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MARKETING CALIFORNIA COTTON: AN ECONOMIC AND POLICY OVERVIEW

by

Jerome B. Siebert,

DEPARTMENT OF AGRICULTURAL AND RESOURCE ECONOMICS

BERKELEY

CALIFORNIA AGRICULTURAL EXPERIMENT STATION

University of California

DEPARTMENT OF AGRICULTURAL AND RESOURCE ECONOMICS
DIVISION OF AGRICULTURE AND NATURAL RESOURCES
UNIVERSITY OF CALIFORNIA AT BERKELEY

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California Agricultural Experiment Station
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Marketing California Cotton: An Economic and Policy Overview

Jerome B. Siebert, Karen Klonsky, and Vijay Pradhan
University of California - Berkeley

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Cotton is an important crop to California agriculture. Its 1989 production value of $1.03 billion made it California's leading crop; it is also the state's leading export crop. The total value of the 1989 California cotton crop is made up of $929.2 million in lint and $102.7 million in seed. The profitability and viability of the California cotton industry is largely dependent on factors outside its direct control and influence. These factors include world market conditions, general economic conditions, conditions of trade, and government policies and programs, both U.S. and foreign. In addition, the amount of cotton acreage in California depends on its profitability in relation to the profitability of other field crops in the short run and fruit and vegetable crops in the long run. For cotton, as well as other crops grown in California, land availability is not as critical a factor as the availability and price of water. Water policy on both the state and federal level is important to the long run viability of the cotton industry in California. Important also is the developing environmental policy and programs which will affect the chemicals that cotton farmers can use in production. All of these factors taken together will determine both the short run and long run profitability of cotton production in California. This chapter will examine some of the marketing, economic, and policy considerations for California cotton production. A bibliography is at the end of the chapter which contains the references from which the data and information is derived.

California Cotton Production in a World Context

In 1989 California cotton production amounted to nearly 2.7 million bales (table 1). This amount is below the 10 year average for the 1980s (2.8 million bales). The highest production occurred during the latter part of the 1970s and early 1980s when California cotton production exceeded 3 million bales. The number of harvested acres in 1989 amounted to 1,059 thousand acres. The acreage in 1989 was below the historical average for the 1980s. California acreage reached a high point during 1979-81, exceeding 1.5 million acres per year, at a time when the emphasis in government programs was to plant "fence row to fence row". The decision to plant cotton depends heavily on the expected returns per acre which in turn depends on farm programs and comparable returns available from other crops.

California cotton production in 1989 amounted to nearly 22 percent of U.S. production.

In contrast, California harvested acreage was only 11.2 percent of U.S. acreage, reflecting a decided advantage in yields produced on California cotton farms. The yield of California cotton in 1989 was 1,218 pounds per acre compared to an average U.S. yield of 619 pounds per acre (tables 1 and 2). Yield per acre in California has been variable since 1960. Yields in the latter part of the 1980s are significantly above those of the 1970s and early 1980s. An average yield in California for the five year period from 1985-1989 is estimated to be nearly 1,145 pounds per acre compared to an average of 625 pounds per acre for the U.S. The difference per acre is largely explained by the difference in climate and cultural methods in California production, particularly irrigation. In Arizona, where climate and irrigation methods are similar, yields are also similar. Hence, California has a decided yield advantage over most other cotton producing areas in the U.S.

Cotton is produced on over 3,000 farms in California (7.3 percent of the total U.S. cotton farms). This number is down from that in 1974 of over 4,000 farms (U.S. Department of Commerce, Bureau of Census 1987). The number of acres per farm is 357 compared to 232 for the U.S., larger than any other region in the U.S. This average size is down significantly from the early 1980s when the average acreage of California cotton farms amounted to nearly 440 acres. Size of farms in California is influenced heavily by both the payment limitation provisions of the federal farm program and federal water policies limiting deliveries to a maximum number of acres.

Exports of cotton from California amounted to nearly 70 percent of the 1989 crop. California's share of U.S. cotton exports amounts to 47 percent. Much of California's cotton exports are shipped to Pacific Rim markets. In 1989, Japan was the leader of imports of California cotton with a value of $376.7 million; other Asian markets amounted to $632 million. Exports of California cotton reached a high of $989 million in 1981 and declined steadily during the first part of the 1980s. This decline was due to the strength of the U.S. dollar during the first part of the 1980s and deficiencies in the U.S. farm program which enabled competing countries to undersell U.S. traders. This trend was reversed during the last part of the 1980s with a decline in the value of the dollar, a revised farm program in the form of the 1985 Food Security Act, and export subsidies (see table 3). The 1990 Farm Bill continues the market orientation of the 1985 Act, enhancing exports.

California cotton prices are closely correlated with U.S. prices (see figure 1). In general, prices have trended upwards since 1960 in step with those in the U.S. During the past 30 years, the average farm price for California cotton reached a low of 24.3 cents per pound in 1970 and 1971 and a high of 77.8 cents per pound in 1980. Average prices for California cotton during the 1980s was 66.9 cents compared to the U.S. average of 60.4 cents. Average variability of California cotton prices during the 1980s was from -7.8 cents

to +10.9 cents from the average price of 66.9 cents per pound. Variability of prices on a year to year basis depends on a number of factors that include farm program benefits, U.S. and world cotton situation, and economic factors such as monetary exchange rates that influence the value of U.S. cotton in world markets.

World and U.S. Supply and Use

World and U.S. supply data is presented in tables 4 and 5 for 1969-89. The trend for world production, supply, and consumption is up for the last 20 years (see table 4). In addition, world trade in cotton as measured by both imports and exports is also up. Beginning and ending stocks have varied between 21.1 million bales to 51.1 billion bales. During the five year period from 1986-1990, ending world stocks have declined as consumption has increased coupled with a decreasing trend in total world supply. Total supply of U.S. cotton since 1985 has remained stable to slightly increasing. However, mill use and exports are up significantly for U.S. cotton resulting in a significant upward trend of U.S. cotton disappearance since 1985. The end result has been low historical levels of ending and carry-over stocks.

Even though cotton production, trade, and consumption have increased worldwide, cotton's share of world fiber production fell from 58 to 50 percent between 1967 and 1987 (USDA, ERS, 1990. "Cotton: Background for 1990 Farm Legislation"). All natural fibers have lost markets to manmade fibers, especially during the past 20 years. However, within the apparel and home furnishing markets, cotton and other natural fibers have had increased popularity during the 1980s.

In world trade, eight countries account for about 60 percent of world cotton imports. Japan is the greatest importer with a 15 percent share of world imports. Other Asian countries, particularly Taiwan, Hong Kong, and South Korea, have increased their cotton imports. The major European importers which include France, Italy, and Germany, have declined in relative importance as they have moved heavily into manmade fibers. China, which accounted for 17 percent of world imports in 1979 and 1980 has tapered off sharply to less than 1 percent. However, China is a wild card in world trade even though it is producing most of its consumption of cotton. While China is a major net exporter of cotton, its increasing domestic consumption, limited arable land, and intense competition for land among crops and urban areas may cause it to increase imports in the future.

The United States is the world's largest cotton exporter with a market share of over 25 percent. As stated previously, California is the largest exporting state with 47 percent of U.S. exports. Major U.S. competitors are the Soviet Union, Pakistan, and China. Other

exporters are Australia, Paraguay, Sudan, Argentina, Brazil, Mexico, and Egypt. U.S. exports of cotton are affected by several factors. One factor is U.S. prices relative to those of competing countries, especially when abundant harvests occur. In addition, the value of the U.S. dollar compared to its competitors has an impact, as well as do export subsidies. The value of the dollar can make U.S. cotton more or less expensive on the world market depending on its relative strength. In addition, the U.S. has used export subsidies to counter those of other countries in order to maintain cotton exports. It is likely that the U.S. will continue in its role as worldwide leader in exports; however, as other countries reverse recent poor showings in production, competition for markets is likely to increase.

The result of world production and consumption trends during the latter parts of the 1980s have been significantly higher prices for U.S. cotton as pointed out earlier. While it is difficult to estimate if these trends will continue into and through the 1990s, many positive factors are in place that include U.S. policy and increasing world demand for cotton. What is important to note, however, is the relationship between the profitability of cotton and world and U.S. supplies and use.

Extra Long Staple (ELS) Cotton

While not discussed in great detail here, mention should be made of ELS cotton. During the past few years, ELS cotton has received increased attention as it has changed from that of an alternative cotton crop to one that has received more emphasis. This change is due to the returns from ELS cotton which are significantly above those of upland cotton. Key has been an increased demand in export markets. This strong export demand has led to higher farm prices which averaged $1.18 per pound in 1988 compared to 55.6 cents per pound for upland cotton. For California cotton, it was $1.16 per pound for ELS compared to 63.5 cents per pound for upland.

Production of U.S. ELS cotton has increased from 155,000 bales in 1985 to 692,000 bales in 1989. Most of this production occurred in Arizona (477,000 bales in 1989) compared to California (40,000 bales). However, California's production was up from only 3,000 bales in 1988. Additional acres were planted in 1990 with an expected production of over 55,000 bales. Considerable evaluation needs to be completed before this trend is determined to persist; however, ELS cotton has caught the attention of cotton producers as something to be considered seriously in cropping plans.

The enhanced demand for ELS cotton is due to its high value uses such as sewing thread and expensive apparel coupled with a tight supply of the world's exportable stocks. In 1988, the U.S. accounted for about 7 percent of world ELS cotton production and 22

percent of world exports. The U.S. in 1988 exported 265,000 bales of ELS cotton which amounted to 80 percent of the year's production.

Industry Organizations

There are a number of organizations that play important roles in the cotton industry. California Planting Cotton Seed Distributors and the San Joaquin Valley Cotton Board are designed to promote the development of high yielding, high quality varieties for the San Joaquin Valley. Others assess sellers of cotton to raise funds for research. Organizations such as the National Cotton Council are designed to promote the economic well-being of western as well as the U.S. cotton industry as a whole.

California Planting Cotton Seed Distributors (CPCSD)

CPCSD is a non-profit, grower owned California corporation representing almost 3,000 cotton growers within the One Quality Cotton District of California (previously referred to as the One Variety Cotton District). It has the responsibility for breeding and distributing cotton planting seed for a number of varieties grown in the San Joaquin Valley. The California legislature passed the One Variety Cotton District Act in 1925 at the request of growers. Seed distribution was handled by the California Farm Bureau from 1926 to 1936. CPCSD was formed in 1936 to perform this task.

The activities of CPCSD are financed through a handling charge on each ton of cotton seed sold. This charge includes a research assessment use for cotton breeding and variety development by CPCSD and cash grants to the University of California and the U.S.D.A. Cotton Research Station in Shafter, CA.

San Joaquin Valley Cotton Board (SJVCB)

This organization was created in 1978 from legislation passed by the California legislature that revised the One Variety Cotton District Act of 1925. The Board has several functions in administering what is now termed the one quality law, including testing and approving cotton varieties within the district. These activities are financed through an assessment placed on sellers of cotton seed sold for planting.

National Cotton Council

The National Cotton Council is the central organization of the U.S. cotton industry representing all segments. The Council's primary mission is to lobby for legislative and regulatory policies that are favored by its members. Additionally, the Council coordinates

national programs of benefit to the entire cotton industry and works to strengthen export markets through its overseas arm, Cotton Council International.

Research and education programs funded by the Cotton Foundation are managed by the Council. The Cotton Foundation is supported by voluntary contributions from allied industry members, such as banks, chemical companies, machinery makers, and others. The Council provides technical assistance to research funded by the Foundation through its Technical Services Staff.

The seven segments of the cotton industry represented by the Council are the following:

1. Producers who grow the fiber.
2. Ginners who separate the fiber from the seed.
3. Warehousemen who store the baled cotton.
4. Merchants who market the fiber.
5. Crushers who process the seed.
6. Cooperatives who process, handle or market cotton for their producer members.
7. Manufacturers who spin the fiber into yarn.

Delegates from each segment of the industry are selected from the dues paying members within nearly 100 state and regional cotton organizations. The number of delegates from each segment is in proportion to the number of members in each segment. The delegates from each of the seven segments vote separately on Council policy. Policy is created if the recommendation is approved by a majority of each of the seven segments voting separately. In other words, each of the individual segments has veto power over any recommendations for Council policy. A Board of Directors is elected each year by the delegates. It is comprised of five representatives from each segment of the industry. Council officers are elected by the Board. The Council is financed by voluntary contributions from members. Dues for each segment of the industry are based on the amount of cotton grown, ginned, handled, or processed.

Organizations Representing Industry Segments

Each of the seven industry segments has regional and national organizations. Members of the National Cotton Council are also members of one or more of the industry segment organizations. Each of these organizations may do their own lobbying. In particular, the industry segment organization may do its own lobbying when there is absence of National Cotton Council policy.

The seven segments of the cotton industry represented by the National Cotton Council and the corresponding western and national organizations are:

Segment	Western Organization(s)	National Organization
Producers	California Cotton Growers Assn. Arizona Cotton Growers Assn.	Producer Steering Committee
Ginners	California Cotton Ginners Assn. Arizona Cotton Ginners Assn.	National Cotton Ginners Assn.
Warehousemen		Cotton Warehouse Assn. of Amer.
Merchants	Western Cotton Shippers Assn.	American Cotton Shippers Assn.
Crushers		National Cottonseed Prod Assn.
Cooperatives	Calcot	Amcot
Manufacturers		American Textile Mfrs. Inst.

Structure of Cotton Marketing

The basic products of cotton are lint and seed. Figure 2 displays how harvested cotton is distributed into its various uses. Cotton lint provides the major portion of the total value of harvested cotton; in 1989 it provided 90 percent of the value received by California producers. While the products from seed are important, the following discussion will center on the marketing of cotton lint.

During the past 20 years, significant shifts and changes have occurred in cotton marketing. These changes were brought about from increased competition from manmade fibers, increases in imported textiles into the U.S., and steady growth in foreign capabilities to produce cotton (USDA, ERS, 1987). The emergence of the Pacific Rim markets as a major outlet for cotton exports has altered distribution channels and transportation cost structures. The shift to more market oriented farm programs has also allowed for increased variation in year to year cotton prices which has increased uncertainty and risk. All of these factors have influenced the numbers, size, and location of marketing firms as well as the marketing services and activities they encompass.

The primary function of the U.S. cotton marketing system is to obtain and assemble dependable and continuous volumes of specified qualities of cotton that are made available to domestic and foreign users. These activities are carried out by a network of cotton gins, warehouses, and merchandising firms in the performance of the following basic activities:

1. Movement of harvested seedcotton from farms to local gins.
2. The separation of lint from the seed, baling, sampling, wrapping lint, and transporting bales to storage facilities.
3. Fiber quality determination and testing.
4. Cotton storage and other associated warehousing activities.
5. Cotton merchandising activities.
6. Transportation of bales to domestic mills and foreign ports.
7. Risk management programs to offset price uncertainties in the marketplace and monetary exchange rate variations.

Marketing cotton from farms to domestic and foreign mills is a complex process involving many different firms and requiring efficient coordination. In the U.S., cotton moves from 43,000 farms located in 17 states to over 3,000 domestic mills and 50 foreign countries. It involves over 1,600 gins, about 400 warehouses, and about 300 marketing and merchandising firms. This process also involves both cooperative and non-cooperative forms of business operations at all levels. In California, 3,000 farms market their cotton through 146 gins. Both the number of farms and gins have declined significantly over the past 20 years. Ginning activities take place under the form of cooperative and non-cooperative business structures. About 50 percent of the cotton production in California is under a major cooperative (CALCOT) with the remainder largely under cotton shippers/merchandisers who are not cooperatives. In addition, Ranchers Cotton Oil is another cooperative that markets about 25 percent of the cotton seed produced in the state with the remainder marketed by other firms.

Distribution of an average bale of U.S. cotton is illustrated in figure 3. As can be seen from this figure, the major consumer products for cotton are in the home furnishing and clothing markets. The U.S. textile industry faces intense competition from foreign imports, particularly the industries in Japan, Taiwan, Hong Kong, and South Korea. These foreign industries were built on low labor costs. Currently, as these countries face increased wage rates due to economic growth, they also are facing increased costs. However, a second tier of countries is emerging to take their place in international competition that include China, Brazil, Pakistan, and India.

Textile trade is influenced significantly by the Multifiber Arrangement (MFA) negotiated under the General Agreement on Tariffs and Trade (GATT). World cotton trade is influenced by the MFA which is a set of complex export restrictions negotiated on a bilateral basis between developed countries and major developing countries in textile trade.

The impact of the MFA on the U.S. textile industry has been a slowing of the decline in textile and apparel mills. Textile imports are influenced heavily by general U.S. economic conditions and the value of the dollar in world trade. The U.S. had bilateral trade agreements with 40 countries in 1988, of which 14 included cotton imports. At this writing, the GATT was being negotiated under the Uruguay Round, which was having extreme difficulty in reaching agreement on agricultural issues, thus leading to the increased possibility of bilateral trade negotiations rather than multi-lateral ones. The concept of bilateral agreements means agreement between two countries. A multi-lateral agreement, the concept under which GATT is negotiated, means that the agreement applies to a group of countries larger than two.

Influence of Government Programs

Government programs have a major influence on the production and marketing of U.S. cotton. The basic legislation from 1985 to 1989 was "The Food Security Act of 1985". This act clearly focused on a market orientation for program crops. This 1985 legislation has been superseded by "The 1990 Farm Bill" which has the formal title of "Food, Agriculture, Conservation, and Trade Act of 1990" and "The 1990 Budget Reconciliation Act" which includes "The Agricultural Reconciliation Act of 1990".

Major features of the 1985 Act included target prices, nonrecourse loans, deficiency payments, and acreage reduction programs. A new feature of the Act was to provide greater market orientation and more flexibility to improve market competitiveness. For cotton, if the world price was below the loan rate, a loan repayment plan referred to as a marketing loan was implemented. It provided for the Secretary of Agriculture to choose between two plans for repayment of loans. Under Plan A the Secretary could lower the repayment rate by 20 percent from the announced loan level. If world prices were or fell below the repayment rate, certificates redeemable for Commodity Credit Corporation (CCC) cotton were issued to buyers to make up the difference allowing producers to redeem their crops and sell them at competitive prices. Under Plan B, repayment rates would vary with world prices during the year. Plan A was selected for the 1986 crop; Plan B for the 1987-89 crops. Acreage reduction programs of 12.5 to 25 percent were also implemented during 1986-89.

The introduction of marketing loans has been significant to cotton producers. Their use allowed U.S. market prices to fall to world levels and greatly increased the risk of not enrolling in the cotton program for the average producer. Producers participating in the cotton program received deficiency payments up to a maximum $50,000 payment limitation

and kept any gain realized from repaying a marketing loan at a level below the announced loan rate. The total return to participants does not fall even if cotton prices drop to low levels.

A major impact of the 1985 Act was to make deficiency payments a major part of cotton producers' incomes (see table 6). Since 1985 farmers have benefited from participation in the upland cotton program directly through price supports and direct payments, and indirectly through higher market prices triggered by acreage reduction or other supply control measures. Producers who did not participate in the program also benefited from higher prices (Skinner and Sanford, 1990). Direct payments to cotton producers averaged 22 percent of their total income during the 1985/86 to 1988/89 crop years.

Government programs also exist for Extra Long Staple (ELS) cotton. Provisions are contained in the Extra Long Staple Cotton Act of 1983 which is significant in what it does not do. Unlike upland cotton, the government program does not significantly limit production, attempt to modify market forces, or cost taxpayers large amounts of outlays. It is interesting to note that in 1988, the ELS program offered producers a loan rate of 80.9 cents per pound and a target price of 95.7 cents. To participate, farmers had to reduce their ELS acreage by 10 percent. During the 1988/89 marketing year, the average market price exceeded the target price; hence, no deficiency payments were made for the 1988 crop. With a performance such as the one in 1988, ELS cotton will continue to receive greater attention as one way to both increase income to farmers and at the same time avoid burdensome government programs.

1990 Farm Act

The 1990 Farm Act must be considered together with the 1990 Budget Reconciliation Act. The 1990 Farm Act continues the market orientation of the 1985 Act and retains many of the same concepts while introducing some modifications (see figure 4). However, the 1990 Budget Reconciliation Act modifies many of the provisions of the 1990 Farm Act in order to reduce outlays as required by the deficit reduction agreement. Most of the required agricultural budget reductions were taken from price support and income support programs, and because the reductions were significant, many major changes in farm programs and mechanisms had to be made in order to achieve the savings (USDA, 1990. "The 1990 Farm Act and The 1990 Budget Reconciliation Act: A USDA Staff Briefing").

The new legislation freezes minimum target prices at 1990 levels for 5 years. For upland cotton, this level is 72.9 cents per pound. The method of determining support loan

rates is left the same as in the 1985 Act for cotton. The loan rate for upland cotton is based on a percentage of past market prices and may not fall below certain designated levels. Loan rates may not be less than the smaller of a) 85 percent of the 5 year moving average of U.S. spot market prices excluding the lowest and highest years, and b) 90 percent of the average 5 lowest priced growths quoted for Middling 1-3/32 inch cotton, c.i.f. northern Europe, adjusted by the difference between the northern Europe price quotation and the spot price in the U.S. The loan level may not be reduced more than 5 percent from the previous years level and not lower than 50 cents per pound.

The 1990 Act retains the mandatory provisions of marketing loans for upland cotton. The 1990 Act also retains the previous method of deficiency payment rate calculations for the 1991 to 1995 crop years. For upland cotton, the deficiency payment is the target price minus the greater of the calendar year market price and the announced loan rate. Deficiency payments are made to producers who participate in the upland cotton program.

In order to participate in the new programs under the 1990 Act, producers must agree to reduce acreage similar to the 1985 Act. However, the triggers for setting acreage reduction programs (ARPS) are changed. An ARP is set so that ending stocks will equal 30 percent of use but not exceed 25 percent in acreage reduction.

The newest change that the 1990 Farm Bill introduces is the concept of planting flexibility while protecting crop acreage base. While retaining the concept of a Crop Acreage Base, the 1990 Act greatly expands on what constitutes "considered planted" to the program crop and eliminates strict and limited cross compliance. However, a producer cannot increase any Crop Acreage Base on a farm and remain eligible for payments on any program crop in that year. In particular, the 1990 Act introduces the concept of "flexible acres" to be used in calculating a producer's deficiency payment. The following schematic will illustrate the method:

Base Acres
Reduced or Idled Acres (ARP)
15 percent of Base Acres (Normal Flex Acres)
= Maximum Payment Acres
x Program Yield
= Maximum Production Eligible for Payments
x Deficiency Payment Rate
=Maximum Deficiency Payments

The new concept here is that of "Normal Flexible Acres" which is not eligible for payments and equals a 15 percent reduction in deficiency payments. Producers may plant other crops on the Normal Flex Acreage without loss of crop acreage base. Other crops

which will be "considered" planted to the program crop include all other program crops, any oilseed crop, any industrial or experimental crop, and any other non-program crop except fruits and vegetables. In addition to Normal Flex Acres, a farmer may elect to plant an additional 10 percent flexible acres (optional Flex Acres) to other crops and still protect the farm's base acres. In planting to both Normal Flex and the Optional Flex acres, the producer loses the deficiency payment. This provision was put in to both reduce the U.S. Treasury outlays for subsidy payments and allow producers greater flexibility in what they produce.

Other features of the 1990 Act are the continuation of the "Zero-92 Program" taking into account Normal Flex Acres and changes in the "Farmer Owned Reserve Program". Payment limitations are $50,000 per person for deficiency payments and $75,000 for Marketing Loan gains. There is no limit on nonrecourse loans. Finally, the 1990 Act modifies and adds conservation provisions to address surface water, ground water and wetland issues.

In summary, California cotton producers need to analyze very carefully their expanded options under the 1990 Farm Act. Particularly important is the inclusion of alternative crops under the flexibility provisions which need to be compared with the option of planting cotton only.

Risk Management Strategies

Managing risk in agriculture is an important factor in production and marketing decisions. The most widely used method of managing risk by cotton producers in the past has been participation in the government cotton programs. However, with the passage of the 1990 Farm Bill, its flexibility provisions, and its increased emphasis on market orientation, uncertainty, and hence risk, is likely to increase during the first half of the 1990s. Another method of managing risk is participation in the crop insurance program which protects against production uncertainties, not marketing uncertainty. A strategy that is used throughout all levels of cotton production and marketing is cotton futures and options. This strategy is the one that will be addressed within this section.

Risk in cotton marketing occurs when a farmer or other seller relies almost completely on the cash market for profits. The ability to make profits on the cash market relies on the seller's capability to accurately forecast the cash market so as to time the sale of cotton to take advantage of a price level that will more than offset costs of producing the cotton. However, as has been pointed out in other sections of this chapter, prices are variable and are affected by many factors out of the control of any individual or firm. These factors tend

to be worldwide in nature and reflect many conditions that are difficult to forecast, particularly world weather and supply conditions of competing countries. As more information becomes available, the price situation can change dramatically leading to wide swings in prices. The risk associated with this price uncertainty can be managed to some degree, although not completely.

There are two primary vehicles that can be used to offset exposure to risk in cotton marketing. These vehicles are 1) taking a position in the cotton futures market opposite from the cash position a producer is in (e.g. selling a futures contract against either expected or already harvested cotton production); and 2) purchasing or selling "options" which have underlying futures contracts. Both cotton futures and options are traded on the New York Cotton Exchange with daily prices reported in financial newspapers.

The use of a futures contract by a producer will reduce downside price risk. The disadvantage of using a futures contract is that it precludes an opportunity to benefit from upward price changes. A possible second disadvantage is that price changes that result in a loss in the futures position may require the deposit of additional margin funds even though on paper the producer will not suffer any loss at all if the cotton crop is delivered against the futures contract. The use of options contracts for price insurance for a producer can help eliminate both of these disadvantages. Options come in two forms: "puts" and "calls". A put is an option which gives the option buyer the right to sell a particular futures contract at a specific price. A call is an option which gives the option buyer the right to purchase a particular futures contract at a specific price.

Strategies have been developed to take advantage of the use of futures contracts, puts, and calls in "hedging" a cash position in order to reduce risk. A hedge is to take an opposite position from the cash position through the exercise of futures, either through the outright purchase or sale of a futures contract, or the use of options. By doing so, producers can protect their interests from unwanted price movements.

The various strategies that can be used to offset risk vary from the simple to the complex. Rather than deal with a detailed description of the strategies in this section, producers who are interested should consult professionals in the field such as brokers, merchants, and consultants who are skilled in guiding them through the various strategies to fit the particular risk aversion goal. Even if producers rely on another entity such as a cooperative or a merchant/shipper to undertake their risk management, they should be familiar with the concept. More complete reference and introduction to the concept of using futures and options for risk management can be obtained through the Chicago Board of Trade and the New York Cotton Exchange. Other materials are also available for reference which can be accessed either through the University of California or the California State

University system.

A final point to be made in the use of futures and options in risk management concerns the concept of "basis" and its accompanying risk. Basis is calculated by subtracting the cash price that a producer can receive from the futures price. The understanding of basis is necessary in order to translate from a particular futures price at a particular time to the approximate selling price that hedging enables a producer to establish for local delivery. Figures 5, 6, 7, 8, and 9 present the relationship of the nearest futures price to that of the cash price reported by the Fresno Cotton Exchange. While it can be seen that the Fresno cash price moves with the futures price, the difference between the two is significantly variable. While the Fresno spot market is usually under the futures price, there are times such as in late 1988 and early 1989, that it was actually above the futures price. In 1985, 1986, 1987, and 1988, the Fresno spot price was under the nearest futures price by 3.83 cents/pound, 2.91 cents/pound, 2.76 cents/pound and 0.12 cents/pound respectively. However, in 1989 the Fresno spot price was above the futures price by 0.5 cents/pound This movement of the spot price in relation to the futures price introduces the concept of "basis risk" which must also be managed in order to effectively reduce marketing risk.

Because of the large number of variables (including supply and demand and the availability and cost of transportation) that affect basis, the price differential is likely to vary from year to year. In hedging then, a producer must be able to estimate as accurately as possible the difference (basis) between the cash price and the price of the futures contract used to hedge the crop at the time that it is intended to be sold.

Summary

This brief discussion on the marketing of California cotton has focused on changes that have taken place and the factors responsible for those changes. In particular, California cotton is impacted by decisions made in other places, particularly in international markets. California cotton is particularly susceptible to changes that take place internationally because of its great reliance on exports (over 70 percent of California cotton is exported). Cotton producers have also been impacted by provisions of government programs, most recently the 1985 Food Security Act. However, government programs, and hence the ground rules for participation, have changed significantly with the passage of both new farm legislation and budget reconciliation acts in 1990. Uncertainty is likely to increase in future years which means that producers must proactively think about how their exposure to price risk in the marketplace will be managed. Of particular importance to cotton producers in future years will be management decisions made regarding the financial

and marketing aspects of their operations.

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Table 1 - CALIFORNIA COTTON ACREAGE, YIELD, PRODUCTION AND FARM PRICES OF COTTONSEED AND LINT (CASS 1959-1989; USDA, NASS 1989)

Year	Acreage Harvested	Yield Per Acre	Lint Production	Average Farm Price for Cotton Seed	Average Farm Price for Cotton Lint
	1,000 acres	pounds	1,000 bales*	$/ton	cents/lb.
1960	946	981	1,939	51.50	30.9
1961	816	990	1,689	55.90	33.7
1962	809	1,132	1,907	50.60	34.3
1963	730	1,124	1,710	47.10	35.2
1964	743	1,133	1,754	48.40	34.9
1965	725	1,116	1,686	47.00	31.6
1966	618	952	1,225	61.40	28.1
1967	588	847	1,038	53.00	33.4
1968	687	1,097	1,569	50.00	24.8
1969	701	898	1,312	37.70	24.3
1970	662	841	1,160	66.90	24.3
1971	741	723	1,117	63.00	31.6
1972	863	982	1,765	57.40	31.2
1973	942	891	1,749	117.00	49.5
1974	1,238	1,006	2,595	157.00	47.4
1975	875	1,072	1,954	108.00	54.5
1976	1,120	1,064	2,482	108.00	67.9
1977	1,390	964	2,790	76.00	56.0
1978	1,455	640	1,940	120.00	63.9
1979 *	1,635	1,000	3,408	125.00	72.5
1980 **	1,540	969	3,109	143.00	77.8
1981	1,530	1,109	3,535	91.00	63.6
1982	1,370	1,077	3,073	90.50	66.9
1983	950	996	1,971	169.00	72.8
1984	1,400	999	2,913	119.00	66.8
1985	1,320	1,132	3,114	85.50	61.8
1986	990	1,088	2,245	102.00	59.1
1987	1,141	1,258	2,991	89.50	68.9
1988	1,337	1,015	2,827	147.00	64.8
1989	1,059	1,218	2,688	94.00	72.0

* Bales of 500 lbs. gross weight. One 500-lb. bale equals 480 net lbs. of lint.

** Does not include American-Pima: 1979 - 100 acres, 100 bales;
1980 - 100 acres, 100 bales; 1981 - 100 acres, 100 bales.

Table 2 – UNITED STATES COTTON ACREAGE, YIELD, LINT PRODUCTION, AVERAGE PRICE, AND TOTAL VALUE (USDA, NASS)

Year	Acreage Harvested	Yield Per Acre	Lint Production	Average Lint Price	Value of Production
	1,000 acres	pounds	1,000 bales*	cents/lb.	$1,000
1960	15,309	446	14,272	30.2	2,154,165
1961	15,634	438	14,318	32.9	2,356,309
1962	15,569	457	14,827	31.9	2,370,480
1963	14,212	517	15,294	32.2	2,469,647
1964	14,055	517	15,145	31.1	2,258,491
1965	13,613	527	14,938	29.4	2,106,088
1966	9,553	480	9,557	21.8	997,467
1967	7,997	447	7,443	26.7	953,820
1968	10,159	516	10,926	23.1	1,212,021
1969	11,051	434	9,990	22.0	1,054,981
1970	11,155	438	10,192	22.0	1,121,622
1971	11,471	438	10,477	28.2	1,419,624
1972	12,984	507	13,704	27.3	1,798,960
1973	11,970	520	12,974	44.6	2,779,504
1974	12,547	442	11,540	42.9	2,374,064
1975	8,796	453	8,302	51.3	2,043,678
1976	10,914	465	10,581	64.1	3,254,954
1977	13,275	520	14,389	52.3	3,614,938
1978	12,400	420	10,856	58.4	3,044,991
1979	12,831	547	14,629	62.7	4,404,663
1980	13,215	404	11,122	75.4	4,026,458
1981	13,841	543	15,646	55.6	4,174,776
1982	9,734	590	11,963	59.6	3,422,370
1983	7,348	508	7,771	65.6	2,448,002
1984	10,379	600	12,982	58.9	3,670,508
1985	10,229	630	13,432	56.3	3,628,112
1986	8,468	552	9,731	52.4	2,449,111
1987	10,030	706	14,760	64.3	4,555,017
1988	11,948	619	15,412	56.6	4,190,488
1989	9,489	619	12,233	65.6	3,840,752

* Bales of 500 lbs. gross weight. One 500-pound bale equals 480 lbs. of lint.

Table 3 – EXPORTS OF COTTON LINT FOR CALIFORNIA AND UNITED STATES, 1979-1989
(CDFA, California Agricultural Exports;
USDA, ERS, Foreign Trade of U.S.; International Financial Statistics 1991)

Year	Exports		Exchange Rate*
	California	United States	
	(Millions of Dollars)		
1979	805.2	2,198.4	1.8329
1980	1,135.6	2,864.2	1.8177
1981	989.3	2,260.0	2.2600
1982	897.0	1,955.3	2.4266
1983	859.0	1,817.1	2.5533
1984	624.7	2,441.4	2.8459
1985	617.5	1,633.2	2.9440
1986	433.4	811.9	2.1715
1987	620.0	1,630.8	1.7974
1988	678.1	1,975.1	1.7562
1989	648.5	2,250.1	1.8800

* Deutsche Mark per US Dollar

Table 4 – WORLD COTTON: SUPPLY AND USE, 1969-70 THRU 1989-91
(Int'l Cotton Advisory Committee 1991)
(1,000 480-lb. Bales)

Crop Year	Beginning Stocks	Production	Total Supply	Consumption	Trade (Exports)	Ending Stocks
1969	24,068	52,264	76,332	55,162	17,819	21,699
1970	21,387	53,922	75,309	55,913	17,799	21,108
1971	21,454	59.423	80,877	58,428	18,883	22,010
1972	22,249	62,443	84,692	59,864	21,311	24,549
1973	24,899	62,535	87,434	61,863	19,721	26,323
1974	26,323	64,054	90,377	58,076	17,514	33,806
1975	33,708	53,671	87,379	61,254	19,196	26,618
1976	26,618	56,778	83,396	60,281	17,443	23,931
1977	23,931	63,582	87,513	60,328	19,396	27,245
1978	27,245	59,404	86,649	62,964	19,980	24,009
1979	24,002	64,637	88,639	64,944	23,236	24,005
1980	23,664	63,434	87,098	65,185	20,129	22,300
1981	22,300	68,875	91,175	64,941	20,194	26,099
1982	26,101	66,472	92,573	66,516	19,555	26,405
1983	26,405	66,538	92,943	67,356	19,705	27,194
1984	27,194	88,373	115,577	69,610	20,771	45,835
1985	45,835	79,895	125,730	75,933	20,482	51,010
1986	50,985	70,204	121,189	83,867	26,452	36,535
1987	36,484	81,256	117,740	83,512	23,400	34,276
1988	34,188	84,382	118,570	85,369	26,300	33,032
1989	32,876	80,062	112,938	86,001	24,393	27,488
1990	27,486	87,294	114,780	85,713	24,110	29,143

Note: Total Supply calculated from reported data.

Table 5 – U.S. COTTON: SUPPLY AND USE, 1969-70 THRU 1989-91. USDA, ERS. 1991.

(1,000 480-lb. Bales)

Crop Year	Beginning Stocks	Production	Imports	Total Supply	Mill Use	Exports	Ending Stocks
1969	6,544	9,990	52	16,586	8,114	2,878	5,843
1970	5,843	10,192	37	16,072	8,204	3,897	4,203
1971	4,203	10,477	72	14,752	8,259	3,385	3,258
1972	3,258	13,704	34	16,996	7,769	5,311	4,221
1973	4,221	12,974	48	17,243	7,472	6,123	3,808
1974	3,808	11,540	34	15,382	5,860	3,926	5,708
1975	5,708	8,302	92	14,102	7,250	3,311	3,681
1976	3,681	10,581	38	14,300	6,674	4,784	2,928
1977	2,928	14,389	5	17,322	6,483	5,484	5,347
1978	5,347	10,856	4	16,207	6,352	6,180	3,958
1979	3,958	14,629	5	18,592	6,506	9,229	3,000
1980	3,000	11,122	28	14,150	5,891	5,926	2,668
1981	2,668	15,646	26	18,340	5,264	6,567	6,632
1982	6,632	11,963	20	18,615	5,513	5,207	7,937
1983	7,937	7,771	12	15,720	5,921	6,786	2,775
1984	2,775	12,982	24	15,781	5,539	6,215	4,102
1985	4,102	13,432	33	17,567	6,413	1,960	9,348
1986	9,348	9,731	3	19,082	7,452	6,684	5,026
1987	5,026	14,760	2	19,788	7,617	6,582	5,771
1988	5,771	15,411	5	21,187	7,782	6,148	7,092
1989	7,092	12,196	2	19,290	8,759	7,694	3,000
1990*	3,000	15,499	2	18,501	8,600	7,900	2,200

*Estimated

Note: There is a small unaccounted quantity equal to the difference between ending stocks based on census data and preceding season's supply less disappearance.

Table 6 - DEFICIENCY PAYMENTS AS PART OF UPLAND COTTON PRODUCERS' INCOMES, 1984-89 (Skinner and Sanford 1990)

	Marketing Year					
	1984/85	1985/86	1986/87	1987-88	1988-89	1989-90
	Million Acres					
Acreage						
National Base[1]		15.6	15.8	15.5	14.5	14.6
14.6						
Acreage Reduction	2.5	3.6	3.4	3.3	1.6	3.1
Paid Land Diversion	-	1.3	-	-	-	-
Conservation Reserve	-	-	-	.7	1.0	1.1
Total Planted[3]		11.1	10.6	9.9	10.3	12.3
10.2						
Harvested[3]	10.3	10.1	8.4	9.9	11.8	9.2
	Pounds per Harvested Acre					
Yield[3]	599	628	547	702	616	602
	Cents Per Pound					
Prices						
Target Price[1]	81.0	81.0	81.0	79.4	75.9	73.4
Loan Rate[1]	55.0	57.3	55.0	52.25	51.8	50.0
Average Farm Price[2]	57.5	56.1	51.5	63.7	55.6	63.6
Deficiency Payment Rate[1]	18.6	23.7	26.0	17.3	19.4	13.1
	Million Dollars					
Income	4,200	4,632	3,744	5,368	5,171	4,210
Market Value of						
Lint Production[2]	3,546	3,578	2,360	4,413	4,001	3,555
Government Payment[4]	654	1,054	1,384	955	1,170	655
Deficiency	654	858	1,384	955	1,170	655
Diversion	-	196	-	-	-	-

1. Green, Robert C. Program Provisions for Program Crops, a database for 1961-90, USDA, Economic Research Services.
2. USDA, National Agricultural Statistics Service. Crop Values, January issues.
3. USDA, National Agricultural Statistics Service. Crop Production, Annual Summary.
4. Stults et al. 1989.

Figure 1

DATA FOR GRAPH - U.S. AND CALIFORNIA LINT PRICES

	U.S.	Calif.
60	30.2	30.9
61	32.9	33.7
62	31.9	34.3
63	32.2	35.2
64	31.1	34.9
65	29.4	31.6
66	21.8	28.1
67	26.7	33.4
68	23.1	24.8
69	22.0	24.3
70	22.0	24.3
71	28.2	31.6
72	27.3	31.2
73	44.6	49.5
74	42.9	47.4
75	51.3	54.5
76	64.1	67.9
77	52.3	56.0
78	58.4	63.9
79	62.7	72.5
80	75.4	77.8
81	55.6	63.6
82	59.6	66.9
83	65.6	72.8
84	58.9	66.8
85	56.3	61.8
86	52.4	59.1
87	64.3	68.9
88	55.5	64.8
89		72.0

Figure 2

Distribution of Harvested Seed Cotton

Harvested Seed Cotton, 1,800 lbs.

Cotton Lint	480
Trash	520
Motes	20
Linters	70
Hulls	196
Cake & Meal	352
Oil	126
Waste	36

Figure 1. Cotton Lint Prices (Cents Per Pound) For
United States & California, 1960 - 1989
(CASS, California Field Crop Statistics; USDA, Agricultural Statistics)

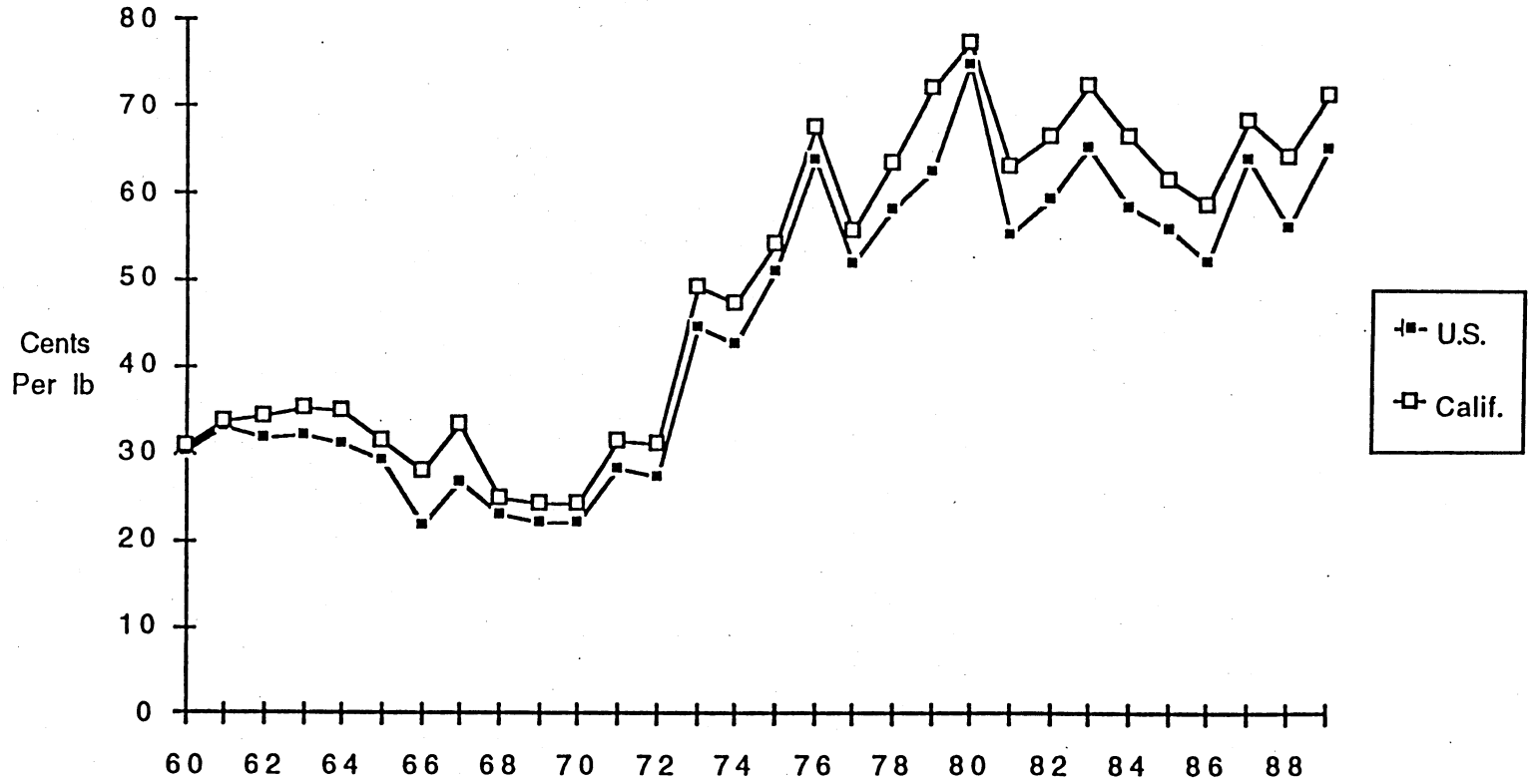
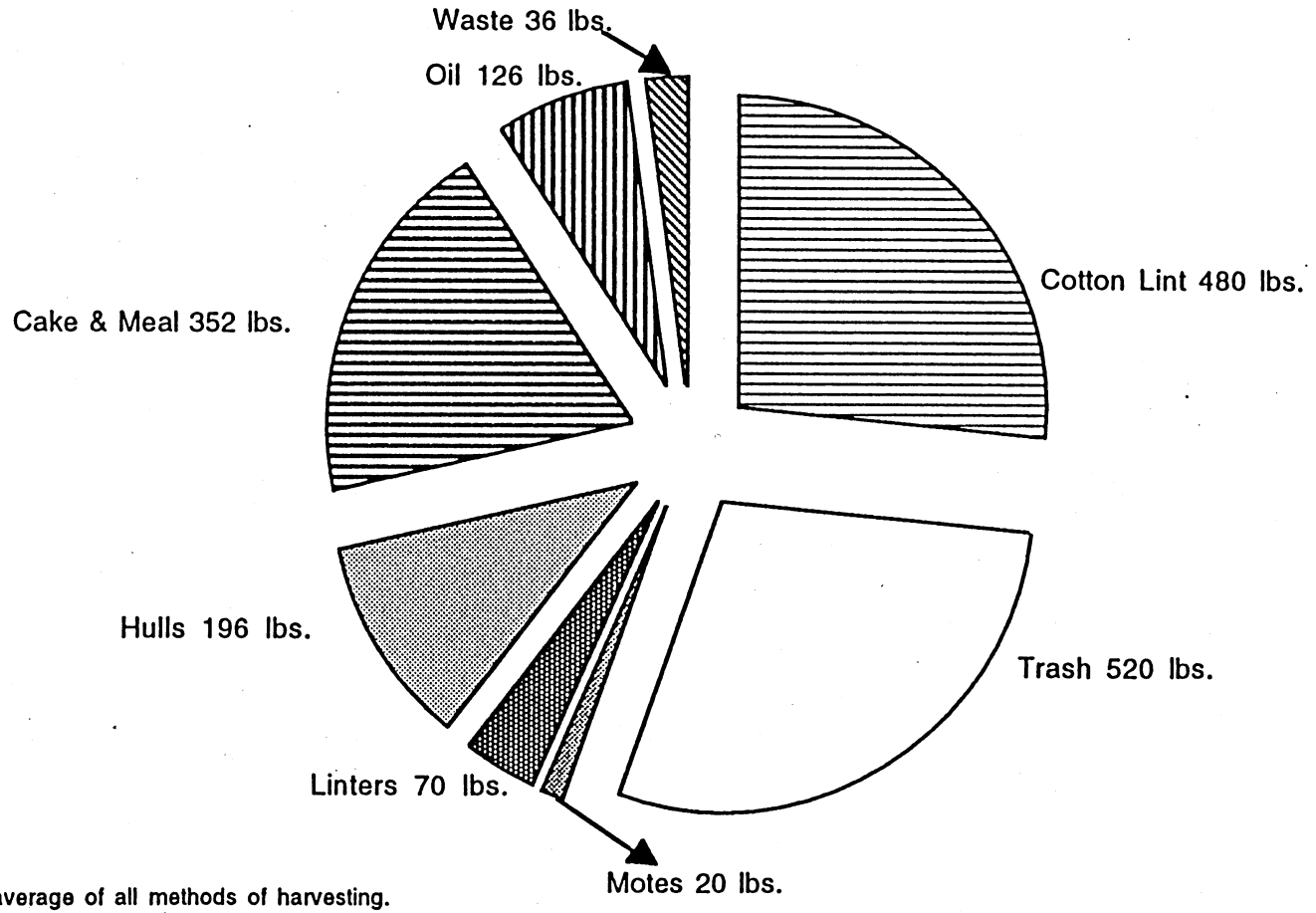


Figure 2. Distribution of Harvested Seed Cotton (1,800 lbs.*)
(USDA, ERS, "Cotton: Background for 1990 Farm Legislation")



* Weighted average of all methods of harvesting.

Figure 3. Distribution of an Average Bale of U.S. Cotton
(USDA, ERS Cotton: Background for 1990 Legislation)

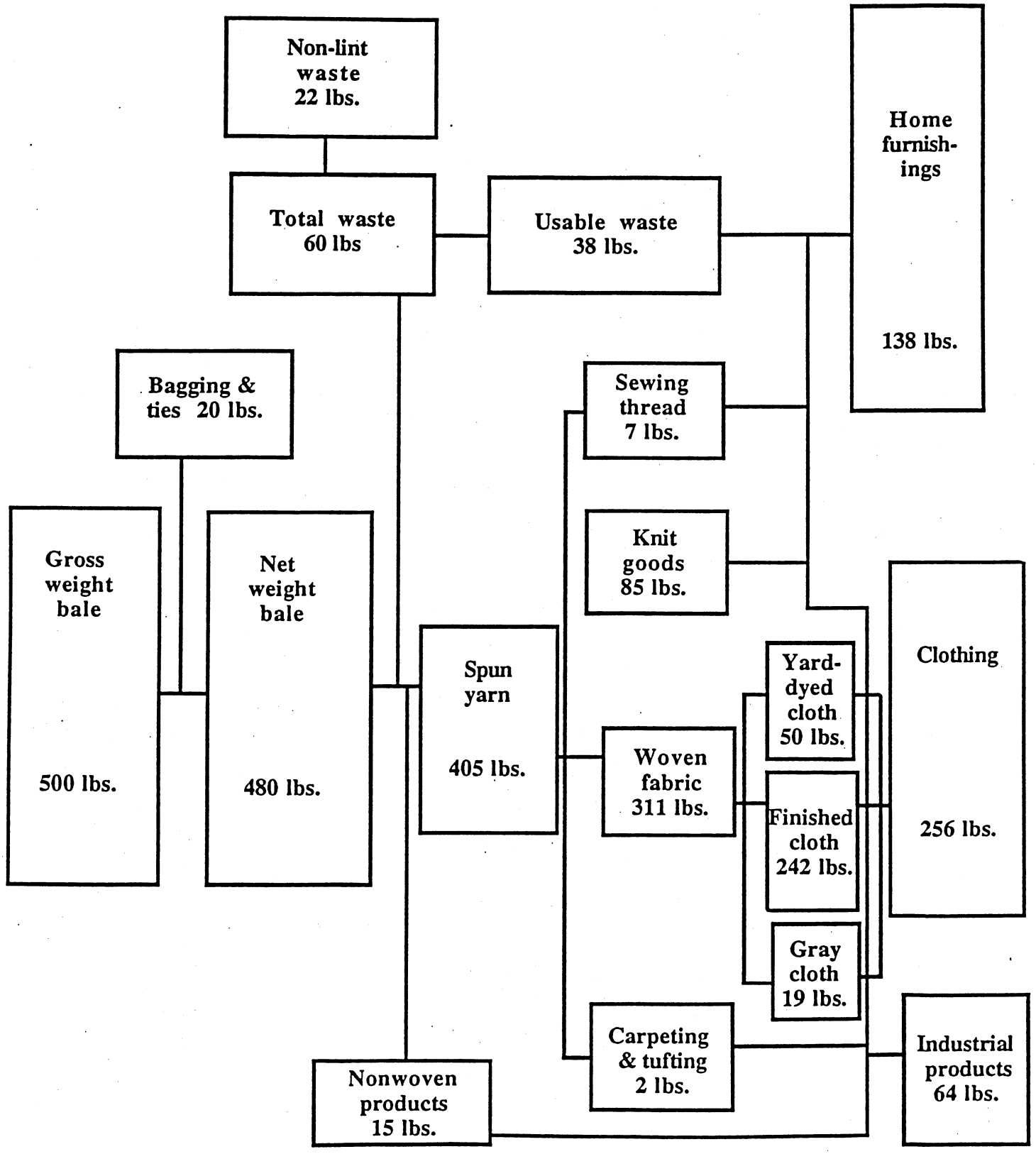


Figure 4. 1990 Farm Legislation Enacted In Different Setting from 1985 With Federal Budget Deficit as Dominant Concern

(USDA 1990. "The 1990 Farm Act & The 1990 Budget Reconciliation Act: A USDA Staff Meeting.")

FARM POLICY SETTING, 1990 VS. 1985

	Problems				
Year	Financial stress	Farm program costs	Crop surpluses	Export competi-tiveness	Environ-mental
1985	Over 200,000 farms considered vulnerable	$25.8 billion for FY1986	Grain carryover stocks at 69% of use for 1985-86	U.S. agricul-tural exports $26 billion for FY1986	Zero acres in Conservation Reserve Program
1990	About 100,000 farms considered vulnerable	$6.5 billion for FY1990	Grain carryover stocks at 30% of use for 1990-91	U.S. agricul-tural exports $40 billion for FY1990	34 million acres Conservation Reserve Program

The main goals of 1990 legislation were (1) to further reduce spending, (2) to help maintain farm income growth through expanding exports, and (3) to enhance the environment.

Figure 5. New York Cotton Exchange Futures Price & Fresno Spot Price By Weeks, 1985
(Wall Street Journal & Fresno Cotton Exchange)
(SLM 41: 1-1/16 BASE)

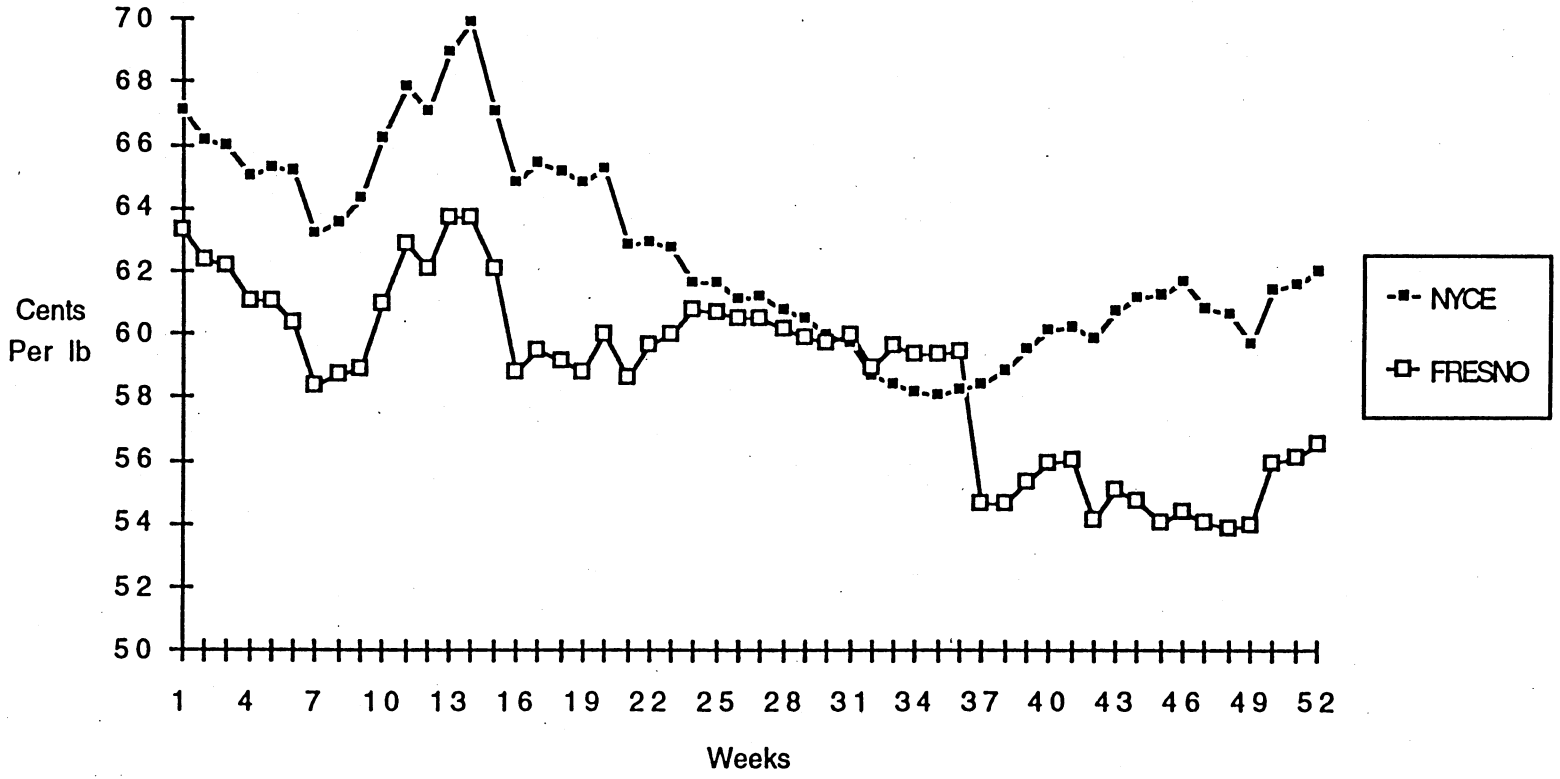


Figure 6. New York Cotton Exchange Futures Price & Fresno Spot Price By Weeks, 1986
(Wall Street Journal & Fresno Cotton Exchange)
(SLM 41: 1-1/16 BASE)

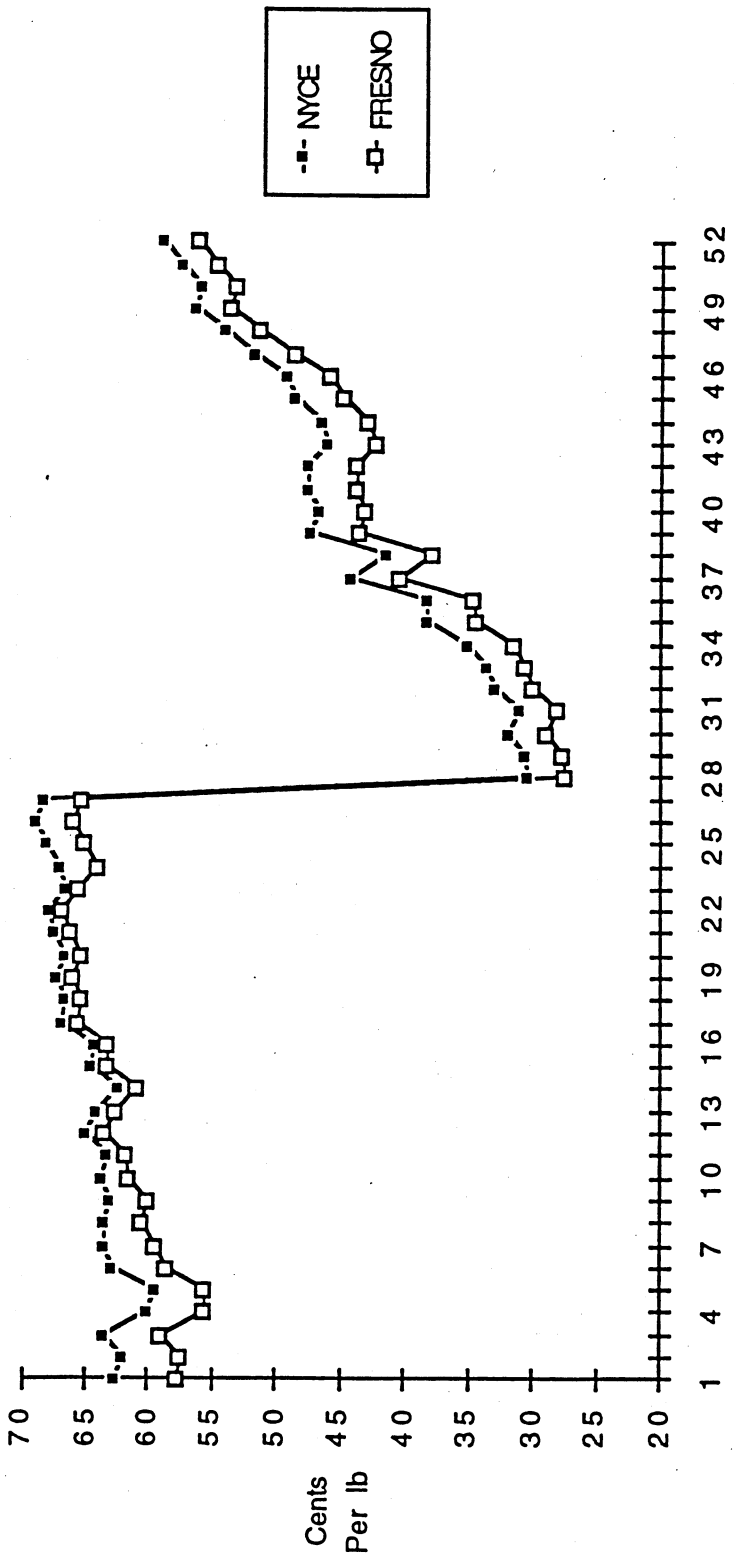


Figure 7. New York Cotton Exchange Futures Price & Fresno Spot Price By Weeks, 1987
(Wall Street Journal & Fresno Cotton Exchange)
(SLM 41: 1-1/16 BASE)

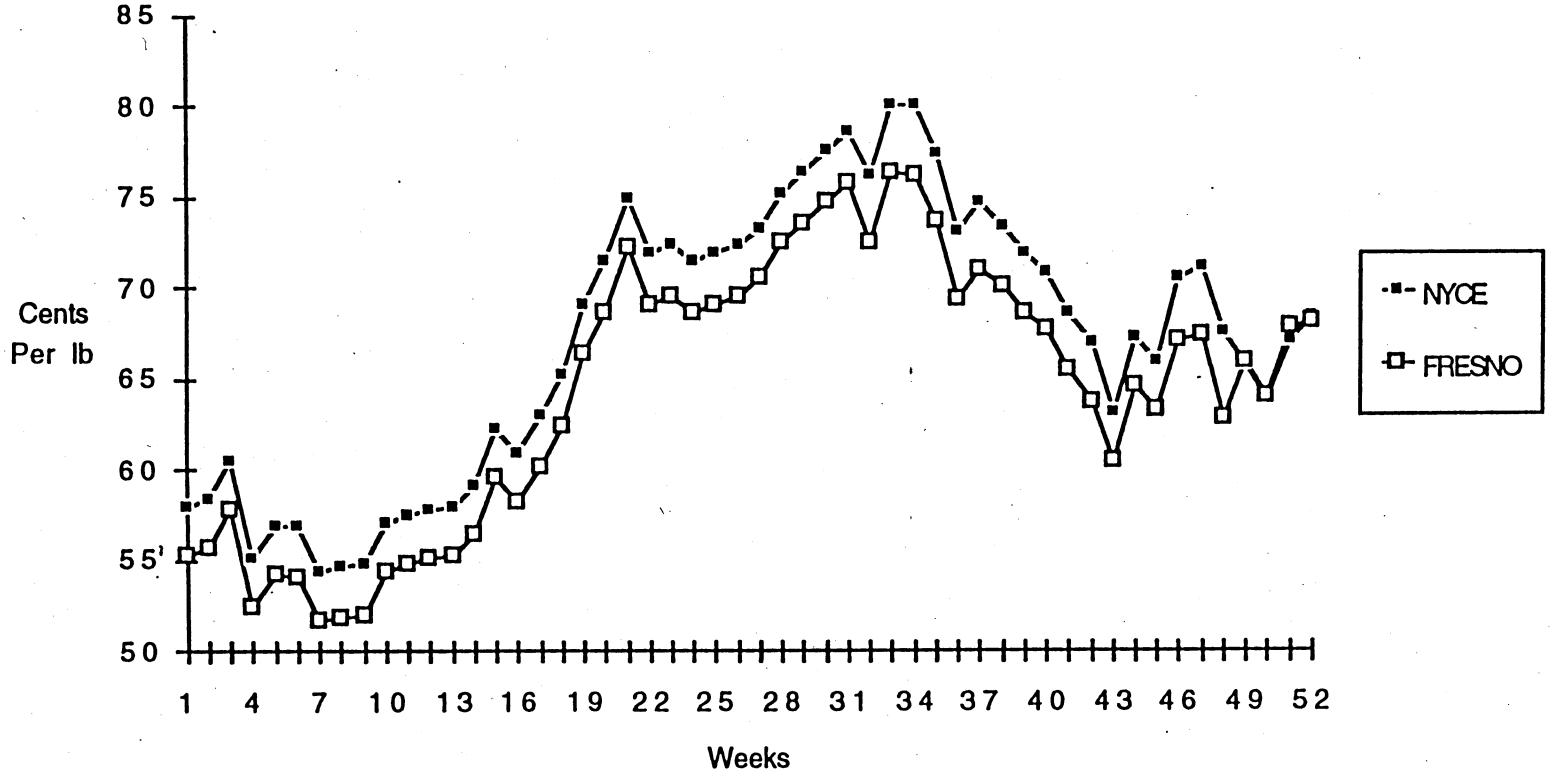


Figure 8. New York Cotton Exchange Futures Price & Fresno Spot Price By Weeks, 1988
(Wall Street Journal & Fresno Cotton Exchange)
(SLM 41: 1-1/16 BASE)

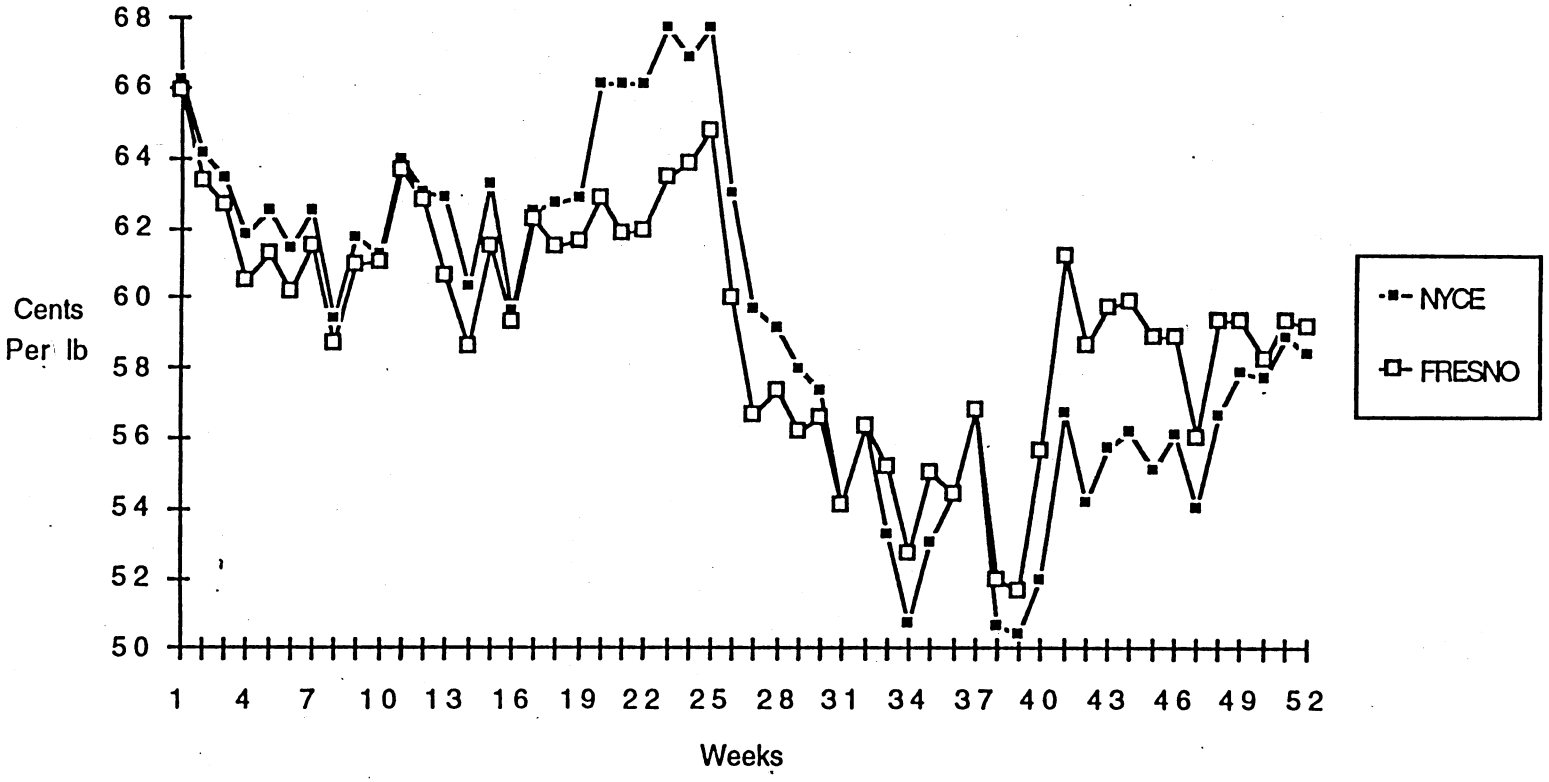


Figure 9. New York Cotton Exchange Futures Price & Fresno Spot Price By Weeks, 1989
(Wall Street Journal & Fresno Cotton Exchange)
(SLM 41: 1-1/16 BASE)