyoming are expected to award contracts for EBT development during 1993.

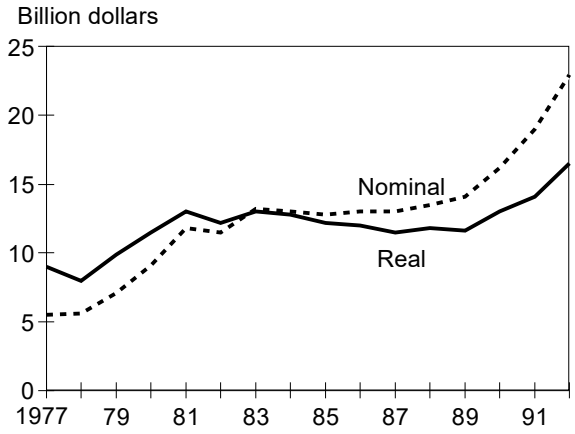
USDA's Food and Nutrition Service has no plans to convert any of the cash-out demonstrations to permanent operations.

Information Sources. Four U.S. Dept. of Agriculture, Food and Nutrition Service, bulletins: *Food Assistance Programs*, 1992; *Electronic Benefit Transfer in the Food Stamp Program: The First Decade*, Mar. 1992; *The Effects of Cash-Out on Food Use by Food Stamp Program Participants in San Diego*, Dec. 1992; and *The Evaluation of the Alabama Food Stamp Cash-Out Demonstration*, Sept. 1992.

Food Stamp Program participation as a percentage of population
Participation has risen sharply since the late 1980's.



Real and nominal Federal expenditures on the Food Stamp Program
Program expenditures are on the rise.



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August 1993

Issues for the 1990's: FOOD AND NUTRITION

Multiple Participation in Domestic Food Assistance

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Issue. The foundation of USDA's domestic food assistance is the Food Stamp Program (FSP), available to all individuals of limited finances. There are also smaller programs primarily targeted to high nutritional risk subpopulations such as pregnant and nursing women, infants, children, and the elderly, as well as food assistance through such alternative channels as soup kitchens. People may participate in more than one program because there is overlap in targeted populations among the programs.

Context. The FSP accounts for about two of every three Federal food assistance dollars. It is available to anyone who meets certain income and asset restrictions. However, not all eligible people participate. The maximum monthly benefit is based on the cost of USDA's Thrifty Food Plan, a low-cost, nutritious, and palatable plan designed to meet most basic food needs. Actual benefits are determined on a sliding scale depending on household size and income. In FY 1992, about 25.4 million persons received food stamp benefits, averaging $69 per person per month.

Other more targeted food assistance programs include food distribution programs (Commodity Distribution to Charitable Institutions, Commodity Donations to Soup Kitchens and Food Banks, Nutrition Program for the Elderly, The Emergency Food Assistance Program, Commodity Supplemental Food Program, and Food Distribution Program on Indian Reservations), child nutrition programs (National School Lunch Program and School Breakfast Program, Special Milk Program, Child and Adult Care Food Program, and Summer Food Service Program), and the Special Supplemental Program for Women, Infants, and Children. Participation in the FSP does not preclude eligibility in these targeted programs, which typically have less restrictive income eligibility requirements than the FSP. For example, FSP restricts income eligibility to gross income of 130 percent of the poverty threshold and net income less than 100 percent of the poverty threshold, while the Special Supplemental Program for Women, Infants, and Children allows up to 185 percent of the threshold. The National School Lunch Program and School Breakfast Program provide free meals to those with household income below 130 percent of the poverty threshold and reduced-price meals to those between 130 and 185 percent of the poverty threshold.

The table illustrates examples of the potential for multiple program participation and overlap of benefits. For example, a household of two adults, a 10-year old, and a 9-year old without income is potentially eligible for $5,684 per year in food assistance, including $4,440 in food stamps and $1,244 from other programs. This household could receive a 28-percent increase over its FSP benefits. The table illustrates other households that could receive a greater benefit increase. Of course, total benefits depend on the household's participation decision, income, and deductions, and will typically be less than the maximum benefits depicted in the table.

At Stake. It is unclear whether or not multiple program participation indicates unnecessary benefit duplication. More work is required to assess the extent of multiple program participation and associated budget costs and nutritional and health benefits. It is easy to determine potential overlap by examining program regulations, but no one knows the current extent of overlap in participation and benefits levels. The most recently available published data are from the 1984 Survey of Income and Program Participation conducted by the Census Bureau. These data suggest that about half of all FSP

households participated in other food assistance programs. About 44 percent participated in the National School Lunch Program and 9 percent participated in the Special Supplemental Program for Women, Infants, and Children.

A major consideration in the evaluation of program overlap is an assessment of the adequacy of food stamp allotments. If FSP allotments are deemed adequate to meet the needs of all households, then program overlap could be wasteful. On the other hand, if allotments are deemed inadequate, then multiple program participation might provide a necessary supplement for household members, such as infants at risk of malnutrition. Benefits from supplemental programs may or may not reach the intended family member. Thus, some assessment of the effectiveness of alternative benefit delivery mechanisms to target individuals at risk is also needed. Also unknown is the number of needy people who do not participate in the FSP (homeless, disabled, and others) who might be reached by distribution programs. The ability of food programs to meet individual needs and to target benefits to the appropriate recipients must be weighed against the efficient use of tax dollars.

Alternatives. If warranted, legislation and regulations could be written to prevent multiple program participation, adjust benefit levels, or consolidate programs.

Agenda. The FSP is likely to be reviewed during the 1995 farm bill debate. However, the philosophical idea of food program consolidation is a part of the more general concept of consolidation of welfare programs, debated for many years. More analysis is needed to assess the extent of multiple program participation and associated costs and benefits.

Information Sources. Two U.S. Dept. of Agriculture, Food and Nutrition Service, bulletins: *Multiple Program Participation Among Food Stamp Recipients*, 1988, and *Food Assistance Programs*, 1992.

Examples of potential multiple program participation and overlap of food assistance benefits
Benefit overlap may exceed 44 percent for some households.

Program	Household composition [1]		
	Two adults (male/female), one 9-year old, and one infant	Two adults, one 10-year old, and one 9-year old	Adult female, one 10-year old, one 9-year old, and one infant
	Annual benefits (dollars)		
Food Stamp Program	4,440	4,440	4,440
National School Breakfast Program [2]	179	357	357
School Lunch Program [2]	346	692	692
The Special Supplemental Program for Women, Infants, and Children [3]	720	0	720
The Emergency Food Assistance Program	195	195	195
Total	5,980	5,684	6,404
		Percent	
Benefit overlap (percent of FSP)	32	28	44

[1]Assumes no household income and program data as of January 1993. [2]Each free school breakfast and lunch is reimbursed $0.945 and $1.83, respectively, including $0.14 in entitlement commodities. If the average number of school days is 189, a child can receive benefits valued at $179 and $346, respectively. [3]Food costs only. Includes mother and infant.

United States Department of Agriculture

Economic Research Service

Agriculture Information Bulletin Number 664-71

March 1994

Issues for the 1990's: FOOD AND NUTRITION

WIC Program Expansion

David M. Smallwood (202) 219-0864

Issue. The Clinton Administration has requested increased funding for the Special Supplemental Food Program for Women, Infants, and Children (WIC) over the next several years to allow participation by all targeted individuals. While support for increased funding is strong, it is likely to raise a number of program operation issues. These issues arise from differences in income and nutritional risk criteria used for eligibility, food benefit distribution methods, and tailoring of food packages among States. These operational differences have evolved over the years in an effort to maximize program effectiveness with limited funds. Additional funds are likely to exert pressure for more uniformity among States.

Context. The WIC program provides supplemental foods, health care referrals, and nutrition education at no cost to low-income pregnant, breastfeeding, and nonbreastfeeding post-partum women, and to infants and children up to 5 years of age who are found to be at nutritional risk. The Food and Nutrition Service (FNS) provides grants to States to provide food benefit packages and services under general guidelines. To maximize program effectiveness, participation is rationed based on nutritional risk criteria. Those at higher risk, such as pregnant women and infants, are given higher priority and those at lower nutritional risk, typically children and nonbreastfeeding post-partum women are given lower priority.

The WIC program has been one of the most popular and successful domestic food assistance programs, in part, due to the targeting of the benefit package and the participants. A 1990 U.S. Department of Agriculture (USDA) study found that each dollar spent through WIC on very-low-income pregnant women participating in Medicaid saved the Federal Government between $1.77 and $4.75 in Medicaid costs for newborn children and their mothers. Definitive studies on the benefits for children are not available, but few argue with the overall success of the program.

States are allowed some flexibility in income and nutritional risk eligibility criteria, tailoring of food packages, and alternative channels of benefit delivery. All but two States use the maximum income eligibility criteria, provided by Federal regulations, of 185 percent of the poverty level. The food items provided include milk, cheese, fruit/vegetable juices, infant formula, eggs, cereals, dried peas and beans, and peanut butter. Although FNS establishes the maximum prescribable amount of each food by regulation, actual food packages may vary within approved limits. Additionally, the method of food benefit distribution varies among States. Some States provide commodities directly, while others provide vouchers for redemption at retail outlets. The vouchers may restrict purchases to particular brands or container sizes, as is the case with infant formula, or specific varieties of fruit/vegetable juice.

During the past decade, program funding and participation have increased sharply. Since 1982, participation and budget have increased 148 percent and 188 percent, respectively. Even with this rapid growth, however, the program's budget level does not allow all eligible individuals to participate. As a consequence, States have undertaken a number of cost-saving measures. Between 1988 and 1993 the average cost of a WIC food package declined from $33.28 per person per month to $29.82, while the Consumer Price Index for food at home increased over 20 percent. The major cost-saving measure has been the negotiation of infant formula rebates in all States. In 1992, rebates averaged $1.52 per 13-ounce can of concentrated formula.

At Stake. The FY 1994 WIC budget is $3.21 billion, up 12.2 percent from 1993. The FY 1995 budget proposal provides for continued expansion. The actual cost of full funding for WIC is likely to be a moving target and difficult to project. Estimating the eligible population has always been difficult due to the combined income and nutritional risk criteria. In 1991, overall program coverage was estimated to be about 60 percent. In particular, about 85 percent of eligible pregnant women and 90 percent of eligible infants participate. Young children will benefit the most from program expansion.

The effect of potential changes in program operations is unknown. Increased funding may reduce some cost containment activities currently undertaken by States. For example, those with stricter income and nutritional risk criteria may become more lenient. Food packages may also change and become more standardized.

Major factors to be considered in WIC expansion include:

(1) the nutritional status of low-income women, infants, and children;
(2) the ability of WIC to reduce Medicaid and other health care costs as a tradeoff;
(3) the budget deficit; and
(4) differences in program operations among States.

Alternatives. Some argue that WIC food benefits provide the incentive for the targeted at-risk population to participate in medical care programs and that it is the medical care which provides the biggest benefit to program participants. If recipients consider medical care more important than food supplements, a program focusing on care might provide more benefits or alternative incentive mechanisms might be investigated.

Expanded funding for WIC would allow increased participation of eligible nonparticipants. This group is comprised mostly of children 1-5 years of age. If the program is expanded, policymakers may also want to address the issue of variation among State WIC programs and make the programs more uniform nationwide.

Agenda. The 1994-97 budgets provide for WIC expansion. How regulations will address the issue of program variation among States and its implications for program costs is uncertain.

Information Sources. U.S. Department of Agriculture, Food and Nutrition Service. *Food Assistance Programs,* Program Information Report (Keydata), Sept. 1993, and B. Devaney, L. Bilhmeimer, and J. Schore, *The Savings in Medicare Costs for Newborns and Their Mothers from Prenatal Participation in the WIC Program*, FNS study conducted by Mathematica Policy Research, Washington, DC, 1990.

WIC program costs and participation levels, fiscal years 1980-93

Fiscal year	Participation level	Total cost	Average food cost per person/per month
	Number	*Million dollars*	*Dollars*
1982	2,189,031	948.0	28.78
1983	2,536,963	1,123.4	29.62
1984	3,044,772	1,386.0	30.58
1985	3,137,986	1,487.6	31.69
1986	3,311,670	1,580.5	31.82
1987	3,429,412	1,677.6	32.68
1988	3,592,833	1,795.4	33.28
1989	4,118,575	1,906.0	30.14
1990	4,516,870	2,115.6	30.20
1991	4,892,630	2,301.1	29.80
1992	5,427,311	2,597.7	30.07
1993	5,919,101	2,818.5	29.82

United States Department of Agriculture

Economic Research Service

Agriculture Information Bulletin Number 664-72

May 1994

Issues for the 1990's: FOOD AND NUTRITION

Changes in Commodity Distribution and Food Assistance Programs

Masao Matsumoto (219-0864)
David Smallwood (219-0864)

Issue. The U.S. Department of Agriculture (USDA) currently spends nearly $1.4 billion each year to purchase, store, and transport commodities for distribution to schools, other institutions, and needy persons as an integral part of domestic food assistance programs. Commodity distributions were conceived to fulfill agricultural and nutritional assistance goals. However, recent concerns about budgetary costs, farm policy, consumer choice, and nutrition assistance objectives have raised questions as to the most effective mechanisms for achieving these sometimes competing goals.

Context. Commodity distribution programs originated in the 1930's as a means to distribute surplus farm commodities acquired through government price stabilization and farm income support programs. The intent of these programs was twofold: (1) to remove price depressing surpluses from the market and distribute them through channels that would not interfere with normal commercial sales and (2) to provide nutritious foods to children and needy persons.

The Federal Government uses three basic funding mechanisms to distribute commodities to the various assistance programs: (1) budget appropriations, which allow foods to be purchased as necessary for specific programs; (2) funds legislated by Section 32 of the Agricultural Adjustment Act of 1935, which appropriate 30 percent of the import duties imposed on all commodities (agricultural and nonagricultural) to purchase surplus nonbasic perishable commodities other than corn, cotton, peanuts, rice, tobacco and wheat; and (3) Section 416 of the Agricultural Act of 1949, which permits the Commodity Credit Corporation (CCC) to donate uncommitted surplus commodities from price support programs to the food assistance programs. These foods are primarily distributed to schools but are also distributed through other programs.

There are two types of commodities: entitlement and bonus. Entitlement commodities are commodities procured with appropriated funds and required by program regulations. For example, annual School Lunch Program legislation mandates that each participating school will receive commodities valued at a prespecified level for each meal served. Entitlement commodities accounted for about three-fourths of the value of all commodities distributed in FY 1992. Bonus commodities are surplus or price-support commodities that are donated to feeding programs in addition to the entitlement commodities. By definition, bonus commodities cannot be assessed against the level of entitlement and in this sense are net increments in program benefits. Surplus commodities are perishable nonbasic commodities purchased by USDA, usually with Section 32 funds, to stabilize prices in markets that are depressed by short-term or seasonal phenomena. Price-support commodities are acquired by the CCC as necessary to support minimum price levels for specified commodities.

The Child Nutrition Programs (CNP) are the largest outlet for USDA commodities. Entitlement and bonus commodities valued at $736 million were distributed in FY 1992 (see chart). The Emergency Food Assistance Program (TEFAP), which provides donated foods to families and individuals, is currently the second largest commodity-based assistance program. In 1992, TEFAP distributed only $191 million worth of food.

At Stake. Some 30-40 million persons comprising between 12 and 16 percent of the population receive direct benefits from the commodity distribution programs. The National School Lunch Program (NSLP) alone serves over 25 million children. In addition, the commodity distribution programs support producers of over 50 domestic food commodities.

The broad objectives of price stabilization and income support for farmers and nutrition assistance for consumers often conflict with one another. Since USDA and the recipient States must pay for transporting, handling, and storing the surplus foods, critics of the programs cite the added costs of distributing surplus commodities as counterproductive. Some of these costs may be underestimated because expenditures for such services are not explicitly included in the annual budgets. As such, these programs may not represent the most efficient means of delivering nutrition assistance to the needy. Further, these critics argue that specifying the kinds and amounts of food that will be delivered to program recipients represents an unwarranted and unnecessary intrusion into the decisionmaking functions of the individual and often conflict with the nutrition objectives. In addition, the availability of commodities, particularly bonus commodities, for use in nutrition programs is often subject to the uncertainties in particular commodity markets.

Supporters maintain that the present programs provide beneficial assistance to needy people who may not have access to food from other channels. The commodity distribution programs provide a useful outlet for surplus commodities that would otherwise be wasted. This is especially true of the bonus commodities that are distributed each year. As long as the Federal Government must acquire farm commodities as a means of stabilizing prices and supporting farmer income, distribution of such commodities through food assistance programs represents an economical and humanitarian means to prevent waste and improve nutrition.

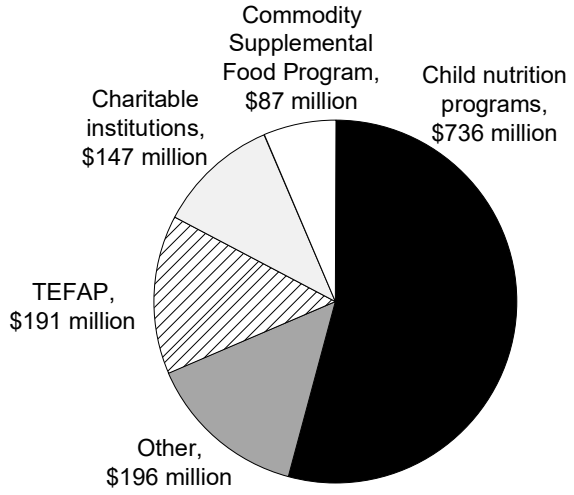
Alternatives.

(1) Make no changes; keep the programs operating at the present rate.
(2) Change the amounts and kinds of commodities purchased.
(3) Change the mix of commodities to more closely meet the needs or desires of the recipients.
(4) Change the administrative or operational functions of the commodity procurement and distribution programs.

Agenda. To change either the method of delivering benefits to recipients or the annually prescribed level of entitlements in the commodity distribution programs would require congressional action and also revision of USDA regulations. Congress must initiate changes in the program charters or revise its annual appropriation bills in order to increase or decrease the total amounts of entitlement commodities distributed. However, the distribution of bonus and the mix of entitlement commodities is not subject to congressional review and can be varied within a wide range of latitude by the Secretary of Agriculture.

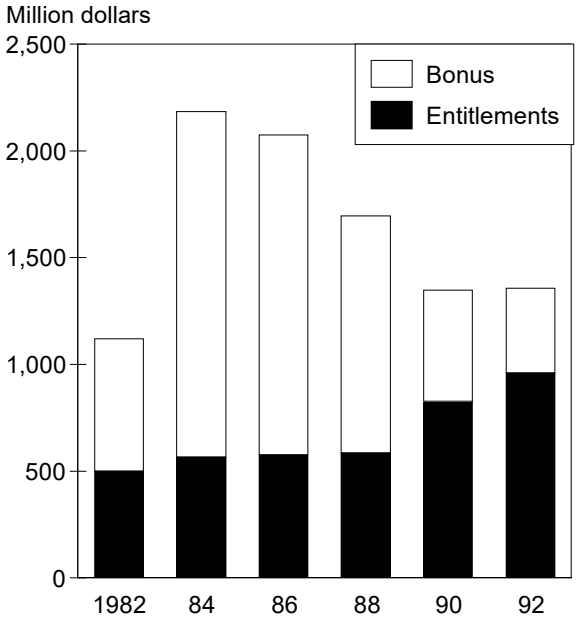
Information Sources. Two U.S. Dept. of Agriculture, Food and Nutrition Service, Program Information Division reports: *Program Information Report*, monthly, and *Food Program Update*, quarterly.

Value of commodities distributed, by program, FY 1992
Child nutrition programs represented nearly 60 percent of the total value of USDA-distributed commodities.



Total for all commodities = $1.357 billion

Value of commodities distributed, 1982-92
Bonus commodities declined as entitlements rose.



United States Department of Agriculture

Economic Research Service

Agriculture Information Bulletin Number 664-9

April 1993

Issues for the 1990's: RURAL ECONOMY

Financial Market Intervention

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Issue. Affordable financing is an important factor in a firm's long-term investment decisions and its day-to-day operations. Adequately financed businesses can adjust to market and technological developments in ways that increase productivity and spur development. Rural financial markets appear to meet the needs of most established rural businesses. But startup businesses, and even mature businesses in some localities, may face financial constraints. The right combination of government-sponsored programs can help alleviate their financing problems, leading to increased investment and rural job growth.

Context. Rural financial institutions and markets have become increasingly integrated with national and international financial markets over the past three decades. But, for the typical small business, financing is still available only from financial service providers having a physical presence in the borrower's community. Since rural communities have few lenders and investors, rural businesses have fewer alternative sources of financing than do their urban counterparts, a particularly vexing problem if local banks and private investors cannot meet a small business firm's financing needs.

Surveys of small businesses indicate that both urban and rural firms are generally satisfied with their access to credit. But research has also shown that entrepreneurs and new firms still in the startup process face severe financing constraints. Regulations imposed to ensure the safety and soundness of the banking system and traditional behavior discourage banks from providing business capital to firms that are not well established. And, a limited supply of investor financing in rural communities means that the vast majority of new businesses must be self-financed. In addition, even well-established creditworthy firms in certain markets may face credit constraints. Small firms located in rural communities served predominantly by large financial institutions may have trouble accessing credit since large banks prefer to make large loans. Conversely, larger firms (but not large enough to directly tap regional financial markets) and firms in a rural community's dominant industry may have trouble finding credit if the area is served by only small lending institutions, which have to be concerned about loan portfolio diversification.

Rural startup businesses having difficulty accessing debt or equity financing are particularly disadvantaged. Formal seed and venture capital funds operate almost exclusively in urban markets where information and transaction costs are minimized. And, rural financial institutions are less likely to take advantage of the risk-sharing financing tools that urban banks use to make risky lending opportunities more attractive. Small rural banks are less likely to originate guaranteed loans, sell loans or loan participations, or refer their customers to other financial service providers. As a result, deals that might be made in a highly competitive urban market are less likely to be made in rural areas.

At Stake. Because of the small size of most rural communities, local financial markets are less competitive than those in urban communities. Investment and job generation in rural America will be slowed if this lack of competition leads to a disparity in access to credit. New business ventures are most likely to be affected, but even well-established firms in certain rural markets may not be able to take full advantage of investment opportunities because of credit constraints. Efforts to foster a vibrant rural economy will be far less successful if the financing needed for worthwhile business opportunities is not forthcoming.

Alternatives. Radical changes in the way credit is allocated are not called for since the existing financial system appears to work well for most businesses seeking debt financing. But, the Federal or State governments can take several steps to improve the operation of rural financial markets. Problems often center around an inadequate exchange of information between borrowers and lenders, and from underuse of alternative sources of funding and mechanisms for distributing risk. Government programs aimed at improving the ability of entrepreneurs and small business owners to prepare realistic business plans and loan applications could reduce loan denials. Other programs that help small banks to evaluate loan requests from new and unfamiliar businesses and to use loan participation arrangements could increase the flow of funds to riskier applicants and to applicants that might wrongly be considered risky. Government support for an information clearinghouse, providing rural bankers with both technical information and easy access to expertise, could help. Easing paperwork and other requirements of loan guarantee programs, such as those operated by the Small Business Administration and the Farmers Home Administration, might also increase their appeal to lenders, making credit more available to riskier loan applicants.

The current system does not always work well for new businesses or rapidly expanding firms needing equity financing in rural areas. Lack of information on alternative sources of financing often discourages rural firms from seeking equity capital. Government support for an information exchange that matches potential investors with prospective entrepreneurs could help. In addition, government-financed seed or venture capital programs specifically aimed at assisting rural businesses could be considered. Most private and public equity funds concentrate their activities in urban areas where fast-growth, high-tech firms are easily found. Public programs aimed at fostering long-term growth in emerging rural industries are rare. Rural areas could benefit if federally assisted small business investment corporations were encouraged to make more equity investments in startup firms rather than making collateral-based loans to existing businesses. Revolving loan funds, which use government appropriations to attract private financing, can also be helpful, particularly if they are chartered to assist new firms. A number of Federal programs provide grants or low-interest loans to help capitalize revolving loan funds, but these funds usually assist expanding businesses rather than startup firms.

Steps encouraging heightened competition within rural financial markets could also benefit rural businesses and residents. Relaxed branching restrictions for banks operating within the State could lead to more competitive rural bank markets in some States. Recent steps to broaden the lending authority of rural electric and telephone cooperatives and the Farm Credit System could eventually increase competition among rural lenders as well. Changes in lending authority need to be carefully considered, however, to ensure that unfair advantages do not ultimately reduce competition in local financial markets. Greater use of Federal and State guaranteed loans and revolving loan programs could further increase interbank competition by encouraging rural lenders to broaden the geographic size of their service areas. As the number of potential lenders increases, rural businesses should find it easier to obtain financing.

Agenda. Proposals have been made to establish a network of privately owned community development banks to lend to new and expanding businesses, and for a small business technical extension service, modelled after the agricultural extension service, to give small businesses easy access to technical expertise. Legislative proposals to allow interstate bank branching and allow the Farm Credit System to begin making loans to rural nonfarm businesses are also expected.

Information Sources. Three U.S. Dept. of Agriculture, Economic Research Service reports: James J. Mikesell and Felice S. Marlor, *Nonmetro, Metro, and U.S. Bank-Operating Statistics, 1990*, SB-846, 1992; Daniel L. Milkove and Patrick J. Sullivan, *Deregulation and the Structure of Rural Financial Markets*, RDRR-75, 1990; and Clifford Rossi, *Rural Conditions and Trends, Special Report on Financial Institutions and Markets*, 1991. Also see: G. Rogers, R. Shaffer, and G. Pulver, "The Adequacy of Capital Markets for Rural Nonfarm Businesses," *The Review of Regional Studies*, Vol. 20, No. 3, Fall 1990.

United States Department of Agriculture

Economic Research Service

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Issues for the 1990's: RURAL ECONOMY

Value-Added Agriculture as a Growth Strategy

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Issue. Many rural areas faced with a declining number of farm jobs consider the food processing sector as a source of potential income and employment growth. By adding value to farm products, the food processing sector is seen by some analysts as a key element of a rural growth strategy.

Context. In 1992, food processing in the United States employed 1.7 million workers in some 20,000 establishments. The sector accounts for 1.3 percent of all jobs and 2.1 percent in nonmetro areas. The food processing sector is small, compared with the farm sector, with 2.5 farm production jobs for every food processing job. The food processing sector, which is quite diverse, comprises 46 food and beverage manufacturing industries, including meatpacking, fruit and vegetable processing, distilling, breadbaking, and ice manufacturing. But, the sector is also highly concentrated, with just seven industries (poultry processing, bakeries, red meat packing, bottled and canned soft drink manufacturing, sausage production, fluid milk production, and miscellaneous food preparations) accounting for more than half of total employment and just under half of all establishments.

Employment in the food processing sector declined 1.7 percent during the 1980's. There is much diversity among food processing industries, in terms of employment changes. Fifteen industries increased employment in the 1980's while 31 experienced losses. Poultry slaughtering and processing gained the most jobs (43,500), followed by miscellaneous prepared foods (16,300). In contrast, the bottled and canned soft drinks industry and red meat packing lost the most jobs (28,500 and 18,800). Sixty-nine percent of all food processing jobs are located in metro counties. Nonmetro food processing jobs are concentrated in just nine industries, which account for two-thirds of all employment.

Nonmetro counties gained nearly 40,000 food processing jobs during the 1980's while metro areas lost 80,000, suggesting some interest on the part of food processors in locating new establishments in nonmetro areas. Nonmetro employment growth in the food processing sector occurred primarily in the poultry slaughtering and processing industry (26,700 jobs) and to some extent in sausage production (7,700), red meat packing (6,800), and the miscellaneous prepared foods industry (6,300). The large-scale growth in the poultry processing industry is due to low-wage labor and a favorable climate in the Broiler Belt (Delmarva Peninsula, the Southeast, Arkansas, and Texas). Nonmetro employment growth in red meat packing during the 1980's was partly caused by a large-scale expansion in the fed cattle industry in the Central and Southern Plains, and an associated decline in processing activity in Corn Belt metro counties.

At Stake. Some rural areas have good prospects for attracting new food processing plants or expanding employment in existing plants. However, reliance on the food processing sector as a critical source of employment growth in the 1990's is likely not a viable option for most local and State economies. No significant employment increases are expected in the sector during the 1990's, partly due to widespread industrial restructuring in food processing during the 1980's. Any gains by rural areas will probably have to come about through intense competition with older, more-established industries in metro areas. Indeed, the process of restructuring, in which many industries underwent mergers and acquisitions and replaced labor with capital investment, has raised questions about the fundamental stability of the sector in certain locations.

Alternatives. The potential for food processing industries to provide new jobs for a rural community largely depends on whether local areas can supply competitively priced raw inputs for local processing facilities. This means that job prospects in the food processing sector are expected to be confined mostly to areas already specializing in these products. However, new uses of farm products and new crops have received considerable attention as a way to enhance farm income and provide rural jobs. For example, kenaf, an annual hibiscus fiber crop, shows promise in the manufacturing of pulp and paper products such as newsprint or tissue. Guayule, a native shrub of north-central Mexico and southwestern Texas, is a potential source of natural rubber. And, crambe, an annual herb of the mustard family, and rapeseed produce oils that can be further processed into ingredients used in plastics, lubricants, and chocolate substitutes.

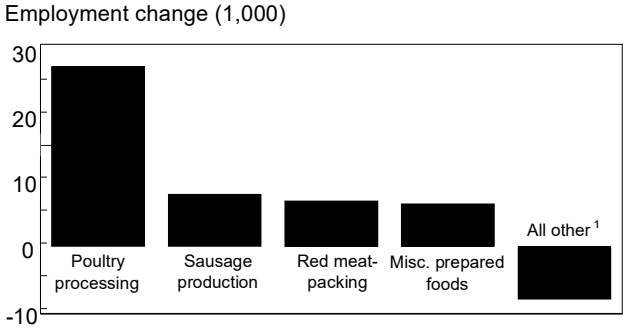
Agenda. Most rural areas need to look elsewhere for ways to retain or expand employment. Some may have good prospects based on their natural amenities or proximity to a large city. Others will need to learn how to reduce the costs of rurality—relative isolation, an absence of economies of scale, lack of services—by finding ways to connect rural firms and entrepreneurs to nodes of information, innovation, and finance, and to increase their access to growing global markets. This may require institutional support, such as an industrial extension program, to help firms effectively turn local resources and accessibility into a market advantage.

Information Sources. *County Business Patterns*, Bureau of the Census, annual, and *Employment and Earnings*, Bureau of Labor Statistics, monthly.

Metro and nonmetro employment

Employment continued to grow in nonmetro areas and decline in metro areas . . .

...but nonmetro growth is mainly concentrated in four industries.



[1] Represents 23 industries in which employment rose and 19 in which employment declined.

United States Department of Agriculture

Economic Research Service

Agriculture Information Bulletin Number 664-11

April 1993

Issues for the 1990's: RURAL ECONOMY

Effect of Bank Consolidation on Rural Credit Availability

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Issue. Bank restructuring affects the local financial markets that rural borrowers rely on for credit and other financial services. While control of rural financial institutions is slowly being transferred to urban-based conglomerates, most banks serving rural areas are still rural headquartered. A reduction in the number of financial institutions serving rural communities might lessen competition and therefore increase the cost of credit or reduce its availability. Proposals to allow interstate banking and branching would accelerate the trend toward fewer but larger banking organizations. Rural business and community leaders worry about how the trend will affect rural economic growth.

Context. The number of commercial banks has declined since the mid-1980's. Part of this reduction is due to bank failures, which initially included many rural-headquartered banks affected by financial problems in the farming and energy sectors. But rural bank failures are now relatively rare. Instead, changes in the size and composition of rural bank markets are due to expansions and mergers of both in-State and out-of-State banking firms. Each State determines the forms of branching and holding company expansion permitted by banking firms already operating in the State, and whether out-of-State bank-holding companies can enter the State by purchasing existing or starting new banks. Most States allow at least some branching by banks chartered within the State, and a large majority permit bank-holding companies based in other States to acquire banks within their jurisdictions. Nonetheless, rural bank offices are not the primary target in most bank acquisitions. And rural banks involved in mergers of bank-holding companies are likely just exchanging one outside owner for another. However, focusing on specific local markets, some mergers do reduce the number of banking firms with a local presence or ownership, and therefore may reduce availability of rural credit. The United States continues to have thousands more banks than other countries, but rural businesses typically have access to just the handful that maintain offices nearby and so can be greatly affected by any change in their local financial markets.

Consolidation of the banking industry can have both negative and positive consequences for rural communities. Some business people and community leaders fear that outside control of rural banks will limit credit availability as local bank deposits are transferred to more profitable outside investment opportunities. Outside banks may also pass up profitable local loans if they fail to accurately evaluate rural loan applications. This may occur because new managers are continually rotated to small rural branches to gain experience before moving on to larger urban offices, or because loan decisions are made by centralized loan committees with limited input from local branches. Those favoring bank consolidation argue that large, geographically diverse banks are less vulnerable to weak economic conditions in a particular region or economic sector. Large banks also provide a wider range of services and products, can handle larger loans, and are less likely to reject loan applications for new types of businesses.

Surveys of small businesses conducted in the 1980's have consistently shown that owners of rural businesses are generally satisfied with their bankers and the availability of bank credit. The data also provide evidence that urban and rural credit markets are well integrated in a national credit market. However, these surveys do not reflect the current regulatory environment that some argue has created a credit crunch. Nor do they provide information on firms that failed or never started due to an inability to obtain credit. Outstanding commercial loans at banks declined during the recession, and the media

provided anecdotal evidence of firms that lost access to credit. Nonetheless, it is difficult to determine whether or not credit is harder to find in rural areas compared to urban areas, or compared to conditions that existed in the 1970's and 1980's. Ratios of loans to deposits at rural banks are well below their historical highs. But is this due to a lack of demand as consumers and firms try to reduce debt levels, or does this reflect a widespread refusal by banks to make loans?

At Stake. Banks represent the primary source of credit in most rural communities and therefore directly influence the pace and direction of economic growth. Banks and other lenders were accused of exacerbating the recent recession by being overly conservative in their loan decisions in response to pressure from regulators not to repeat the errors that caused so many financial institutions to fail during the 1980's. Rural consumers and businesses are likely to find themselves operating in financial markets that are becoming more national and global in nature. Rural banking offices will not disappear, but over time more of them will belong to large banking organizations based in distant cities and States. Whether this change has a positive or negative effect on local credit availability depends, in part, on how competitive rural financial markets remain. If local competition is heightened, rural communities stand to benefit from the banking industry's consolidation.

Alternatives. Federal legislation could open the entire country to interstate banking and branching. Variants of this proposal give each State an opportunity to opt out of interstate banking by passing appropriate legislation within a specified timeframe, or require States to pass enabling legislation to participate in interstate banking. Large bank-holding companies argue that they could operate more efficiently, with benefits passed on to all of their customers, if they were able to convert bank affiliates to bank branches and to enter any market rather than those dictated by individual States.

Experience in States that have permitted widespread branching for many years suggests competition within local markets need not suffer when large urban-based banks move into rural markets. A significant proportion of community banks endure and prosper in statewide branching environments by identifying and serving markets and customers ignored by large banking organizations. This is likely to be the case whether or not interstate banking legislation is passed, as long as the current Federal Deposit Insurance System remains unchanged.

Some proposals for changing the current bank deposit insurance system could penalize rural banks. The system was designed to protect both individual depositors and the broader financial system by assuring that failure of one bank does not scare people into removing deposits from other banks. However, deposit insurance removes the incentive for depositors to closely monitor lending and investing activities of their financial institutions, adding to the cost of the financial system. To reduce this distorting effect, some have proposed lowering the effective ceiling on insured deposits held by individuals and their families. But community bankers and their supporters argue that this would unfairly penalize small banks. Because of concern about possibly jarring the Nation's economy, regulators tend to repay both the insured and uninsured portions of deposits at large failed banks, but not at small banks. If insured deposits are reduced and people expect regulators to continue to protect large banks, depositors might switch from small rural banks to offices of large urban banks, making it difficult for rural banks to compete.

Agenda. Comprehensive banking legislation was proposed in the last session of Congress, but a coalition representing groups such as community banks, insurance agents, and retired people was able to delete those sections addressing interstate banking and additional bank powers.

Information Sources. Two U.S. Dept. of Agriculture, Economic Research Service, reports: J. M. McGlone, "Rural Businesses Voice Few Complaints About Their Bankers," *Rural Development Perspectives*, Vol. 7, Issue 2. D. L. Milkove and P. J. Sullivan, *Deregulation and the Structure of Rural Financial Markets*, RDRR-75, Feb. 1990.

United States Department of Agriculture

Economic Research Service

Agriculture Information Bulletin Number 664-12

April 1993

Issues for the 1990's: RURAL ECONOMY

Preferential Tax Treatment for Capital Gains

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Issue. A major challenge facing the U.S. economy is the need to encourage greater investment to maintain a competitive edge in an increasingly interdependent world economy. Reinstating some form of preferential treatment of capital gains is one policy option being considered to encourage the formation of new businesses and increase investment. Preferential tax treatment of capital assets increases the relative rate of return on such assets by reducing potential income tax liability and provides incentives to invest in small business. Given the importance of capital income to farmers, the treatment of such income has important implications for farm output and asset values.

Context. The Federal income tax code has historically contained some form of preferential treatment for gains generated from capital assets. The preferential treatment of capital gains increases the rate of return to savings, and lowers the cost of capital, leading to an increase in the level of investment. That, in turn, raises gross national product (GNP). Since assets used in a trade or business are eligible for capital gains treatment, policies aimed at restoring some form of preferential treatment for capital assets have important implications for farmers. Agricultural assets eligible for treatment as capital income include breeding and dairy livestock and farmland. As a result of this treatment, capital gains is an important component of income for farmers. From 1987 to 1989, a minimum of 35 percent of farm sole proprietors reported capital gains. This compares to 11-13 percent of nonfarm returns over the same period. The average capital gain reported by farm sole proprietors ranged from slightly over $13,000 to nearly $16,000 from 1987 to 1989.

Between 1922 and 1986, as much as 60 percent of the gains from the sale of long-term capital assets were excluded from Federal income taxes. The Tax Reform Act of 1986 repealed the 60-percent exclusion for long-term gains and capped the maximum tax rate on realized capital gains at 28 percent, providing individuals subject to the maximum statutory marginal income tax rate a 3-percentage-point differential in tax rates. The repeal of the 60-percent exclusion for long-term capital gains resulted in a substantial increase in Federal income tax liabilities for farmers, especially livestock farmers. Repeal of the capital gains exclusion accounted for about half of the tax increase under the act, research estimates show. The resulting increase in tax liability associated with the sale of farmland that has been held for many years is a significant concern for farmers planning to dispose of farmland for retirement purposes. On the positive side, the repeal of the exclusion reduced the incentive to convert fragile rangeland and wetlands to cropland. Capital gains treatment was considered a major factor in such conversions.

At Stake. A lower tax rate on capital gains would reduce Federal income tax liability for many farmers. However, for both nonfarm returns and farm sole proprietors, a large portion of the resulting tax reductions would accrue to relatively high-income individuals. In 1989, approximately 48 percent of the capital gains reported by farm sole proprietors was reported by those with adjusted gross incomes above $200,000.

Given other tax preferences in agriculture, a lower rate would encourage farm proprietors to adopt management practices designed to maximize income eligible for capital gains treatment. This lower rate would also spur investment in agricultural capital assets by nonfarm individuals. A lower tax rate on capital gains, if applicable to assets used in farming, would increase agricultural output and land

values. The resulting increase in investment in agriculture would occur in a capital-intensive industry already characterized by excess capacity. The increased rate of return on farmland would be capitalized in land values, increasing current farmland prices.

Alternatives. Several alternatives relating to preferential tax treatment exist:

(1) Maintain the current 28-percent maximum tax rate on realized capital gains. Under current law, only individuals subject to the maximum 31-percent tax rate benefit from this differential treatment. These benefits would increase substantially if the top marginal income tax rate were increased to 36 percent. The 8-percentage-point differential could encourage individuals to invest more in agricultural assets such as farmland and breeding and dairy livestock to generate capital income rather than ordinary income.

(2) Index capital assets for inflation. Under current law, taxes are imposed on nominal changes in asset values. Indexation would ensure that only real gains, not inflationary gains, would be subject to taxation. The primary benefits of indexing in agriculture would accrue to owners of farmland held for a long time, since a large part of the increase in value is often attributed to inflation. Other farm assets eligible for capital gains treatment, such as livestock, generally have a zero basis and, hence, would not benefit from indexation.

(3) Enact legislation that provides a graduated exclusion depending upon the length of time the asset is held. For example, one recent proposal was to exclude the gains from assets held between 1 and 2 years, 2 and 3 years, and assets held 3 or more years at 10, 20, and 30 percent, respectively. This approach encourages long-term investment by increasing the tax benefits along with the length of time the asset is held. Since the exclusion of capital gains from taxable income is general, all farmers reporting capital gains would benefit, with the extent of benefits depending upon how long the assets were held and the individual's tax rate.

(4) Target preferential treatment to certain types of capital investments. A recent example is a proposal that would have excluded 50 percent of the capital gains from newly issued stock of small companies held for 5 or more years. The advantages of this type of policy are that it would target specific types of investment deemed to be the most effective in stimulating the economy and creating jobs. Forgone tax revenue would also be reduced relative to a general capital gains exclusion. The implications for agriculture would depend upon the type of investments targeted to receive preferential treatment. Agriculture would not be a major beneficiary of a capital gains exclusion restricted to newly issued stock in small companies.

Agenda. Since the Tax Reform Act of 1986 repealed the exclusion of 60 percent of capital gains from taxable income, various proposals have been made to reinstate some form of preferential treatment for capital gains. While the preferential treatment of capital gains is a policy option to stimulate investment in small business in order to generate jobs and increase economic growth, the extent of preferential treatment must be balanced with the constraints imposed by the Federal budget deficit.

Information Source. *Effects of Lower Capital Gains Taxes on Economic Growth*, Congressional Budget Office, Aug. 1990.

United States Department of Agriculture

Economic Research Service

Agriculture Information Bulletin Number 664-13

April 1993

Issues for the 1990's: RURAL ECONOMY

Rural Economic Disadvantage

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Issue. Several economic indicators suggest that rural conditions worsened during the 1980's. The rural unemployment rate rose rapidly during the 1980-82 recessions and had not fallen back to its 1979 level by the onset of the 1990-91 recession. Rural per capita income and earnings per job fell further behind urban income and earnings during the decade. The rural poverty rate increased. And, half of all rural counties lost population. These indicators appear to be symptoms of a growing rural disadvantage in the emerging national and global marketplaces, thereby raising questions about the future well-being of much of rural America.

Context. Entering the 1980's, rural America seemed poised for strong economic performance. Growth in population, employment, and income in the 1970's had exceeded that of urban areas, narrowing the historical lag in rural well-being and greatly reducing rural population loss. But, a combination of factors prevented rural areas from further narrowing the gap in the 1980's. The 1980-82 recessions hit rural areas much harder than urban areas, primarily because job losses were concentrated in production occupations in manufacturing firms, where a higher proportion of rural than urban employment is concentrated. Rural manufacturing employment recovered slowly, not surpassing the prerecession (1979) number of jobs until 1989. These problems in manufacturing were combined with a farm crisis in the mid-1980's and job losses in mining in the last half of the decade. Evidence suggests these cyclical changes were accompanied by a long-term shift in rural competitiveness. Structural change in goods production reflects increasing global competition, technological change continues to displace production workers, and growing specialized producer services bypass rural areas.

At Stake. Continued rural economic deterioration could lead to increased outmigration to urban areas. From 1986 to 1988, 192 rural counties experienced net outmigration and more deaths than births. Some small communities in these areas may discontinue services when the cost of providing them rises above the remaining residents' ability to pay. Outmigration is also a concern for rural areas because the young, highly educated comprise a disproportionate share of those who leave. If rural areas cannot find ways to attract or create jobs requiring the skills of highly educated people, they may lose the group most likely to be the catalyst for improving local conditions. The Nation may also lose from rural outmigration as the costs of providing services in increasingly congested cities rise.

Alternatives. Views on equity and economic efficiency condition responses to rural-urban inequality and rural economic problems. Tight State and Federal budgets severely limit what could be spent to relieve rural problems. And, the wide variety of rural conditions calls for an array of responses, not a simple one-program-fits-all approach.

The National Initiative on Rural America, begun in 1989, established the President's Council on Rural America, a group of 19 rural leaders from the public and private sectors, to provide guidance to the President in setting a national rural development policy agenda. It also initiated State Rural Development Councils to assess local rural development needs and coordinate delivery of Federal, State, local, and private programs that respond to those needs. Most States are in the process of setting up Councils (47 States and territories are expected to have Councils by the end of 1993).

Funding for rural development-related projects comes from numerous Federal, State, and local programs. For example, the Small Cities Urban Development Block Grant program is administered by

the U.S. Department of Housing and Urban Development. Rural housing, electrification, and community facilities loan and grant programs are administered by various agencies in the U.S. Department of Agriculture (USDA). And, many States provide seed money to rural revolving business loan funds to which local governments often add their own contributions.

Agenda. The current Federal rural development agenda is built on the principle that local residents are the best judges of which rural development strategies are appropriate for their communities. Efforts to reduce the rural economic disadvantage in an era of tight government budgets will require creative input from all levels of government.

Information Source. U.S. Dept. of Agriculture, Economic Research Service, *Rural Conditions and Trends*, various issues.

Nonmetro economic indicators, 1979-91

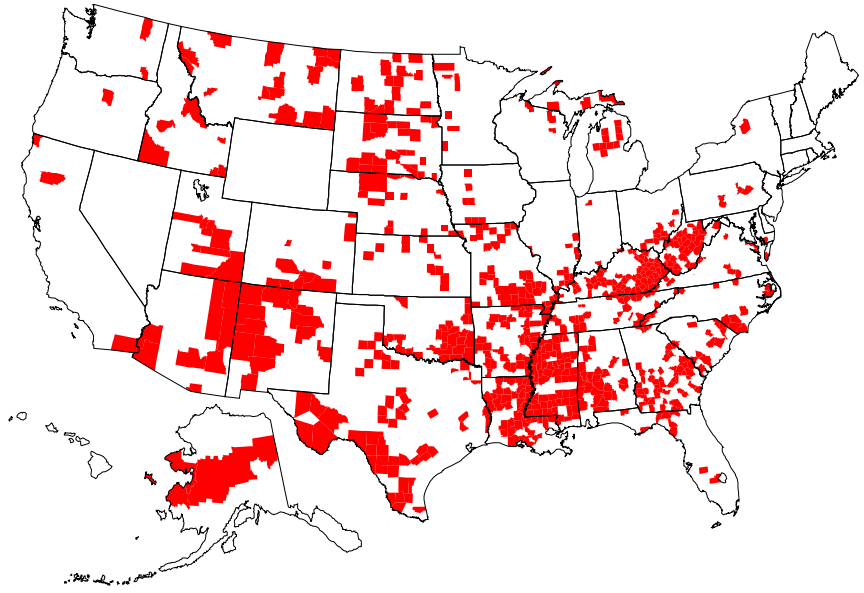
Unemployment, income, and earnings gaps widened during the 1980's, signaling increasing nonmetro disadvantage.

Year	Unemployment rate	Difference from metro unemp. rate	Real per capita income	Ratio to metro income	Real earnings per wage and salary job	Ratio to metro earnings
	Percent	*Percentage points*	*1990 dollars*	*Percent*	*1990 dollars*	*Percent*
1979	6.1	0.5	13,086	77.2	18,732	79.3
1980	8.0	1.1	12,768	75.4	18,489	79.0
1981	8.5	1.2	13,015	75.9	18,614	79.4
1982	11.1	1.8	12,786	74.9	18,614	78.6
1983	11.2	2.1	12,711	73.9	18,435	77.7
1984	9.1	2.1	13,318	74.3	18,522	77.4
1985	9.1	2.5	13,445	73.4	18,435	76.5
1986	9.0	2.6	13,715	73.5	18,394	75.5
1987	7.9	2.1	13,821	72.9	18,272	74.6
1988	6.9	1.8	14,117	72.3	18,189	73.5
1989	6.4	1.5	14,491	72.9	17,938	73.4
1990	6.5	1.3	14,600	73.4	17,791	73.1
1991	7.6	1.1	NA	NA	NA	NA

NA=Not available.

Nonmetro counties with more than one economic stress indicator

Most States have at least one nonmetro county displaying signs of economic stress.



Nonmetro counties with at least 2 of the following characteristics:

- in lowest 20 percent of all counties by 1990 per capita income.
- in lowest 20 percent of all counties by 1990 earnings per wage and salary job.
- in highest 20 percent of all counties by 1991 unemployment rate.
- in highest 20 percent of all counties by 1989 poverty rate.
- experienced both net out-migration and more deaths than births during 1986-88.

United States Department of Agriculture

Economic Research Service

Agriculture Information Bulletin Number 664-14

April 1993

Issues for the 1990's: RURAL ECONOMY

Rural Enterprise Zones and Economic Development

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Issue. Federal enterprise zones are among the programs proposed to alleviate economic problems in distressed areas. Many States already have enterprise zone programs. But, do they work? How can such a program be designed to help in rural areas?

Context. Distressed areas often suffer from a combination of problems, including poverty, crime, unemployment, and a long history of failed economic development ventures. Many people believe that only a coordinated, multi-dimensional approach can overcome these problems and encourage businesses to grow in distressed areas. Enterprise zones, designated distressed areas that get special government assistance, are advocated as one such approach. In 1992, 35 States had enterprise zone programs. Most States have competitive programs where distressed communities compete with each other in the application process in order to receive State tax incentives for businesses that invest in enterprise zones. In such competitive programs, the State tax incentive lures competing communities to develop strategic plans for revitalizing their economies. These comprehensive plans usually employ a variety of local initiatives, including infrastructure improvements, loans to businesses, streamlined business permit processes, and community crime watch or literacy programs.

Evaluations of State enterprise zones have been generally positive. Some critics had feared that firms would simply relocate from neighboring communities into enterprise zones, but this does not appear to happen very often. Most of the employment growth in zones is due to firm startups or expansion of existing firms. Another fear was that a substantial share of the businesses claiming tax incentives would be free riders; that is, firms that benefit from doing things they would have done anyway. While there is ample evidence of free riding, this has not led to higher program costs per job than in other job creation programs. The most serious problem is that, despite the tax incentives and other zone-associated actions aimed at stimulating the economy, the economic performance of enterprise zones is highly variable, and some zones benefit very little.

Rural zones perform as well as, or perhaps even better than, urban zones, according to evidence from the few studies that examined rural (or small city) enterprise zones. The main drawback for rural areas is that only a small percentage of distressed rural areas have received enterprise zone status. Most large cities have at least one enterprise zone operating within their jurisdiction.

At Stake. Before a new Federal program is enacted, policymakers might want to consider alternative program features that could reduce program costs or increase benefits in rural areas. These include (1) the number of zones, (2) qualifications required for zone designation, (3) duration of zone designation, and (4) assistance provided to the zones. A key consideration in defining these program features is to recognize that when it comes to economic development policy, more is not always better. Emphasis should be on assuring that rural zones will effect productive development strategies.

Alternatives. Any prospective Federal program is likely to be patterned after 1992 proposed legislation, which would have created 25 urban zones and 25 rural zones. Some might argue for more rural zones, because 25 rural zones would cover only a small percentage of distressed rural communities. Expanding the number of zones, however, would add to overall program cost.

Significant expansion of the program could diminish the marketing appeal of the incentive, reducing program effectiveness.

The 1992 legislation would have allowed rural zones to be as large as 10,000 square miles, large enough to encompass several counties in the East, while requiring a population minimum of only 1,000. More restrictive requirements might reduce cost per zone, but the kind of flexibility provided in the 1992 legislation should pay off because it allows clusters of communities and even multicounty areas to work together in creating a coherent regional development strategy.

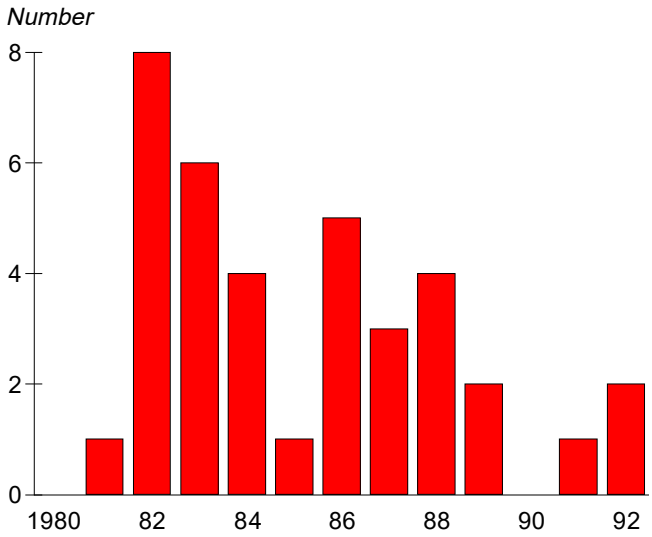
The 1992 legislation would have entitled each zone to 15 years of tax incentives. While some places might require that long to revitalize their economies, other places might be expected to have a quicker turnaround. If a shorter period, such as 5 years, were employed, program administrators could be given the flexibility to extend zone status for places needing and deserving more time. For places where little effort has been made to implement a development strategy, zone status could be allowed to expire long before the 15-year period is up.

Some have described the 1992 legislation's proposed Federal tax incentives as excessively generous. These incentives include exclusions from capital gains, expensing of stock purchases, wage credits for new hires, losses credited against ordinary income, and additional tax-exempt financing. The estimated cost for just the first 5 years of this program would be $2.5 billion. Policymakers may want to consider only those tax incentives that give the most "bang for the buck," and give zones the opportunity to select among various tax incentives, grants, and loans, so they may fine-tune the package of benefits they receive.

Agenda. Federal legislation is likely in 1993. Some State governments may also consider creating or modifying enterprise zone programs.

Information Sources. Rural performance of State enterprise zone programs: Richard J. Reeder and Kenneth L. Robinson, "Enterprise Zones: Assessing Their Rural Development Potential," *Policy Studies Journal*, Vol. 20. Details on State enterprise zones and Federal enterprise zone proposals, such as the revised version of HR 11 vetoed by President Bush on Nov. 4, 1992: U.S. Dept. of Housing and Urban Development, Office of Community Planning and Development.

Number of new State programs enacted
Interest in State enterprise zones peaked in the early 1980's.



United States Department of Agriculture

Economic Research Service

Agriculture Information Bulletin Number 664-15

April 1993

Issues for the 1990's: RURAL ECONOMY

Effects of the Investment Tax Credit on Farmers

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Issue. Continued slow growth of the U.S. economy has prompted policymakers to explore a variety of alternatives for stimulating job growth. One alternative that promotes capital formation, and thus more jobs, is an investment tax credit for purchases of machinery, equipment, and similar eligible property. Agriculture is a capital-intensive industry. Thus, restoration of the investment tax credit could offer important benefits to some farmers.

Context. Investment in depreciable capital has been eligible for a 7- or 10-percent investment tax credit at various times over the past 30 years. Eligible assets in farming have included farm machinery and equipment, as well as certain livestock and farm structures. The investment tax credit provides a substantial reduction in the cost of capital, encouraging investment in eligible assets. Research examining the effect of tax policies on investment in agricultural equipment during 1956-78 found that over 20 percent of net investment was attributed to tax policies. The investment tax credit was the most effective policy tool in stimulating investment, the research concluded. Repeal of the investment tax credit by the Tax Reform Act of 1986 resulted in a substantial increase in the cost of capital. The act reduced the stock of farm machinery and equipment by nearly $4 billion or nearly 25 percent relative to prior law, with the repeal of the investment tax credit accounting for approximately 89 percent of the decline, according to research examining the repeal's implications for capital investment.

While the investment tax credit is effective for stimulating investment, it favors certain forms of economic activity over others, discriminates among firms within a single industry, and encourages tax-motivated behavior. The tax credit distorts investment decisions by encouraging investments in assets or activities eligible for the credit rather than in those that would produce a greater economic return in its absence. In farming, the tax credit encouraged expanded investment despite excess supply for various farm commodities.

At Stake. The possibility that an investment tax credit in some form will be restored revives the debate regarding its implications for agriculture. The credit substantially reduces Federal income tax liability for many farmers. For example, prior to the repeal of the credit, about half of all farmers were eligible for an average tax credit of approximately $1,400 per year. The benefit to large farms was even greater, with nearly 85 percent of farms with gross receipts over $250,000 eligible for the investment tax credit. The average tax credit for these farms was over $10,000. The tax credit also lowers the cost of capital, which encourages investment in eligible assets. This increased investment benefits farm machinery dealers and other input suppliers. It also expands the production capacity of the sector and induces productivity growth. This results in expanded production, which results in lower prices, and increased government costs for some farm programs. For some farmers, the reduced farm income associated with lower prices could more than offset the benefit from the investment tax credit.

Alternatives. Policy alternatives include: (1) continue current policy (no investment tax credit), (2) restore a broad-based, 10-percent investment tax credit similar to that which existed prior to the Tax Reform Act of 1986, (3) provide an incremental tax credit that would be applicable only for investment above a specified base or threshold amount, or (4) enact a targeted investment tax credit that would be available only for investment in specified classes of property determined to be the most productive.

Choices among these alternatives will be influenced by the perceived need to stimulate the economy, the estimated cost of each of the alternatives, and the ability to identify acceptable revenue sources to offset the estimated tax losses.

Restoration of an across-the-board investment tax credit of 10 percent is the least likely due to the substantial revenue loss to the government. In farming alone, the government could lose as much as $1.5 billion a year in revenue. If a broad-based investment tax credit were enacted, it would likely be at a lower rate, reducing the effectiveness of the credit.

Enactment of an incremental tax credit for investment above a certain base would substantially reduce the tax drain. While this approach would favor some new businesses, it would provide little or no benefit to those firms that have invested heavily during the base period.

Under a targeted tax credit, a much narrower class of property would be eligible for a tax credit than prior to the 1986 law. While a targeted investment tax credit may be the most cost-effective alternative, it may be the most difficult to enact due to equity concerns that would arise by favoring certain industries or classes of assets over others. Under this alternative, the tax credit could be withheld on certain types of farm property, such as single-purpose agricultural structures, or on farms likely to expand production and increase the cost of government farm commodity programs in response to a tax credit.

Agenda. Numerous legislative proposals have been made to restore the investment tax credit. However, they have failed to gain broad-based support due to the rather large revenue loss associated with the proposed legislation. Nevertheless, given the recent support expressed for the enactment of an investment tax credit, a specific legislative initiative will likely be introduced early in 1993 as part of a fiscal stimulus package.

Information Sources. Michael LeBlanc, James Hrubovcak, Ron Durst, and Roger Conway, "Farm Machinery Investment and the Tax Reform Act of 1986," *Journal of Agricultural and Resource Economics*, Vol. 17, No. 1, Jul. 1992, pp. 66-79.

United States Department of Agriculture

Economic Research Service

Agriculture Information Bulletin Number 664-26

April 1993

Issues for the 1990's: RURAL ECONOMY

Improving Living and Working Conditions of Hired Farmworkers

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Issue. Hired farmworkers experience low wages, seasonal employment, weak attachment to the labor force, and limited options for higher paying jobs. In addition, many are excluded from coverage under basic worker protection programs generally available to other U.S. workers. Federal assistance programs targeted specifically to hired farmworkers frequently serve only a small portion of those eligible. These continuing disadvantages raise questions about the direction of efforts to improve their living and working conditions.

Context. Hired farmworkers comprise a small proportion of all U.S. wage and salary workers. But, they are an essential input to U.S. agriculture and contribute necessary labor during critical production periods. Almost half of all U.S. farms used hired labor in 1987; these farms produced about 84 percent of the total value of sales for farm products. Farmers spent almost $13 billion for labor in 1987, accounting for 12 percent of total farm production expenses. Labor costs on the more labor-intensive fruit, vegetable, and horticultural specialty farms accounted for 37-44 percent of total farm production expenses.

An average of 884,000 hired farmworkers were employed per week on U.S. farms in 1991, according to the latest data from the Current Population Survey. Hired farmworkers were more likely than all wage and salary employees to be young, male, and Hispanic and they had lower education levels. About 55 percent of hired farmworkers in 1991 had not completed high school, compared with 15 percent of all wage and salary workers. The median weekly earnings of full-time hired farmworkers was $240, or only 56 percent of the $427 received by all full-time wage and salary workers. Because of the seasonal nature of agriculture, many hired farmworkers are employed for only part of the year, but depend heavily on their farm earnings. Some hired farmworkers seek nonfarm work to supplement their incomes, but are often unable to compete for higher wage nonfarm jobs because of limited education and labor market skills.

Many Federal and State worker protection programs have special exemptions for agricultural employers based on employee numbers, days worked, or payroll size. These special exemptions for agriculture were applied largely because of perceived administrative and enforcement difficulties, concern over high labor costs for small farmers, and less representation of agricultural worker interests. Employees working on these exempt farms do not receive program benefits. The Fair Labor Standards Act, for example, requires only those employers using more than 500 man-days of agricultural labor during any calendar quarter of the preceding calendar year to pay the Federal minimum wage. Other Federal programs, including unemployment insurance, Social Security, and provisions of the Occupational Safety and Health Act (OSHA), also exempt some agricultural employers based on number of employees and/or size of payroll. Farmworkers are fully covered by State workers' compensation laws in only 14 States and partially covered in 23 others.

Federal programs sponsored by the U.S. Departments of Education, Labor, and Health and Human Services, among others, have provided a variety of employment, training, education, and health care services to hired farmworkers. Program evaluations suggest, however, that only a relatively small proportion of those eligible actually receive program assistance.

At Stake. Improvements in Federal assistance programs and basic workplace protection could help improve living and working conditions of many hired farmworkers. At the same time, these efforts could

lead to greater Federal program costs and/or substantially higher labor costs to some farmers, particularly growers of fruit, vegetable, and horticultural crops. Increased labor costs could be passed on to consumers in the form of higher prices and could lead to increased foreign competition for some commodities.

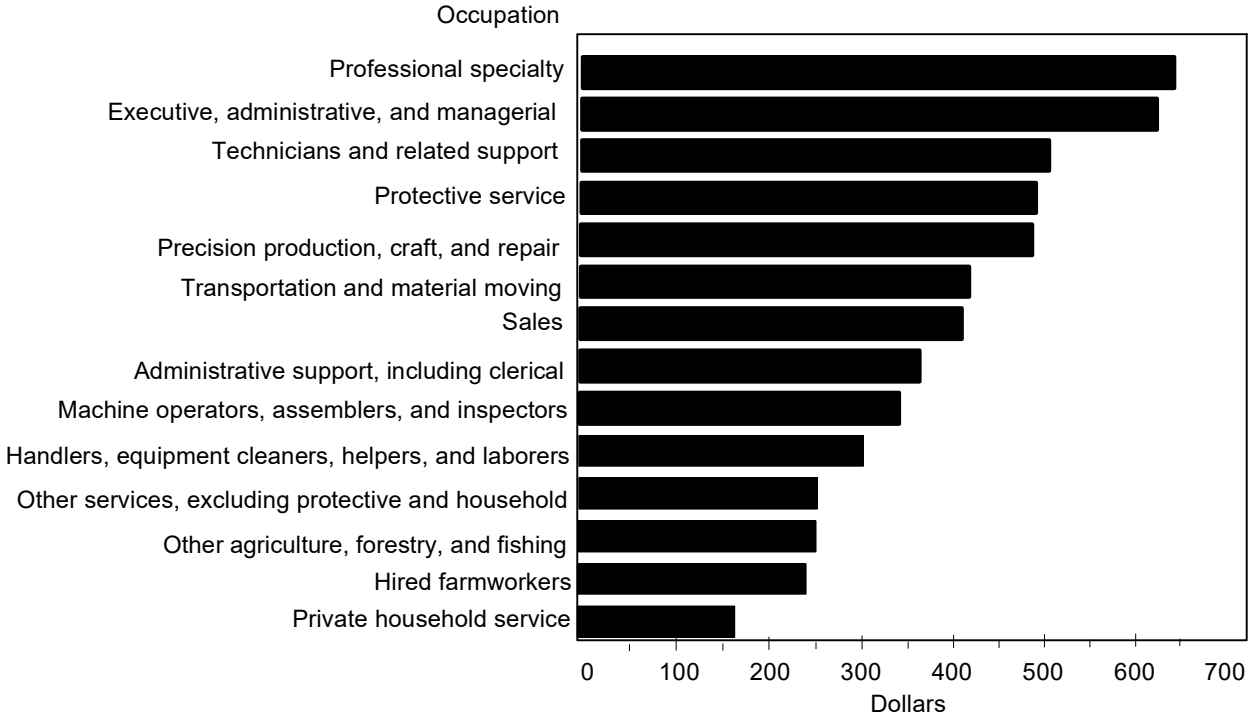
Alternatives. Two broad strategies could be followed. One strategy focuses on Federal assistance directed specifically to those low-skilled, low-income workers who depend heavily on farmwork. Current Federal programs provide a variety of employment, training, education, and health care services to hired farmworkers. Increased funding, expanded eligibility criteria, better service delivery, and improved coordination among programs could help extend program benefits, but at increased government costs. A second strategy calls for the removal or modification of agricultural exemptions in basic workplace protection programs. Such a strategy would extend to hired farmworkers the programs and benefits available to most other U.S. workers. Costs for expanding worker protection programs, such as minimum wage guarantees, unemployment insurance, occupational safety and health programs, and workers' compensation, would largely fall on farm employers currently exempt from program coverage. Costs of expanding Social Security coverage would be shared by both farm employers and their employees.

Agenda. Congressional hearings in 1990, 1991, and 1992 focused on a wide range of farm labor topics, including the socioeconomic well-being of hired farmworkers and the lack of workplace safeguards for many farm laborers. Although no legislative action is pending in early 1993, issues relating to the living and working conditions of hired farmworkers will likely receive continued congressional and media attention.

Information Sources. Two U.S. Dept. of Agriculture, Economic Research Service, reports: Victor J. Oliveira, *A Profile of Hired Farmworkers, 1990 Annual Averages*, AER-658, Feb. 1992 and Jack L. Runyan, *A Summary of Federal Laws and Regulations Affecting Agricultural Employers, 1992*, AIB-652, Aug. 1992. Also see: U.S. General Accounting Office, *Hired Farmworkers: Health and Well-Being at Risk*, report to congressional requesters, GAO/HRD-92-46, Feb. 1992.

Median weekly earnings of full-time wage and salary workers

Only private household service workers earned less than hired farmworkers.



Source: 1991 Current Population Survey microdata earnings file.

United States Department of Agriculture

Economic Research Service

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May 1993

Issues for the 1990's: RURAL ECONOMY

Trends in Numbers, Sizes, and Ownership of Farms

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Issue. The trend toward fewer, larger, and increasingly corporate farms has created a concern that many midsized family-owned farms will disappear. The trend has implications for the ownership and control of farm resources, concentration of farm production, distribution of farm program payments, distribution of farm-generated income, and farm career opportunities for young people. Some interest groups cite possible links between the structure of farming and the security and resilience of the food system, as well as to the viability of rural communities.

Context. The number of farms has been declining since a peak in the 1930's, while average farm size has increased, as measured by either value of output or number of acres. And, very large farms have been increasing their share of farm production. Less than 2 percent of all farms now account for nearly 40 percent of the value of U.S. farm output. Changes were most dramatic from the early 1950's through the mid-1970's. The number of farms declined by 52 percent, from 4.78 million to 2.31 million between 1954 and 1974. The trends have slowed since the 1970's. The share of farm product sales accounted for by farms with sales of $500,000 or more (measured in 1982 constant dollars) increased from about 25 percent in 1974 to nearly 40 percent in 1987. The number of corporate farms has also increased, but most are family-held corporations.

At Stake. There are two conflicting views on the proper role of agricultural policy in attempting to influence trends in farm numbers, sizes, and ownership: (1) advocacy of a farm structure consisting of midsized farms owned and operated by individual families (family farm system), and (2) letting market forces determine ownership of agricultural resources.

Advocates of the family farm system emphasize sociological and environmental arguments, contending that a large number of midsized, family owned and operated farms will promote a stronger overall rural economy and promote more ecologically and environmentally sound stewardship of agricultural resources than would an agriculture dominated by large-scale farms. They further argue that a farming system dominated by a few large-scale producers would result in monopolized control over food production and higher consumer food prices.

Advocates of letting market forces determine farm structure emphasize competitiveness, economic efficiency, and productivity arguments. They argue that farms need to get large enough to obtain economies of scale inherent in state-of-the-art production technology to most efficiently use their resources. This will result in the greatest resource and labor productivity, maintain the competitiveness of U.S. agriculture, and keep consumer food costs lower than would a farm system composed of farms of less than technology optimum size.

Alternatives. General classes of policy alternatives include:

(1) Continue current policies and programs (status quo).

(2) Alter farm programs to stop them from favoring larger farms. Since many payments are production-based, large farms tend to receive a disproportionate share of payments (see *Distribution of Direct Government Payments*, AIB-664-37). Lowering and strengthening payment limitations and targeting

payments to smaller farms can make current commodity programs more size neutral. Strengthening limits on ownership of federally irrigated land and controls on delivery of water above these limits can improve the size neutrality of Federal irrigation projects.

(3) Strengthen policies to overtly favor beginning farmers or small family farms. Expanded public credit, beginning farmer, and disadvantaged farmer programs are examples.

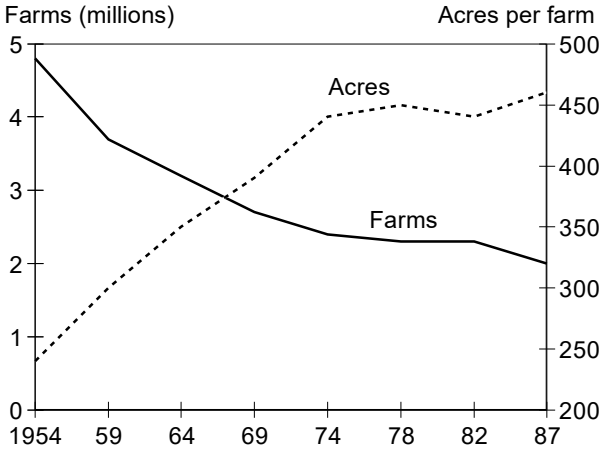
(4) Pass laws to limit nonfamily involvement in farming. No Federal policies fit this category, but some States have restrictions on corporate ownership and/or operation of farmland.

Choices among these alternatives are based as much on beliefs and values held by people or policymakers as they are on fact. Research shows that the most important underlying causes of farm structural change have been: (1) increases in labor productivity stemming from technological advances, and (2) higher wage rates in nonfarm industries discouraging people from farming. These forces for change will continue as our economy grows and develops. Farm structure will continue to adjust to its economic and technological environment. Policy changes acceptable to the public can only slightly alter these forces and their resulting trends.

Agenda. No Federal legislation directed specifically at controlling the number, size, and ownership of farms has been proposed. Rather, arguments from both points of view have been marshaled in debate of related legislative proposals and program provisions. This is expected to continue, but no specific legislative initiatives are expected.

Information Sources. Two U.S. Dept. of Agriculture, Economic Research Service, reports: Donn A. Reimund and Fred Gale, *Structural Change for the U.S. Farm Sector, 1974-87*, *13th Annual Family Farm Report to Congress*, AIB-647, May 1992, and Mitchell J. Morehart, James D. Johnson, and David E. Banker, *Financial Performance of U.S. Farm Businesses, 1987-90*, AER-661, Dec. 1992.

Farm numbers and average farm size
Farm numbers and sizes have nearly stabilized since the mid-1970's.



Farms and farm product sales
The proportion of small farms has stabilized, but concentration of sales by large farms continues to increase; farms remain over 90-percent family owned.

Real value of products sold	All farms 1974	All farms 1987	All sales 1974	All sales 1987	Type of organization	All farms 1974	All farms 1987	All sales 1974	All sales 1987
	Percent					*Percent*			
Less than $10,000	48.1	48.6	3.7	2.4	Sole proprietorship	89.5	86.7	67.6	56.3
$10,000-99,999	42.7	36.9	36.4	20.6	Partnership	8.6	9.6	13.9	17.1
$100,000-499,999	8.5	12.8	34.7	37.5	Family corporation	1.7	2.9	18.0	19.5
Over $500,000	.7	1.6	25.2	39.4	Nonfamily corp.		.3		6.1
					Other	.2	.6	.5	.9

United States Department of Agriculture

Economic Research Service

Agriculture Information Bulletin Number 664-28

May 1993

Issues for the 1990's: RURAL ECONOMY

The Rural Apparel Industry

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Issue. Continuing technological advances, changes in product market structures, and probable bilateral trade liberalization will likely reduce the size and change the structure of the U.S. apparel industry. How can communities heavily dependent on these industries respond to such important developments?

Context. During the 1980's, employment in the apparel industry contracted significantly in response to increases in labor productivity and intensified foreign competition. Many of these foreign competitors have long ceased being just low-cost assembly sites for less expensive items; they now produce even the highest quality, most sophisticated fashion. These trends are likely to continue to exert downward pressure on industry employment. This pressure will intensify if trade liberalization reduces the level of protection for the U.S. industry.

Many nonmetro areas depend on the apparel industry. Of 771 nonmetro counties in 10 Southeastern States, 209 had 20 percent or more of their 1987 private nonfarm employment in the textile mill and apparel product industries, principally clothing and apparel fabric. Forty-seven percent of these 771 nonmetro counties had 10 percent or more employed in these industries. In some States, the nonmetro rates were much higher. For example, 56 percent of South Carolina's nonmetro counties, 46 percent of Alabama's, 43 percent of Georgia's, and 39 percent of North Carolina's nonmetro counties had more than 20 percent of private nonfarm employment in textile mill and apparel products. More than half the nonmetro counties in 7 of the 10 States had more than 10 percent of their employment concentrated in these industries.

The importance of apparel industry employment to individual nonmetro counties extends well beyond the absolute percentages because, as manufacturing industries, these sectors constitute a significant portion of the local economy's "export base," or the industries which bring most new income into the area.

At Stake. Continued downsizing of the apparel industry will cause the employment base to contract in many southeastern communities, and affect employment prospects of many rural workers. A significant share of the affected families will have incomes below or near the poverty level, and will thus be very vulnerable to any income loss. In recent years, dislocated apparel workers have had above-average difficulty finding new jobs at comparable pay levels. Part of the reason is that dislocated apparel workers have lower educational levels than the average dislocated worker, and are more likely to be older, female, and members of a minority group. Worker adjustment therefore may well be more difficult, even in communities with a relatively good supply of alternative job opportunities. Unsuccessful local adjustment could stress the region's cities as well as rural areas by increasing the inmigration from rural areas of unemployed, low-skilled workers, and the cost of welfare and social service programs in both urban and rural areas.

Alternatives. There are two general classes of policy alternatives:

(1) Expand worker adjustment assistance. The public sector could increase adjustment assistance to dislocated workers as employment declines continue. Extremely high average apparel turnover rates of

approximately 50 percent each year, coupled with a traditional male reluctance to work as a sewing operator, means some job openings for those wishing to work in the apparel industry are likely to exist, even in the face of accelerated dislocation. However, geographic mismatches will exist in many local economies between apparel jobs that are lost and available job openings within the industry. This suggests communities could help dislocated workers who wish to remain in the industry find new apparel jobs by developing better information on job openings within the region, helping to arrange for supporting services such as alternative transportation or child care, and, where appropriate, assisting in relocation.

For dislocated workers who wish to leave the industry, and for other workers in affected communities who lose or cannot find a job, job search assistance, retraining for employment in other sectors, retraining for self-employment, and relocation assistance could be offered. A major issue is the level of support that should or can be provided. For example, of two major Federal programs now targeted to help dislocated workers, the Trade Adjustment Assistance program usually supports much longer training periods than does the Job Training Partnership Act Title III program. A corollary issue is whether separate funding sources should be dedicated to training for those affected by trade liberalization.

(2) Emphasize business development. The public sector could also help improve the competitiveness of the domestic apparel industry (in order to minimize dislocation), work to develop alternative employment opportunities in hard-hit regions, or both. Regarding the first, one option is to encourage formation of "Quick Response," just-in-time production partnerships among fabric, apparel, and major retail firms, particularly ones involving small- and medium-sized enterprises. The public sector might also help accelerate the development and use of new products and manufacturing processes, augmenting competitive strength by increasing levels of research and technology diffusion. More traditional job creation activities, such as business assistance and infrastructure investment, could also help offset local employment losses.

Agenda. Worker/community adjustment titles will likely be considered as part of enabling legislative packages accompanying any trade agreement sent to Congress, such as a General Agreement on Tariffs and Trade or a North American Free Trade Agreement. Such packages have not yet been designed. Many States have programs (industrial engineering assistance, customized job training, and small business financing) that assist firms and workers in the apparel and apparel fabric as well as other industries. These programs may be revisited with proposals for change.

Information Sources. U.S. Dept. of Commerce, *U.S. Industrial Outlook*, annual. Statistical reports of the American Textile Manufacturers' Institute, *Textile Hi-Lights*, quarterly. The American Apparel Manufacturers' Association, *Focus: An Economic Profile of the Apparel Industry*, annual.

United States Department of Agriculture

Economic Research Service

Agriculture Information Bulletin Number 664-39

May 1993

Issues for the 1990's: RURAL ECONOMY

Assisting Farm Entrants

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Issue. Many farm operators will reach retirement age in the coming decade, but fewer young people are entering farming to replace them. Many farm advocates and policymakers suggest that government should assist new farmers, warning that low farm entry will reduce the farm sector's production capacity and increase the concentration of farm ownership among fewer, but larger management units.

Context. Farm youths have been the major source of new farm entrants, but their numbers declined substantially in recent years. And, the farm operator population has aged. In 1987, the last Census year, 45 percent of farms were headed by individuals 55 years old or older. Based on the current age distribution of farm operators and historical rates of entry and exit by age group, farm numbers are projected to decline to between 1.9 to 1.6 million by the year 2002, depending on the rate of entry (see figure).

Many are concerned that high capital requirements for farming and difficulties obtaining credit prevent young persons with little equity from entering farming. Thus, the land and other assets of retiring farmers are often consolidated into existing farms, rather than being sold or rented to new entrants. This reinforces the trend toward fewer, larger farms. In response to these concerns, policymakers have created programs offering direct assistance to beginning farmers. The 1992 Agricultural Credit Improvement Act (Public Law 102-544) provides for direct loans, guarantee of commercial loans, and interest rate subsidies to beginning farmers and ranchers through the Farmers Home Administration. About 20 States also have active beginning farmer assistance programs. Some privately operated programs are also in place, such as volunteer programs that match beginning and experienced farmers in a mentor-type relationship.

The primary reason for low farm entry is the attractiveness of better paying, less risky nonfarm careers, according to research. This raises questions about the effectiveness of using subsidized credit programs as the primary way to increase the number of farm entrants. Most young farmers are able to reduce their credit needs by renting land rather than buying, using off-farm income to fund entry and expansion, and getting help from family members in acquiring land.

Entering farmers tend to be more productive than retiring farmers. Though farmers 65 years old and older outnumber those under 35 by three to two and control twice as much land, their sales are only slightly larger (see table). Young farmers are more educated and make greater use of new, more efficient technology, machinery, and management practices. They have substantially more machinery and equipment and operate much larger farms than their elders did when they entered farming.

Policymakers frequently argue that as the number of farmers declines, local nonfarm businesses experience declining sales and possible closure leading to rural economic decline. But, research suggests that, for most rural communities, the impact of declining farm numbers is minor. Fewer and fewer rural places depend primarily on farming as their major source of income and employment. Manufacturing, recreation-retirement, and service industries have become the dominant rural employers in most rural communities. The remaining farm-dependent rural areas are concentrated in the western Corn Belt and Plains States. Farmers, particularly those operating small noncommercial farms, depend on the nonfarm economy for off-farm jobs.

At Stake. Domestic demand for farm products is fairly stable, while farmers are becoming increasingly productive. Thus, the Nation's supply of food and fiber is not threatened by the declining number of farmers and farm entrants. Changes in entry rates into farming do have longrun implications on the degree of concentration of U.S. farm production. Given the current Federal budgetary pressure, policymakers interested in facilitating entry into farming may need to look beyond tradititonal farm commodity and credit subsidies for strategies to assist beginning farmers.

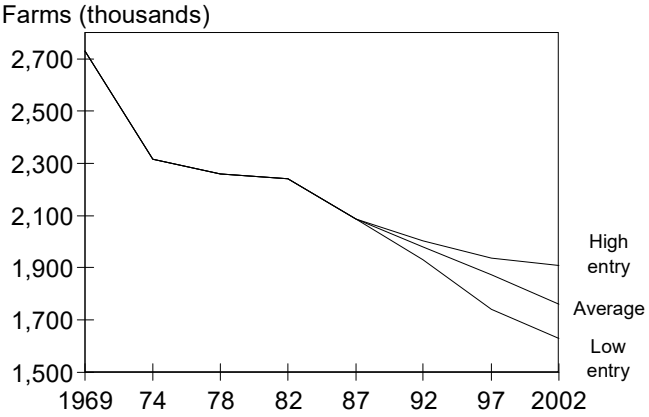
Alternatives. Efforts to increase export demand for U.S. food and fiber could help raise farm incomes, thereby encouraging young persons to enter farming. Efforts to develop new crops and industrial uses of farm commodities that expand total demand for food and fiber would similarly create opportunities for new farmers. Economic growth and nonfarm job creation in rural areas is critical for young farmers who often rely on off-farm employment for family income and capital expenses.

Agenda. The 1990 farm act will expire in 1995. Policymakers will be monitoring trends in farming and financial condition of farmers in preparation for the upcoming farm bill debate.

Information Source. Fred Gale, "What's Behind the Declining Farm Count?" *Agricultural Outlook,* AO-186, June 1992.

Number of U.S. farms, actual 1964-87 and projected 1992-2002

The decline in farm numbers depends on entry.



Farm characteristics of principal farm operator

The youngest farmers are generally more productive and efficient than the oldest.

		Age of farm operator	
Characteristics	Unit	Under 35	65+
Structural characteristics[1]:			
Number of farms	1,000	279	447
Land in farms	Mil. acres	101	199
Acres per farm	Acres	362	446
Sales	Bil. dollars	17	18
Sales per farm	Thous. dollars	63	41
Value of machinery and equipment per farm	Thous. dollars	39	23
Education[2]:			
Not high school graduate	Percent	12	44
High school graduate	do.	48	34
Post-high school	do.	40	22
Financial ratio[2]:			
Debt-asset ratio	Percent	25	6

[1]Source: 1987 Census of Agriculture, Bureau of the Census.
[2]Source: 1990 Farm Costs and Returns Survey, USDA-ERS.

United States Department of Agriculture

Economic Research Service

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April 1993

Issues for the 1990's: RURAL ECONOMY

Ethanol Production and the Rural Economy

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Issue. Among strategies to enhance farm income and provide rural jobs is development of new uses for farm products. The recent history of ethanol production illustrates how such strategies may unfold.

Context. U.S. ethanol production capacity is about 1.1 billion gallons a year at 39 currently operating facilities. Actual production was just over 900 million gallons in 1991. The eight largest plants account for 87 percent of total ethanol output and have production capacity ranging from 40 million to 280 million gallons per year. Large-scale ethanol plants are capital intensive, employing about three workers per million gallons of production. The larger plants use corn as a feedstock; seven of the eight largest plants are located in the Corn Belt. Nearly 96 percent of the Nation's ethanol is made from corn. About 6 percent of the 1990 corn crop was processed for ethanol.

More than half of ethanol plants produce less than 10 million gallons per year. Many of these are niche plants designed to use locally available, but commercially unusable, feedstocks. For example, cheese whey, potato waste, molasses, and brewery waste are relatively low-value food processing residues that can be transformed into a higher value product; their use solves a waste disposal problem. Such feedstocks often come at low or even negative cost to the ethanol producer. Use of an otherwise waste product as an input into the ethanol production process also provides benefits to society.

Demand for ethanol may grow rapidly due to clean air standards that are to be implemented in stages beginning in 1993. Substantial increases in ethanol production will result in crop substitution and increased farm and farm-related employment. Doubling ethanol production to 2 billion gallons per year by 1995 would require a 3.4-percent increase in production of corn, the primary feedstock for U.S. ethanol production. Prices and production of soybeans and other grains, such as wheat, sorghum, oats, and barley, would also be affected, some gaining and some losing value. Ethanol production will generally move the farm sector toward more market orientation as prices for corn and other grains move higher and as government deficiency payments decline.

Increasing annual ethanol production to 2 billion gallons by 1995 could create almost 28,000 jobs: 15,000 in farming and farm-related activities, 10,000 direct and indirect jobs from ethanol processing, and 3,000 temporary jobs from new plant construction. A majority of these jobs will be in the Midwest corn growing areas and many of the farm and farm-related jobs will go to rural residents. However, some farmers may choose to work additional hours rather than hire new workers and some of the new jobs may represent only part-time or seasonal employment opportunities. Nonfarm jobs associated with increasing the productive capacity of the ethanol industry, plant construction, and plant operation will be in communities that can meet the infrastructure and raw material needs of large plants. Industry experts suggest that an optimal-size, state-of-the-art ethanol facility should have a productive capacity of 100 million gallons per year.

At Stake. Hard-pressed rural communities are looking for ways to improve income and employment opportunities. A community's success in attracting a new 100-million-gallon ethanol facility will mean adding about 370 temporary jobs during the construction phase and about 840 permanent jobs during the operational phase. For communities with adequate resources, such increased employment means greater diversity in the economic base and more opportunities for growth.

Alternatives. Small- and medium-size cities in the Corn Belt are the most viable candidates to meet the basic requirements for large plants. The region produces abundant supplies of corn, its small- and

medium-size cities have adequate labor to build and operate the plants, and many of the communities already have grain production, handling, processing, and transportation facilities as major parts of their economic base. Increased ethanol production will simply require an expansion of these sectors.

Most small, isolated rural communities cannot support large-scale ethanol plants. However, integrating ethanol production with other agricultural activities, such as production of a feedstock or use of byproducts, allows cost-competitive production on a smaller scale and offers additional employment opportunities. Examples of four integrated facilities are Garden City, Kansas, where ethanol byproducts are used in cattle feedlots and aquaculture, an Idaho plant where potato processing wastes are used as a feedstock, and two California plants where cheese whey from dairy processing is used as a feedstock.

Local communities may also benefit from emerging technologies that lower the cost of producing ethanol from renewable, nonfood feedstocks consisting primarily of cellulose. Organic wastes, agricultural crops, and forest products are all potential energy biomass feedstocks. Cellulosic conversion technology will make ethanol production possible in areas where sufficient biomass feedstock is available from agricultural activities (rural areas) or accumulated waste products (urban or suburban areas). Introducing energy crops (fast-growing trees and a variety of grasses) into the local agricultural economy, particularly on marginal lands, could lead to some increases in farm income and jobs, both on and off the farm.

Initially, biomass conversion plants are likely to be small-scale, perhaps 10 to 50 million gallons of ethanol per year. Some of these operations will locate in or near urban centers to solve problems of organic waste disposal. But, because most of the energy biomass will be grown in rural areas, the new biomass technology will improve the ability of rural America to effectively compete in ethanol production.

Agenda. The effect ethanol will have on farm income and rural job growth will largely be determined by the role it will play in meeting national clean air standards. Additional expansion of the industry will depend on a continuation of current favorable conditions, including extension of the Federal gasoline tax exemption. Ethanol's role will likely be debated for some time by public officials.

Information Sources. Two U.S. Dept. of Agriculture, Economic Research Service, reports: Neil Hohmann and C. Matthew Rendleman, *Emerging Technologies in Ethanol Production*, AIB-663, 1993, and Michael LeBlanc and John Reilly, *Ethanol: Economic and Policy Tradeoffs*, AER-585, 1988.

Jobs and ethanol

Almost 28,000 jobs could be added if annual ethanol production reaches 2 billion gallons.

Item	U.S. ethanol production capacity[1]	Employment gains					
			Ethanol plant operation				
		Construction[2]	Direct[3]	Indirect[4]	Total	Agriculture[5]	All
	Mil. gallons	*Jobs*					
Current production	920	--	--	--	--	--	--
Future production:							
Excess operating plant capacity	210	--	630	1,130	1,760	2,820	4,580
Proposed operating plant expansion	385	1,430	1,160	2,090	3,250	5,180	9,860
Proposed new plants	360	1,340	1,080	1,940	3,020	4,840	9,200
Idled plant capacity	183	--	550	990	1,540	2,460	4,000
Total	2,058	2,770	3,420	6,150	9,570	15,300	27,640

--=Not applicable. [1]Based on data from Information Resources, Inc. [2]A 100-million-gallon ethanol production facility takes 2 years and requires about 300 full-time construction workers. [3]Assumes that the labor requirement does not change as the industry expands. [4]Includes employment increases induced by increased consumer expenditures for goods and services. [5]Includes farm-related employment gains due to increased grain production. Total is allocated in proportion to all categories of future production.

United States Department of Agriculture

Economic Research Service

Agriculture Information Bulletin Number 664-49

June 1993

Issues for the 1990's: RURAL ECONOMY

Role of Government in Agricultural Finance

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Issue. Federal farm credit policy has focused on enhancing competition among farm lenders, supplying lenders with loanable funds, and providing subsidized credit to farmers unable to afford commercial credit. This policy has promoted the integration of rural capital markets with the national capital market and improved farmers' access to credit since the early part of this century. In addition, farm incomes are now comparable to nonfarm incomes and farm families are, on average, wealthier than nonfarm families. However, government farm credit programs played a critical role in resolving the farm financial crisis during the late 1980's and redistributing the losses sustained during that period. These developments raise questions about the role of farm credit subsidies.

Context. Federal credit programs were developed earlier in this century to overcome deficiencies in rural capital markets and respond to problems of poverty, tenancy, and disenfranchisement. Perceived deficiencies in rural credit markets included the high cost and short term of farm mortgages, large regional disparities in interest rates, and limited access to national financial markets which subjected farmers to swings in credit availability. Federal credit policies are primarily implemented by the Farmers Home Administration (FmHA) and the federally chartered cooperative Farm Credit System (FCS). Although privately owned, the FCS enjoys some tax advantages and Federal agency status on its bonds, allowing it to provide low-cost agricultural credit. The FCS and FmHA hold 37 percent of all farm debt.

Access to credit allows farmers more flexibility in production decisions and in financing intergenerational transfers of farm assets. It also affords farmers the ability to expand their earnings base more rapidly than would reliance on retained earnings. Credit needs of agriculture have grown as farms specialized, enlarged, and relied more on purchased inputs and technology. Without credit, farmers would have been slower to adopt productivity-enhancing technologies. Historical data on the use of debt, growth of mechanization, and increasing concentration of farm production suggest that American agriculture was greatly aided by access to credit. Thus, credit policy has had a direct effect on the number and size of farms.

Imprudent use of credit has a down side for individual borrowers, their lenders, and for the economy as a whole. Many experts contend that imprudent use of credit and credit subsidies was responsible for the run-up and crash of land values during the 1970's and 1980's. Because using credit increases a farmer's exposure to financial risk, heavy credit users are more vulnerable to fluctuations in income, input costs, and asset values. Subsidized credit tends to increase asset values and discourage prudent use of credit. Economic costs of poor credit policy include misallocation of resources and increases in the costs of financial distress of borrowers and lenders. For example, Federal credit programs to help farmers recover from natural disasters, such as floods or droughts, are often inadequate substitutes for alternative policies that would insure income; disaster loans only partially replace lost income and increase farmers' liabilities.

Credit needs of the past two decades varied widely. Farm credit expanded rapidly during the 1970's and rural lenders, especially banks, were sometimes constrained by liquidity considerations. During the 1980's, farm credit contracted rapidly as falling commodity prices and land values produced widespread

financial distress among farm borrowers and their lenders. Rural lenders recorded losses of $20 billion during the crisis. Rescue and restructuring of the FCS required a new infusion of Federal funds (which will be repaid under the conditions established in the FCS Safety and Soundness Act of 1992). FmHA losses required a rethinking of program objectives. Today's eased farm financial stress, improved farm incomes, heightened competition among farm lenders, and more closely integrated rural and national capital markets make arguments for government intervention less compelling.

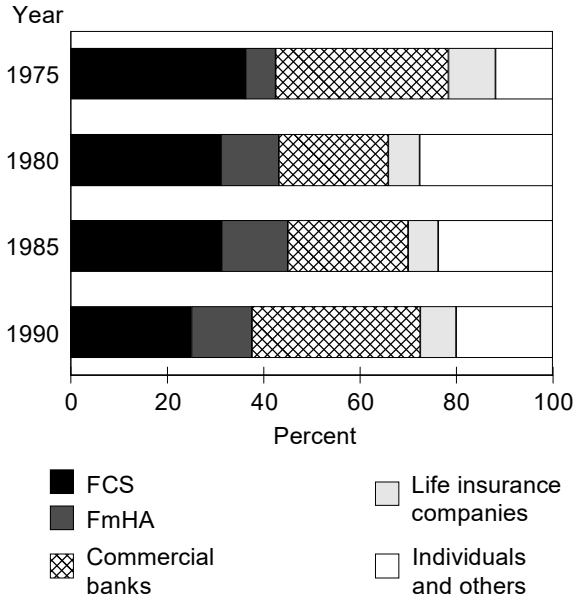
At Stake. Approximately 15 percent of farm operator households use the FHA and the FCS as their primary credit source. The financial strength of these producers would be affected the most by a change in Federal farm credit subsidy policy. Other producers would suffer if policy changes decrease competition among rural lenders. Subsidized credit may be important to smoothing intergenerational transfers of farm assets. In addition, private-sector lenders frequently have been reluctant to provide credit to beginning and minority farmers. However, adequate production of food and fiber in the United States does not depend on subsidized credit.

Alternatives. Policymakers might consider targeting credit programs. For example, an aging farm population, fewer new farm business start-ups, and the capital intensive nature of U.S. agriculture have heightened concern that individuals, particularly young or disadvantaged farm operators, will be unable to own farm assets. Government intervention might help some low-equity borrowers acquire essential farm assets and obtain a foothold in farming. However, targeted credit is not a complete replacement for insufficient farm incomes.

Such intervention could be delivered directly by the FmHA, through the Farm Credit System, or through the tax code. If provided through the FmHA, the assistance can take the form of subsidized and unsubsidized loans made and serviced directly by FmHA or commercial loans guaranteed by FmHA. Unsubsidized guaranteed loans are less costly than direct loans, but subsidized guaranteed loans can be more costly than direct loans. Changes to the FCS's charter could also provide a method for policymakers to target certain populations. Sale of federally tax-exempt bonds by State and local authorities is another option available to policymakers.

Agenda. Policy objectives to improve access to credit for beginning farmers and to streamline delivery of FmHA's guaranteed farmer programs were addressed by the Agricultural Credit Improvement Act of 1992. Effectiveness of programs in meeting these legislative objectives depends on the formulation and implementation of regulations under this law. Legislative debate continues on laws governing the U.S. commercial banking system. Banking law changes alter the operation and structure of the industry and could affect the delivery of agricultural credit since commercial banks are a primary supplier of agricultural credit.

Market shares of total farm debt
Government share of farm debt is declining.



Information Sources. Three U.S. Dept. of Agriculture, Economic Research Service, reports: *Agricultural Income and Finance: Situation and Outlook Report*, AFO-48, Feb. 1993; *Federal Credit Programs for Agriculture: Background for 1985 Farm Legislation*, AIB-483, Nov. 1984; and *Farm Financial Stress, Farm Exits, and Public Sector Assistance to the Farm Sector in the 1980's*, AER-645, Apr. 1991.

United States Department of Agriculture

Economic Research Service

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July 1993

Issues for the 1990's: RURAL ECONOMY

Rural Business Incubators and Economic Development

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Issue. Rural business incubators, which came to the forefront of local development policy in the 1980's, nurture emerging businesses. The assumption is that these new businesses, having survived the critical first stage of business development, will in turn contribute to more sustained local economic growth. Many State and local governments support business incubator programs and many areas are considering them as a way to stimulate job growth. But, do these programs foster local business development, particularly in rural areas? If so, what general approach works best?

Context. Rural business incubators are facilities that offer a unique supportive physical environment and business services to nurture start-up firms. Their goal is to improve the survival and growth rates for start-up enterprises. Incubators may be located in a building, a portion of a building, or a group of buildings. They provide physical and logistical services, shared office services, and business consulting services. Ownership of the facilities is fairly evenly spread among universities, 2-year colleges, private nonprofit organizations, local government, and for-profit corporations. The number of incubators nationwide grew nearly tenfold from 1984 to 1991, reaching approximately 450. Incubators have become increasingly popular as a part of a broader rural economic development program, such as a rural enterprise zone. Rural areas have 28 percent of all incubators (as of 1991), with most rural incubators founded since 1987.

There have been no empirical studies on the long-term effectiveness of incubators, but several small case studies suggest that success varies and those incubators designed to address targeted enterprise development objectives, such as supporting start-up electronics firms, have more success creating jobs. This is particularly important for incubators in rural areas because the local economy usually has limited diversity. While a few incubators do house one or more mature firms, there is no evidence that incubators merely induce firms to change location within a region. Research has also affirmed that incubators largely nurture homegrown businesses; most of the incubators' entrepreneurs, prior to establishing their business, had lived for many years in the same area as the incubator.

Incubators should not be perceived as quick fixes for a community's depressed economy. The actual number of jobs created in an incubator will be relatively small because the program is designed more for the long-term economic health of a region than for a shortrun increase in employment or income. The intent is to help several fledgling businesses get started in the hope that eventually some of them will leave the incubator to prosper and grow in the region. Successful firms typically leave the incubator after 1-2 years.

At Stake. While incubators can contribute to a region's longrun economic growth, establishing an incubator in rural locations offers special challenges. Incubators are expensive to develop, typically costing more than $500,000, and difficult to fund. Very few are self sufficient and many have no realistic plan for achieving self-sufficiency. Most rural facilities find it hard to develop financing for businesses wishing to enter an incubator. Hence, an important precondition for developing incubators is revolving sources of capital. Management assistance can be difficult to provide when a rural area has few business consultants. The relatively small pool of entrepreneurial clientele in rural areas and the limited ability to attract entrepreneurs from other regions, including other rural areas, impedes incubator development.

Alternatives. What success means for a particular business incubator depends on the aim of the developer(s). The general aim of incubator developers is rural economic growth in their region. Business incubators accomplish this goal by increasing the number of ventures that survive the critical early stage of business formation. An incubator also encourages an increase in local business start-ups. While incubators serve as facilitators of funding and business assistance to firms on their premises, this does not preclude firms from independently garnering the necessary knowledge or finances for their needs.

Successful rural business incubators build upon communities' strengths, not their weaknesses. The strengths may include the skill levels of potential employees, a specialty niche created by existing businesses, or the location of the community. Rural communities can improve the success of their incubators by making sure that market analysis is done for potential entry firms. This analysis could identify businesses most likely to succeed. Rather than focusing on the physical structure for the incubator, rural areas might focus on developing a solid support network for new ventures. Developers, in devising and implementing plans for their incubators, must allow for the incubation time needed for a given business and determine what firms are likely to succeed past the incubation stage and would likely then locate within the region. The necessary incubation time will vary according to the type of business and the socioeconomic characteristics of the rural area.

Rural business incubators work best as part of larger economic development strategies, specifically when they are tied into comprehensive support networks for start-up companies including business consultation and financial help for all stages of business growth. Local Small Business Development Centers (sponsored by the U.S. Small Business Administration), which are commonly housed on the campuses of local colleges, often are part of the support networks and lend business assistance. Effective community leadership, such as in building support networks, in tandem with appropriate rural incubator strategies (those designed to best take advantage of the local economic environment) can lead to the successful development of incubators. Rural business incubators will often be included in larger development plans, such as research or industrial parks and enterprise zones.

Funding to establish business incubators or to finance firms within the incubators has come from a multitude of private and public sources, including some Federal agencies (for example, the Small Business Administration, Department of Commerce, Office of Community Services, and Department of Health and Human Services). If correctly designed and managed, incubators often increase the success rates for their fledgling businesses. Businesses that are nurtured in them will usually remain in the community. Nonetheless, incubators should not be operated merely as general subsidy programs for the private sector. Incubator services must be targeted to those needs that are critical to the success of start-up firms and not otherwise provided in an effective manner.

Agenda. A rural development initiative that includes providing Federal assistance to rural communities, businesses, and individuals to improve the quality of rural life and increase employment opportunities in rural areas is part of the Clinton administration's comprehensive economic plan for the Nation. Congressional consideration of the plan has begun.

Information Source. Mark L. Weinberg, "Business Incubators Give New Firms in Rural Areas a Head Start," *Rural Development Perspectives*, 3(1987):6-10.

United States Department of Agriculture

Economic Research Service

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August 1993

Issues for the 1990's: RURAL ECONOMY

Agriculture as a Rural Growth Strategy

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Issue. Farm jobs have declined during the past 15 years, and jobs closely related to farming have shown little growth. At the same time, the number of other agriculture-related jobs has increased. The issue is how to stimulate rural economic growth.

Context. Employment on farms in nonmetro counties diminished by almost 590,000 jobs (22 percent) during 1975-89 (see table). Technological changes that substitute capital for labor in farming explain much of the decline. These advances, coupled with periods of unfavorable economic conditions, caused all regions to lose nonmetro farm jobs. Declines ranged from 8 percent in the Pacific States to almost 32 percent in the Southeast.

While the numbers of farm proprietors and wage and salary farmworkers declined, industries closely related to farming -- agricultural services, forestry, and fisheries, agricultural inputs, and agricultural processing and marketing -- added over 70,000 jobs (4.5 percent). Nonmetro employment in industries weakly linked to farming, including wholesale and retail trade of agricultural products and indirect agribusiness, increased by 1.1 million jobs (59.8 percent).

Rural jobs increased the most in industries not related to farming, where growth exceeded 5.6 million jobs (42 percent). These employment trends indicate that nonmetro areas gained over 11 jobs in off-farm industries for each onfarm job lost; only 2 of these off-farm jobs were in farm-related industries. This job gain/loss ratio varies dramatically across the Nation. The Northeast, with little economic dependence on farming, added almost 48 jobs off the farm for each farm job lost. But the ratio was about six jobs gained for each farm job lost in regions more dependent on farming, such as the Plains States, Corn Belt, and Delta States.

More striking is the low job gain/loss ratio in farm employment-dependent counties. In the 335 counties where farming alone accounts for 25 percent or more of county employment, 59,556 farm jobs were lost while only 86,405 off-farm jobs were gained during 1975-89, a ratio of 1.5 (see figure). Most of these counties are concentrated in the western Corn Belt and Plains States. Farming is no longer the dominant industry in many other areas, as the number of farm employment-dependent counties has fallen from 750 to 335 since 1975.

At Stake. Farming's ability to create new jobs is limited. Employment trends indicate that areas most dependent on farming and closely linked industries for jobs will have difficulty sustaining or expanding economic growth unless these communities can diversify their industrial base. Although some farm-related industries, particularly wholesale and retail trade of agricultural products, may generate jobs, employment growth in wholesaling and retailing depends more on the growth of consumer markets than on the farm sector. Agricultural wholesale and retail trade industries probably cannot provide significant job growth in sparsely settled rural areas.

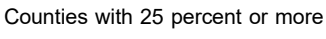
Alternatives. Counties where farming is important could increase employment by providing initiatives to encourage nonfarm businesses. Rural enterprise zones, rural incubators, or investment in technology to overcome problems of remoteness are among strategies that could be used to expand

nonfarm jobs. Developing new industrial uses for traditional farm commodities or for new nontraditional crops may also help sustain jobs in the farm sector.

Agenda. The administration's economic plan includes efforts to enhance rural business development. The U.S. Congress is considering these programs.

Information Source. T. Alexander Majchrowicz and Jacqueline L. Salsgiver, *U.S. Farm and Farm-Related Employment in 1989: Where Are Jobs in Farming and Its Related Industries Most Important?* AIB-654, U.S. Dept. Agr., Econ. Res. Serv., Jan. 1993.

Farm production employment counties, 1990
Farming is the dominant industry in the western Corn Belt and Plains States.



Counties with 25 percent or more of total employment in farm production.

Nonmetro employment change in farm, farm-related, and nonfarm industries, 1975-89
Farm production jobs declined while other employment off the farm grew.

Region	Nonmetro farming and farm-related industries						Nonmetro nonfarm	
	Farm production		Closely related[1]		Peripheral[2]			
	1,000 jobs	*Percent*	*1,000 jobs*	*Percent*	*1,000 jobs*	*Percent*	*1,000 jobs*	*Percent*
United States	-589.6	(-21.9)	70.7	(4.5)	1,119.4	(59.8)	5,607.5	(42.0)
Farm employment-dependent counties	-59.6	(-19.2)	-.7	(-1.5)	10.6	(23.2)	76.5	(21.6)

[1]Industries with strong linkages to farming, including agricultural services, forestry, and fisheries, as well as agricultural inputs and agricultural processing and marketing.
[2]Industries weakly linked to farming, including wholesale and retail trade of agricultural products and indirect agribusiness.

United States Department of Agriculture

Economic Research Service

Agriculture Information Bulletin Number 664-52

July 1993

Issues for the 1990's: RURAL ECONOMY

Rural Manufacturing Links to Rural Development

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Issue. Manufacturing faltered as an engine of rural growth in the 1980's. Rural manufacturing employment stagnated after growing by over 20 percent in 1970-80 and at even higher rates in previous decades. Considerable restructuring of urban manufacturing occurred in the 1980's, resulting in increases in high-skill jobs, productivity, and wages in contrast to rural manufacturing which became more associated with low-skill, low-wage jobs and low productivity gains. The slowdown in the growth of manufacturing jobs in rural areas and their continued dependence on low wages as an attraction to manufacturing firms raise questions about the development prospects of rural areas in a competitive global marketplace.

Context. From the 1950's until the 1980's, the national growth in manufacturing and its decentralization to rural areas produced about 1 million new manufacturing jobs in rural areas each decade. These jobs absorbed many people leaving agriculture and resulted in a shift in the economic base from agriculture to manufacturing in many rural areas.

Manufacturing now accounts for nearly 25 percent of personal income in rural America and 20 percent of rural jobs. Two and half times as many rural workers are employed in manufacturing as in farming, forestry, and fishing combined. Even in counties classified as farming dependent, about as many people work in manufacturing as in agriculture.

Rural manufacturing is characterized by low-skill, low-pay, routine production jobs. And in contrast to the situation in urban areas, there is little evidence of a shift in rural jobs toward higher skill levels. Low wages tend to make rural areas more competitive than urban areas for routine production activities, but heightened international competition and growing use of high technology mean the number of low-skill jobs is declining nationally. Workers in many countries are willing to work at lower wages than those received by U.S. workers, and high-technology, high-skill jobs appear to be more easily introduced into the production process in an urban setting, raising serious questions about the place of rural manufacturing in our rapidly changing national economy.

At Stake. Some rural areas have good growth prospects based on their natural amenities or proximity to a large city, but manufacturing is likely to remain critical to expansion of the economic base and employment of many rural areas. A transformation of rural manufacturing toward high-technology, flexible manufacturing production practices like those in urban areas seems essential to prevent eventual declines in rural manufacturing employment and wages.

Alternatives. Strategies to enhance the competitiveness of rural areas for higher skill, higher wage, and higher productivity manufacturing could focus principally on rural workers or on rural firms and entrepreneurs. It does not appear, however, that the lower skill level and education of the rural workforce has been the major bottleneck to restructuring rural manufacturing. In fact, rural areas have not been able to hold on to the more highly educated members of the workforce they do have. Rather, the main bottleneck appears to be the effects of rurality: isolation, an absence of economies of scale, and few agglomeration economies. A more effective approach to fostering the desired restructuring is likely to be to reduce the costs of rurality, to connect rural firms and entrepreneurs to nodes of information, innovation, and finance, and to increase their access to growing global markets.

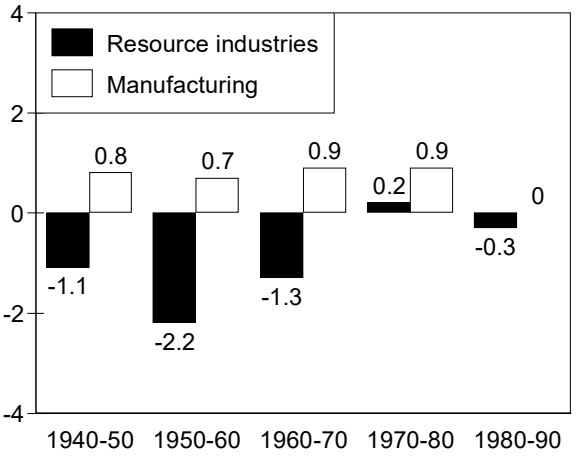
An industrial extension program, similar to the one that has helped the agriculture industry, is one model for delivering such support. Such institutions would function like the private, and often informal, institutions in urban areas that serve the same purpose.

Agenda. The administration's economic plan includes a rural development initiative that would provide Federal assistance to rural businesses and communities and an initiative to provide incentives and opportunities for communities to explore new technologies for increasing productivity such as developing broadband, interactive telecommunications networks. Congressional consideration of these proposals has begun.

Information Sources. Three U.S. Dept. of Agriculture, Economic Research Service, reports: David A. McGranahan and Linda M. Ghelfi, "The Education Crisis and Rural Stagnation in the 1980's," R. Long, coord., *Education and Rural Economic Development: Strategies for the 1990's*, AGES-9153, Sept. 1991, pp. 40-92; David A. McGranahan, "Thriving Rural Economy in the 1990's?" *Agricultural Outlook*, AO-182, Jan.-Feb. 1992, pp. 35-37; and G. Andrew Bernat, Jr., "The Rural Economy in the 1990's: The Role of Manufacturing," *Agriculture's Changing Horizon*, proceedings of the 69th Agricultural Outlook Conference, Mar. 1993.

Change in nonmetro manufacturing jobs, 1940-90

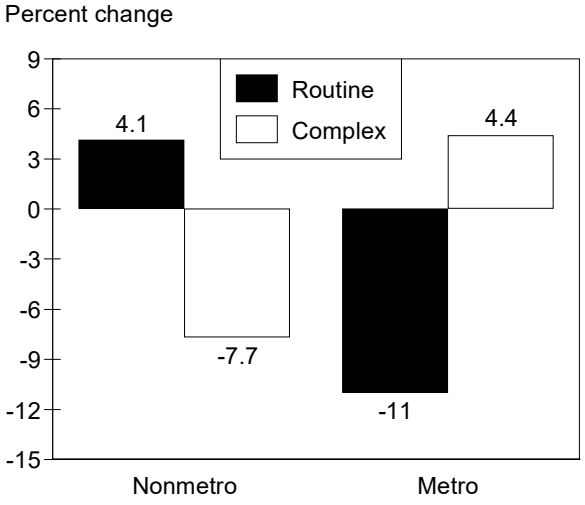
Nonmetro manufacturing job growth stopped in the 1980's.



Source: U.S. Census Bureau.
Note: Uses 1983 metro classification.

Change in nonmetro routine and complex manufacturing, 1980-88

Routine jobs grew and complex jobs declined in nonmetro manufacturing; the reverse occurred in metro manufacturing.



Source: USDA, ERS.

United States Department of Agriculture

Economic Research Service

Agriculture Information Bulletin Number 664-54

July 1993

Issues for the 1990's: RURAL ECONOMY

Persistent Poverty in Rural Areas and Small Towns

Calvin Beale (202) 219-0535

Issue. The incidence of poverty has historically been higher in rural and smalltown (nonmetro) areas than in large city and suburban (metro) places, creating a special rationale for rural development policy. After 1960, when poverty data were first collected, nonmetro poverty rates fell rapidly as the economy diversified, many poor people moved to urban areas, and the number of workers commuting to metro areas increased. In spite of that trend, many nonmetro counties have continued to suffer high levels of poverty throughout the last three decades, with no further progress since 1980. This raises the question of the nature and extent of problems in such areas, and poses the policy issue of how the affected populations can achieve higher levels of income that are more consistent with national standards.

Context. The U.S. incidence of poverty was 13.1 percent in the 1990 census, 12.1 percent for metro people and 16.7 percent for nonmetro people. The definition of poverty, varying by size of family, was income of less than $13,254 in 1989 for a household of two adults and two children. In 783 nonmetro counties, 20 percent or more of the population had poverty-level income, a level more than one-half higher than the national rate. The great majority (546) were counties of persistently high poverty, where the rate was above 20 percent in each census from 1960 to 1990 (see map).

There are people in every part of the country who are poor because of a temporary economic problem or a disadvantaging personal condition, such as physical or mental disability, responsibility for children without assistance from a spouse, or death of a spouse. Even very prosperous counties have poverty rates of 6-8 percent. But the persistence of poverty among 20 percent or more of an area's population reflects an entrenched syndrome of poverty-related conditions. These include a chronic shortage of moderate- to well-paid jobs (leading to a large number of poor working families), usually accompanied by substandard educational attainment, above average income concentration, extreme poverty among many of the poor, a comparative dearth of urbanization, and (except in the Southern Highlands) the presence of longstanding ethnic disparities and conflicts. The areas are often still struggling with the long-term consequences of past displacement of tenants and hired workers from the traditional extractive industries of farming, mining, and timber work.

The persistent-poverty counties can be characterized overwhelmingly as having one of four ethnic or regional characteristics. With few exceptions, their high poverty reflects low income levels in the black, Hispanic, and American Indian or Alaskan Native populations, or their location in the core of the Southern Highlands, either Appalachia or Ozark-Ouachita. The minority ethnic groups affected have distinct histories, but they share a legacy of economic and social suppression. The affected Southern Highland populations are typically white, but have been chronically below average in income because of various circumstances of history, economy, and location. Counties with persistently high poverty contained 30 percent of all nonmetro poor people in 1990. Their future development cannot be addressed without recognizing the special and long-term nature of the poverty-inducing problems that affect them.

At Stake. A majority of the rural poor do not live in the persistently poor counties. But, such counties are the core of the most difficult poverty problems. At stake is a satisfactory overall resolution of rural poverty conditions that cannot be attained without significant progress in the widespread areas where poverty is chronic. Only then can the Nation achieve acceptable levels of living and opportunity in rural and smalltown America as a whole.

Alternatives. Many rural people, especially young adults, have solved or attempted to solve their problems by moving to the cities. But prolonged exodus alone does not solve the problems of the source communities and the people remaining behind. Public measures to reduce poverty are typically of three kinds:

(1) Cash and cash-equivalent transfers to provide income and services, the so-called safety net measures. These include welfare payments (especially to women with minor children), assistance to the elderly or persons with disabilities, food stamps, public or subsidized housing, and medical care.

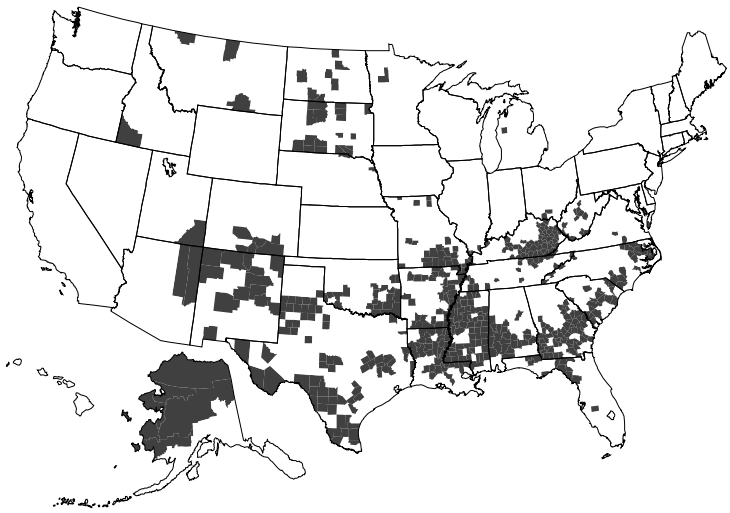
(2) Programs to enable people to become self-supporting. These may involve income support while taking schooling or job training, provision of public service jobs, or subsidy of private employers to hire workers who would otherwise be on welfare.

(3) Programs to create or preserve jobs. The approach is to help new or existing businesses through direct assistance or by aiding communities to obtain necessary community facilities. Rural and smalltown communities have had access to such programs, but thus far with varying degrees of availability, funding, or effectiveness.

Agenda. Since 1990, two presidentially appointed bodies have studied the problems of rural development and prepared policy recommendations intended to improve the rural economy and rural living. The Clinton administration's economic proposal contains recommendations to improve welfare and education programs and expand rural development efforts. Congress is considering these proposals.

Information Sources. Robert A. Hoppe, *Economic Structure and Change in Persistently Low-Income Nonmetro Counties*, RDRR-50, U.S. Dept. Agr., Econ. Res. Serv., Oct. 1985; *Revitalizing Rural America Through Collaboration*, President's Council on Rural America, Aug. 1992; *Future Directions in Rural Development Policy*, National Commission on Agriculture and Rural Development Policy, Dec. 1990.

Nonmetro counties with persistently high poverty, 1960-90
More than 500 counties have persistent poverty rates of 20 percent or more.



Source: Bureau of the Census.

United States Department of Agriculture

Economic Research Service

Agriculture Information Bulletin Number 664-59

June 1993

Issues for the 1990's: RURAL ECONOMY

Infrastructure Investment and Rural Economic Development

Thomas D. Rowley (202) 219-0546

Issue. Investing in the quality and quantity of infrastructure, the fixed physical installations and facilities undergirding an area's economic activities, is often cited as a way to promote rural economic development, especially where existing infrastructure is particularly inadequate. This leads to the issue of the proper role of infrastructure investment in a rural economic development strategy.

Context. The most recent, comprehensive national survey of rural infrastructure, conducted in 1981, suggested that basic infrastructure, including roads, bridges, water and wastewater treatment, and fire protection, was available in most rural areas. However, aging and deterioration were reported. More than half of the Nation's 3.1 million miles of rural roads are unpaved, and many that are paved need repairs. Furthermore, 180,000 rural bridges are deficient. Additionally, environmental regulations may require upgrades to facilities to bring them into compliance with more stringent standards. The Environmental Protection Agency estimates that 75 percent of needed improvement in wastewater facilities is located in rural communities with population less than 10,000. This situation, combined with the relatively weak performance of the rural economy, leads policymakers, including the President and Secretary of Agriculture, to call for infrastructure investments to stimulate the rural economy.

Infrastructure by itself is rarely sufficient to promote rural economic development. Other factors such as an educated and healthy workforce, good social institutions, and adequate financial capital are equally important. Infrastructure investments will be most successful in promoting rural development when made part of an area's overall development strategy. Given the increasingly global economy in which rural areas must operate and compete, the ability to connect with large urban centers of economic activity is often critical. Therefore, adequate transportation infrastructure to carry people and freight, as well as high-quality telecommunications infrastructure to carry information, is critical if rural areas are to compete.

Investing in rural infrastructure is important for reasons other than to promote economic growth. The health, safety, environment, and quality of rural life depend heavily on infrastructure. And Federal and State regulations place increasing pressure on rural areas to upgrade infrastructure to meet health, safety, and environmental standards.

At Stake. Livability, economic growth, and compliance with regulations are all at stake. Many rural communities need to upgrade and develop their infrastructure to meet regulatory standards and to protect their health, safety, and environment. In some communities, specific infrastructure investments made as part of an overall development strategy may be needed to promote economic growth.

Alternatives. Infrastructure investments can be financed by either the public or private sectors. The Federal Government provides assistance to rural areas to install or upgrade infrastructure. For example, the U.S. Department of Commerce's Economic Development Administration provides loans and grants for industrial parks, water and sewer improvements, and other investments. Many of these loans and grants are made to rural communities. The U.S. Department of Agriculture provides loans and grants for rural water and wastewater facilities, health care clinics, fire stations and equipment, and other types of community facilities. Some States have similar programs to assist rural communities. For example, Texas has a capital fund that is used, in part, to provide grants for rural infrastructure

investment. Infrastructure investments are usually the province of the public sector. But, private sector investments such as advanced telecommunications can be vital to infrastructure improvement.

Agenda. Congress is considering proposals to increase Federal support for infrastructure investment.

Information Sources. D.W. Sears, T.D. Rowley, and J.N. Reid, *Infrastructure Investment and Economic Development*: *Rural Strategies for the 1990's*, U.S. Dept. Agr., Econ. Res. Serv., Staff Report AGES 9069, Dec. 1990; J.N. Reid, "Building National Strategies for Rural Economic Development," paper presented at the Agricultural Outlook-USDA, Dec. 1992; *Toward a Federal Infrastructure Strategy: Issues and Options*, Advisory Council on Intergovernmental Relations, Aug. 1992; *Rural America: Worth the Investment*, National Association of Counties, National Association of Development Organizations, and the National Association of Towns and Townships, Jan. 1993.

United States Department of Agriculture

Economic Research Service

Agriculture Information Bulletin Number 664-60

June 1993

Issues for the 1990's: RURAL ECONOMY

Workforce Education and Training

Paul Swaim (202) 219-0540

Issue. Policymakers, debating the appropriate Federal role in upgrading worker skills, face an additional question of how education and training policies can best meet the needs of rural people.

Context. Several weaknesses of rural education and training should be addressed as part of the national effort to improve workforce skills. The rural high school dropout rate is still higher than the urban, due largely to pockets of low educational attainment in the South. Rural students' achievement test scores in the South also lag significantly. Rural high schools throughout the Nation offer relatively few advanced academic courses, probably due to small school sizes and limited tax revenues (see chart). The lesser access of rural students to college-prep courses may help explain why fewer rural youths score at advanced levels on achievement tests or attend and graduate from college.

Rural workers receive less training than urban workers, and they fell further behind during the 1980's. Much of the training received by rural workers is informal on-the-job learning, while training for urban workers is more often formal instruction away from the job, either at an alternative site within the firm or at an external site such as a community college. Formal training is required to master many of the more advanced production technologies. The typically smaller sizes of rural firms may be one reason that rural workers receive less training, because larger firms are better able to achieve scale economies in training programs. Another barrier to rural training is the generally greater distance to technical and community colleges.

At Stake. Improved education and training are critical for rural workers because access to good jobs is increasingly limited to individuals with advanced job skills. The stakes go beyond the well-being of individual rural workers and their home communities, however. Many of the best educated and best trained rural workers migrate to urban centers for better jobs.

ERS research suggests that the local economic development potential of increased investments in workforce skills is quite limited for most rural communities. Lower education levels do not appear to have been associated with slower economic growth in rural areas in either the 1970's or 1980's, after controlling for other factors that affect local economic growth, such as industry mix. One reason is that the firms placing the greatest premium on high skill levels, such as high-tech manufacturers, tend to locate in large urban areas near research universities and suppliers of advanced producer services. It therefore seems unlikely that increased workforce education and training, by themselves, can improve the competitive position of most rural areas.

Education and training initiatives probably can contribute to economic development in some rural areas, where they can be accompanied by successful efforts to increase local demand for higher workforce skills. These high-skill development strategies will not succeed unless rural workers actually have the required skills.

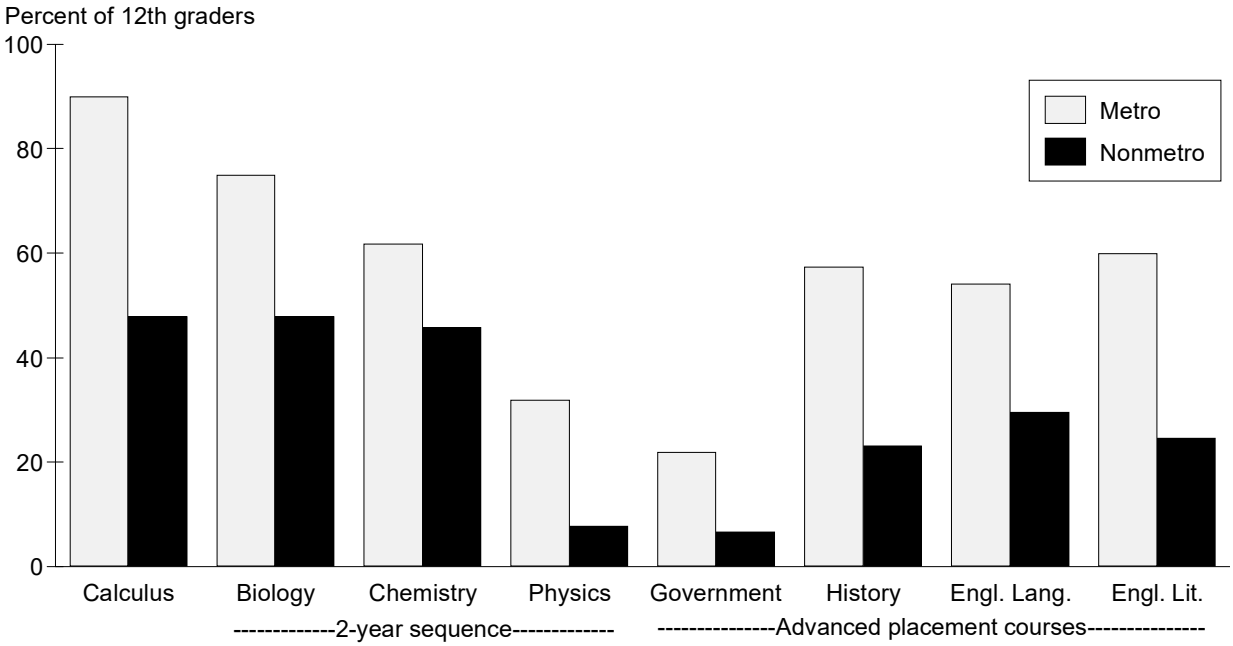
Alternatives. Several types of policies might help rural people participate in national efforts to upgrade schools and workforce training. Expanding early intervention programs, such as Head Start, extended in some form through elementary and secondary schools, might be an effective response to high dropout rates and low school achievement because these problems are most severe in high-

poverty areas. High school programs that integrate academic study, vocational training, and work experience for noncollege-bound students may be especially valuable in rural communities, where fewer jobs require college degrees. Innovations such as distance learning (use of telecommunications to connect rural students to classes taught in larger communities) can make more advanced curricula available to students in remote locations. Public policy might also promote high-skill growth in some rural areas through investments in fiber optic lines or other forms of geographically integrating infrastructure. Expanded technical and training support to small rural firms wishing to use advanced technologies also appears promising.

Agenda. Congress is considering the Clinton administration's economic program, which proposes to increase investment in education, job training, and technical assistance for small firms, and to develop a national telecommunications network linking schools, businesses, and government.

Information Sources. U.S. Dept. of Agriculture, Economic Research Service, *Education and Rural Development: Strategies for the 1990's*, Staff Report AGES 9153, Sept. 1991; Ruy Teixeira and Lawrence Mishel, "Upgrading Workers' Skills Not Sufficient To Jump-Start Rural Economy," *Rural Development Perspectives*, Vol. 7, Issue 3, June-Sept. 1991; and Elizabeth Greenberg, Paul Swaim, and Ruy Teixeira, "Can Rural Workers Compete for the Jobs of the Future?" *Proceedings of Agriculture Outlook '93*, U.S. Dept. Agr., Mar. 1993.

Availability of advanced curricula in metro and nonmetro high schools
Fewer advanced classes are available in rural (nonmetro) high schools.



Source: National Assessment of Educational Progress, 1988 and 1990.

United States Department of Agriculture

Economic Research Service

Agriculture Information Bulletin Number 664-65

September 1993

Issues for the 1990's: RURAL ECONOMY

Areas Where Farm Program Payments Are Important

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Issue. Counties with high government farm payments depend almost twice as much on farm and closely related employment as does the Nation as a whole. Not only has total employment growth slowed in these counties, but farm and farm-related employment base has declined by one-fifth, or over one-half million jobs.

Context. Farm program payments have little or no significance for a majority of U.S. farmers and farm-based communities. But, government payments do play an important role in income support and provide longrun income stability for a substantial percentage of U.S. farmers who produce wheat, feed grains, rice, and cotton. Government payments averaged 6.6 percent of gross U.S. farm income between 1986-90. In many counties where program crops dominate farm production, farm commodity payments exceeded the national average by two or three times. Government payments to farmers averaged $12.6 billion during this 5-year period, with over 70 percent consisting of deficiency payments to producers of wheat, feed grains, rice, and cotton. Government farm payments peaked at $16.7 billion in 1987, dropping to $9.3 billion by 1990.

Counties with significant government payments are concentrated in the spring wheat and barley areas of the Northern Plains, winter wheat and sorghum areas of the Central Plains, cotton, wheat, and sorghum areas of West Texas and southwest Oklahoma, and cotton, rice, and wheat areas of the Mississippi Delta and gulf coast. Government payments account for more than 20 percent of gross farm income in many of these counties. There were 378 counties where government payments as a percentage of gross farm income exceeded twice the national average of 6.6 percent, and 107 where they exceeded three times the national average (see map). A majority of the counties most dependent on program crops are in North Dakota, Montana, West Texas, and the Mississippi Delta.

At Stake. Federal support for farm programs has declined, and there is continued pressure for reduced payments. Cuts in farm commodity programs will alter the structure of farming in areas that rely heavily on program crops. Even without substantial changes in farm payment provisions, many of these sparsely settled counties will find it difficult to sustain their employment base and maintain local services.

Alternatives. Counties where program payments are most important may need assistance in diversifying their economic base with nonfarm jobs. Activities adding value to farm products are one possible option, but this option will not lead to new jobs in all farm-based communities. These counties could be the prime targets of rural development initiatives.

Agenda. Rural development programs that help farm program-dependent areas diversify their economic base can play an important role in the policy agenda. This might include programs that acquaint community leaders with ways to expand their nonfarm economic base and likewise inform industry leaders on the merits of these communities as possible sites for industry expansion.

Information Source. Mindy Petrulis, Thomas A. Carlin, and Wyn Francis, *Agriculture-Related Employment: Farm Commodity Programs and Rural Economies*, AIB-613, U.S. Dept. Agr., Econ. Res. Serv., Sept. 1990.

Structure and importance of farming in program-dependent counties, 1975-89

Counties most dependent on farm programs experienced little overall employment growth in recent years.

Item	United States	Government farm payments as a percentage of gross farm income: Above national average of 6.6 percent	6.6-13.2	13.3-19.9	20.0+
		Number, 1987			
Counties	3,141	1,218	840	271	107
Farms	2,087,759	868,695	650,346	161,565	56,784
		Percent of farm sales, 1987			
Principal program crops:					
Most important	Corn (7.8)	Corn (14.9)	Corn (16.2)	Corn (14.4)	Wheat (26.7)
2nd most important	Wheat (3.5)	Wheat (6.6)	Wheat (3.9)	Wheat (10.6)	Cotton (17.2)
3rd most important	Cotton (3.1)	Cotton (4.4)	Cotton (2.0)	Cotton (9.3)	Rice (13.4)
		Percent of total employment, 1989			
Farm and closely related industries	5.1	9.4	8.8	12.3	16.1
Farm inputs	0.3	0.8	0.7	1.4	1.2
Farm production	2.4	6.0	5.5	7.8	12.1
Farm processing and marketing	2.4	2.6	2.6	3.1	2.4
		Percent change in employment, 1975-89			
Farm and closely related industries	-15.8	-22.8	-21.2	-26.8	-29.4
All industries	44.6	29.1	32.4	18.0	0.6

United States Department of Agriculture

Economic Research Service

Agriculture Information Bulletin Number 664-70

November 1993

Issues for the 1990's: RURAL ECONOMY

Population Loss in Remote Rural Areas

David McGranahan (202) 219-0532

Issue. During the 1980's, the nonmetropolitan (nonmetro) population grew by only 4 percent, a drop of 10 percentage points from the 1970-80 rate and considerably less than the 12 percent metro growth in the 1980's. Some nonmetro counties grew rapidly, but over half lost population. The population loss was most prevalent in the more sparsely settled, remote rural areas, making delivery of public services in these areas more difficult and expensive and raising questions of survival for many communities.

Context. Rural population settlement was once organized largely around extractive industries—agriculture, forestry, and mining—and the delivery of services to both those industries and the people associated with them. As employment in extractive industries declined, manufacturing growth absorbed some of the labor, but rural settlement has become increasingly organized in proximity to expanding urban areas and natural amenities. The importance of natural resources, climate, and environment for the rural economy has shifted from resource exploitation toward attractiveness to working families, retirees, and vacationers. One consequence of this shift has been a wide disparity among rural areas in the direction and rate of population change.

Much of the rural middle of the country lost population in the 1980's, while the rural West, Southwest, and some of the South gained population. This shift generally represents a movement from remote rural counties with relatively few natural amenities to high-amenity areas, especially those areas with access to major urban centers. The population in counties both in the top 20 percent on an Economic Research Service natural amenity scale and adjacent to metro areas grew by 61 percent between 1970 and 1990. In contrast, remote, low-amenity counties lost population. High-amenity areas were defined by relatively warm, sunny winters; cool, dry summers; lakes or other water; varied topography; and low elevation.

Declines in population associated with farming and mining contributed to much of the rural population loss (see table). About three-fourths of the 900 counties specializing in these industries lost population in the 1980's. Lacking natural amenities and distant from large urban centers, many of these counties are unable to develop recreation, retirement, or other amenity-related industries or become bedroom communities (areas occupied mainly by commuters). Manufacturing appears to reduce the effects of having relatively few natural amenities, however, as manufacturing counties with few amenities were much more likely to gain population during 1980-90 than other low-amenity counties.

At Stake. Rural areas adjoining growing metro areas and areas attractive to vacationers and retirees are likely to continue to grow; in fact, a desire to limit growth actually becomes an issue in some cases. For rural communities dependent on manufacturing, the problem will be to maintain or enhance competitiveness in an increasingly global economy. (See *Rural Manufacturing Links to Rural Development*, AIB 664-52). Further population decline seems most likely for sparsely settled, remote rural areas dependent on farming or mining and lacking popular natural amenities. Moderate decline does not in itself present a problem. Poverty and unemployment rates are not particularly high in the rural upper Midwest, for instance, in part because of high rates of outmigration. But population loss does put added strain on service delivery systems.

Alternatives. Sparsely settled, remote, amenity-poor rural regions highlight a basic development problem. If one believes that government should attempt to provide everyone equal access to services, irrespective of residence, low rural population density prevents schools, hospitals, and other services from being both nearby and sufficiently large to offer a variety of services. The small size of jurisdictions further complicates the issue.

Agenda. New technologies, particularly information technologies, can increase the effective scale of some services available to rural residents and thereby reduce cost. Some regions, particularly in the Midwest, are actively organizing intercommunity cooperation.

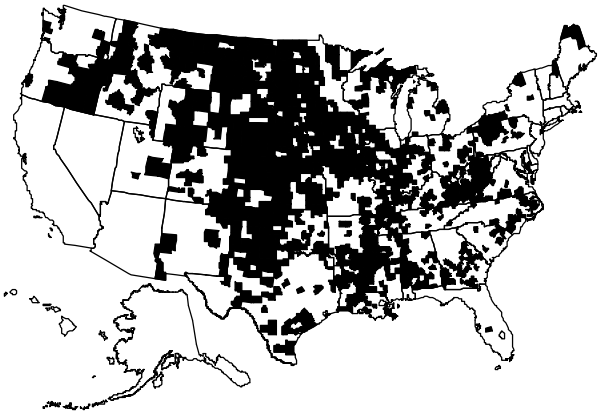
Information Sources. *Rural Conditions and Trends*, Vol. 4, No. 3, Fall 1993.

Average metro and nonmetro population and population change, 1980-90
Population declined in remote counties without market centers and in mining and farming counties.

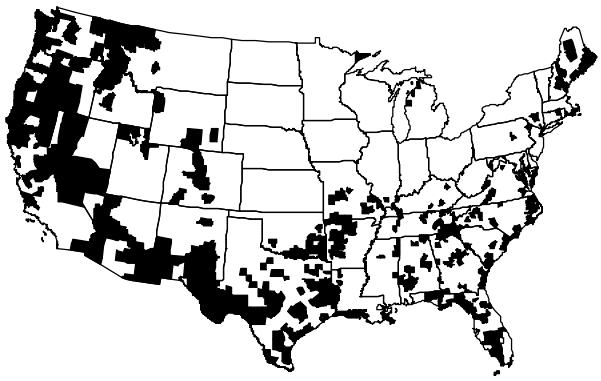
	Counties		Population	
County type	Total	Losing population	Total	Change, 1980-90
	Number	*Percent*	*Millions*	*Percent*
Total	3,097	45.2	248.7	9.8
Metro	714	19.0	192.0	11.6
Nonmetro	2,383	53.1	56.7	4.2
Adjacent to metro	918	39.8	28.6	6.6
Not adjacent	1,465	61.4	28.1	1.2
Center of 10,000+	295	43.1	13.3	4.4
No large center	1,170	66.1	14.8	-0.7
Economic type[1]				
Farming	695	74.7	7.8	-0.7
Mining	202	72.8	3.7	-4.2
Manufacturing	656	43.2	22.0	2.5
Natural amenity	429	23.7	12.3	16.3

[1]Based on percentage of county earnings in: farming (over 20 percent in 1976-79), mining (over 20 percent in 1979), and manufacturing (over 30 percent in 1979) with some overlap. Natural-amenity counties fall in the top 20 percent on amenity scale.

Nonmetro counties with population loss, 1980-90
Loss is most prevalent in remote areas.



Nonmetro counties ranking high on natural-amenity scale
Few high-amenity counties lost population.



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Issues for the 1990's: CONSERVATION

Expiration of Conservation Reserve Program Contracts

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Issue. Producers have voluntarily placed over 36 million acres of highly erodible or other environmentally sensitive cropland in the Conservation Reserve Program (CRP) through the 12th signup period. Soil erosion has been significantly reduced and other conservation and wildlife benefits have been achieved. After CRP contracts expire, annual rental payments made by the U.S. Department of Agriculture (USDA) to CRP participants will end and producers will decide the next use of their land. If commodity market conditions are favorable, a significant portion of CRP land could be taken out of grass and returned to crop production. The conservation compliance provision of farm legislation should moderate increases in soil erosion and related water quality effects on most CRP land if returned to crop production. But, other CRP benefits, like wildlife habitat, would be reversed. Land first placed in the CRP will be available for crop production or other uses starting in late 1995.

Context. The CRP was authorized by the 1985 farm act as a voluntary long-term cropland retirement program with a soil conservation orientation. USDA pays producers an annual rental payment plus half the cost of establishing a conserving land cover in exchange for retiring highly erodible or other environmentally sensitive land from crop production. Ninety-three percent of CRP land is planted to grass or trees under 10-year contracts. Nearly 377,000 CRP contracts have been established, covering 8 percent of U.S. cropland. Expiration of CRP contracts will make land available for cropping or other uses beginning in late 1995, but the majority of acres are available for other uses in late 1996 and 1997. Fifty-seven percent of CRP acres are located in the 10 Great Plains States. Annual rental payments average $50 per acre, with an annual $1.8 billion Federal government outlay.

Establishing vegetative cover on CRP land improves surface water quality, creates wildlife habitat, preserves soil productivity, protects ground water, and reduces offsite wind erosion damage. Soil erosion reductions on CRP land amount to nearly 700 million tons per year. This is a 22-percent decrease in U.S. cropland erosion compared with conditions existing prior to CRP and conservation compliance. If returned to crop production, most CRP land would be subject to conservation compliance, thus moderating increases in soil erosion. Conservation compliance requires producers to use approved conservation plans on highly erodible land in exchange for continued eligibility to receive farm program benefits. The CRP also provides producers a dependable source of income and helps to reduce commodity surpluses, increase crop prices, and decrease annual commodity program costs.

When their contracts expire, producers with plans for their CRP acres said they would return half to crop production, leave one-third in grass for livestock grazing or hay production, and keep almost a tenth in tree cover or in grass or trees for wildlife habitat, according to a 1990 survey. Producers cited economic conditions as the most important factor in determining future use of CRP land. However, changing economic conditions could induce post-contract uses different from those anticipated by producers in 1990.

At Stake. It is too early to accurately predict the economic and budgetary conditions that will exist when CRP contracts end. If demand for U.S. wheat and feed grains is strong, possibly due to trade agreements and increased foreign demand, most CRP land could return to crop production and annual acreage reduction programs would probably be small. This scenario, similar to the mid-1970s, would have the most negative implications for soil erosion, water quality, and wildlife habitat benefits provided by the CRP.

If demand for U.S. wheat and feed grains weakens, a smaller amount of CRP land would likely return to crop production in the immediate period following contract expiration. However, annual acreage

reduction programs would be large, absorbing some CRP land, but providing less overall soil erosion, water quality, and wildlife habitat benefits.

Something between these scenarios would likely occur if demand for U.S. commodities remains near recent levels. Some CRP land would be returned to crop production with resulting reductions in environmental benefits. Annual acreage reduction programs would likely increase over current levels.

Alternatives.

Do nothing except maintain bases, allotments, and quotas. Current regulations require USDA to protect crop acreage bases, quotas, and allotments on CRP land and to permit haying and grazing during specified periods for 5 years after a contract expires if the producer keeps the land in conserving uses. This provision, along with commodity program provisions such as 0/50/92, planting flexibility, and multiyear set-aside, provides producers with production choices that will not force them to replant CRP acres solely to preserve base history.

Target selected CRP land for contract extensions or easements. Contract extensions or easements of varying durations with or without haying and grazing privileges could be offered to producers. However, consistent with efforts to reduce the Federal budget deficit, easements or contract extensions might be offered only to selected CRP land. Because CRP land differs, selection could be based on the magnitude of its environmental benefits and/or the likelihood of its return to crop production relative to costs necessary to keep it in conserving uses. CRP land subject to effective conservation compliance treatment or providing minimal environmental benefits might be ineligible for contract extension or easements. Similarly, CRP land planted to trees could be ineligible since nearly all of this land likely will remain in trees.

Under existing farm legislation, producers can extend most CRP contracts for up to 5 additional years if they convert existing vegetative cover to hardwood trees, windbreaks, shelterbelts, or wildlife corridors. In addition, USDA has authority to extend contracts for up to 10 years or purchase long-term or permanent easements on CRP land (except land planted to trees) that is determined to pose an environmental threat and is likely to return to crop production. However, before this authority could be exercised, Congress would have to appropriate funds for extensions or easements.

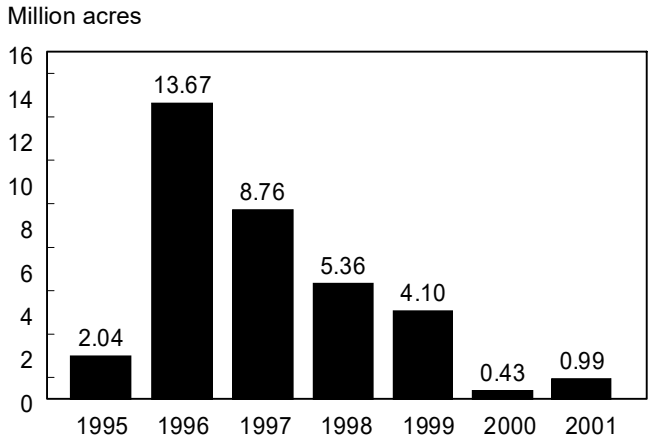
Other options. Other possible options for dealing with expiring CRP contracts include cost-sharing of fencing and watering facilities for assisting conversion to livestock production, transfer or purchase of crop acreage base, and, in limited instances, outright government purchase of CRP land.

Agenda. Commodity groups, conservation, wildlife, and environmental organizations, contract holders, and local interests are asking what, if anything, the Federal government plans for CRP land as contracts expire. Early resolution by Congress and the administration would allow producers time to plan for the transition. However, action will likely revolve around the next farm bill debate, expected in 1995.

Information Sources. Two U.S. Dept. of Agriculture, Economic Research Service bulletins: *The Conservation Reserve Program: Enrollment Statistics for Signup Periods 1-11 and Fiscal Years 1990-92*, SB-843, and *The Conservation Reserve Program: An Economic Assessment*, AER-626. Also see: *When Conservation Reserve Program Contracts Expire...A National Survey of Farm Owners and Operators Who Have Enrolled Land in the Conservation Reserve*, Soil and Water Conservation Society, Ankeny, IA.

Post-contract availability of CRP land

Most acres will be available for cropping or other uses in late 1996 and 1997.



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Issues for the 1990's: CONSERVATION

Water Reallocation and Policy Reform

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Issue. Growing water demand, coupled with limited potential for expanding supplies, assures increasing competition for water. Extreme drought conditions over several consecutive years has exacerbated supply problems in many areas of the West. Water reallocation, involving the transfer of water from current to alternative uses through voluntary markets or restrictions on use, is a central water policy issue. Federal and State agencies involved with water policy must balance quantity allocations and, where possible, introduce pricing mechanisms or water markets to ensure that water is reallocated to achieve economic and environmental goals.

Context. Irrigated agriculture accounts for about 80 percent of the Nation's total consumption of freshwater withdrawn from surface streams and aquifers. The 46 million acres irrigated in 1987 represented only 15 percent of the total harvested cropland, yet accounted for 38 percent of total crop value.

Irrigated agriculture in the Pacific and Mountain States relies heavily on surface water. Federally financed Bureau of Reclamation (Reclamation) projects account for about one-third of total surface water withdrawals for irrigation (see figure). The importance of the Federal role is historically rooted, in part, in an agriculturally based settlement strategy that provided surface water supplies at below cost to promote economic development of the West. Ground water is the dominant water source in the Plains States. While significant groundwater reserves exist under much of the region, supplies are nonuniform due to varying aquifer thickness. Groundwater withdrawals, largely for irrigation, have caused aquifer levels to decline in many areas. This, in turn, has resulted in increased pumping costs and localized aquifer exhaustion. At the same time, irrigation is expanding in areas of the Northern Plains with more favorable aquifer conditions. Irrigation has expanded significantly in recent years in the more humid East, with both Arkansas and Florida now among the top 10 States in irrigated acreage. Water supply conflicts, traditionally a western problem, are emerging in the Eastern States.

At Stake. Reallocation of existing agricultural water supplies will be needed to supply expanding urban and industrial demand, environmental needs, and reserved water rights of Federal and Native American lands. Failure to reallocate water may compromise future economic development and environmental quality. On the other hand, policies to conserve supplies may impose costs on irrigated agriculture and rural communities by idling irrigated cropland, altering cropping patterns, and increasing the chances for crop and farm failure.

Alternatives. Meeting future water needs will involve some combination of enhancing, reallocating, and conserving water supplies.

Supply enhancement. This historically preferred option will not completely supply future needs. While a few dams may be constructed, high monetary and environmental costs are limiting factors. Increased groundwater withdrawals may boost supplies in the short run, but higher pumping costs and public concern about declining aquifers will likely slow long-term groundwater use. Research continues on practices and technologies to augment supplies: cloud seeding, runoff management, groundwater recharge, water reuse, and desalination, for example.

Supply reallocation. Reallocation of existing water supplies is the most likely alternative. Supply reallocation could be direct, by limiting water withdrawal rights, or indirect, through voluntary, compensated water transfers. Compensating irrigators who reduce their water use could minimize production losses by providing both an incentive to conserve water and funds required to improve irrigation systems. An expanded market transfer system would require relaxing institutional and administrative barriers that currently restrict market activity.

Conservation. Onfarm water management and improved water conveyance and application systems can greatly reduce irrigation water withdrawals. Increases in irrigation efficiency may largely offset reductions in water supplies in some locations, implying little effect on acreage or production. Policy tools to encourage water conservation may include direct quotas on withdrawals, investment incentives for water-conserving technologies, penalties for wastewater discharge, and higher water prices, possibly through reduced Federal subsidies or increased groundwater taxes.

Agenda. Reclamation contract, pricing, and delivery policies remain the central focus of Federal water policy reform. Recently enacted reform of Reclamation's Central Valley Project in California provides for reallocating water to environmental uses, removing some Federal barriers to market transfers, and increasing water prices. Effectiveness of this reform in promoting water conservation, providing for growing urban demands, and meeting environmental needs will be evaluated. This legislation might serve as a model for more general revision of Reclamation policy.

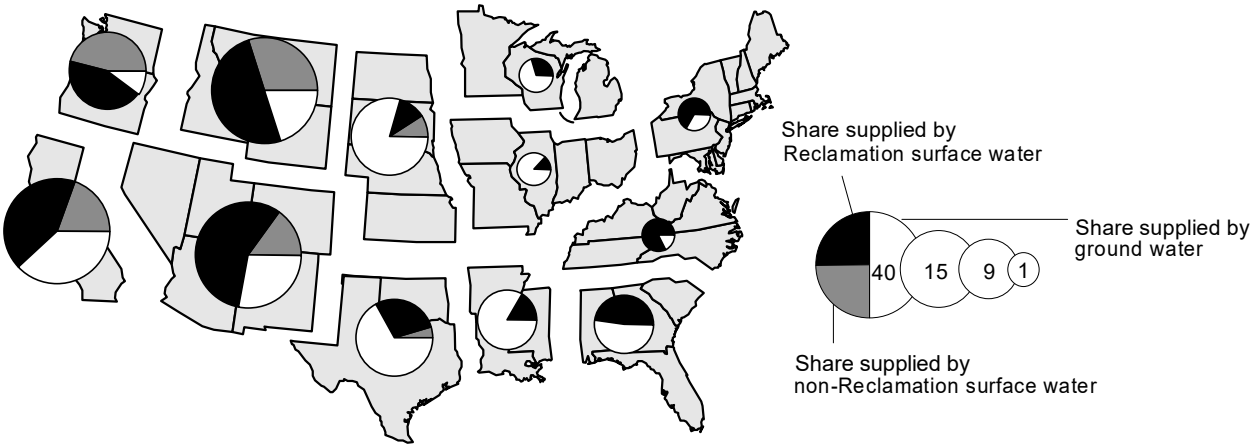
Federal water policy is defined by numerous Federal policies, programs, and statutes affecting water supply and demand conditions. In practice, Federal water policy extends beyond Reclamation, involving the Departments of Agriculture, Interior, Commerce, Energy, and Justice, as well as the Environmental Protection Agency. Coordination among agencies is needed to avoid policies that operate at cross purposes.

Action at the Federal level comprises only part of water policy reform. Responsibility for policies affecting ground water and most surface water resources rests at the State, river basin, or district level. Federal agencies can help by providing information and resources.

Information Sources. Information on irrigated agriculture: U.S. Dept. of Agriculture, Economic Research Service, *Agricultural Irrigation and Water Use*, AIB-638, Jan. 1992, and U.S. Dept. of Commerce, Bureau of the Census, *Farm and Ranch Irrigation Survey (1988)*, AC87-RW-1, May 1990. Information on water use; U.S. Dept. of the Interior, Geological Survey, *Preliminary Estimates of Water Use in the United States, 1990,* Open-File Report 92-63, and U.S. Dept. of the Interior, Bureau of Reclamation, *1990 Summary Statistics,* 1991.

Irrigation water withdrawals by major water source, 1990

Federal policies influencing Reclamation projects affect one-third of total surface water used for irrigation.



Note: Values and corresponding circle size represent maximum irrigation water withdrawals in million acre-feet.