PROCEEDINGS

44th Annual Meeting

WESTERN AGRICULTURAL ECONOMICS ASSOCIATION

Squaw Valley, California
July 25, 26, 27, 1971

Samuel H. Logan, Editor

SOME IMPLICATIONS OF THE GREEN REVOLUTION FOR U.S. RICE POLICY

John G. Stovall[1/]
Farm Production Economics Division, Economic Research Service,
U.S. Department of Agriculture, University of Kentucky

The so-called Green Revolution in some of the major rice-producing countries raises some profound questions for U.S. policymakers that involve sharp conflicts between the domestic rice program and foreign assistance to developing nations.

The purpose of this paper is to delineate some of these conflicts, show how they have arisen, suggest some alternative policies and some of the consequences of each.

The record shows without question that the United States has been fully committed for many years to an international effort to assist and encourage the spread of the Green Revolution in less-developed countries by providing technical assistance, financial support, and other help in spreading the adoption of new high-yielding rice varieties. But the very success of these efforts is now a source of a great deal of concern by domestic rice producers, their spokesmen, and those charged with the responsibility of carrying out the provisions of the government program for rice. The success of that program (from the producer's point of view) depends to a large extent on a strong export market. During the past 3 years about 60 percent of the U.S. production has been exported. Without these export markets, income to U.S. rice producers would drop sharply.

The Green Revolution affects these exports in at least three very important ways. In the first place, some countries who in the past were commercial importing countries are now, or soon will be, self-sufficient in rice and no longer need our exports. Second, improvement in production levels has diminished the need for PL-480 food assistance. Third, some of these same countries who were once our rice customers have become our competitors in the world export market.

In short, U.S. policymakers are faced with the question whether to compete vigorously with the less-developed countries in the world market which will depress prices even further or whether to restrict our exports and production to a level that will allow these developing countries to develop a rice trade and to supply the major share of the world's imports. In other words, will we supply only those markets and grades that cannot be supplied by the less-developed countries and assume the position of a residual supplier of world rice?

This will not be an easy decision for our government to make. There are persuasive arguments and powerful political support on both sides of the issue. Moreover, the question is much deeper than rice or even agricultural products. The same question will have to be answered with respect to wheat, with respect to manufactured goods, and with respect to international trade in general. But the conflict comes into sharper focus in the case of rice because of this country's unique position in the world rice trade and the fact that the Green Revolution has had a more dramatic effect on rice production than any other commodity.

Conflicts between the goals of government programs are by no means confined to international trade. It is well known, and often embarrassing, that ACP payments for output-increasing practices run counter to and dilute the programs to control the supply of agricultural products. Land Reclamation projects often bring more land into production of surplus crops, thereby increasing the supply control costs. Such conflicts are probably inherent in our form of government and our political process, through which such conflicts must be resolved or allowed to coexist.

Although their resolution must come via the political process, economic research has an important role to play. That role begins with the identification of such conflicts, includes an assessment of their economic and social costs, and concludes with an evaluation of the consequences of alternative courses of action.

Although rice is the major component of the diet of a large share of the world population, world trade in this product is relatively light. Only 3 or 4 percent of the world production enters world trade compared with about 15 percent for wheat. Moreover, in the last 2 or 3 years, the United States has been the leading exporter with about 30 percent

of the total in recent years.

Until this recent period and throughout modern history, the Southeast Asian "Rice Bowl" -- Burma, Thailand, Cambodia, and Viet Nam -- supplied most of the rice entering the world market. Political problems in Viet Nam, Burma, and Cambodia and a higher domestic demand in Thailand resulted in a decline in the exports from these countries and enabled the United States to emerge as the world's leading rice exporter in 1968. The threat of famine in 1966-67 in some of the Asian countries further encouraged the United States to increase its production and exports to avert world disaster.

However, the Green Revolution in two or three years' time transformed world trade in rice from a "bull" market to a "bear" market. The United States found it necessary to reinstate its export subsidy in 1969 in order to move U.S. rice on the world markets. The Thailand export price (5% brokens) fell from an average of $224 per metric ton in 1967 to $203 in 1968, $186 in 1969, and to $125 in early 1971 -- a decline of 44 percent in 3 years.

The outlook for exports of rice and world prices is, at best, uncertain. Because such a small fraction of total production moves in world trade and because there is no major international market for rice -- such as there is for wheat or cotton -- world prices are likely to remain unstable and be very sensitive to changes in production in some important producing countries unless an international trading agreement is reached. The internal policies of the United States and other major exporting countries are likely to be the most important determinants of world prices for rice.

The future of PL-480 exports of rice appears very uncertain, in part because of the Green Revolution. Some of the countries who have been the major recipients of these exports in the past are making real progress with the high-yielding rice varieties and may very well be self-sufficient in the next few years. Moreover, the overall concept of food-aid to some of these developing countries is being seriously questioned. The views of many experts are that other forms of assistance, such as fertilizer, pesticides, capital, and technical aid have a higher payoff than food. If such views prevail in the future and PL-480 exports of rice are eliminated, or curtailed, the adverse effects on the U.S. rice industry are obvious.

The FAO has proposed a formal international commodity agreement as a vehicle to accommodate the needs of developing countries in the international rice trade. This implies that developed countries, such as the United States and Japan, should make room for less-developed countries in the international trade of rice. It is interesting to note that there are only four formal international agricultural commodity agreements: (1) wheat, (2) coffee, (3) sugar, and (4) olive oil. Their record of performance is far from perfect and there seems to be increasing dissatisfaction in this country with the international wheat agreement, the only one of the four agreements which affects a large segment of the U.S. farm population.

The choice of a farm policy for rice, in view of possible conflicts with agricultural developments in some developing countries, will be made in the political arena. The political muscle of the U.S. rice interests is quite strong, and any course of action that is detrimental to its income position will be resisted vigorously. On the other hand, economic development and foreign assistance advocates will oppose any U.S. farm policy that adversely affects the progress of the Green Revolution.

What are some of the alternatives with respect to U.S. farm policy for rice, and what can be said about them? The alternatives are obviously numerous, but the following three policy positions reflect two extremes and the middle ground.

1. No change in the rice program. The choice of this alternative would require no action since the legislation for the current program is permanent. This would seem to be the course of least resistance, since any change that requires legislative action is difficult to accomplish.

   This course of action is not without its difficulties, however. The difference in farm price and world price would become greater as the support price is moved up according to the parity formula and if world prices continue to decline. Thus, the cost of the program would be expected to increase because of higher export subsidies required to move U.S. rice in the world market. Price support costs could also be expected to increase. Allotments, also, would likely be reduced

as prospects for exports declined. Income of rice producers would not likely change significantly.

The rising government cost and the dilemma of what to do about exports -- both PL-480 and commercial -- would be the main arguments for change.

2. Export all the rice that farmers are willing to produce at world prices. Under this alternative farmers would be free to produce any acreage of rice they wanted at the prevailing export price. This price, of course, would presumably fall to an equilibrium level consistent with the quantity of rice produced and exported.

   An analysis by Grant and Moore [2] in which they examined the "no program" alternative gives some indication of the possible effects if such a policy position were taken.[2/] He estimates that under free market conditions in the United States, an equilibrium would be reached at an export price of $6.71 per cwt. (milled basis). At this price, about 140 million cwt. would be produced of which 100 million cwt. would be exported. Farm prices would fall to $3.40 per cwt. (farm basis), and there would be no government cost. Income to rice producers would drop considerably compared to current levels. According to the analysis, this lower income level would be more than sufficient to cover variable cost, but not land costs at current prices. Thus, the longer run effects would be capital losses to owners of land and allotments in the form of lower land and allotment prices.

   We can only speculate on the impact of this position on less-developed countries. Certainly the economy of countries, such as Thailand, who depend on exports for much of their foreign exchange, would suffer a severe blow (as they have already) because of depressed export prices and more selective buying. Other less-developed countries who are large importers of rice would experience a rise in real income as their food costs declined.

   To add further to the uncertainty surrounding this course of action, it should be noted that Grant's analysis included the simplifying assumption that there would be no counter or retaliatory action on the part of other nations to this large increase in exports. But, in reality, we do not know how they would react to such action on our part. In addition, the "no program" alternative projects many variables -- both demand and supply -- well outside the observable range, making the results subject to question.

3. Become a residual supplier of rice. Such a policy position would be a concession to developing nations who are attempting to increase their production and exports. However, these nations probably could not supply all of the world rice needs in the grades and quantities demanded. The United States would continue to serve those markets.

   This alternative would probably work best under some sort of international agreement and would necessarily involve the same concession from some of the other developed countries, principally Japan. U.S. producers would probably be required to cut back acreages considerably and would experience a loss in income as they substituted lower valued crops on the land formerly devoted to rice. In areas where soybeans are the next most profitable crop, a switch to beans would probably not mean a great loss in income, at least compared to policy position number 2.

The choice of any one of these three policy directives involves a trade-off between the goal of assisting developing countries, the goal of enhancing the income position of U.S. rice producers, and the ever-present goal of reducing government costs. Alternative number 1 would probably be favored by the U.S. rice interests, but it would result in higher government costs and continued pressure on the advance of the Green Revolution.

Position number 2 would appeal to free trade advocates and would be in line with the direction that other commodity programs have taken, i.e., lower government support prices to near world level. Some economists would also argue that this alternative, which incorporates the principle of comparative advantage, would be in the best long-run interest of developing countries as well. For example, Colin Clark [1] points out that if a developed country can produce agricultural products at a cost which enables it to sell at the present world market, it is rather difficult to justify any government or international authority in attempting to prevent it from doing so.

Position number 3 would be a clear concession to developing countries, but at some expense to U.S. rice producers. It would likely be defended by economic development and foreign aid spokesmen, but vigorously opposed by U.S. rice interests. Some less-developed countries who hold no hope of becoming self-sufficient in rice could also be expected to oppose this position because they might very well have to pay a higher price for rice imports and might have a less dependable supply. Moreover, an international trade agreement -- which this alternative presupposes -- might be extremely difficult to negotiate.

These conflicts and a discussion of them has pointed up that the major issues facing U.S. rice producers lie in the area of international trade, foreign aid, the Green Revolution, and in the policy position our government adopts toward them. Although the existence of these conflicts seems clear, their magnitude is not. In order for policymakers to make intelligent choices from the array of alternatives, they need to know more about the consequences of each. This suggests a clear challenge for researchers to provide economic intelligence on a timely social and economic issue.

FOOTNOTES

1/ The views presented herein are those of the author and are not necessarily views of the U.S. Department of Agriculture or the University of Kentucky.

2/ Grant's supply response estimates are taken from the results of a regional rice adjustment study published in [3] for the Southern Rice Area and [4] for the Sacramento Valley. These studies used linear programming results from representative rice farms to obtain aggregates. These studies showed that with no allotment restrictions, U.S. production would be 175 million cwt. with rice at $4 per cwt. A major portion of the production occurred in the Mississippi River Delta where water is relatively plentiful. The demand estimates used in Grant's study came from an econometric model using time series data.

REFERENCES

1. Clark, Colin. The Economics of Subsistence Agriculture. 4th Edition. (London) Macmillan; (New York) St. Martin's. 1970.

2. Grant, Warren R. and Moore, D. S. Alternative Government Rice Programs: An Economic Evaluation, ERS, USDA, AER No. 187, June 1970.

3. Mullins, T., Grant, W. R., Campbell, J. R., Gerlow, A. R., Bonnen, C. A., and Welsch, D. E. Resource Use Adjustments in Southern Rice Areas, Part I. Effects of Price Changes with Selected Rice Allotment Levels, Arkansas Agr. Exp. Sta. Southern Coop. Ser. Bul. 122, June 1967.

4. Nwoko, Gabriel S. The Effects of Various Production Control Programs on Rice Supply in California, unpublished Ph.D. thesis, University of California at Davis, 1968.