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# Fibers

## Background for 1990 Farm Legislation

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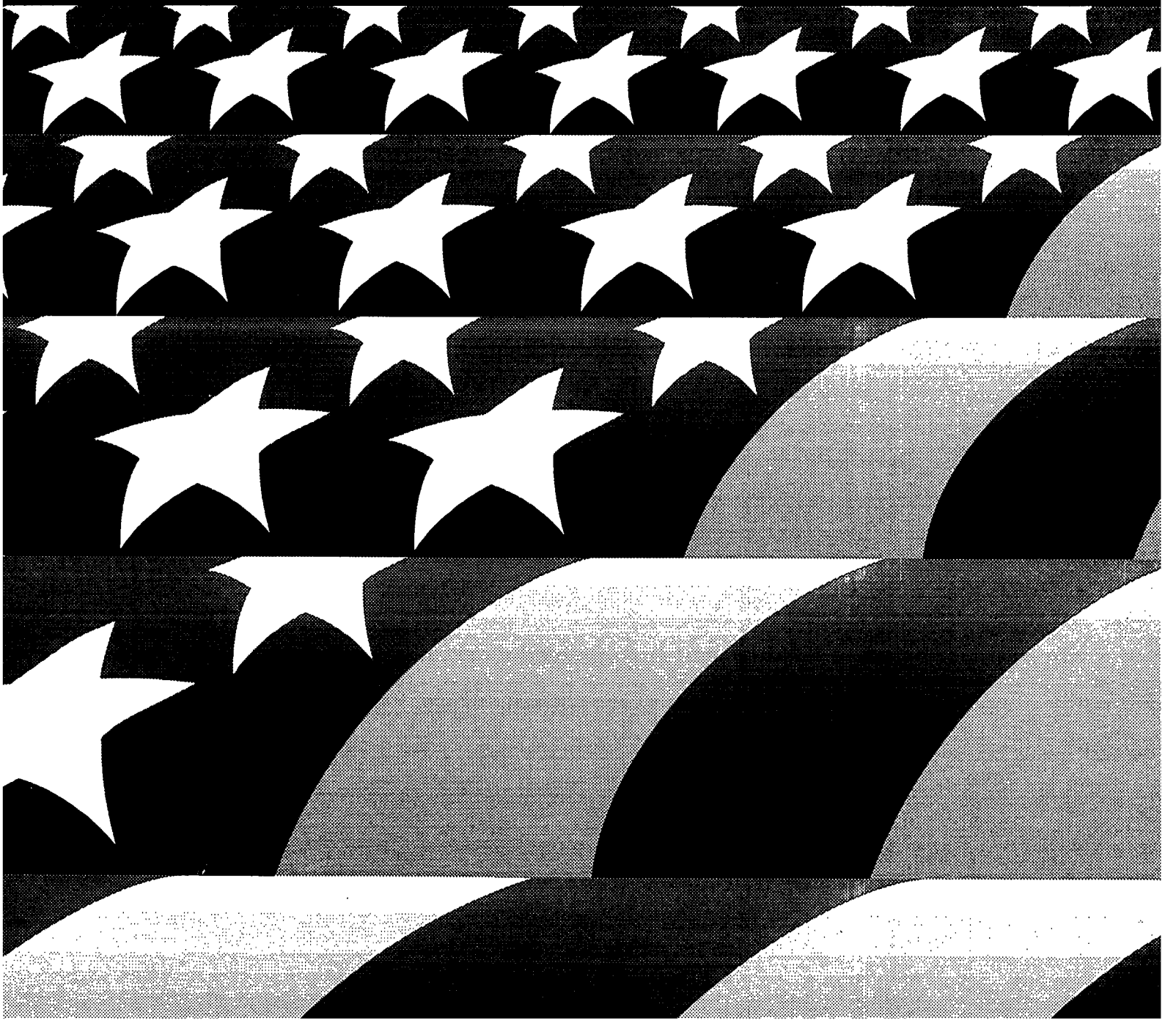

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**Part 1: Cotton.** By Harold Stults, Edward H. Glade Jr., Scott Sanford, and Leslie A. Meyer.

**Part 2: Wool and Mohair.** By John V. Lawler and Robert A. Skinner.

## Abstract

**Cotton** acreage, production, and prices have been influenced by Government programs since the 1930's in an attempt to meet market needs, with varying degrees of success. The Food Security Act of 1985 is generally considered successful in dealing with the cotton sector despite several problems. The marketing loan provisions of the act helped make cotton competitive in world markets in 1987 and some market share was regained. However, consistently competitive pricing has been somewhat elusive. In 1988-89 problems with the adjusted world price formula and with the storage terms resulted in noncompetitive prices for U.S. cotton. A rule change on the adjusted world price formula and prices above the loan rate helped restore competitiveness. While the general preference for 1990 legislation for cotton will likely be for stability, the combination of budget, trade, environment and flexibility issues may result in more than fine tuning of the current act.

**Wool and mohair** have been declining industries. Sheep inventories are a fifth of their World War II level; goat numbers are a third of their mid-1960's level. High lamb prices and a strong demand for wool increased producers' net returns in the late 1980's. Government payments to wool producers in 1988 were the lowest since 1980 because of a record high wool price. Policymakers have had limited control over wool program costs given the formula-based Government support price, the trend of declining textile market share, rising raw wool textile imports, stagnant lamb and mutton consumption, and the dominance of Australia and New Zealand in the world wool market. Issues for 1990 include whether to continue the program and, if so, the level and method of determining support prices.

**Keywords:** costs and returns, exports, cotton, cotton production, farm programs, imports, mohair, policies, program effects, textile mill use, wool

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## Preface

Debate is underway in the 101st Congress on legislation to replace the expiring Food Security Act of 1985. The omnibus food and agricultural legislation will continue a 57-year history of Federal farm programs that dates back to the Agricultural Adjustment Act of 1933.

This lengthy history provides important lessons on the effects of various policy options that may be applied to development of the commodity programs for the 1990's. ERS analysts have prepared a series of background reports on feed grains, food grains, fibers, oilseeds, livestock, and specialty crops. The reports analyze production, marketing, and use of the commodities, as well as the evolution of their respective support programs. The reports also identify important issues for the 1990 farm bill debate.

Federal agricultural policy and programs evolved in response to the frequent and often dramatic financial and resource adjustments necessary because of weather conditions, policy shifts, technological advances, and the vagaries of world supply and demand. While many of the current basic program instruments have been used since the 1930's, the focus of agricultural policy has shifted to meet the changing needs of the farm sector.

Between 1933 and the mid-1960's, farm policy was designed to address the problems created by chronic excess capacity and overproduction. Rapid technological advances, including mechanization, fertilizers, herbicides, pesticides, and improved varieties and hybrids, resulted in farm productivity far outpacing the growth in demand. With too many resources devoted to food and fiber production, low commodity prices, underemployment, and low returns for agricultural labor became characteristics of the farm sector. For most years, the average income of farm families has been significantly below the average income of nonfarm families. A variety of farm programs, including production control and government acquisitions, were adopted to address the problems arising from excess capacity.

With supplies exceeding domestic needs, exports became an increasingly important source of demand for U.S. farm products, especially in the 1970's. Expanding links between agriculture and the domestic and international economies broadened the farm policy arena to include macroeconomic, trade, and foreign policy considerations, as well as traditional concerns about farm prices and income.

Growing dependence on foreign markets exposed U.S. agriculture to risk associated with fluctuating world economic conditions. Events of the 1970's and 1980's --including the temporary disappearance of the sector's excess capacity, an export boom and bust, and a severe farm financial crisis--clearly demonstrated the volatility that can plague agriculture. The pitfalls of fixing programs based on expectations that conditions of the recent past would continue for the duration of a farm bill became apparent and pointed to the need for establishing farm programs that will allow farmers to adjust to market conditions.

The 1985 Food Security Act (PL 99-198) focused on shifting agriculture toward more market orientation so that the farm sector could produce for domestic and international markets at prices reflecting global supply and demand. The act lowered loan rates to make U.S. farm products more price competitive and to reduce

the incentives that U.S. loan rates and price supports provide to foreign competitors to expand production. Target prices were reduced to minimize the pressure of lower loan rates on the Federal budget. Export promotion/assistance programs were mandated to address the problem of large price-depressing surpluses and declining U.S. export shares for many commodities. The Food Security Act also addressed long-term conservation and environmental issues.

The concerns behind many of the issues addressed during the 1985 farm bill debate remain as strong or stronger today. As a result, the 1990 agricultural policy agenda will be similar to that of 1985 in many respects. For example, because expanding exports in extremely competitive world commodity markets remains a critical challenge, price support and export programs will receive major consideration in 1990.

Interest in the conservation reserve and annual acreage reduction programs will persist because agriculture's productive capacity still exceeds demand. Stock policies will also be on the 1990 agenda. Reserve and Commodity Credit Corporation inventory management policies will be reexamined to determine how large stocks should be, how they should be financed, and how their release to the market can be encouraged when supplies tighten.

Environmental issues will receive more attention than in the 1985 debate. Surface and ground water quality, in particular, is likely to be a key conservation issue. The discussion is also likely to include proposals to discourage reliance on agricultural chemicals.

While the list of issues is extensive, budgetary pressures may limit policy options and focus debate on cost-saving proposals. While Federal outlays for farm programs dropped from the peak of $25.8 billion in fiscal 1986 to $12.5 billion in fiscal 1988, they remain several times the levels of a decade ago.

## Contents

**Part 1: Cotton** . . . . . 1

Summary . . . . . 2

Introduction . . . . . 2

Structure of the Cotton Industry . . . . . 3
- Production Characteristics . . . . . 3
- Trends in Domestic Cotton Use . . . . . 7
- Trends in World Cotton Trade . . . . . 8
- World Textile Trade . . . . . 11
- Trends in Prices, Costs, and Returns . . . . . 11

History of Cotton Programs . . . . . 14
- Early Programs . . . . . 14
- Cotton Programs in the 1960's . . . . . 17
- Cotton Programs in the 1970's . . . . . 18
- Cotton Programs in the Early 1980's . . . . . 20
- The Food Security Act of 1985 . . . . . 22
- Current Program Situation . . . . . 24

Program Effects . . . . . 25
- Producers . . . . . 25
- Consumers . . . . . 28
- Taxpayers . . . . . 28

Issues . . . . . 29

Additional Readings . . . . . 29

Glossary . . . . . 33

Appendix Tables . . . . . 42

**Part 2: Wool and Mohair** . . . . . 57

Summary . . . . . 58

Introduction . . . . . 59

Structure of the Wool Industry . . . . . 59
- Wool Production . . . . . 60
- Domestic Wool Use . . . . . 61
- The World Wool Market . . . . . 65
- Prices and Producer Returns . . . . . 68

Structure of the Mohair Industry . . . . . 69
- Mohair Production . . . . . 70

Continued--

Domestic Mohair Use . . . . . 70
World Mohair Market . . . . . 71
Prices . . . . . 71

History of the Wool and Mohair Programs . . . . . 72
Early Legislation . . . . . 72
The 1954 Act and Support Payments . . . . . 72
Changes in the Support Price . . . . . 73

Effects of Wool and Mohair Programs . . . . . 75
Effects on Producers . . . . . 75
Effects on Consumers . . . . . 77
Effects on Taxpayers . . . . . 78

Additional Readings . . . . . 78

Glossary . . . . . 79

Appendix Tables . . . . . 81

# Part 1: Cotton

Harold Stults, Edward H. Glade, Jr.
Scott Sanford, and Leslie A. Meyer

**Abstract**

**Cotton** acreage, production, and prices have been influenced by Government programs since the 1930's in an attempt to meet market needs, with varying degrees of success. The Food Security Act of 1985 is generally considered successful in dealing with the cotton sector despite several problems. The marketing loan provisions of the act helped make cotton competitive in world markets in 1987 and some market share was regained. However, consistently competitive pricing has been somewhat elusive. In 1988-89 problems with the adjusted world price formula and with the storage terms resulted in noncompetitive prices for U.S. cotton. A rule change on the adjusted world price formula and prices above the loan rate helped restore competitiveness. While the general preference for 1990 legislation for cotton will likely be for stability, the combination of budget, trade, environment and flexibility issues may result in more than fine tuning of the current act.

## Summary

The health of the U.S. cotton industry depends on the world economy. U.S. exports vary greatly from year to year, depending on foreign cotton output and general economic conditions, which contribute to supply and price instability. However, the United States will likely continue to be the world's leading cotton exporter.

Since the turn of the century, U.S. cotton producers have frequently experienced excess production capacity, high stocks, and low product prices. Government programs since the early 1930's have attempted to support prices and adjust acreage and production to market needs. These programs may have stabilized and improved net incomes and slowed the transfer of resources out of cotton production. However, until recently, cotton farms continued to increase in size in response to economic and technological forces.

While there have been year-to-year changes in acreage planted to cotton, the long-term trend has been downward. On the other hand, production has remained relatively stable because of substantial increases in yields. Since 1980, the farm value of the cotton crop has not been enough to pay all costs of production. But Government payments have made cotton production profitable overall. Still, one in five cotton farms had negative net farm income in 1987, a very good year for cotton farmers. No deficiency payments were made to cotton producers from 1974 through 1980 since prices received were above target prices. However, large deficiency payments were made during 1981-88 when Government payments (except in 1983 and 1986) comprised between 12 percent and 23 percent of total income from cotton.

As with wheat and feed grains, Government programs for cotton to control production, stabilize prices, and support income have been in effect for 50 years. Acreage allotments, marketing quotas, and price supports based on parity were in effect during the early years, with the exception of 1943-49 and 1951-53 when allotments and quotas were temporarily removed. Allotments remained in effect at varying levels from 1954 through 1970. The 1965 Food and Agriculture Act changed cotton policy by clearly separating price and income supports. The market price of cotton was supported at 90 percent of the estimated world price level. This allowed domestic market prices to seek world price levels. Payments to farmers were based on their participation in an acreage reduction program. By the end of 1970, the huge surpluses of cotton were gone. The voluntary program to reduce acreage had met the objective of reducing stocks, but the direct payments in excess of $600 million during the late 1960's had resulted in relatively high U.S. Treasury costs.

The programs of the 1970's continued to recognize the importance of the world market price in setting the loan rate of cotton. The 1973 Act established target prices, which provided for direct payments to producers if market prices fell below target price levels. The 1977 Act set target prices based on the cost of production, but this adjustment was removed in the 1981 Act, which established the 1981-85 target prices at successively higher levels. The programs of the early 1980's continued the market oriented loan rate formula, combined with relatively high deficiency payments. However, substantial acreage reductions to reduce surpluses were required, culminating in the payment-in-kind program of 1983.

The Food Security Act of 1985 established cotton farm policy for the 1986-90 crop years. Some major features of past farm acts were retained, including acreage limitations, nonrecourse loans, and target prices. But, the act also gave the Secretary of Agriculture more discretionary authority for administering the program. In contrast to earlier programs, the 1985 Act specified declining target price minimums through 1990. A major new provision of the act, the marketing loan, provided a loan repayment plan allowing loans to be repaid at levels below the loan rate if world market prices (adjusted to U.S. quality and location) were below the loan rate. The program performed effectively during 1986/87 and part of the 1987/88 season as both exports and domestic cotton use increased and stocks fell. Since then, changing foreign supply and demand conditions and problems with the mechanics of the program itself forced numerous adjustments in program provisions as U.S. cotton struggled to be competitive in world markets.

## Introduction

Upland cotton comprises 98 percent of all cotton grown in the United States. Extra-long staple (ELS) cotton, which historically has been considered a unique crop for program purposes, is not covered in this report. Cotton is the single most important textile fiber in the world, accounting for about 67 percent of all fibers used. Cotton is grown in about 75 countries. China, the Soviet Union, and the United States account for about 60 percent of world production. During 1986-88, the United States produced about 20 percent of the world's cotton and used 10 percent.

Cotton has been a major cash crop and an important source of foreign exchange in the United States for nearly 200 years. Cotton was first grown in the United States at Jamestown in the early 17th century, but it remained a minor crop until 1793 when Eli Whitney invented the cotton gin to separate the seed from the lint. This development spurred production, with most of the lint being exported to textile mills in England. In 1850, for example, nearly 90 percent of lint production was exported, with the earnings offsetting the costs of about two-thirds of all goods imported into the United States. U.S. exports of raw cotton during 1980-82 accounted for about 30 percent of world cotton trade. Export earnings averaged about $2 billion, or about 5 percent of the total value of U.S. agricultural exports.

In 1987, cotton ranked fifth ($4.6 billion) among the major field crops in value of farm production, following corn ($14.0 billion), soybeans ($11.3 billion), harvested hay ($9.1 billion), and wheat ($5.4 billion).

Cotton lint is used chiefly in clothing and home furnishings, with lesser amounts used in industrial products. The seeds are crushed for oil and the remaining meal is fed to livestock as a protein meal. The short fuzz on the seed, called linters, has many uses, including padding materials, nonwoven fabric, and as a source of cellulose for making rayon, plastics, and other products.

## Structure of the Cotton Industry

### Production Characteristics

Cotton is currently produced in 17 States from California to Virginia, with major concentrations in the Delta areas of Mississippi, Arkansas, and Louisiana; the Texas High Plains and Rolling Plains; central Arizona; and the San Joaquin Valley of California. Forces influencing location of production are ultimately reflected in relative returns among products that can be grown in an area and costs of inputs, which determine comparative advantages of production among areas. Soils, topography, elevation, temperature, and water availability are important determinants of where and how well cotton can be produced. The northern limit in the United States is established by a need for at least 200 days between killing frosts and a minimum average summer temperature of 77 degrees.

The predominant type of cotton grown in the United States, Gossypium hirsutum, is better known as American upland cotton. It typically accounts for about 98 percent of the total U.S. cotton crop. It is grown throughout the Cotton Belt as well as in most of the major cotton producing countries. Another type of cotton grown in the United States, Gossypium barbadense, is commonly referred to as American-Pima, or extra-long staple (ELS) cotton. ELS cotton is grown chiefly in west Texas, New Mexico, and Arizona where it is particularly well adapted to environmental conditions. The production of ELS cotton is small relative to that of upland cotton because its production costs per pound are higher and its markets are chiefly high-value products such as sewing thread and expensive apparel items.

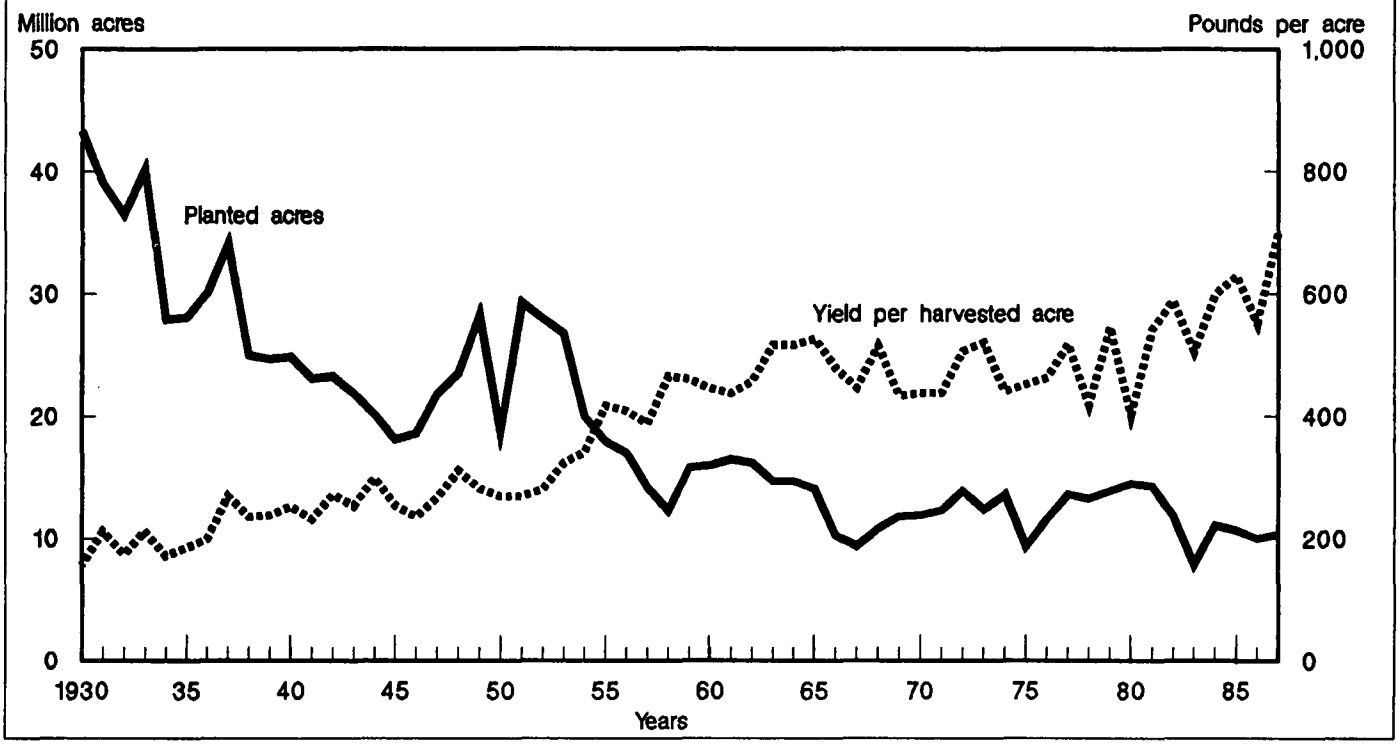
#### *Trends in Acreage, Yield, and Production*

Cotton acreage in the United States increased from less than 8 million acres at the end of the Civil War to more than 44 million acres in the mid-1920's. Production over that period ranged from about 2 million bales in 1866 to about 18 million bales in 1926. Cotton yields averaged about 180 pounds per harvested acre and rarely exceeded 200 pounds during the 1866-1930 period.

From 1930 to the mid-1960's, acreage trended down but yields moved upward (fig. 1). Yields increased from 269 pounds per harvested acre in 1950 to 527 pounds in 1965, about 4.5 percent per year. Since 1965, yields have shown considerable fluctuation but no obvious trend until the 1980's when average yield began to climb. While Government programs and prices of cotton and competing crops have influenced acreage, weather has been the chief determinant of year-to-year variability in yields. U.S. production has averaged more than 12 million bales a year during the past decade, fluctuating from a low of 7.8 million bales in 1983 to a high of 15.6 million bales in 1981.

The westward shift of U.S. cotton production seems to have ended. In 1980, the West (California, Arizona, and New Mexico) accounted for about 41 percent of U.S. output, up from 16 percent in 1970 (table 1). In contrast, the southeastern share had declined to about 5 percent of the total. The Southwest (Texas and Oklahoma) and the West accounted for nearly 74 percent of U.S. cotton production by 1980, compared with 51 percent in 1970. This regional shift was due chiefly to lower average farm production costs in the West and Southwest and to the elimination of marketing quotas and the restrictive acreage allotments that were tied to historical locations of production. Since 1980 the share of production in the Southeast and the Delta has increased. By 1987 the share of production in the West and Southwest had dropped to about 60 percent.

Figure 1
**U.S. cotton acreage and yield**




Cotton's primary competitors for land include soybeans and, to a lesser extent, corn in the Southeast and Delta, grain sorghum and wheat in the Southwest, and wheat, hay crops, and barley in the irrigated Far West. Competition from soybeans has resulted in significant fluctuation in cotton acreage in the Delta in recent years.

***Number and Size of Farms***

The trend to fewer and larger cotton farms appears to have ended (table 2). Like most other kinds of farms, there has been a long-term trend to fewer but larger cotton farms in response to economic and technological forces. In 1949 there were 1,110,000 farms growing cotton in the United States with an average of 24 acres of cotton per farm. By 1982 the number of farms dropped to 38,000 and average acreage increased to 256 acres. Cotton acreage per farm increased 87 percent from 1974 to 1982 while the number of farms dropped by 43 percent. However, preliminary data from the 1987 Census of Agriculture indicate that the number of farms producing cotton is up about 10 percent since 1982 and the number of acres of cotton per farm is down about 10 percent.

Acres harvested in 1987 were slightly less than in 1982, so the increase in number of farms growing cotton was not due to increased area in production. A probable explanation for the change in the long-term trend toward fewer and larger cotton farms is a substantial restructuring of farm ownership and operation in response to economic conditions, tax laws and other regulations, and cotton programs.

The largest number of cotton farms in 1987 was in the class with sales between $100,000 and $250,000 (table 3). Gross, net, and family income went up as sales increased, but the largest sales class earned less off-farm income than the next smaller sales class. However, a larger proportion (28.9 percent) of farms with sales over $500,000 had negative net farm income than any other sales class. Net family income was calculated by subtracting $17,400 from net income from all sources.

Farms from the smallest sales class had the largest proportion of farms with negative family income (42.8 percent), but over 28 percent of the farms in the largest sales class also had negative net family income.

There is little vertical or horizontal integration in cotton production. The corporate form of organization, although increasing, is undertaken by farm operators chiefly to take advantage of tax policies, limited liability, or property transfer provisions. Cotton production has

**Table 1—Cotton acreage harvested, yield per harvested acre, and production, by region, 1965-87**

| Crop year[1] | Southeast[2] | Delta[3] | Southwest[4] | West[5] | United States[6] |
|---|---|---|---|---|---|
| | | | *1,000 acres* | | |
| Acreage: | | | | | |
| 1965 | 2,280 | 3,974 | 6,293 | 1,068 | 13,615 |
| 1970 | 1,375 | 3,355 | 5,487 | 938 | 11,155 |
| 1975 | 690 | 2,616 | 4,317 | 1,173 | 8,796 |
| 1976 | 898 | 3,611 | 4,913 | 1,492 | 10,914 |
| 1977 | 808 | 3,388 | 7,129 | 1,949 | 13,275 |
| 1978 | 574 | 2,862 | 6,936 | 2,028 | 12,400 |
| 1979 | 613 | 2,412 | 7,552 | 2,254 | 12,831 |
| 1980 | 672 | 2,846 | 7,565 | 2,132 | 13,215 |
| 1981 | 764 | 2,943 | 7,971 | 2,163 | 13,841 |
| 1982 | 623 | 2,381 | 4,847 | 1,882 | 9,734 |
| 1983 | 470 | 1,683 | 3,930 | 1,264 | 7,347 |
| 1984 | 697 | 2,629 | 5,095 | 1,058 | 10,379 |
| 1985 | 807 | 2,595 | 5,030 | 1,797 | 10,229 |
| 1986 | 722 | 2,545 | 3,801 | 1,289 | 8,357 |
| 1987 | 823 | 2,784 | 4,801 | 1,491 | 9,899 |
| 1988 | 988 | 3,277 | 5,736 | 1,735 | 11757 |
| | | | *Pounds per acre* | | |
| Yield: | | | | | |
| 1965 | 453 | 610 | 401 | 1,112 | 527 |
| 1970 | 410 | 546 | 310 | 846 | 438 |
| 1975 | 422 | 457 | 293 | 1,050 | 453 |
| 1976 | 413 | 382 | 348 | 1,083 | 465 |
| 1977 | 313 | 542 | 411 | 967 | 520 |
| 1978 | 473 | 493 | 297 | 725 | 420 |
| 1979 | 501 | 609 | 392 | 1,013 | 547 |
| 1980 | 355 | 409 | 232 | 1,021 | 404 |
| 1981 | 541 | 554 | 376 | 1,142 | 542 |
| 1982 | 749 | 747 | 302 | 1,082 | 590 |
| 1983 | 415 | 564 | 323 | 1,042 | 508 |
| 1984 | 722 | 701 | 367 | 1,029 | 600 |
| 1985 | 741 | 689 | 404 | 1,131 | 630 |
| 1986 | 493 | 577 | 347 | 1,110 | 547 |
| 1987 | 571 | 791 | 498 | 1,264 | 702 |
| 1988 | 515 | 689 | 462 | 1,038 | 616 |

Continued—

**Table 1—Cotton acreage harvested, yield per harvested acre, and production, by region, 1965-87 —Continued**

| Crop year[1] | Southeast[2] | Delta[3] | Southwest[4] | West[5] | United States[6] |
|---|---|---|---|---|---|
| | | | *1,000 bales* | | |
| Production: | | | | | |
| 1965 | 2,150 | 5,051 | 5,262 | 2,475 | 14,938 |
| 1970 | 1,175 | 3,819 | 3,545 | 1,653 | 10,192 |
| 1975 | 607 | 2,491 | 2,636 | 2,567 | 8,302 |
| 1976 | 733 | 2,874 | 3,565 | 3,368 | 10,580 |
| 1977 | 527 | 3,827 | 6,109 | 3,927 | 14,389 |
| 1978 | 566 | 2,939 | 4,288 | 3,063 | 10,856 |
| 1979 | 639 | 3,061 | 6,172 | 4,757 | 14,629 |
| 1980 | 498 | 2,424 | 3,664 | 4,536 | 11,122 |
| 1981 | 862 | 3,394 | 6,244 | 5,146 | 15,646 |
| 1982 | 972 | 3,707 | 3,049 | 4,235 | 11,963 |
| 1983 | 406 | 1,979 | 2,643 | 2,743 | 7,771 |
| 1984 | 1,049 | 3,842 | 3,992 | 4,098 | 12,982 |
| 1985 | 1,246 | 3,723 | 4,313 | 4,151 | 13,432 |
| 1986 | 740 | 3,057 | 2,746 | 2,982 | 9,525 |
| 1987 | 979 | 4,587 | 5,518 | 3,791 | 14,475 |
| 1988 | 1,061 | 4,707 | 5,518 | 3,791 | 15,077 |
| | | | *Percent* | | |
| Regional shares of U.S. production: | | | | | |
| 1965 | 14.4 | 33.8 | 35.2 | 16.6 | 100 |
| 1970 | 11.5 | 37.5 | 34.8 | 16.2 | 100 |
| 1975 | 7.3 | 30.0 | 31.7 | 30.9 | 100 |
| 1976 | 7.3 | 27.2 | 33.7 | 31.8 | 100 |
| 1977 | 3.7 | 26.6 | 42.5 | 27.3 | 100 |
| 1978 | 5.2 | 27.1 | 39.5 | 28.2 | 100 |
| 1979 | 4.4 | 20.9 | 42.2 | 32.5 | 100 |
| 1980 | 4.5 | 21.8 | 32.9 | 40.8 | 100 |
| 1982 | 8.1 | 31.0 | 25.5 | 35.4 | 100 |
| 1983 | 5.2 | 25.5 | 34.0 | 35.3 | 100 |
| 1984 | 8.1 | 29.6 | 30.7 | 31.6 | 100 |
| 1985 | 9.3 | 27.7 | 32.1 | 30.9 | 100 |
| 1986 | 7.8 | 32.1 | 28.9 | 31.3 | 100 |
| 1987 | 6.8 | 34.7 | 34.4 | 27.1 | 100 |
| 1988 | 7.0 | 31.2 | 36.6 | 25.1 | 100 |

[1]Year beginning August 1. [2]Virginia, North Carolina, South Carolina, Georgia, Florida, and Alabama. [3]Missouri, Arkansas, Tennessee, Mississippi, Louisiana, Illinois, and Kentucky. [4]Texas, Oklahoma, and New Mexico. Includes ELS cotton. [5]California, Arizona, and Nevada. Includes ELS cotton. [6]Totals may not add due to rounding.

not attracted a substantial influx of capital investment by nonfarm corporations.

***Tenure of Farm Operators***

Share renting and cash renting of land for cotton production are common practices in all cotton production regions. According to the 1982 Census of Agriculture, about 45 percent of the farms harvesting cotton were operated by part-owners, 25 percent by tenants, and 30 percent by full owners.

Over 80 percent of the farms harvesting cotton in 1978 were individual family operations, 13 percent were partnerships, and 4 percent were corporations. The proportion and number of corporations increased somewhat between 1978 and 1982. However, about 90 percent of the corporations were family-held in 1978. The pro-

**Table 2—Number of farms harvesting cotton and acres of cotton per farm, by region and State**

| Region/State | Number of farms | | | Cotton area per farm | | |
|---|---|---|---|---|---|---|
| | 1974 | 1982 | 1987 | 1974 | 1982 | 1987 |
| | | *Number* | | | *Acres* | |
| Southwest | 16,020 | 3,265 | 4,297 | 82 | 181 | 162 |
| Alabama | 6,827 | 1,458 | 1,820 | 79 | 202 | 190 |
| Georgia | 4,279 | 770 | 1,733 | 87 | 171 | 134 |
| North Carolina | 2,405 | 620 | [1] | 60 | 111 | [1] |
| South Carolina | 2,509 | 417 | 744 | 102 | 229 | 156 |
| Delta | 34,228 | 10,921 | 13,138 | 123 | 214 | 210 |
| Arkansas | 7,585 | 2,109 | 2,479 | 147 | 201 | 214 |
| Louisiana | 4,486 | 2,371 | 2,675 | 130 | 237 | 221 |
| Mississippi | 1,277 | 3,710 | 4,225 | 150 | 264 | 243 |
| Tennessee | 8,119 | 1,850 | 2,545 | 61 | 131 | 162 |
| Missouri | 2,761 | 971 | 1,214 | 109 | 149 | 163 |
| Southwest | 33,918 | 19,839 | 20,167 | 152 | 253 | 237 |
| Oklahoma | 6,089 | 2,848 | 2,913 | 82 | 146 | 126 |
| Texas | 26,334 | 16,292 | 16,557 | 171 | 278 | 263 |
| New Mexico | 1,459 | 699 | 697 | 98 | 112 | 114 |
| West | 5,152 | 4,179 | 4,236 | 301 | 438 | 346 |
| Arizona | 1,143 | 1,177 | 1199 | 351 | 441 | 318 |
| California | 4,009 | 3,002 | 3037 | 287 | 437 | 357 |
| United States | 89,536 | 38,266 | 41,838 | 137 | 256 | 232 |

[1]Preliminary 1987 Census summary data did not include cotton for North Carolina.

**Table 3—Income of cotton farms by sales class, 1987[1]**

| Sales class | Number of farms | Income | | | | Farms with negative income | |
|---|---|---|---|---|---|---|---|
| | | Gross farm | Net farm | Off-farm | Family[2] | Net farm | Net[3] family |
| | *Number* | | *$1,000* | | | *Percent* | |
| $39,999 or less | 5,807 | 27.7 | 8.5 | 17.9 | 26.4 | 24.6 | 42.8 |
| $40,000 to $99,999 | 5,903 | 81.6 | 23.1 | 15.2 | 38.2 | 15.9 | 28.8 |
| $100,000 to $249,999 | 7,099 | 186.8 | 48.7 | 19.9 | 68.5 | 20.0 | 22.4 |
| $250,000 to $499,999 | 2,033 | 392.0 | 28.3 | 14.5 | 14.2 | | |
| | | 115.6 | 143.9 | | | | |
| $500,000 or over | 1,783 | 978.3 | 27.8 | 28.9 | 28.7 | | |
| | | 141.4 | 169.2 | | | | |
| All farms | 22,611 | 199.2 | 44.9 | 19.5 | 64.5 | 20.3 | 29.1 |

[1]Farms for which cotton constitutes 50 percent or more of either sales or acres harvested.
[2]Net farm income plus off-farm income.
[3]Calculated after $17,400 is subtracted from family income for estimated family living expenses.

portion of individual or family operations decreased as the acres of cotton harvested per farm increased.

**Trends In Domestic Cotton Use**

Domestic cotton use reached an historic high in the United States in 1987 at 12.1 million bales. Domestic cotton use equals mill use plus the cotton in textile imports minus the cotton in textile exports. The previous record domestic use was in 1942 when 11.3 million bales were used. Domestic use reached a post-World War II peak of 10.4 million bales or 25.4 pounds per person in 1966. Competition with manmade fibers and slower real economic growth beginning in the 1970's caused domestic cotton use to decline to 6.5 million bales by 1982 when per capita consumption fell to only 13.5 pounds per person. Since 1982 there has been a steady and rapid growth in consumer demand for cotton. By 1987 per capita consumption had risen to 23.9 pounds.

Foreign textile producers seem to have a basic labor-cost advantage over U.S. textile producers, especially in the apparel sector, and cotton textile imports grew at an average compound rate of about 4.6 percent between 1965 and 1980. The average compound annual rate of growth of textile imports increased to about 16 percent during 1980-87, in part due to the increase in the value of the dollar since 1980 and the strength of the U.S. economy relative to foreign economies in 1983. The raw cotton equivalent of U.S. textile imports totaled a record 4.9 million bales in 1987. But, the growth of imports slowed down in 1988 and totaled about 4.4 million bale-equivalents, representing a 10-percent decrease in volume but a slight increase in value.

Additional imported products increase the supply of cotton textiles available to American consumers at the retail level. In 1987, 53 percent of the fibers in imported textiles were cotton, while cotton accounted for only 29 percent of the fibers used in U.S. mills. Also, apparel prices at the retail level are declining in real terms, and lower prices are encouraging increased domestic use. The consumer price index (CPI) for apparel products (1967= 100) rose from 179 in 1980 to 208 in 1986. The overall CPI rose from 270 to 405 over that same period, implying about a 14-percent drop in real retail prices of apparel products.

Mill use of cotton reached 9.6 million bales in 1966 and declined to 5.3 million bales in 1981 before recovering to 7.6 million in 1987. During 1966-83, cotton mill use declined at a compound annual rate of 3.3 percent. The decline in mill use was caused primarily by two factors: the loss of market share to manmade fibers, mainly polyester, and the loss of market share to textile imports.

Cotton's share of mill consumption dropped from 90 percent in 1960 to 59 percent in 1980. From 1966 to 1983, cotton's share of total use in the cotton system (mills and spindles adapted to the use of cotton) declined from 81.5 percent to 60.3 percent. Manmade fiber's strength, uniformity, and ease of handling and care account for much of the decline in cotton's share of mill use. Costs to mills were higher for cotton than for polyester and rayon during most of the 1970's.

If cotton had maintained its 1966 share of cotton-system fiber use at 81.5 percent, the decline in cotton mill use would have been more than 2 million bales less than actually occurred between 1966 and 1980 when cotton's share of total mill consumption reached its lowest point. Since 1980 cotton's share of total mill consumption rose to 67.4 percent in 1987. However, the entire cotton system is becoming smaller. This is partly because manmade fibers have entirely supplanted cotton in some end uses such as tire cord and carpeting, but mostly because the cotton textile trade deficit (the excess of imports over exports of cotton textiles on a raw-fiber equivalent basis) grew from 668,000 bales in 1966 to 1.9 million bales in 1983. During 1966 to 1983, total fiber use in the cotton system declined from the equivalent of 12.1 million bales to 9.6 million bales, implying an additional 2-million-bale loss in cotton mill use.

In recent years consumer preference for cotton has led to both increased mill use of cotton and a greater share of total mill consumption. This was at the same time that textile imports were growing rapidly.

In 1980, the cotton textile trade deficit represented only 8.5 percent of domestic cotton use. That year, imports reached 1.7 million bale-equivalents while cotton textile exports equaled 1.1 million bales, for a trade deficit of 590,000 bales. In 1983, the United States imported 2.3 million bale-equivalents of cotton in the form of textile products, and exported 460,000 bale-equivalents. The resulting deficit of 1.9 million bale-equivalents represented about 25 percent of all the cotton used in the United States in 1983. In 1988 4.4 million bale-equivalents were imported as textiles and 688,000 bale-equivalents were exported.

End uses of cotton include apparel, household, and industrial products. On average, clothing accounts for

about 256 pounds of total end use of a 480-pound bale of cotton delivered to a textile mill (fig. 2). Home furnishings and industrial products account for 138 pounds and 64 pounds.

## Trends in World Cotton Trade

Forces affecting world cotton trade are complex. Since cotton is an input for the production of clothing, it can be traded as raw cotton, yarn, fabric, or finished apparel. The United States is a competitive exporter of raw cotton, but other countries, many of them also cotton producers, are more competitive as exporters of finished products (tables 4 and 5). The demand for U.S. raw cotton exports depends heavily on: (1) foreign cotton production, (2) U.S. cotton price relative to the cotton prices of competing exporters, (3) the price of cotton relative to other fibers, and (4) the rate of economic growth in importing nations. For example, it has been estimated that a 1-percent increase in real income of foreign importing countries is associated with about a 120,000-bale increase in U.S. cotton exports. If our major competitors increase their production by 1 million bales, U.S. exports might drop by about 600,000 bales in the short run.

World cotton production increased from an average of 54.5 million bales in 1964-68 to an estimated 80.5 million bales in 1984-88, an increase of 48 percent. Cotton trade, however, increased only 32 percent in the same period, from an average of 17.3 to 22.8 million bales. Hence, a larger share of world cotton production is now milled within producing countries.

Even though cotton production and trade have increased worldwide, cotton's share of world fiber production fell from 58 to 50 percent between 1967 and 1987. All natural fibers have lost markets to manmade fibers, especially during the past 20 years. The development of polyester in the 1950's brought intense competition with other cotton, rayon, and acetate and was instrumental in cotton's loss of market share. However, within the apparel and home furnishing markets, cotton and other natural fibers have enjoyed increased popularity during the 1980's. These and other developments mean that world producers in search of export growth will compete for a larger share of a slowly expanding market.

### *Changes in Importing Countries*

Eight countries account for about 60 percent of world cotton imports. Japan is by far the most important cotton importer with a 15-percent share of world imports in 1986-87. The Japanese share fell 2-3 percent during the 1970's as other East Asian textile producers--Taiwan, Hong Kong, and South Korea--expanded mill capacity and increased cotton imports. In 1986-87, South Korea purchased 8 percent of world cotton imports while Taiwan and Hong Kong had import market shares of 9 and 5 percent. The share of trade held by China increased from an average of less than 3 percent in 1960-64 to more than 17 percent in 1979 and 1980.

China's imports have tapered off sharply since 1980, however, as Chinese cotton production has expanded. In 1986 and 1987, Chinese cotton imports comprised less than 1 percent of world imports. In 1988, however, Chinese cotton imports were expected to account for about 6 percent of world imports. While China is a major net exporter of raw cotton, its increasing domestic consumption, limited arable land, and intense competition for land among crops have placed it at a crossroads with respect to production and further highlighted its role in international cotton trade.

The major European cotton importers--France, Italy, and Germany--have declined in importance since the early 1960's as these countries have moved heavily into the use of manmade fibers. Each of these countries currently purchases 3-6 percent of world cotton imports.

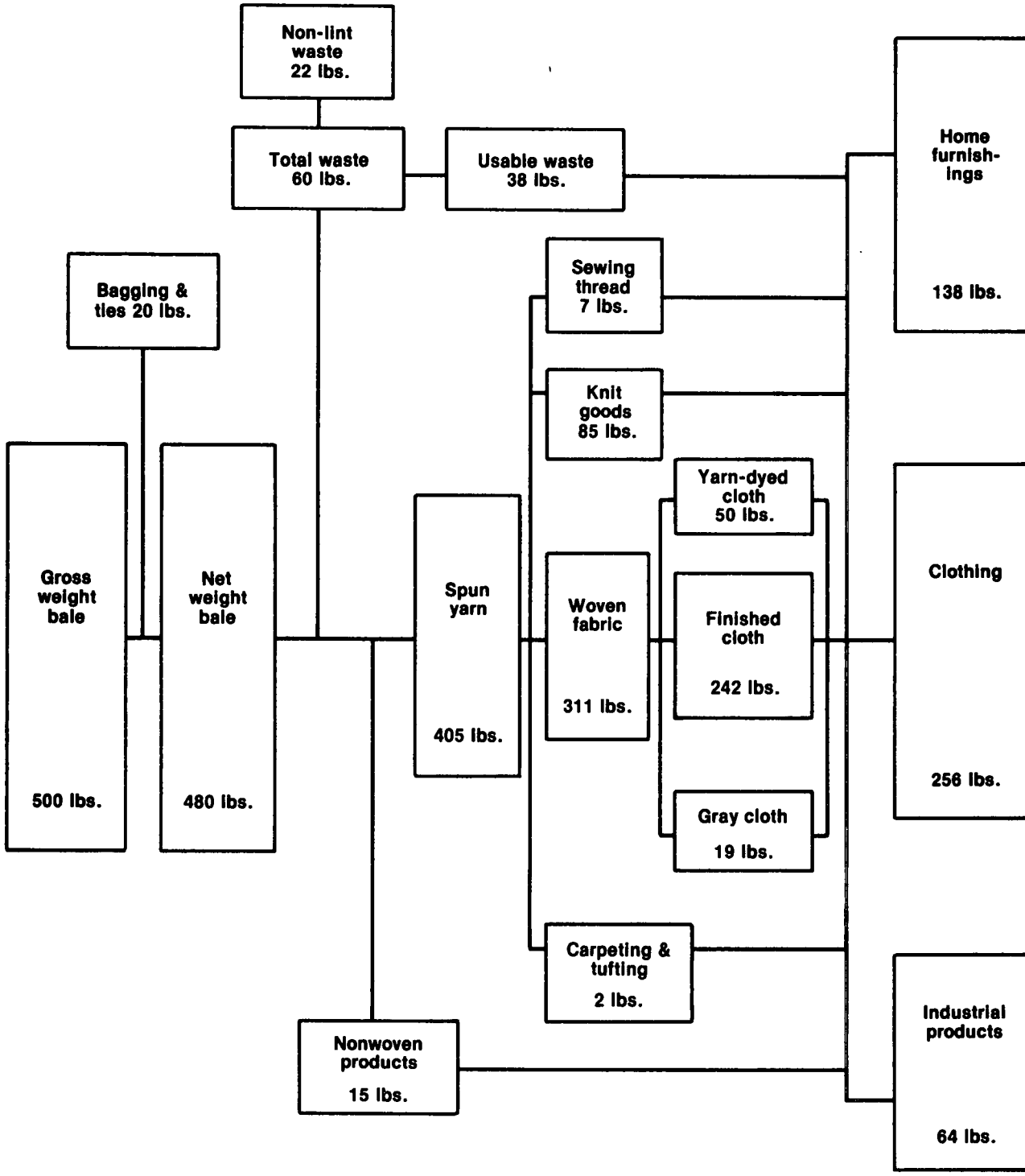
### *Changes in Exporting Countries*

The United States is the world's largest cotton exporter with a market share in 1986-87 of 27 percent. The U.S. share has varied substantially since 1960, ranging from 10 to 40 percent of world exports (see table 4). Much of the variation in market share is explained by relative prices for U.S. cotton and cotton from competing exporting countries. Abundant harvests in competing exporting countries cause a reduction in U.S. exports. Also, during the 1982/83 season, when U.S. prices fell to the loan rate, U.S. exports fell from 33 percent to 27 percent of world trade, even though U.S. ending stocks rose to 7.9 million bales.

The United States accounts for a high proportion of total imports of raw cotton by several countries, including Japan, Korea, Taiwan, Hong Kong, Indonesia, Thailand, and Canada (table 5). Japan was the largest single export market for the United States during 1984-87, followed closely by Korea. The United States holds the largest market shares of imports by Canada and Korea.

Figure 2

## Distribution of an average bale of U.S. cotton



During the 1950's and early 1960's, when U.S. price support rates were high relative to world prices, a payment-in-kind was used to promote exports, but it was discontinued in 1967. Such a program provides an indirect advantage to foreign textile manufacturers which compete with U.S. mills. During fiscal years 1985-87, about 950,000 bales a year were exported under a credit guarantee program. Although PL 480 exports were important in some earlier years, only about 50,000 bales each year were exported through PL 480 during 1985-87.

**Table 4—World cotton exports and market shares, 1960-87**

| Year | World exports | U.S. exports | Market shares: United States | USSR | Other exporters |
|---|---|---|---|---|---|
| | *Million bales* | | | *Percent* | |
| 1960 | 17.1 | 6.9 | 40.1 | 10.2 | 49.7 |
| 1965 | 16.9 | 3.0 | 17.0 | 13.2 | 68.9 |
| 1970 | 17.7 | 3.9 | 22.0 | 13.8 | 64.2 |
| 1975 | 19.1 | 3.3 | 7.4 | 20.5 | 62.1 |
| 1980 | 19.7 | 5.9 | 30.1 | 20.8 | 49.1 |
| 1981 | 20.2 | 6.6 | 32.6 | 21.3 | 46.1 |
| 1982 | 19.5 | 5.2 | 26.9 | 20.1 | 53.0 |
| 1983 | 19.2 | 6.8 | 35.8 | 18.5 | 45.7 |
| 1984 | 20.2 | 6.2 | 30.2 | 14.3 | 55.5 |
| 1985 | 20.2 | 2.0 | 9.6 | 15.5 | 74.9 |
| 1986 | 25.9 | 6.7 | 25.8 | 12.0 | 59.4 |
| 1987 | 23.5 | 6.6 | 27.9 | 14.5 | 57.6 |
| 1988 | 24.6 | 6.2 | 24.0 | 14.2 | 61.8 |

The United States imposes an annual import quota on raw cotton totaling 14.5 million pounds (about 30,240 bales) of short-staple cotton having a length of less than 1-1/8 inches, and a quota of 45.7 million pounds (about 95,118 bales) of long-staple cotton having a length of 1-1/8 or more. Raw cotton imports have not approached these quota limits in recent years, having averaged about 2,500 bales in 1986-87.

The United States will likely continue as the world's leading exporter of raw cotton in the near future, though its position has slipped somewhat since the early-1980's. Chief competitors and their 1987-88 export market shares are the Soviet Union (14.4 percent), Pakistan (11.6 percent), and China (7.9 percent). Among these countries, Pakistan has garnered an increasing share of world exports in recent years.

Other cotton exporters with a significant 1987-88 share of the world market include Australia (4.3 percent), Paraguay (3.3 percent), Sudan (2.9 percent), Argentina (1.9 percent), Brazil and Mexico (1.8 percent each), and Egypt (1.5 percent). Among these countries, the role of exports varies considerably with the first three exporting nearly all of their production and the last three exporting an average of only 20-40 percent. Individual variation of exports as a percentage of pro-

**Table 5—U.S. raw cotton exports of selected countries, August-July years 1983-88[1]**

| Destination | 1983/84 Exports | 1983/84 Market share | 1984/85 Exports | 1984/85 Market share | 1985/86 Exports | 1985/86 Market share | 1986/87 Exports | 1986/87 Market share | 1987/87- Exports | 1987/87- Market share |
|---|---|---|---|---|---|---|---|---|---|---|
| | *1,000 bales* | *Percent* | *1,000 bales* | *Percent* | *1,000 bales* | *Percent* | *1,000 bales* | *Percent* | *1,000 bales* | *Percent* |
| Japan | 1,709 | 51 | 1,464 | 48 | 520 | 17 | 1,723 | 48 | 1,569 | 46 |
| Korea | 1,269 | 79 | 1,257 | 77 | 513 | 31 | 1,330 | 72 | 1,450 | 74 |
| Taiwan | 495 | 42 | 513 | 45 | 46 | 3 | 907 | 41 | 424 | 27 |
| Hong Kong | 583 | 28 | 125 | 13 | 1 | 0 | 52 | 4 | 88 | 8 |
| Italy | 252 | 22 | 301 | 26 | 91 | 8 | 263 | 19 | 406 | 28 |
| France | 154 | 20 | 132 | 17 | 8 | 1 | 114 | 15 | 67 | 9 |
| Germany, Federal Republic of | 195 | 20 | 195 | 19 | 85 | 9 | 263 | 21 | 376 | 33 |
| Portugal | 69 | 10 | 80 | 12 | 7 | 1 | 76 | 10 | 58 | 7 |
| Indonesia | 320 | 63 | 258 | 43 | 105 | 15 | 324 | 41 | 287 | 33 |
| Thailand | 244 | 44 | 139 | 25 | 17 | 3 | 239 | 23 | 248 | 16 |
| Canada | 227 | 93 | 195 | 87 | 98 | 34 | 70 | 30 | 153 | 73 |
| China | 12 | 5 | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other | 1,556 | | 1,550 | | 469 | | 1,324 | | 1,456 | |
| World | 6,786 | 35 | 6,215 | 31 | 1,960 | 10 | 6,685 | 26 | 6,582 | 28 |

[1]For each country, market share is the U.S. share of total cotton imports. For the world, market share is the U.S. percentage share of world exports.

duction is greatest for Argentina, which exported about 20 and 75 percent of its outturn in 1987 and 1988.

**World Textile Trade**

Much of the growth in world and U.S. cotton trade in the 1960's and 1970's was associated with the development of textile industries in Japan, Taiwan, Hong Kong, and South Korea. These countries, with their low labor costs, gained a competitive advantage on a global basis in the manufacture of labor-intensive textile products. However, economic growth in these countries has increased wage rates. From 1983-87, wage rates in Japan, Taiwan, Hong Kong, and South Korea increased 81, 89, 48, and 54 percent, respectively. A second tier of textile exporters has recently emerged, including China, Brazil, Pakistan, and India. These countries, all raw cotton producers, have begun to compete for textile markets in an effort to increase revenue through sale of value-added textile products. In 1987, U.S. textile workers received an average of $9.11 per hour, while workers in Taiwan, Hong Kong, and South Korea received $2.19, $2.19, and $1.48 per hour, respectively. While differences do not account for labor productivity differences, variable exchange rates, or differences in purchasing power, they give an indication of the advantage that lower wage countries have over the United States and Western Europe in textile production.

The Multifiber Arrangement (MFA) is a factor influencing textile trade and, by extension, world cotton trade. The MFA, negotiated under the auspices of the General Agreement on Tariffs and Trade (GATT) in 1974, is a set of complex export restrictions negotiated on a bilateral basis between developed-country textile importers and the major developing-country textile exporters. Import quotas negotiated under the MFA may have slowed the decline of textile and apparel mills in developed countries. In the U.S. textile industry, employment is estimated to decrease 1 percent for each 5-percent rise in the value of textile imports. The value of U.S. imports of textile products is estimated to have increased at about a 16-percent compound annual rate during 1978-86.

The quantity of U.S. cotton textile imports is highly influenced by domestic economic conditions and the international value of the U.S. dollar. For instance, a 1-percent improvement in the performance of the domestic economy is likely to raise cotton textile imports by 1.7 percent. Likewise, a 1-percent increase in the trade-weighted exchange value of the dollar is likely to result in a proportionate increase in cotton textile imports. Thus, as the U.S. economy strengthens (weakens), imports of cotton textile products will likely increase (decline).

The United States had bilateral trade agreements involving cotton textile imports with 40 countries in 1988, compared with 20 countries in 1983. In addition to the broader country coverage, the cotton category coverage is more comprehensive. In 1988, 14 of the 40 agreements covered all cotton imports, compared with 6 of the 20 agreements in 1983. Countries with comrehensive cotton category coverage accounted for 63 percent of cotton imports in 1987. Not all U.S. cotton textile imports in 1988 were charged against import quotas, while tariffs covered all textile imports. U.S. import tariffs on cotton yarn, woven cotton fabrics, and wearing apparel and accessories averaged 7.6, 9.2, and 20.3 percent, respectively, of customs value in 1988.

**Trends in Prices, Costs, and Returns**

Prices, costs, and returns for the cotton sector can be reported in various forms. With government programs, there is not just one price to consider but several prices. Likewise there are many ways to estimate costs and returns and different uses for each way. For example, estimates of marginal costs and returns are valuable for analysis of individual farms as well as certain industry analysis. Large cotton farms will usually have lower costs per acre than small cotton farms because fixed costs can be spread over more acres. Per acre costs of irrigated cotton are usually more than three times as high as nonirrigated cotton. And returns vary with yields, type of farm, and other factors. However, for this section, U.S. average prices, costs, and returns are used. Average costs and returns are the only national data available. Average costs are the most useful for most issues involving the overall condition of the industry and program effects.

***Prices***

Although U.S. cotton prices vary substantially from year to year, there was no significant upward trend in nominal prices from the mid-1940's through 1972 (table 6). Farm prices more than doubled in the 1970's, reaching a peak of 74.4 cents per pound in 1980. Prices then dropped below 60 cents per pound in 1981 and 1982 and again rose somewhat during the 1983 crop year due to the payment-in-kind program and drought. Prices fell to near 50 cents in 1986 as U.S. cotton became noncompetitive in world markets. The

**Table 6—Upland cotton farm prices, yields, and revenue, 1929-87**

| Crop year | Average farm price: Current dollars | Average farm price: 1982 dollars | Yield | Revenue per harvested acre |
|---|---|---|---|---|
| | *Cents per pound* | | *Pounds* | *1982 dollars* |
| 1929 | 6.8 | 115.1 | 164 | 188.71 |
| 1933 | 10.2 | 91.1 | 213 | 193.98 |
| 1940 | 9.8 | 75.4 | 252 | 189.97 |
| 1945 | 22.5 | 143.3 | 254 | 364.01 |
| 1950 | 39.9 | 166.9 | 269 | 449.08 |
| 1955 | 33.6 | 123.5 | 417 | 515.12 |
| 1960 | 31.3 | 101.3 | 446 | 451.77 |
| 1965 | 29.2 | 86.4 | 527 | 455.28 |
| 1970 | 22.8 | 54.3 | 439 | 238.31 |
| 1971 | 28.1 | 63.3 | 438 | 277.20 |
| 1972 | 27.2 | 58.5 | 480 | 280.77 |
| 1973 | 44.4 | 89.7 | 521 | 467.32 |
| 1974 | 42.7 | 79.1 | 441 | 348.72 |
| 1975 | 51.1 | 86.2 | 453 | 390.36 |
| 1976 | 63.8 | 101.1 | 464 | 469.15 |
| 1977 | 52.1 | 77.4 | 519 | 401.78 |
| 1978 | 63.8 | 88.4 | 419 | 370.25 |
| 1979 | 62.1 | 79.0 | 547 | 432.17 |
| 1980 | 74.4 | 86.8 | 402 | 348.99 |
| 1981 | 54.0 | 57.4 | 542 | 311.36 |
| 1982 | 59.1 | 59.1 | 589 | 348.10 |
| 1983 | 66.1 | 63.6 | 504 | 320.64 |
| 1984 | 58.7 | 54.5 | 600 | 327.02 |
| 1985 | 56.8 | 51.2 | 630 | 322.67 |
| 1986 | 51.5 | 45.2 | 552 | 249.59 |
| 1987 | 63.7 | 54.1 | 702 | 379.93 |
| 1988 | 54.8 | 45.3 | 616 | 278.98 |

marketing loan provision of the 1985 Food Security Act restored U.S. cotton's competitiveness. Exports and prices both rose.

Prices received by farmers from 1975-87 were above variable cash expenses but under total economic costs (fig. 3). Total economic cost is the breakeven longrun average price necessary to continue producing a crop. It includes returns to all factors of production including land. During the 1980's the target price was generally high enough to cover total economic costs. The loan rate generally stayed above variable cash expenses and below farm prices and well below total economic costs.

Cotton prices averaged 64 cents in 1987, but U.S. cotton again lost its competitiveness in world markets in 1988. This time it was due to procedures for calculating the adjusted world price (AWP) which reflect the true market differences in transportation costs. U.S. cotton prices in world markets were successfully undercut by competitors, causing U.S. exports to drop. In addition, the marketing loan was not sufficient to induce producers and merchants to sell cotton they were holding in storage because the cotton program allowed owners of cotton to hold stocks for up to 18 months with little or no storage or other holding costs and no downside price risk. The result was tight short-term supplies and rising prices even though stocks were growing and exports were down.

Cotton competes with manmade fibers for a share of the textile market. Through the 1970's, cotton's share of the market had been declining. Polyester, the major manmade fiber, was cheaper than cotton and offered mills a stronger fiber with consistent fiber qualities. When cotton prices fell in the early 1980's, cotton became cheaper than polyester (fig. 4) and the downward trend in the share of the market for cotton bottomed out. At the same time consumers began showing a preference for cotton clothing, helping to bring cotton's market share from a low of 29 percent to 34 percent in 1987, the highest level in more than a decade.

Cotton is the only agricultural commodity covered by specific legislation prohibiting price forecasting by the Federal Government. This restriction has existed since 1929.

### *Costs and Returns*

From 1980-86 the farm value of cotton was not enough to cover all production costs (fig. 5). However, when Government payments were included, cotton producers were able to earn a profit after paying all costs, including returns to land and unpaid family labor. Cotton producers had a good year in 1987 because prices increased enough so that all costs could be paid from the farm value of the crop and substantial Government payments added to producers' profits.

Yield changes are a key factor in unit costs of production. Yields in the mid-1960's were triple those of 1929-30. Productivity increases resulted in relatively high real (deflated) revenues per harvested acre from 1950 through 1965. Yields from 1965 to 1980 showed no obvious trend and real revenue per harvested acre generally declined as real prices weakened. Yields finally turned upward during the 1980's but stocks and supplies were high and real prices dropped, causing real

Figure 3
**U.S. cotton prices and costs**

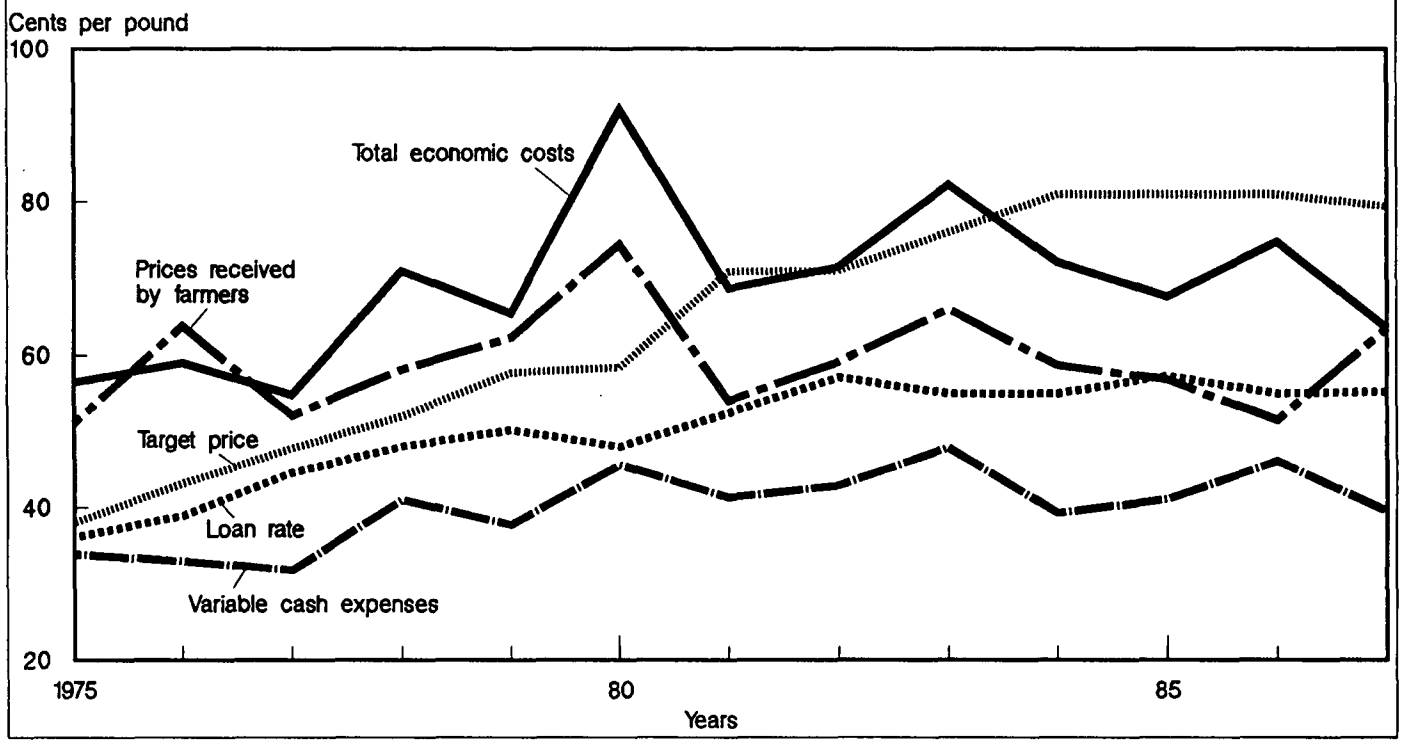



Figure 4
**U.S. raw-equivalent fiber prices**

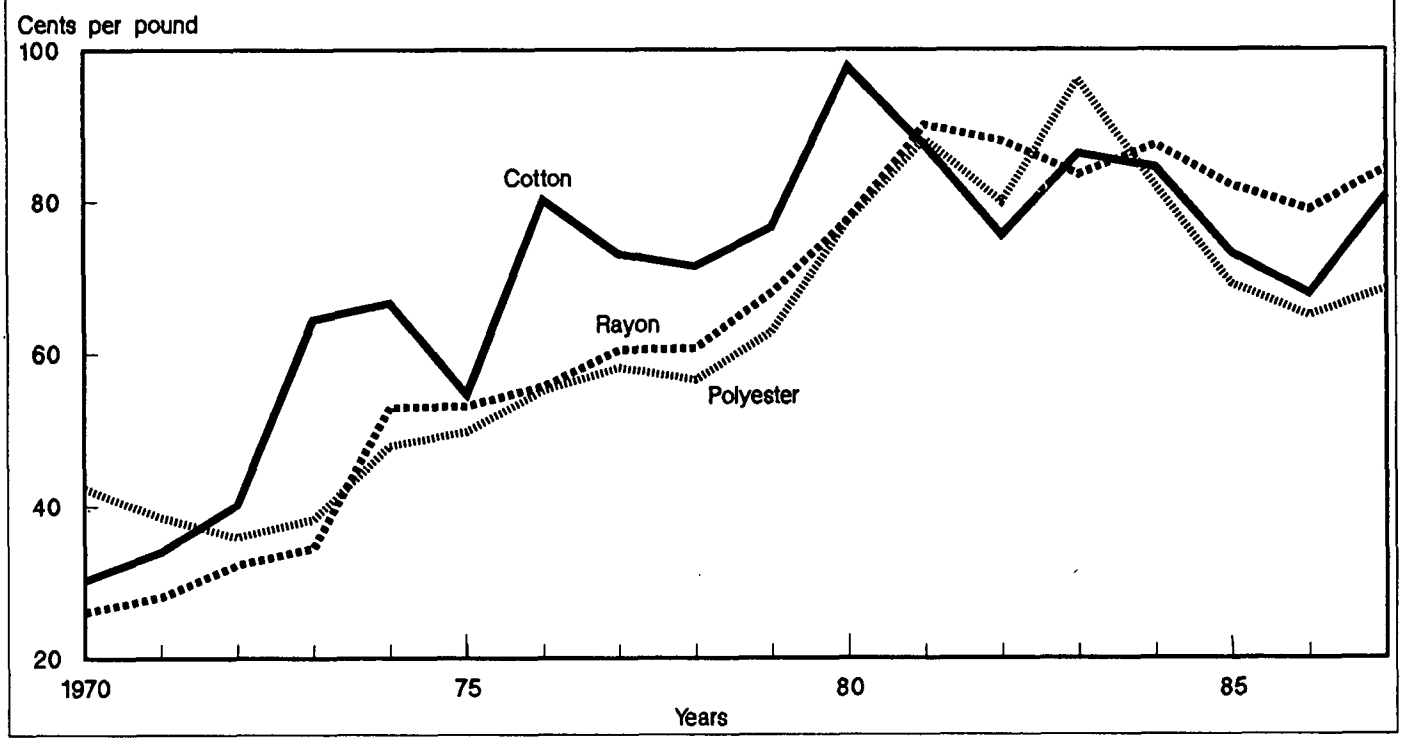
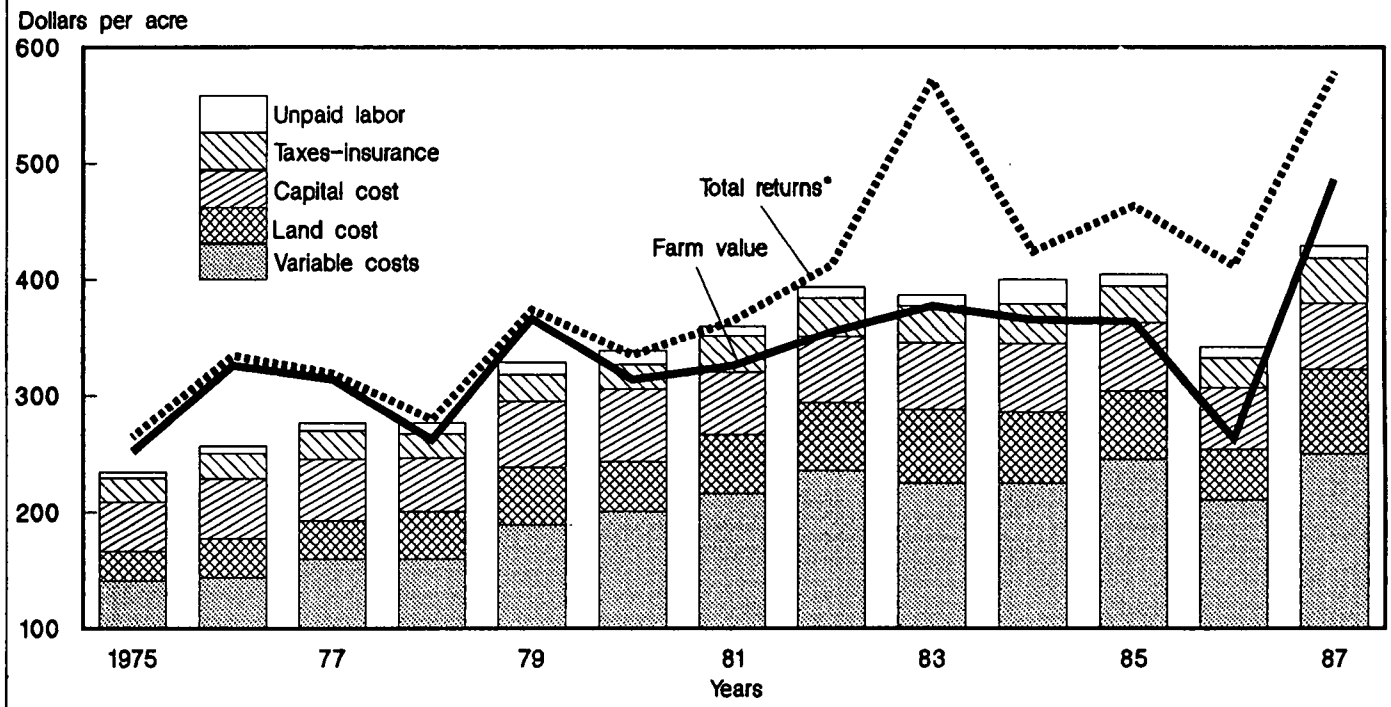


Figure 5
**U.S. cotton costs and returns**




* Includes Government payments.

revenue per harvested acre to decline even with higher per acre production (see table 6).

Compared with other types of farms, cotton farms were relatively profitable in 1987 (fig. 6). Cotton farms are defined as farms having at least 50 percent of harvested acreage or cash sales from cotton.

There has been an upward trend in the growth of the cotton sector as a whole (table 7). But total economic costs have also increased so that total income above economic costs shows little or no growth over time. Like most crops, real returns per unit of output show a downward trend. As a result, farm costs of cotton products continue to decline and consumer costs decline from what they would be otherwise.

## History of Cotton Programs

### Early Programs

The decline in the economic conditions of farmers, especially cotton farmers, after World War I led to public discussion of possible programs to stabilize commodity prices and increase farm income. Farm leaders had been advising farmers to control production on a voluntary basis as a means of stabilizing market prices.

The failure of those efforts to affect the acreage of crops in oversupply and mounting pressure for legislation to cope with a depressed farm economy led to enactment of the Agricultural Marketing Act of 1929. This act created the Federal Farm Board, which made loans to marketing cooperatives for the purchase and storage of surplus commodities, including cotton. This program failed to achieve its objectives of stabilizing prices or increasing farm income. The failure was due in part to the absence of an effective program to control production, but more importantly to declining demand for cotton and other farm products during the depression. This experience led to the enactment of the Agricultural Adjustment Act of 1933, a comprehensive program aimed at controlling production and increasing prices of designated "basic" commodities, including cotton. One of the major goals of the act was to restore farm purchasing power of agricultural commodities to the 1910-14 average level. This concept later became known as "parity" which was translated into parity prices for each of the "basic" commodities. The concept was used to establish minimum levels of price support through the mid-1960's for cotton. Parity prices were based on a rigid historical formula and

Figure 6
**U.S. farm income by farm type, 1987**

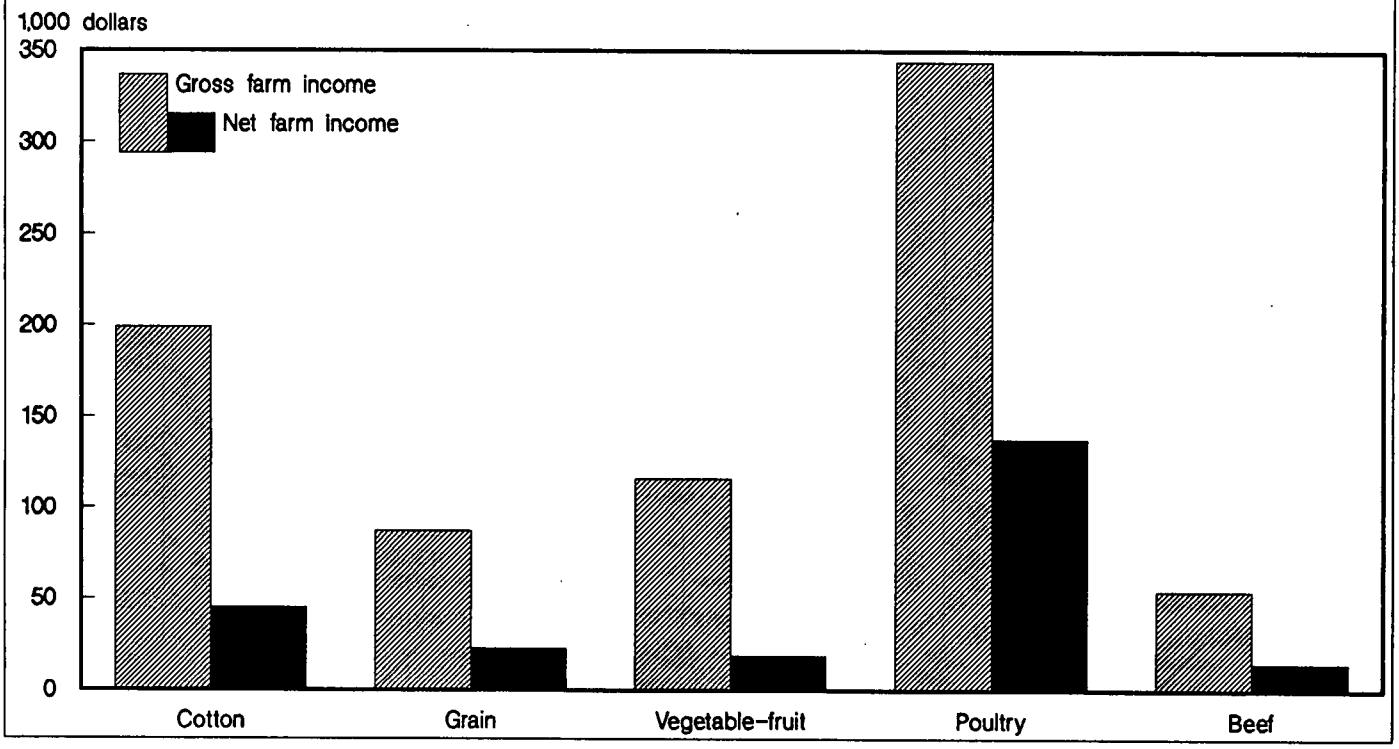



**Table 7—Cotton sector costs and returns, 1975-87[1]**

| Crop year | Farm value[2] | Direct payments[3] | Total income | Total cash[4] expenses | Total economic costs[5] | Returns above total economic costs: Farm value | Total income: Total | Total income: Nominal | Total income: Real[6] |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *Million dollars* | | | | *Cents per pound* | |
| 1975 | 3,375 | 118 | 2,493 | 1,677 | 2,206 | 168 | 286 | 7.31 | 12.27 |
| 1976 | 3,776 | 98 | 3,874 | 2,109 | 2,974 | 801 | 899 | 17.84 | 28.27 |
| 1977 | 4,273 | 69 | 4,342 | 2,732 | 3,765 | 508 | 576 | 8.39 | 12.47 |
| 1978 | 3,488 | 228 | 3,716 | 2,626 | 3,681 | -193 | 35 | .68 | .94 |
| 1979 | 5,083 | 108 | 5,191 | 3,194 | 4,562 | 520 | 628 | 9.01 | 11.46 |
| 1980 | 4,538 | 302 | 4,840 | 3,490 | 4,890 | -352 | -51 | -.96 | -1.12 |
| 1981 | 4,646 | 550 | 5,196 | 4,281 | 5,134 | -487 | 62 | .83 | .88 |
| 1982 | 3,996 | 654 | 4,650 | 3,652 | 4,436 | -441 | 216 | 3.43 | 3.43 |
| 1983 | 2,965 | 1,528 | 4,493 | 2,455 | 3,042 | -77 | 1,451 | 39.26 | 37.79 |
| 1984 | 4,041 | 665 | 4,706 | 3,483 | 4,427 | -386 | 279 | 4.39 | 4.08 |
| 1985 | 3,857 | 1,056 | 4,913 | 3,425 | 4,288 | -430 | 625 | 9.86 | 8.89 |
| 1986 | 2,614 | 1,482 | 4,096 | 2,683 | 3,396 | -782 | 700 | 15.43 | 13.55 |
| 1987 | 4,998 | 951 | 5,949 | 3,593 | 4,418 | 580 | 1,531 | 21.93 | 18.63 |

[1]Costs are from ERS Cost of Production series. Acreage and payments from Commodity Fact Sheets, published by the Agricultural Stabilization and Conservation Service, USDA.
[2]Total gross value (including cotton seed) per planted acre times planted acres.
[3]The sum of deficiency, diversion, and disaster payments to producers. Loan value of payment-in-kind (4.3 mil. bales @ $0.53 per lb.) is included for 1983.
[4]Includes variable cash expenses, general farm overhead, taxes and insurance, interest on operating loan, and interest on real estate.
[5]Includes variable cash expenses, general farm overhead, taxes and insurance, capital replacement, and allocated returns to operating capital, nonland capital, land, and unpaid labor.
[6]Based on GNP implicit price deflator (1982 = 100).

failed to reflect changing market conditions and technological advances.

Production control was a primary objective of the Agricultural Act of 1933 and subsequent legislation. Farmers could take land out of production in return for benefit payments. In response to very low cotton prices received by farmers in 1932 and an abnormally high carryover, a cotton plow-up campaign in 1933 successfully eliminated about 10 million acres, or one-fourth of the growing crop. Growers received cash payments for their participation in the program. However, before the 1933 crop could be harvested, the deteriorating financial condition of cotton farmers led them to demand price supports. In response, a nonrecourse loan of 10 cents a pound was authorized on the 1933 crop. The term "nonrecourse" means that the producer may pay back the full dollar amount of the loan, or alternatively, deliver the stored cotton to the Commodity Credit Corporation (CCC). Such delivery constitutes payment of the price support loan in full, regardless of the current market value of cotton.

Marketing quotas were legislated in 1934 to prevent nonparticipants in the acreage control program from sharing in its financial benefits. The quotas restricted the quantity of cotton that each producer could sell without paying a penalty tax. Marketing quotas were a longstanding provision of subsequent cotton programs, ending in 1970.

The production control and financing features of the 1933 Act were declared unconstitutional by the Supreme Court in 1936. This action was followed by enactment of the Soil Conservation and Domestic Allotment Act in 1936, which provided for payments to farmers who agreed to adopt soil-building practices and shift land from "soil-depleting" surplus crops such as cotton and wheat to "soil-conserving" crops such as legumes and grasses. The soil-conserving payments in the 1936 Act failed to bring the desired cotton crop reduction. Harvested acreage in 1937 climbed to 33.6 million acres, compared with an average of about 28 million acres each year from 1933 through 1936.

Mounting crop surpluses and declining farm prices led to the Agricultural Adjustment Act of 1938. This act provided for mandatory price support loans and marketing quotas keyed to acreage allotments. The latter provision was intended to keep production in balance with market needs. Acreage allotments and marketing quotas were used for cotton from 1938 to 1942. The acreage planted to cotton declined to less than 25 million acres under this program, but there was not a comparable decline in production because of increasing yields.

Cotton acreage allotments were not in effect during 1943-49 because of the need to expand production during and following World War II. However, cotton price supports ranged up to 95 percent of parity during these years. Cotton acreage declined during the war and then expanded slowly, reaching 28.3 million acres by 1949, which was over 17 percent above the 1938-42 average. The anticipation of a return to acreage allotments in 1950 may have accounted for part of the large acreage in 1949.

The Agricultural Act of 1948 provided for mandatory price support for cotton, at 90 percent of parity if producers approved marketing quotas. Subsequent legislation extended this level of support through the 1954 crop.

Cotton acreage dropped about 35 percent in 1950 with the return of acreage allotments and marketing quotas. Production restrictions were again removed during 1951-53 because of the Korean War, and both acreage and production increased substantially. Production reached 16.5 million bales in 1953, a level not exceeded since then (fig. 7).

Increased production and stocks during 1950-53 prompted the renewal of allotments and marketing quotas under the Agricultural Act of 1954. Cotton was under marketing quotas continuously from 1954 through 1970. Under the 1954 Act and subsequent programs, cotton acreage declined from the 1951-53 average of 25.7 million acres to 18.1 million acres in 1954-55 and 13.7 million acres during the soil bank years in 1956-58. The soil bank was established by the Agricultural Act of 1956 to (1) reduce the amount of land planted to allotment crops and (2) provide for long-term retirement of cropland to conservation uses. The soil bank program idled acreage, but in relative terms, the reduction in capacity to produce was small. A major objection to the program was that communities were disrupted when many farmers placed whole farms in the conservation reserve. Yields continued to increase. Over the next 7 years (1959-65), cotton acreage averaged 14.8 million acres, and the accumulation of cotton stocks was substantial. With the exception of a few years, cotton prices received by farmers remained close to the loan level (table 8). Despite marketing quotas, supplies continued to increase because the allotment level had been reduced to the minimum allowed by legislation, leaving program administrators with no further allotment reduction discretion.

## Cotton Programs in the 1960's

In the late 1950's and early 1960's, policymakers realized that surpluses were mounting and existing legislation provided no effective provision to deal with them. Stocks peaked at nearly 17 million bales at the end of the 1965 crop year (see fig. 7), which exceeded total use that year by 4.5 million bales. Legislated minimum support prices and allotments, particularly for wheat and cotton, in conjunction with increasing yields insulated producers from the market. Even so, individual producers were dissatisfied because the allotment rigidities were preventing desired production shifts among crops in which they had a comparative advantage.

The Cotton-Wheat Act of 1964 authorized the Secretary of Agriculture to make payments to domestic handlers or textile mills in order to bring the price of cotton used in the United States down to the export price. This essentially ended the two-price system that had been in effect since 1956. Also, a domestic cotton allotment, smaller than the regular allotment, was authorized for 1964 and 1965. Producers who planted within the domestic allotment received a higher support through a direct price support payment. This act had two elements common to attempts to deal with surpluses: demand enhancement and voluntary acreage reduction. The 1964 Act was the beginning of voluntary program for reducing cotton production.

The Food and Agriculture Act of 1965 was a major piece of farm program legislation that included dairy, wheat, feed grains, and cotton. The act also established a cropland adjustment program. The legislation covered 4 years, 1966-69, and was later extended to 1970. This act was more market oriented, with price supports for all of the covered commodities except dairy set below world market prices. The market price of cotton was supported at 90 percent of estimated world price levels. Incomes of cotton farmers were maintained through payments based on the extent of participation in an acreage reduction program. A minimum acreage reduction of 12.5 percent of the cotton acreage allotment was required of participants. Small farms had special provisions. For the first time, sale and lease of allotments within a State were permitted. Planted cotton acreage dropped from 14.1 million acres in 1965 to 10.3 million in 1966. The price support loan dropped from 29 to 21 cents. However, that reduction was offset by a price support payment (table 9). Starting in 1966, cotton producers joined wheat and feed grain producers in diverting cropland acreage to approved conserving uses. Cotton production was substantially reduced during 1966-68 as a result of

Figure 7
**U.S. cotton production and carryover**

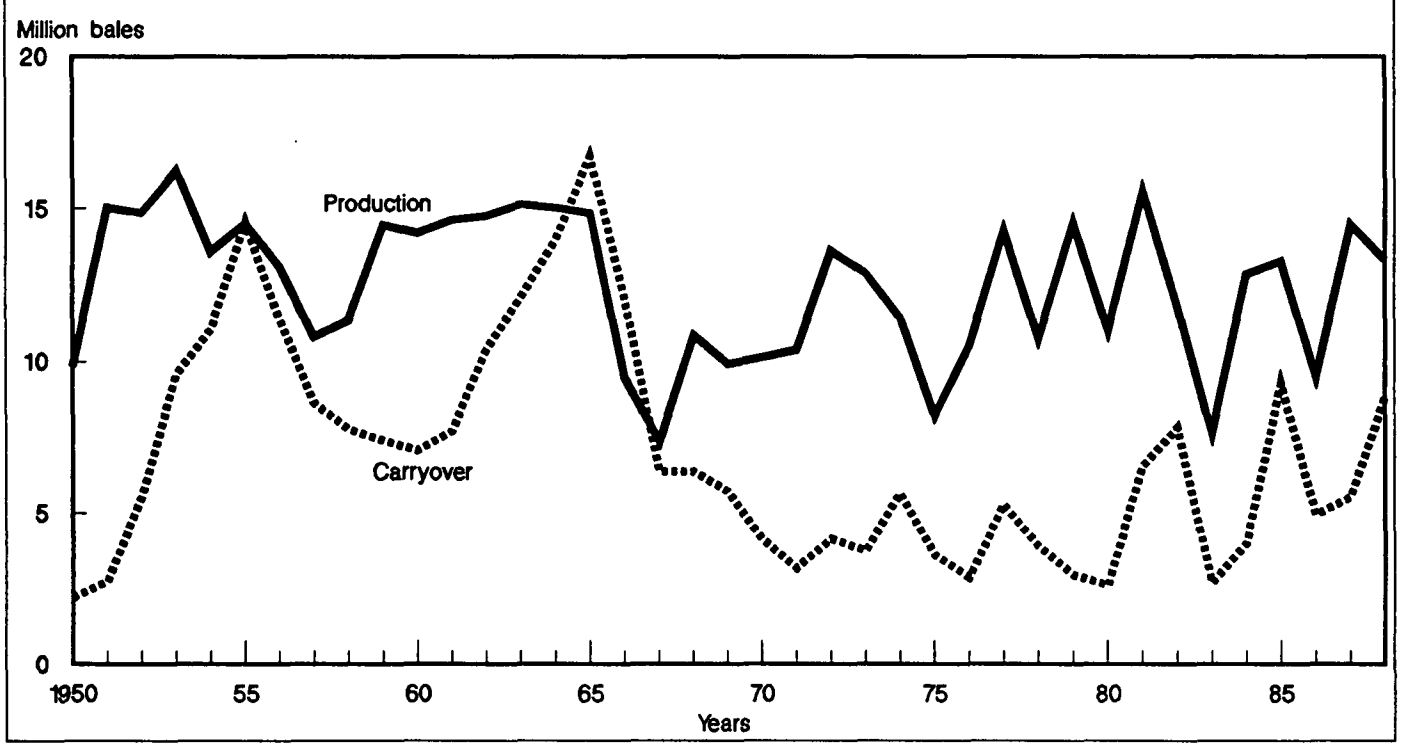


**Table 8—Average price support levels and average prices received by farmers for upland cotton under early agricultural programs, 1940-63**

| Year | Level of support: Percentage of parity[1] | Level of support: Price support loan[2] | Season-average price received by farmers (gross weight) |
|---|---|---|---|
| | *Percent* | *Cents per pound* | |
| 1940 | 571 | 9.40 | 9.83 |
| 1941 | 85 | 14.42 | 16.95 |
| 1942 | 90 | 17.42 | 18.90 |
| 1943 | 90 | 19.51 | 19.76 |
| 1944 | 95 | 21.33 | 20.72 |
| 1945 | 92.5 | 21.39 | 22.51 |
| 1946 | 92.5 | 24.68 | 32.63 |
| 1947 | 92.5 | 28.19 | 31.92 |
| 1948 | 92.5 | 31.49 | 30.38 |
| 1949 | 90 | 30.03 | 28.57 |
| 1950 | 90 | 30.25 | 39.90 |
| 1951 | 90 | 32.36 | 37.69 |
| 1952 | 90 | 32.41 | 34.17 |
| 1953 | 90 | 33.50 | 32.10 |
| 1954 | 90 | 34.03 | 33.52 |
| 1955 | 90 | 34.55 | 32.27 |
| 1956 | 78 | 32.74 | 31.63 |
| 1957 | 81 | 32.31 | 29.46 |
| 1958 | 80 | 35.08 | 33.09 |
| 1959[3] | 80 | 34.10 | 31.56 |
| | 65 | 28.40 | |
| 1960[3] | 75 | 32.42 | 30.08 |
| | 60 | 26.63 | |
| 1961 | 82 | 33.04 | 32.80 |
| 1962 | 79 | 32.47 | 31.74 |
| 1963 | 79 | 32.47 | 32.02 |

[1]Reflects average level. In 1944 and 1945, the CCC purchased cotton at 100 percent of parity.

[2]Prior to 1961, support was based on 7/8-inch Middling cotton, but all support prices have been converted to Middling 1-inch to make them comparable. Reported on gross weight basis.

[3]In 1959 and 1960, producers could elect to (a) plant within their regular allotment and receive support at not less than 80 percent of parity for 1959 and 75 percent of parity for 1960, or (b) increase their acreage by as much as 40 percent over their allotment and receive support at a level of 15 percent of parity less than that of choice (a).

attractive diversion payments and low yields in 1966 and 1967.

By the end of the 1970 season, the huge CCC inventory of cotton was gone. The voluntary programs to reduce acreage had met the objective of reducing or eliminating surpluses, but they had raised a new issue: the direct Treasury cost of programs and the amount of payments going to large producers. Large cotton producers, particularly, were singled out as recipients of large annual payments.

### Cotton Programs in the 1970's

The Agricultural Act of 1970 established a voluntary program for cotton, as marketing quotas were suspended for 3 years. The act also provided for a cropland set-aside program in which diversion of cropland to conserving uses could not exceed 28 percent of the farm's base acreage allotment. The set-aside payment to participating farmers was specified as the difference between the higher of 65 percent of parity or 35 cents a pound, and the average market price for the first 5 months of the marketing year. This payment, however, could not be less than 15 cents per pound. The 1970 Act put a separate $55,000 annual limit on Government payments to producers of upland cotton, wheat, and feed grains. The limit applied to all direct payments but did not include CCC loans or purchases. The loan rate was established at 90 percent of the average world price for the previous 2 years.

The provisions of the 1970 Act continued to recognize the importance of the world market price through the way the loan rate was set. The set-aside concept gave producers a wider latitude in crop selection and mix because there was no restriction on the crop mix on remaining planted acres. However, cotton producers would lose some allotment if less than 90 percent of their farm allotment were planted to cotton.

The issue of large payments was addressed by the $55,000 payment limitation. The limit had little impact on total payments because large producers often divided ownership of their units, which allowed a unit to have multiple recipients.

A set-aside program was in effect in 1971 and 1972. The 2-million-acre set-aside was half of the acreage diverted in the 1966-68 period. Planted acreage reached 14 million acres in 1972 for the first time since 1965. The increase in acreage was a result of higher price expectations at planting time and the elimination of planting restrictions. Unlike previous programs, the farm cotton allotment in 1971-73 did not limit the acreage of cotton that a participant could plant. However, set-aside payments were based on production from acreage planted within the base acreage allotment rather than the total acreage planted.

By 1973, the worldwide demand for American farm products was at a high level due to world crop shortages, devaluation of the dollar, and generally favorable

**Table 9—Average price support levels and average prices received by farmers for upland cotton, 1964-73**

| Year | Level of support | | | |
|---|---|---|---|---|
| | Price support loan[1] | Price support payment[2] | Total support or guarantee[3] | Season-average price received by farmers[4] |
| | *Cents per pound* | | | |
| 1964 | 30.00 | 3.50 | 33.50 | 29.62 |
| 1965 | 29.00 | 4.35 | 33.35 | 28.03 |
| 1966[5] | 21.00 | 9.42 | 30.42 | 20.64 |
| 1967 | 20.25 | 11.53 | 31.78 | 25.39 |
| 1968 | 20.25 | 12.24 | 32.49 | 22.02 |
| 1969 | 20.25 | 14.73 | 34.98 | 20.94 |
| 1970 | 20.25 | 16.80 | 37.05 | 21.86 |
| 1971 | 19.50 | 15.00 | 35.00 | 28.07 |
| 1972 | 19.50 | 15.00 | 35.85 | 27.20 |
| 1973 | 19.50 | 15.00 | 41.25 | 44.40 |

[1]For Middling 1-inch cotton. Gross weight basis through 1970; net weight thereafter.
[2]Available on domestic allotment for 1964-70 crops; for 1971-73, represents minimum payment rate on full base acreage allotment.
[3]For 1964-70 crops, represents total support on domestic allotment; for 1971-73 crops, the final payment, together with the national average market price, had to equal the higher of 35 cents or 65 percent of parity, but not be less than 15 cents a pound.
[4]Price supports and prices received were based on gross weight of cotton and wrapping prior to 1971; all quotations from 1971 to date are net weight.
[5]For 1966 and subsequent years, loan rate set at 90 percent of average price of U.S. cotton in world markets during a specified period.

worldwide economic growth. Stocks that had built to surplus levels in the 1950's and 1960's were greatly reduced. The Agriculture and Consumer Protection Act of 1973 was debated and passed in a far different setting than the acts since 1954. Many agricultural interests felt the setting had changed from a situation of chronic surpluses and income problems to a situation where the Government could minimize its role and the attendant cost for crops.

A major feature of the 1973 Act was the target price concept. Target prices were provided in recognition that agriculture faces weather and market extremes which can result in low incomes, and that income support should not affect the market price. Direct payments would be made only if market prices fell below target price levels. The payment rate would vary by the actual amount the market price was below the target price during a specified period of the marketing year. Payment rates could not exceed the difference between target prices and the loan rate. The loan rate for upland cotton was established to reflect 90 percent of the average price of American cotton in world markets for the preceding 3-year period. The act specified target price levels for 1974 and 1975 and provided a specific adjustment formula based on the index of prices paid for farm inputs and changes in productivity measured by yields for 1976 and 1977. The use of set-aside was authorized but not required during the period covered by the 1973 Act. The payment limit was lowered to $20,000 per person and applied to payments for wheat, feed grains, and cotton combined.

Another new concept introduced in the 1973 Act was disaster payments. Participating producers in the wheat, feed grain, and cotton programs who were prevented from planting any portion of allotments or who suffered low yields due to natural disaster received a payment based on a percentage of the target level of support. Disaster payments were made for each of the 1974-82 crop years (shown by crop year in table 12 and by fiscal year in app. table 4).

The target price, set-aside, and disaster programs applied to national base acreage allotments that were determined and apportioned by the Secretary of Agriculture. Additional plantings were not eligible for support, but no penalties were imposed.

The increase in 1974 acreage over 1973 resulted largely from attractive prices for cotton (table 10). However, a significant drop occurred in 1975 cotton acreage, chiefly due to a strong cost-price squeeze and significant shifts from cotton to soybeans in the Delta and Southeast. No deficiency payments were made through 1977, as the average market price received exceeded the target price.

**Table 10—Average price support levels and season-average prices received by farmers for upland cotton, 1974-88**

| Year | Loan rate[1] | Target price | Season-average price received by farmers (net weight basis) |
|---|---|---|---|
| | | *Cents per pound* | |
| 1974 | 27.06 | 38.00 | 42.7 |
| 1975 | 36.12 | 38.00 | 51.1 |
| 1976 | 38.92 | 43.20 | 63.8 |
| 1977 | 44.63 | 47.80 | 52.1 |
| 1978 | 48.00 | 52.00 | 58.1 |
| 1979 | 50.23 | 57.70 | 62.3 |
| 1980 | 48.00 | 58.40 | 74.4 |
| 1981 | 52.46 | 70.87 | 54.0 |
| 1982 | 57.08 | 71.00 | 59.5 |
| 1983 | 55.00 | 76.00 | 65.3 |
| 1984 | 55.00 | 81.00 | 58.7 |
| 1985 | 57.30 | 81.00 | 56.8 |
| 1986 | 55.00 | 81.00 | 51.5 |
| 1987 | 52.25 | 79.40 | 63.7 |
| 1988 | 51.80 | 75.90 | 54.8 |
| 1989 | 50.00 | 73.40 | [2] |

[1]Base loan rates for SLM 1-1/16-inch cotton (micronaire 3.5-4.9) at average location, net weight.
[2]USDA is prohibited by law from publishing cotton price forecasts.

Falling farm income dominated discussions on whether to extend or replace 1973 farm legislation. Stocks were far below those of the early 1960's, but commodity prices had not kept pace with production costs, which resulted in a cost-price squeeze. The farm income issue focused on the price and income support structure. The basic rationale of the 1973 Act had been to protect farm income, yet farm income had fallen in 1976 and 1977 without triggering any large-scale support. No deficiency payments had been paid for cotton, but there had been some disaster payments. Export markets continued strong, so there was still optimism about demand.

The response as embodied in the Food and Agriculture Act of 1977 was to set target prices on the basis of cost of production. Cost of production was used as a guideline in setting the target price levels specified in the 1977 Act, and a formula using cost estimates was defined for subsequent adjustments.

The loan rate continued to be based on a percentage of past market prices. The formula was expanded to use the lower of 85 percent of a preceding 3-year average of prices at domestic locations or 90 percent of the average price of specified classes of cotton in northern Europe during the 15-week period beginning July 1 of the year in which the loan level was announced. A minimum loan rate of 48 cents a pound was specified.

Another significant change was to base the target price payment calculation on acreage actually planted rather than on an historical allotment. The payment could be reduced by a national allocation factor if producers in the aggregate exceeded an announced national program acreage. Overall, the 1977 Act was the second attempt at establishing a price and income safety net for producers that would be effective without impinging on the desired market orientation. No deficiency payments were made through 1980, as market prices exceeded target prices.

The Food and Agriculture Act of 1977 facilitated a shift of cotton production to the lower cost regions of the West and Southwest since benefits were based on recent plantings rather than on an historically based allotment. This encouraged the movement of acreage to more efficient producers and to regions where cotton held a comparative advantage. Cotton acreage and production increased significantly during 1978-81. The 1978-81 average acreage planted to cotton increased to 14.1 million acres from the 12.1-million average for 1974-77.

### Cotton Programs In the Early 1980's

The Agriculture and Food Act of 1981 was also debated and developed under a situation of falling farm income. Net farm income had increased in 1978 and 1979, the first 2 years under the 1977 Act, but then began to decline again. The focus of the 1981 debate was on the price and income supports and the provisions or mechanisms affecting their adjustment. The cost-of-production adjustment formula for target prices had not worked satisfactorily. It was based on an historical moving average of per acre costs and actual yields in estimating unit costs. The formula was applied during a period of increasing inflation with the result that adjustments lagged behind actual conditions. Production costs reflect changes in production inputs and their prices and do not accurately track changing market conditions.

There was general optimism during the legislation development period that export demand would remain strong. The 1981 Act specified minimum target prices at successively higher levels for all 4 years of the legislation. The Secretary was given authority to adjust target prices based on a number of factors, including

changes in the cost of production. A crop-specific acreage reduction program was established. The payment limit for deficiency and diversion payments remained at $50,000 per person during 1982-85. No limits were applied to loans and purchases.

The 1977 Act had removed the vestiges of the historical allotments and bases that traced back to the 1950's and 1960's. The 1981 Act provided for establishment of a crop acreage upon which acreage reductions were to be based. Acreage reduction programs were in effect during 1982-84. The act specified that acreage taken from production was to be devoted to conserving uses.

The cotton loan rate formula followed the same general specifications as in the 1977 Act, based on either domestic or world prices, whichever was lower. However, the minimum loan was raised from 48 cents a pound to 55 cents a pound. The 1981 Act allowed the Secretary of Agriculture to make disaster payments to producers only if emergency conditions exist or if Federal crop insurance is not available. Although Federal crop insurance was available in all cotton-producing counties in 1982, disaster payments were authorized in the Texas Plains where adverse weather caused widespread abandonment of cotton acreage. Disaster payments could not exceed $100,000 per person.

The third attempt to set a price and income safety net in conjunction with a market-oriented program again conflicted with emerging conditions. The 1981 Act established the 1982-85 target prices at successively higher levels. A worldwide recession reduced both domestic and export demand, inflation rates declined, and yields hit record high levels. Surpluses quickly accumulated, despite acreage reduction programs. Supplies of cotton greatly exceeded use during 1981 and 1982. Cotton acreage in 1982 dropped 20 percent from 1981 and production fell almost 25 percent. Widespread compliance with the acreage reduction program under the 1981 Act and low cotton prices explain most of the decline. Even after the substantial drop in production, stocks remained considerably above desired levels. Deficiency payments to cotton producers in 1982 totaled over $520 million.

Increased stocks, depressed commodity prices, and lower farm income led to the implementation of the payment-in-kind program for the 1983 crop. Payment-in-kind was added to the existing acreage reduction and cash-paid diversion programs in order to idle substantially larger acreage. The 1983 loan rate for program participants was 55 cents per pound and the target price was 76 cents. Eligibility for program benefits and payment-in-kind program participation required growers to participate in the 20-percent acreage reduction program. Producers could idle up to an additional 5 percent of their base acreage in return for a cash diversion payment rate of 25 cents per pound of lint.

Farmers participating in the 20-percent acreage reduction program had an option of idling an additional 10-30 percent of their base acreage and receiving a payment-in-kind equal to 80 percent of the farm program yield. They also had the option of submitting sealed bids indicating the percentage of their farm program yield for which an in-kind payment would be accepted for idling their entire base acreage.

Under the payment-in-kind program, 4.1 million cotton acres were diverted to conserving uses, for which producers received payment in surplus cotton from CCC stocks or from cotton under loan. An additional 2.5 million acres were diverted under the regular acreage reduction program. Acreage planted to upland cotton dropped to 7.9 million acres in 1983. Production dropped by 4.2 million bales due to the payment-in-kind program and the drought, and stocks dropped from the 7.8 million bales on hand on August 1, 1983, to 2.7 million bales on August 1, 1984. If there had been no Government acreage control program in 1983, an estimated 13.5 to 14.5 million acres would have been planted and ending stocks might have remained near 8 million bales, with farm prices near the loan level. However, even with the payment-in-kind program and relatively high exports in 1983/84, farm prices remained below the target price. Thus, deficiency payments totaling $430 million were required by law. The estimated value of payment-in-kind entitlement was about $1.1 billion.

An acreage reduction program was in effect for cotton in 1984. In order to be eligible for nonrecourse loans and target price protection, producers had to limit their upland cotton acreage to no more than 75 percent of their cotton acreage base (average of the 1982 and 1983 acreage planted and considered planted) and restrict the diverted acreage to approved conserving uses. There was no paid land diversion. The target price was 81 cents per pound as specified by law and the loan rate was at the legislated minimum of 55 cents per pound. About 11 million acres were planted in 1984 and 2.5 million acres were devoted to conserving uses.

The record-high 1984 yield, combined with reduced mill use and lower exports in 1984/85, resulted in end-

ing stocks of about 4.1 million bales, up about 1.3 million bales from a year earlier. Deficiency payments to cotton producers in 1984 totaled about $650 million, based on the difference between the target price of 81 cents per pound and the calendar year average price received by farmers of 62.4 cents.

The Agricultural Program Adjustment Act of 1984 froze the 1985 target price at 81 cents per pound rather than the 86-cent level specified by the 1981 Act. The average loan rate, however, rose from 55 cents per pound to 57.3 cents per pound for SLM 1-1/16 inch cotton. To be eligible for target price and loan rate protection, farmers could plant no more than 70 percent of their upland cotton base acreage and were required to devote the reduced acres to conserving uses. The reduced acreage was comprised of a 20-percent acreage reduction program and a 10-percent paid land diversion program. The land diversion payment was based on 30 cents per pound times the farm yield times 10 percent of the farm's base acreage. No payment was made for the regular 20-percent acreage reduction. Producers who participated in the 1985 upland cotton acreage reduction program were eligible to receive deficiency payments on the number of pounds equal to their cotton-planted acres times their farm program yields. Advance payments equal to half of the diversion payment and half of the expected 1985 deficiency payment could be requested by producers when they signed up to participate. For advance payment purposes, the USDA announced an estimated deficiency payment for 1985 of 19.8 cents per pound.

About 82 percent of the upland cotton base of 15.8 million acres was enrolled in the 1985 program. About 10.6 million acres of cotton were planted in 1985, and yields exceeded the record-high level of 1984. Production totaled about 13.3 million bales, based on an average yield of 628 pounds per harvested acre. Production at this level greatly exceeded the estimated 1985/86 disappearance (mill use plus exports) of 8.2 million bales, thus adding about 5 million bales to ending stocks. Deficiency payments totaled about $860 million in addition to diversion payments of about $200 million. The 1985 deficiency payment rate was 23.7 cents a pound, which is the difference between the 81-cent target price and the national average loan rate of 57.3 cents a pound. The national average price received by farmers for upland cotton lint in calendar year 1985 was 54.7 cents. Because the average farm price was lower than the loan rate, the deficiency payments were based on the difference between the target price and the loan rate.

**The Food Security Act of 1985**

Development of farm legislation in 1985 took place when the cotton market was characterized by falling mill use, sharply lower exports, rising stocks, growing textile imports, and low farm prices. Contributing to the sluggish market for U.S. cotton was the record 1984/85 world crop of nearly 88 million bales that exceeded consumption by about 18 million bales. For the first time since 1974, foreign production in 1984/85 exceeded foreign consumption. World ending stocks in 1984/85 reached a record 42 million bales, resulting in a sharp drop in world market prices. Although world production dropped to about 79 million bales in 1985/86, ending stocks rose to about 48 million bales.

The Food Security Act of 1985 established farm policy for 5 crop years, 1986-90. Some major features of past farm acts were retained, including acreage limitations, nonrecourse loans, and target prices, but the act vested the Secretary of Agriculture with more discretionary authority for administering annual commodity programs. The act provided for greater market orientation and more flexibility to promote market competitiveness. The act also specified declining target price minimums through 1990. Loan rates are tied to an average of past market prices with provisions for allowing loans to be repaid at levels below the loan rate if market competitiveness might be hampered by the formula-determined rate.

The basic loan rate for upland cotton in 1986 was set at 55 cents per pound for SLM 1-1/16 inch cotton. For 1987-90, the loan rates are based on essentially the same formula as that used in the 1981 Act: the smaller of (1) 85 percent of the average spot market price during 3 of the preceding 5 market years, excluding highest and lowest, or (2) 90 percent of the average of the 5 lowest priced growths among the growths quoted for Middling 1-3/32 inch cotton, c.i.f. northern Europe, adjusted downward by the average difference between the northern European prices and U.S. spot market prices of SLM 1-1/16 cotton.

Notwithstanding the above loan formula, the loan rate for 1987-90 crops may not be reduced by more than 5 percent per year from the rate of the preceding crop, and the minimum loan rate through 1990 is 50 cents per pound. In October 1986, the Secretary announced a loan level of 52.25 cents per pound for the base quality of 1987 upland cotton, a 5-percent reduction from a year earlier.

A major new provision of the 1985 Act, the marketing loan, provided a loan repayment plan if the basic loan rate is not competitive on world markets. If the world price of cotton, as determined by the Secretary, is below the loan rate, a loan repayment plan must be implemented. The Secretary would choose one of two alternative "market enhancement" plans for repayment of loans. Under Plan A, the Secretary could lower the producer repayment rate by up to 20 percent, thus allowing farmers to redeem their crops and sell them at a more competitive price. Under Plan A, the repayment level must be announced at the same time the Secretary announces the loan rate (by November 1) and cannot thereafter be changed. Under Plan B, repayment rates would vary periodically during the year to keep pace with world markets. For the 1987-90 crops, if the world price, adjusted to U.S. quality and location (adjusted world price), is below 80 percent of the basic loan rate, a loan repayment level may be set at any level between the adjusted world price and 80 percent of the loan rate. Plan A was chosen for the 1986 crop, with a loan repayment rate equal to 80 percent of the basic loan rate for each quality of cotton. Plan B was subsequently selected for the 1987-89 crops.

The concept of the marketing loan was an attempt to retain the basic cotton loan program, but yet keep U.S. cotton competitive in world markets. Under this program, the USDA each week calculates and publishes an adjusted world price (AWP). The AWP is the prevailing world market price of cotton adjusted to U.S. base quality and location. The procedure for establishing the weekly AWP is based on a specified formula developed by the USDA. Congress gave the Secretary of Agriculture discretionary authority to develop and modify this formula as deemed necessary to keep U.S. cotton competitive.

Target prices for upland cotton were frozen for the 1986 crop at the 1985 level of 81 cents per pound. Subsequent minimum target price levels per pound are 79.4 cents in 1987, 77.0 cents in 1988, 74.5 cents in 1989, and 72.9 cents in 1990 but the Agricultural Reconciliation Act of 1987 reduced the minimum to 75.9 cents in 1988 and 73.4 cents in 1989.

If the Secretary determines that the supply of cotton is excessive, an acreage limitation program or paid diversion program, or both, is authorized. The act specifies that, to the extent practicable, an acreage limitation program should create a carryover of 4 million bales of upland cotton.

Deficiency payments are made available to eligible producers in an amount computed by multiplying the payment rate by the individual farm program acreage times the farm program payment yield. The payment rate is equal to the target price minus the higher of the national average market price received by producers during the calendar year that includes the first 5 months (August-December) of the marketing year or the basic loan rate determined for the crop. If an acreage limitation program is in effect, and if producers plant cotton for harvest on at least 50 percent but not more than 92 percent of the permitted acreage (base acreage less required reduction), and if the remaining permitted acreage is placed in conservation uses or certain approved nonprogram crops, then deficiency payments will be made on 92 percent of the permitted acreage. This requirement is commonly known as the "50/92" provision. If producers plant less than 50 percent of their permitted acreage, or plant 92 percent or more of their permitted acres, then deficiency payments are made on the acreage planted for harvest. If no acreage limitation program is in effect, payments may be subject to an allocation factor which allocates acres on which deficiency payments are made based on national program acres.

The act specified that the total combined deficiency and diversion payments that a producer may receive annually during 1986-90 under one or more programs for wheat, feed grains, upland cotton, ELS cotton, and rice may not exceed $50,000. Disaster payments were limited to $100,000 per person. Exempted from the payment limits were loans or purchases, gains realized from repayment of loans under the marketing loan provisions of the act, loan deficiency payments received by participating producers who forego obtaining loans in return for such payments, and inventory reduction (payment-in-kind) payments received by producers who forego loan and deficiency payments and reduce acreage by half the announced acreage reduction.

In October 1986, Congress established a new ceiling of $250,000 on total farm payments, effective with all 1987 commodity programs. The new ceiling will include the $50,000 payment limit for regular deficiency payments and land diversion payments, as well as all other Government payments except crop support loans, grain reserve storage payments, upland cotton first handler marketing certificate payments, and rice marketing certificate payments.

**Current Program Situation**

The primary objective of the cotton provisions of the Food Security Act of 1985 was to make U.S. cotton competitive in the world market. Prior to the 1985 Act, the upland cotton loan rate placed an artificial floor under U.S. prices. This encouraged foreign production. When world supplies were excessive, world cotton prices would drop below the U.S. loan rate. The United States would become a residual supplier, and exports would decline. Also, because of the relatively high fixed loan rate, foreign competitors were often able to set prices below the loan rate and erode U.S. world market share.

A prime example of these conditions was the 1985/86 marketing year. The U.S. loan rate was well above world prices, and U.S. exports dropped sharply to less than 2 million bales from the preceding 5-year average of 6.1 million bales. This, in addition to a relatively large 1985 crop, resulted in stocks increasing from 4 million bales at the beginning of the season to 9.3 million bales by the end of 1985/86. This was the situation at the beginning of the 1986/87 season, the first under the Food Se-curity Act of 1985 which utilized the marketing loan concept.

The program provisions initially functioned as intended. World prices declined sharply in the months following enactment of the 1985 Act, as many major foreign competitors lowered their prices in an effort to sell their cotton prior to implementation of the new U.S. program on August 1, 1986. Foreign acreage was lowered about 3.5 percent in 1986 from 1985. U.S. cotton was once again competitive in the world marketplace. Exports of upland cotton rebounded to 6.6 million bales in 1986/87, while U.S. textile mills were running at near capacity. Domestic cotton use grew by 1 million bales in 1986/87. Stocks were reduced sharply from the 9.3 million bales at the beginning of the 1986 season to 4.9 million on July 31, 1987, almost at the level (4 million bales) targeted under the 1985 Act. Stronger demand and falling stocks caused cotton prices, both domestic and foreign, to increase throughout the 1986/87 season, more than doubling during the period. The adjusted world price (AWP) went above the loan rate in April 1987 and stayed above until mid-July 1988, eliminating the marketing loan for more than 15 months.

At the beginning of the 1987/88 season, U.S. cotton prospects were very encouraging. But, higher cotton prices caused both foreign and U.S. cotton acreage to expand by about 5 percent and 3 percent, respectively. Prospects for continued strong demand, however, were expected to absorb the additional volume of global production.

Major provisions of the 1988 U.S. cotton program had to be announced by November 1, 1987. The prospects at that time indicated a need to lower the acreage reduction requirement for the 1988 crop from the 25-percent level in effect for the 1987 crop. Although many in the industry recommended the acreage reduction program be cut to 10 percent, USDA selected a 12.5-percent reduction.

Although domestic use increased during 1987/88, higher prices and larger foreign supplies caused U.S. exports to decline. U.S. production in 1987/88 increased nearly 5 million bales from a year earlier because of record yields, and foreign production grew by over 5 million bales. Foreign prices declined more sharply than U.S. prices because of the equity (premium above loan) demanded by producers. U.S. export sales dropped and by February 1988, U.S. cotton was no longer competitive in world markets. U.S. stocks grew by 800,000 bales during the season.

It was generally believed that the noncompetitive prices were caused primarily by the following factors:

(1) The transportation adjustment in the adjusted world price formula was not reflecting true transportation costs.

(2) The accumulating storage and interest costs on outstanding loans. In 1986/87, CCC did not charge interest and paid storage costs during the initial 10-month loan period. Producers were required to pay these costs for the 1987 crop.

(3) The equities above loan value that farmers wanted. During 1986/87 and the early part of 1987/88, many farmers received 10-20 cents per pound above loan. When prices dropped, the equity offers dropped to 5-7 cents and farmers were unwilling to sell at these levels.

A number of changes aimed at improving the effectiveness of the program were made by the USDA at the recommendation of the cotton industry on August 19 and on August 22, 1988. Additional changes were also made effective February 3, 1989. These changes, which were at the discretion of the Secretary of Agriculture, primarily affected the way in

which the adjusted world price was calculated, the payment of storage and interest, and several other adjustments which attempted to fine-tune the program.

Despite all the changes made, U.S. cotton remained uncompetitive throughout much of the 1988/89 season. U.S. exports are projected to decline by about 600,000 bales, and domestic use is projected to fall by about 200,000 bales compared with the 1987 season. In addition, the 1988 crop totaled 15.1 million bales, the highest since 1981. The increased production and lower total use are resulting in a further substantial buildup in stocks. Stocks on August 1, 1989, were projected at 7.9 million bales, approximately 2.1 million above stocks at the beginning of the season.

All these factors resulted in calls for additional changes in program provisions, including allowing the Secretary of Agriculture discretionary authority to adjust the adjusted world price to whatever level he considers necessary in order to allow U.S. cotton to be priced competitively in domestic and export markets. Beginning with the 1989 crop, the proposal would reinstate payment of interest and warehouse charges on outstanding loans during the 8-month loan extension and require prepayment of storage charges on outstanding loans during the 8-month loan extension. As of late June 1989 the proposals are under consideration by USDA.

For the 1989 crop, the Secretary of Agriculture imposed the maximum acreage reduction allowed by law because of accumulating cotton stocks and growing program costs. The acreage reduction program for 1989 at 25 percent was announced on October 31, 1988. There were also proposals to further reduce production by offering a paid land diversion for the 1989 crop. It was determined by the Secretary, however, that this would send the wrong signals to our foreign competitors that the United States, once again, is unilaterally reducing production and is content to be a passive, residual supplier rather than an aggressive exporter as intended by the marketing loan concept of the 1985 Act.

The loan rate for the 1989 crop was set at the statutory minimum of 50 cents per pound for the base quality, while the target price has also been lowered to 73.4 cents per pound. Other cotton program provisions for 1989 remained virtually unchanged from 1988, including the program changes which were made during the 1988/89 season.

## Program Effects

### Producers

Cotton producers have benefited from farm programs. Each of these programs provides small changes which effectively alter the producers' participation and payments received under these programs. Just as the program provisions have varied, so have the effects, both in the short run and the longer term.

#### *Program Participation*

Potential net revenue is the bottom line in whether a producer decides to participate or not in Government programs. Depending on the various program provisions and cropping alternatives, the decision can be complex. Program provisions important to this decision by producers include price support and target price levels, the payment base, acreage reduction or diversion requirements, cross- and offsetting-compliance requirements, and payment limitations. Other important decision variables include expected market prices and expected yields of cotton and alternative crops.

The loan program is used by many growers. The program enables cash expenses to be met until the crop can be marketed and can eliminate a portion of price and weather risk. The availability of loans undoubtedly promotes participation of some producers, but the guiding philosophy since the mid-1960's has been that the loan rate should not attract additional resources into cotton production if the market is not calling for those resources.

While participation in recent cotton programs has been voluntary, only program participants have been eligible for price support loans, target price protection, and other direct program benefits. Participation has been relatively high because of these attractive benefits.

During the 1982-88 period, national program participation rates included a high of 94 percent in 1983 and a low of 70 percent in the following year, with the 7-year period averaging 85 percent (table 11). However, there was a greater variation among participation rates for the four major cotton-producing regions, due to the unique situations each region faces. The Southwest had the highest level of acreage compliance during 1982-88 crop years, except in 1986 when program participation was above 90 percent for each region. The Southeast and Delta had similar participation rates throughout this period, while the West provided the

**Table 11—Upland cotton program participation rates, by region, 1982-88**

| Crop year | Region | | | | U.S. average |
|---|---|---|---|---|---|
| | Southeast[1] | Delta[2] | Southwest[3] | West[4] | |
| | *Percent* | | | | |
| 1982 | 73 | 73 | 85 | 58 | 78 |
| 1983 | 94 | 95 | 96 | 85 | 94 |
| 1984 | 70 | 70 | 77 | 41 | 70 |
| 1985 | 87 | 85 | 87 | 58 | 82 |
| 1986 | 93 | 95 | 91 | 90 | 92 |
| 1987 | 93 | 96 | 98 | 73 | 93 |
| 1988 | 87 | 93 | 93 | 72 | 89 |
| Average | 85 | 87 | 90 | 68 | 85 |

[1]Alabama, Florida, Georgia, North Carolina, South Carolina, and Virginia.
[2]Arkansas, Louisiana, Mississippi, Missouri, and Tennessee.
[3]Kansas, Oklahoma, and Texas.
[4]Arizona, California, and New Mexico.

lowest acreage compliance during the 7-year period, primarily due to large producers facing payment limitations.

***Direct Payments to Producers***

Direct payments to cotton producers during 1978-88 averaged $779 million with a low of $108 million for the 1979 crop and a high of $1.5 billion in 1983, including payment-in-kind entitlement (table 12). No deficiency payments were made to cotton producers from 1974 through 1980 since market prices received were higher than target prices. During the 1981-84 crop years, deficiency payments averaged $519 million; in contrast, the 1985-88 period averaged about $1.1 billion. Payments for voluntary diversion of cotton acreage were made during only 3 years since 1968: 1978, 1983, and 1985. Also, loan deficiency payments were made in the 1986 and 1988 crop years. These payments are made to producers eligible to participate in the loan program, but who agree to sell their cotton and forego the CCC loans.

During 1970-88, direct payments to producers as a share of total income from cotton varied greatly (table 13). During the 1970-73 period, the average was 33 percent, with a high of 45 percent in 1970. In the 1974-80 period, the share of total income directly from payments was less than 10 percent. Since 1981, however, the percent of total income received through direct payments varied between 12 and 23 percent, except for 1983 and 1986 when the share was 39 percent and 37 percent.

**Table 12—Direct payments to cotton producers, 1978-88**

| Crop year | Payments | | | | |
|---|---|---|---|---|---|
| | Deficiency | Diversion | Disaster | Other | Total |
| | *Million dollars* | | | | |
| 1978 | 0 | 40 | 188 | 0 | 228 |
| 1979 | 0 | 0 | 108 | 0 | 108 |
| 1980 | 0 | 0 | 302 | 0 | 302 |
| 1981 | 469 | 0 | 81 | 0 | 550 |
| 1982 | 523 | 0 | 131 | 0 | 654 |
| 1983 | 431 | 3 | 0 | [1]1,094 | 1,528 |
| 1984 | 654 | 0 | 0 | 0 | 654 |
| 1985 | 858 | 196 | 0 | 0 | 1,054 |
| 1986 | 1,258 | 0 | 0 | [2]125 | 1,383 |
| 1987 | 951 | 0 | 0 | 0 | 951 |
| 1988 | 1,119 | 0 | 0 | [2]41 | 1,160 |

[1]Payment-in-kind entitlement; 4.3 million bales valued at average loan redemption rate of $0.53 per pound.
[2]Loan deficiency payment.

**Table 13—U.S. farm value of cotton lint produced and Government payments, 1970-88**

| Crop Year | Farm value | Direct payments[1] | Total income | Share of total | |
|---|---|---|---|---|---|
| | | | | Lint value | Payments |
| | *Million dollars* | | | *Percent* | |
| 1970 | 1,110 | 915 | 2,025 | 55 | 45 |
| 1971 | 1,399 | 818 | 2,217 | 63 | 37 |
| 1972 | 1,778 | 807 | 2,585 | 69 | 31 |
| 1973 | 2,747 | 705 | 3,452 | 80 | 20 |
| 1974 | 2,346 | 128 | 2,474 | 95 | 5 |
| 1975 | 2,023 | 118 | 2,141 | 94 | 6 |
| 1976 | 3,223 | 98 | 3,321 | 97 | 3 |
| 1977 | 3,568 | 69 | 3,637 | 98 | 2 |
| 1978 | 3,004 | 228 | 3,232 | 93 | 7 |
| 1979 | 4,344 | 108 | 4,452 | 98 | 2 |
| 1980 | 3,933 | 302 | 4,235 | 93 | 7 |
| 1981 | 4,038 | 550 | 4,588 | 88 | 12 |
| 1982 | 3,364 | 654 | 4,018 | 84 | 16 |
| 1983 | 2,430 | 1,528 | 3,958 | 61 | 39 |
| 1984 | 3,546 | 654 | 4,200 | 84 | 16 |
| 1985 | 3,560 | 1,054 | 4,614 | 77 | 23 |
| 1986 | 2,360 | 1,383 | 3,743 | 63 | 37 |
| 1987 | 4,413 | 951 | 5,364 | 82 | 18 |
| 1988 | 3,917 | 1,160 | 5,077 | 77 | 23 |

[1]The sum of deficiency, diversion, disaster, and other payments to producers, as noted in table 12.

Neither direct payments nor market prices showed a distinct trend during 1970-88 (table 14). On a per-pound-of-production basis, direct program payments averaged 12 cents on a nominal basis and 15.5 cents

**Table 14—Nominal and deflated cotton prices and payments per pound produced, 1970-88**

| Crop year | Market price | | Average direct payments | | Total | |
|---|---|---|---|---|---|---|
| | Nominal | Real[1] | Nominal | Real[1] | Nominal | Real[1] |
| | | | *Cents per pound* | | | |
| 1970 | 22.8 | 54.3 | 18.8 | 44.8 | 41.6 | 99.1 |
| 1971 | 28.1 | 63.3 | 16.4 | 36.9 | 44.5 | 100.2 |
| 1972 | 27.2 | 58.5 | 12.4 | 26.7 | 39.6 | 85.2 |
| 1973 | 44.4 | 89.7 | 11.4 | 23.0 | 55.8 | 112.7 |
| 1974 | 42.7 | 79.1 | 2.3 | 4.3 | 45.0 | 83.4 |
| 1975 | 51.1 | 86.2 | 3.0 | 5.1 | 54.1 | 91.3 |
| 1976 | 63.8 | 101.1 | 1.9 | 3.0 | 65.7 | 104.1 |
| 1977 | 52.1 | 77.4 | 1.0 | 1.5 | 53.1 | 78.9 |
| 1978 | 58.1 | 80.5 | 4.4 | 6.1 | 62.5 | 86.6 |
| 1979 | 62.3 | 79.3 | 1.6 | 2.0 | 63.9 | 81.3 |
| 1980 | 74.4 | 86.8 | 5.7 | 6.7 | 80.1 | 93.5 |
| 1981 | 54.0 | 57.4 | 7.4 | 7.9 | 61.4 | 65.3 |
| 1982 | 59.1 | 59.1 | 11.5 | 11.5 | 70.6 | 70.6 |
| 1983 | 66.0 | 63.5 | 41.5 | 39.9 | 107.5 | 103.4 |
| 1984 | 57.5 | 53.4 | 10.6 | 9.8 | 68.1 | 63.2 |
| 1985 | 56.1 | 50.6 | 16.5 | 14.9 | 72.6 | 65.5 |
| 1986 | 51.5 | 45.2 | 30.2 | 26.5 | 81.7 | 71.7 |
| 1987 | 63.7 | 54.0 | 13.7 | 11.6 | 77.4 | 65.6 |
| 1988 | 55.6 | 46.0 | 16.0 | 13.2 | 71.6 | 59.2 |

[1]Nominal value divided by the gross national product price deflator (1982 = 100).

on a real basis since 1970. During this period, the nominal low was 1 cent per pound in 1977, and the nominal high was 41.5 cents per pound (including payment-in-kind entitlement) in 1983. On both a nominal and real basis, payments from 1974 through 1981 were substantially below those of the 1970-1973 and 1981-88 periods. In nominal terms, the 1983 payment per pound produced exceeded any other year since 1969, while in real terms it equaled that of 1970.

On a per-pound-of-production basis, market prices averaged 52.1 cents on a nominal basis and 67.7 cents on a real basis during 1970-88. In this period, nominal and real market prices have fluctuated; the nominal low was 22.8 cents per pound in 1970, with a high of 74.4 cents per pound in 1980. In contrast, real market prices were at their lowest in 1986 at 45.2 cents per pound, and the high was over $1 per pound in 1976.

***Acreage, Production, and Prices***

While there have been year-to-year changes in the acreage planted to cotton due to Government programs, plantings since 1966 have averaged 11.7 million acres per year. Acreage planted to cotton dropped from the 1948-53 average of almost 26 million acres to an average of about 11 million acres in 1986-88 (table 15). The decline in production during these years has been much less than the decline in acreage because of substantial increases in yields. While planted acreage has been cut by more than 50 percent, yields have more than doubled from a weighted average of 286 pounds per harvested acre in 1948-53 to a record average of 625 pounds in 1986-88. Although some of the increase in yield can be attributed to a higher propor-

**Table 15—Average cotton acreage, production, and yield per harvested acre, selected periods**

| Period | Planted | Harvested | Production | Weighted average yield |
|---|---|---|---|---|
| | *1,000 acres* | | *1,000 bales* | *Pounds* |
| 1948-53 | 25,772 | 24,172 | 14,412 | 286 |
| 1954-59 | 16,214 | 15,330 | 13,008 | 407 |
| 1960-65 | 15,373 | 14,643 | 14,687 | 481 |
| 1966-70 | 10,833 | 9,912 | 9,551 | 462 |
| 1971-73 | 12,850 | 12,048 | 12,294 | 490 |
| 1974-77 | 12,050 | 11,316 | 11,123 | 472 |
| 1978-81 | 13,980 | 12,998 | 12,969 | 479 |
| 1982-85 | 10,201 | 9,348 | 11,418 | 586 |
| 1986-88 | 10,841 | 10,003 | 13,026 | 625 |

tion of the crop being produced on land well adapted to cotton production, most of the increase is due to improved technology and information, and a higher percentage of the crop being produced on irrigated land.

Debate has often centered on the effects of price supports and other program provisions on cotton production, prices, and exports. Since 1981, except for 1983 and 1986, production has exceeded total use by wide margins, thus requiring acreage reduction programs to limit production. Substantial deficiency payments have been made since 1981, because target prices have greatly exceeded average market prices. And, in the absence of acreage reduction programs, target prices have the potential to encourage production on most of the cotton acreage base.

Prior to the 1964 Act, the U.S. loan rate in effect determined not only the U.S. farm price, but world market prices as well. Since 1966, the U.S. loan rate has had little direct effect on U.S. market prices or world prices. Because loan rates have been declining during the past several years, market prices have fluctuated on either side of the loan rate.

There is little doubt that most cotton producers benefited from participation in the acreage reduction programs during 1982-88. Large deficiency payments were made during those years and indirect benefits were received from the higher market prices induced by acreage reduction.

In addition to the level of the target price, the acreage base and production level on which the target price is applied also affect planting decisions. Providing target price protection to normal production from current plantings has caused the target price to become much more important in crop production decisions. The cotton program's effective acreage base averaged 14.5 million acres during 1986-88, exceeding average plantings of about 11 million acres for the same period. This difference, however, is largely attributable to the acreage reduction program and the conservation reserve program.

The cotton programs during the past 50 years have shifted some of the production and price risk from cotton producers to the taxpayer. During the first 30 years of farm programs, acreage allotments and marketing quotas, combined with high price supports, provided some price and income stability, but also provided an incentive for foreign production of cotton and some loss of markets to manmade fibers. Higher domestic prices encouraged overproduction in the United States, leading to excess stocks and subsequent production controls. Acreage controls were implemented during many of these years to prevent the accumulation of excessive stocks. During periods when marketing quotas were not in effect (1936-37, 1943-49, and 1951-53), production expanded and carryover increased. Cotton programs since the mid-1960's have placed more reliance on market signals to guide farmers' production decisions, with lower price supports combined with direct payments to support incomes of participating farmers. With the exception of 5 marketing years (1981/82, 1982/83, 1985/86, 1987/88, and 1988/89), stocks have been maintained at relatively low levels since 1970/71.

**Consumers**

The cotton program has had little effect on retail prices of cotton textile products because of the wide farm-to-retail price spread and the small amount of cotton consumed per item. In 1988, domestic consumption of cotton per capita was estimated at 21.4 pounds, down from 23.9 pounds in 1987. The farm value of this per capita quantity was only $16.15, compared with $18.15 a year earlier. The cotton programs of recent years have featured direct payments to support farm incomes. Thus, most of the program costs have been borne directly by the taxpayers rather than by high cost of textiles paid by consumers.

Price increases at the farm level may not be reflected as higher retail values in the short run because of the highly competitive nature of the cotton textile industry. The impact of raw cotton prices (cost to mills) on retail values depends partly on the quantity of cotton contained in the finished product and the type and amount of processing required. As an illustration, about 3/4 pound of raw cotton is required to produce a typical business shirt or a bath towel, compared with about 2 pounds in denim jeans. The cost of raw cotton as a share of the estimated 1987 retail value was only about 3 percent for a shirt, 12 percent for a bath towel, and about 9 percent for denim jeans. Thus, a 10-percent increase in farm price may increase the retail price of a shirt by only less than 1 percent and the price of bath towels and jeans about 1 percent.

**Taxpayers**

The cotton program's net expenditure for fiscal year 1988 was about $666 million or about 5.3 percent of

total public expenditures on all commodity price supports and related programs. Since 1980, cotton program costs have varied from a low of $64.3 million in 1980 to a high of $2.1 billion in 1986 (table 16). The 1986 program cost was a record high in nominal terms, whereas in real terms, 1970 was the most recent year when net expenditures surpassed those in 1986. These expenditures, or budget outlays, are borne by taxpayers and represent a direct transfer of income from taxpayers to the farming sector. Appendix table 4 provides program cost detail for each fiscal year since 1970.

The $666 million outlay in fiscal year 1988 represented a $5.71 cost to each taxpayer, while the $2.1 billion outlay in 1986 represented a $19.24 cost per taxpayer (table 16). In comparison, the farm value was estimated at about $3.9 billion and $2.4 billion for crop years 1988 and 1986. Cotton program costs were comparatively low during the 1975-81 years, but since 1982, costs have exceeded $1.1 billion, except in fiscal years 1984 and 1988.

**Table 16—Farm-related program costs for upland cotton, 1970-88**

| Fiscal year | Total cost[1] | | Cost per taxpayer[2] | |
|---|---|---|---|---|
| | Nominal | Real[3] | Nominal | Real[3] |
| | *Million dollars* | | *Dollars* | |
| 1970 | 891.4 | 2,122.4 | 11.03 | 26.26 |
| 1971 | 603.2 | 1,358.6 | 7.42 | 16.71 |
| 1972 | 760.4 | 1,635.3 | 9.06 | 19.48 |
| 1973 | 824.0 | 1,664,7 | 9.49 | 19.17 |
| 1974 | 724.6 | 1,341.9 | 8.19 | 15.17 |
| 1975 | 232.8 | 392.6 | 2.66 | 4.49 |
| 1976 | -4.0 | -6.3 | -.04 | -.06 |
| 1977 | 104.3 | 155.0 | 1.11 | 1.65 |
| 1978 | 223.8 | 310.0 | 2.29 | 3.17 |
| 1979 | 141.2 | 179.6 | 1.41 | 1.79 |
| 1980 | 64.3 | 75.0 | .64 | .75 |
| 1981 | 335.7 | 357.1 | 3.29 | 3.50 |
| 1982 | 1,189.7 | 1,189.7 | 11.76 | 11.76 |
| 1983 | 1,362.9 | 1,311.7 | 13.30 | 12.80 |
| 1984 | 244.0 | 226.6 | 2.29 | 2.13 |
| 1985 | 1,552.7 | 1,400.1 | 14.26 | 12.86 |
| 1986 | 2,141.9 | 1,880.5 | 19.24 | 16.89 |
| 1987 | 1,785.7 | 1,517.2 | 15.64 | 13.29 |
| 1988 | 665.8 | 550.2 | 5.71 | 4.72 |

[1]Based on net CCC outlays from appendix table 4. Negative indicates net receipts for that fiscal year.
[2]Net CCC outlays divided by total employment, including resident armed forces.
[3]Nominal values deflated by the gross national product price deflator (1982 = 100).

## Issues

Cotton policy issues likely to be of concern during deliberations on the 1990 farm bill relate chiefly to excess supply, the high Government costs of the program, and ensuring competitively priced U.S. cotton. Recurring issues will concern the need for and the level of acreage and production controls, support prices and incomes, payment limitations, planting flexibility, and environmental issues. Cotton export subsidies and credit, import quotas and tariffs, and trade barriers will also be important issues.

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## Glossary

**Acreage allotment**. An individual farm's share of the national acreage that the Secretary of Agriculture determines is needed to produce sufficient supplies of a particular crop. The farm's share is based on its previous production.

**Acreage reduction program (ARP)**. A voluntary land retirement system in which farmers must idle a portion of their base acreage of wheat, feed grains, upland and extra-long staple (ELS) cotton, or rice. The base is the average of the acreage planted for harvest and considered to be planted for harvest during a specified preceding period. The latter includes any acreage not planted because of acreage reduction and diversion programs during a period specified by law. Farmers are not given a direct payment for ARP participation, although they must participate to be eligible for benefits like Commodity Credit Corporation loans and deficiency payments. Participating producers are sometimes offered the option of idling additional land under a paid diversion program, which gives them a specific payment for each idled acre. See paid land diversion.

**Adjusted world price (AWP)**. The result of using a formula that adjusts the world price of cotton to U.S. prices. See prices, raw cotton, and world price.

**Agricultural Stabilization and Conservation Service (ASCS)**. The USDA agency that carries out several principal farm commodity programs from appropriated funds, including Commodity Credit Corporation (CCC) program activities.

**Bale**. A package of compressed cotton lint as it comes from the gin. Including bagging and ties, a bale weighs about 500 pounds, and its dimensions vary depending on the degree of compression, 12-32 pounds per cubic foot. A bale is the form in which cotton moves in domestic and international commerce. However, cotton is bought and sold on a net weight (pound or kilogram) basis. For statistical purposes, cotton is reported in terms of running bales, in 480-pound net weight bales, or in pounds. A running bale is any bale of varying lint weight as it comes from the gin. To maintain comparability, bale weights are commonly converted to 480-pound net weight equivalents.

**Basic commodities**. Agricultural products, including corn, cotton, peanuts, rice, tobacco, and wheat, that are designated by legislation as price-supported commodities.

**Blending**. The mixing of other fibers with cotton. The resulting textile product is a compromise of unique properties or characteristics of the fibers in the blend, often providing a superior end product in some uses.

**Boll**. The seed pod of the cotton plant.

**Bonded warehouse**. A warehouse owned by persons approved by the U.S. Treasury Department, and under bond or guarantee for the strict observance of the revenue laws; used for storing goods until duties are paid or goods are otherwise released.

**Carding**. A process in yarn manufacturing by which fibers are sorted, separated, partially aligned, and cleaned of foreign matter.

**Cargo Preference Act**. A U.S. law which provides that "whenever the United States contracts for, or otherwise obtains for its own account, or furnishes to or for the account of any foreign nation without provision for reimbursement, any equipment, materials or commodities," the United States shall ship in U.S. flag vessels, to the extent that they are available at fair and reasonable rates, at least 50 percent of the gross tonnage involved.

**Carryover stocks**. The quantity of a commodity which is available for marketing at the beginning of a marketing year or crop year. "Beginning stocks" of cotton are frequently reported for the marketing year beginning August 1. "Ending stocks" reflect supply less disappearance, adjusted for any unaccounted cotton, for the year ending July 31.

**Cellulosic fibers**. All fiber of plant or vegetable origin. These fibers include natural fibers such as cotton, linen, and jute, and manmade fibers of wood pulp origin, such as rayon and acetate.

**Cloth**. A textile product obtained by weaving, knitting, braiding, felting, bonding, or fusing of fibers. Cloth is synonymous with "fabric."

**Commodity Credit Corporation (CCC).** The USDA agency responsible for directing and financing major USDA "action programs," including price support, production stabilization, commodity distribution, and related programs. CCC also directs and finances certain agricultural export activities. CCC activities are implemented by the Agricultural Stabilization and Conservation Service.

**Conserving use.** An approved cultural practice or use of land authorized by the county Agricultural Stabilization and Conservation Service on cropland required to be diverted under production adjustment or conservation programs.

**Corduroy.** A pile-filling fabric with ridges of pile running lengthwise, creating a ribbed surface.

**Cost, insurance, and freight (c.i.f.).** A term usually used in reference to ocean shipping which defines the seller's price to include the cost of goods, marine insurance, and transportation (freight) charges to the point of destination.

**Cotton.** A soft, white vegetable (cellulosic) fiber obtained from the seed pod of the cotton plant, a member of mallow family (Gossypium). Cotton is produced in about 75 countries. The two principal types of cotton grown in the United States are upland cotton (Gossypium hirsutum) and American Pima cotton (Gossypium barbadense). Upland cotton is grown throughout the Cotton Belt, accounting for about 99 percent of U.S. cotton production. The types of cotton grown, or once grown, in the United States are as follows:

**Upland cotton.** The predominant type of cotton grown in the United States and in most major cotton producing countries of the world. The staple length of these fibers ranges from about 3/4 inch to 1-1/4 inch, averaging nearly 1-3/32 inches.

**Extra-long staple cotton (ELS).** Cottons having a staple length of 1-3/8 inches or more, according to the classification used by the International Cotton Advisory Committee. Also characterized by fineness and high fiber strength, contributing to finer and stronger yarns, needed for certain end-uses such as thread and higher valued fabrics. American growths include American Pima and, formerly, Sea Island cotton.

**American-Pima cotton.** An extra-long staple cotton formerly known as American-Egyptian cotton in the United States, grown chiefly in the irrigated valleys of Arizona, New Mexico, and west Texas. Represents only 2 percent of the U.S. cotton crop. Used chiefly for thread and high-valued fabrics and apparel. Came into existence as the Sea Island cotton was becoming extinct in the United States.

**Sea Island cotton.** An extra-long staple cotton first grown in the United States in about 1786 from seed received from the Bahamas Islands. Relatively unimportant as a commercial crop until the 19th century. Produced in the coastal areas of South Carolina, Georgia, and Florida until the early 1920's, when U.S. production virtually ceased because of increasing competition from foreign growths of ELS cotton, the growing American-Egyptian cotton industry in the Western States, and production problems associated with Sea Island cotton. Commonly about 1-1/2 inches in length but ranged up to 2 inches.

**Cotton Board (CB).** A quasi-governmental organization whose members are appointed by the Secretary of Agriculture from nominees of cotton producer organizations. Established in 1967 by the Cotton Research and Promotion Act, the board receives and disburses grower assessments to finance the Cotton Incorporated program.

**Cotton compress.** The equipment which forms the ginned raw cotton into a bale. The first compression, primarily to modified flat or universal bale dimensions, is performed at the gin. Further compression of flat or modified flat bales is performed at cotton warehouse locations.

**Cotton Council.** See National Cotton Council of America.

**Cotton Council International (CCI).** The overseas operations service of the National Cotton Council of America. Established in 1956, CCI's primary objective is to develop markets for U.S. exports. CCI programs are operated in close cooperation with the Foreign Agricultural Service, USDA, and trade groups in the United States and abroad. Headquartered in Washington, DC.

**Cotton count.** (1) For yarn, a numbering system based on the number of 840-yard lengths in a pound. The higher the number the finer the yarn. A single strand of #10 yarn is expressed as 10s or 10/1. A 10s yarn has 8,400 yards to the pound; a pound of 20s yarn is 16,800 yards long. (2) For woven cloth, the number of warp ends and filling picks per inch. If a cloth is 68x72, there are 68 ends and 72 picks per inch

in the fabric. An end is a warp yarn or thread that runs lengthwise or vertically in cloth. The ends interlace at right angles with filling yarn (picks) to make woven fabric. (3) For knitted fabric, count indicates the number of wales and courses per inch. A course is a crosswise row of loops or stitches, similar to the filling of woven fabric. A wale is a lengthwise series of loops in a knitted fabric.

**Cotton exchange**. A membership organization which provides facilities where cotton futures contracts are bought and sold. As of 1986, there were two such exchanges: the New York Cotton Exchange and the Chicago Rice and Cotton Exchange. The basis grade for the New York contract is Strict Low Middling 1-1/16-inch cotton; the basis grade for the Chicago contract is Strict Low Middling Light Spotted 31/32-inch cotton, largely produced in Texas and Oklahoma.

**Cotton Incorporated (CI)**. A private corporation established in 1971 as the sales-oriented marketing and research organization representing U.S. cotton growers. CI's objectives are to increase producer's profits and to expand the sale of products containing cotton. Headquartered in New York City.

**Cotton quality**. Those characteristics of the cotton fiber that affect processing performance and/or the quality of the various end products. While there are numerous factors that affect quality, the seven most important are fiber length, length uniformity, strength, fineness, maturity, color, and trash content. Their relative importance depends upon the product that is to be made and the type of processing equipment that is to be used. The traditional classification system, which relies primarily on human sight and touch, assesses each of these factors except length uniformity and strength. USDA's new, instrument based classification system, which has been gradually introduced over the past decade is scheduled to entirely replace the traditional classification system in 1991, assesses all seven factors.

**Cottonseed**. The seed of cotton from which the lint has been removed. Cottonseed oil is extracted from the seed through a crushing process. Cottonseed meal and cottonseed hulls, coproducts from the seed-crushing operation, are used as livestock feed.

**Cotton system**. A process originally used to manufacture cotton fiber into yarn and now used extensively for producing spun yarns of manmade fibers, including blends. The major manufacturing steps in the cotton system include opening of the fiber bales, picking, carding, drawing, roving, and spinning. The combing step is included after carding when combing yarns are made.

**Crop year**. The year in which a crop is planted. Also the cotton marketing year, which is the year beginning August 1 and ending July 31.

**Cross compliance**. When a full cross-compliance program is in effect, a producer participating in one commodity program (wheat, feed grains, cotton, or rice) on a farm must also participate on that farm in any of the other commodity programs. When a limited cross-compliance program is in effect, a producer participating in one commodity program must not plant in excess of the crop acreage base on that farm for any of the other program commodities for which an acreage reduction program is in effect.

**Deficiency payment**. A direct Government payment to participating producers if farm average prices fall below specified target price levels during the calendar year. Payment rates cannot exceed the difference between target prices and price support loan rate.

**Delinting**. The process of separating the very short fibers ("linters") remaining on the seed after the longer fiber has been removed in the ginning process.

**Denier**. A metric system method of measuring fibers. It is the weight in grams of 9,000 meters of the fiber.

**Denim**. A relatively heavy, yarn-dyed twill fabric traditionally made of cotton with colored warp yarns and undyed fill yarns. Most denim fabric is used to make trousers.

**Disappearance**. U.S. textile mill raw fiber consumption plus raw fiber exports.

**Disaster payments**. Government payments to participating producers who are prevented from planting any portion of their permitted acreage under a program, or who suffer low yields, due to weather and related conditions. Starting in 1982, disaster payments, as a rule, were available only to those producers who had no access to Federal crop insurance.

**Diversion payments**. Government payments made to farmers in some years for not planting a specified portion of crop-acreage base or permitted acreage. A specified acreage is usually diverted to soil conserving uses.

**Domestic consumption**. U.S. mill raw fiber consumption plus raw fiber equivalent of imported textiles, less raw fiber equivalent of exported textiles.

**Durable press.** Performance characteristics of treated textile products, mostly apparel. These features generally involve easy care: shape retention, machine washability, tumble-dry, little or no ironing, and the like. Often referred to as "permanent press" or "wash and wear."

**End**. A warp yarn or thread that runs lengthwise or vertically in the fabric. Ends interlace at right angles with filling yarn (picks) to make woven fabric.

**End-use**. The final product form in which fibers are consumed, including apparel, household products, and industrial items.

**Extra-long staple**. See cotton.

**Fabric**. See cloth.

**Face**. The side of a fabric which, by reason of weave, finish, or other characteristic, presents a better appearance than the other side, or back.

**Fiber**. A slender strand of natural or manmade material usually having a length at least 100 times its diameter and characterized by flexibility, cohesiveness, and strength. Several strands may be combined for spinning, weaving, and knitting purposes. Cotton fibers are known as staple fibers since their length varies within a relatively narrow range from about 7/8 inch to 1-3/4 inches. Manmade fiber filaments are often cut to blend or mix with cotton for further processing on the cotton system.

**Filament**. An individual strand of fiber indefinite in length. Manmade fibers are indefinite in length. Silk is the only natural fiber available in filament form. Silk may run several hundred yards in length.

**Filling**. An individual yarn which interlaces with warp yarn at right angles in woven fabric. Also known as pick or filling pick. Usually has less twist than warp yarn, which runs lengthwise in the fabric.

**Finishing**. Those processes through which a fabric passes after being taken from the loom, such as bleaching, dyeing, sizing, lacquering, waterproofing, and removing defects.

**Fiscal year**. The official Federal Government operating year which begins October 1. The fiscal year is used by program agencies in reporting much of their data on the cotton program.

**Food Security Act of 1985 (FSA)**. The farm act covering the years 1986-90.

**Forward contract**. Sale of a commodity from a future crop for future delivery. The sale could involve all of the crop from a given contract acreage or, more commonly, a given quantity of specified quality.

**Gin**. A machine that separates cotton lint from seed and removes most of the trash and foreign matter from the lint. The lint is cleaned, dried, and compressed into bales weighing approximately 500 pounds, including wrapping and ties. There are about 2,000 gins located throughout the Cotton Belt.

**Grade**. See cotton quality.

**Gray or greige fabric**. Woven or knitted goods direct from the loom or knitting machine, before they have been given any kind of finishing treatment.

**Group "B" mill price**. See price, raw cotton.

**Hand**. A subjective measurement of the reaction obtained from the sense of touch created when handling a fabric, reflecting the many factors which lend individuality and character to a material.

**Hard fibers**. Comparatively stiff, elongated, woody fibers from the leaves or leaf stems of certain perennial plants. These fibers are generally too coarse and stiff to be woven and are used chiefly in twine, netting, and ropes. Examples are abaca, sisal, and henequen. See soft fibers.

**Hedging**. The practice of buying or selling futures contracts to offset an existing position in the cash or spot market, thus reducing the risks of unforeseen major price changes.

**High density**. The compression of a flat, modified flat, or gin standard bale of cotton to high density of about 32 pounds per cubic foot. Previously used for most exported cotton, but currently replaced by universal density compression of about 28 pounds per cubic foot.

**HVI (high volume, instrument) testing.** A process for determining cotton quality that utilizes instruments

rather than sight and touch methods to determine quality characteristics.

**Import quota**. The maximum amount of a commodity that can be imported in a specified time period. The United States imposes an annual import quota on raw cotton totaling 14.5 million pounds (about 30,000 bales) of short staple cotton having a length of less than 1-1/8 inches and a quota of 45.7 million pounds (about 95,000 bales) of long staple cotton having a length of 1-1/8 or more inches.

**Industrial fabrics**. A broad term for fabrics used for nonapparel and nondecorative uses. These uses fall into several classes: (1) a broad group of fabrics employed in industrial processes such as filtering, polishing, and absorption; (2) fabrics combined with other materials to produce a different type of product such as tires, hose, and electrical machinery parts; and (3) fabrics incorporated directly in a finished product such as tarpaulins, tents, and awnings.

**International Cotton Advisory Committee (ICAC)**. A worldwide association of governments which assembles, analyzes, and publishes data on world production, consumption, stocks, and prices. ICAC closely monitors developments in the world cotton market and promotes intergovernmental cooperation in developing and maintaining a sound world cotton economy. Headquartered in Washington, DC.

**International Institute for Cotton (IIC)**. A nonprofit organization of cotton producing countries founded in 1966. Its purpose is to increase world consumption of cotton and cotton products through utilization research, market research, sales promotion, education, and public relations. Headquartered in Brussels, Belgium.

**Inventory (CCC)**. The quantity of a commodity owned by CCC at any specified time. For example, 8,610 bales of upland cotton were in CCC inventory (owned by CCC) on June 1, 1989.

**Knitting**. A method of constructing fabric by interlocking a series of loops of one or more yarns. The two major classes of knitting are warp knitting and weft knitting. In warp knitting, yarns run lengthwise in the fabric; in weft knitting, the thread runs back and forth crosswise in a fabric. Warp knit fabrics are flatter, closer, and less elastic than the weft knit. Tricot and milanese are typical warp knit fabrics, while jersey is a typical weft knit.

**Lint**. Raw cotton that has been separated from the cottonseed by ginning. Lint is the primary product of the cotton plant, while cottonseed and linters are byproducts.

**Linters**. The fuzz or short fibers which remain attached to the seed after ginning. Linters are usually less than 1/8 inch in length and are removed from the seed by a delinting process.

**Long staple cotton**. Refers to cotton fibers whose length ranges from 1-1/8 inches to 1-3/8 inches. Fibers whose length is 1-3/8 inches or more are known as extra-long staple (ELS).

**Loom**. A machine which weaves fabric by interlacing a series of lengthwise (vertical) parallel threads, called warp threads, with a series of crosswise (horizontal) parallel threads, called filling threads.

**Manmade fibers**. Industrially produced fibers, as contrasted with such natural fibers as cotton, wool, and silk. Examples are nylon, rayon, acetate, acrylics, polyester, and olefin.

**Marketing loan**. A major new provision of the 1985 Farm Security Act. It provides for a loan repayment plan if the basic loan rate is not competitive on world markets. Two plans have been used under the 1985 Act. Plan A, which applied in 1986, allowed farmers to repay their loans at a price below the loan rate, thereby encouraging them to redeem the loan and sell their cotton on the open market. Plan B was used in 1987-89. It allowed farmers to repay their loans at a rate tied to the adjusted world price (AWP).

**Marketing year**. The U.S. cotton marketing year begins August 1 each year and ends on July 31 of the following year.

**Micronaire reading**. The results of an airflow instrument used to measure cotton fiber fineness and maturity. See cotton quality.

**Middling**. The designation of a specific grade of cotton (see cotton quality). Grades are determined by the amount of leaf, color, and the ginning preparation of cotton, based on samples from each bale of cotton. Middling is a high-quality white cotton.

**Mill (textile)**. A business concern or factory which manufactures textile products by spinning, weaving, or knitting.

**Mill consumption**. Quantity of a fiber processed in manufacturing establishments.

**Moduled seed cotton**. A mechanical module builder compresses cotton into large modules in the field after harvest so that cotton may be held temporarily on the farm or at the gin while awaiting ginning. About 40 percent of U.S. cotton is moduled. This practice is especially important in the Southwest and West.

**Motes**. Cotton waste material from the cotton ginning process, primarily resulting from the lint cleaning operation. Motes can be reclaimed and sold for use in padding and upholstery filling, nonwovens, and some open-end yarns.

**Multifiber Arrangement (MFA)**. The MFA, negotiated under the auspices of the General Agreement on Tariffs and Trade (GATT), provides a set of complex rules to which signatory nations agree to abide when negotiating bilateral agreements to control trade in cotton, wool, and manmade fiber textiles and apparel. In 1985, the United States had bilateral textile agreements with 36 exporting countries, most of which were negotiated under the rules of the MFA.

**Naps**. Large tangled masses of fibers that often result from ginning wet cotton. Naps are not as detrimental to quality as neps.

**National Cotton Council of America (NCC)**. The central organization representing all seven sectors, or interests, of the raw cotton industry of the United States: producers, ginners, warehouses, merchants, seed crushers, cooperatives, and manufacturers (spinners). NCC is a voluntary private industry association established in 1939. NCC programs include technical services, foreign operations, communication services, economic services, and Government liaison. Headquartered in Memphis, TN.

**Natural fibers**. Fibers of animal (such as wool, hair, or silk), vegetable (such as cotton, flax, or jute), or mineral origin (such as asbestos or glass).

**Neps**. Very small, snarled masses or clusters of fibers that look like dots or specks in the cotton lint and are difficult to remove. If not removed, they will appear as defects in the yarn and fabrics.

**Noncellulosic fibers**. Fibers made from petroleum-derived chemicals. The major types are polyester, nylon, acrylic, and polypropylene.

**Nonrecourse loan**. Delivery to the CCC of the pledged and eligible commodity, or warehouse receipts representing stocks acceptable as to quantity and quality, constitutes repayment of the price support loan in full, regardless of the current market value of the commodity.

**Nonwoven fabrics**. Material made primarily of randomly arranged textile fibers held together by an applied bonding agent or by fusion.

**Offsetting compliance**. When an offsetting compliance program is in effect, a producer participating in a diversion or acreage reduction program must not offset that reduction by overplanting the acreage base for that crop on another farm.

**Oilseed crops**. Major U.S. oilseed crops are soybeans, cottonseed, flaxseed, peanuts, sunflower seed, rapeseed, and sesame seed. Other oils include palm, olive, coconut, tung, and castor.

**Open-end spinning**. Processing fibers directly from a fiber supply, such as a roving sliver, to the finished yarn, in contrast to ring spinning. Three basic open-end methods are mechanical, electrostatic, and fluid or air. Advantages over ring-spun yarns include increased speed, less labor, and less floor space for equipment.

**Operator (farm)**. The person who is in general control of the farming operation on the farm during the program year.

**Paid land diversion.** If the Secretary of Agriculture determines that planted acres for a program crop should be reduced, producers may be offered a paid voluntary land diversion. Farmers are given a specific payment per acre to idle a percentage of their crop acreage base.

**Parity price**. The price which will give agricultural commodities the same relative purchasing power in terms of goods and services farmers buy that prevailed in a specified base period. This concept was first defined by the Agricultural Adjustment Act of 1933. The parity price formula is not a comprehensive measure of the economic well-being of farmers, nor does it measure cost of production, standards of living, or income parity. The parity price formula is based on price relationships, and reflects only one component of cost of production and income.

**Pick**. A filling yarn or thread that runs crosswise in woven goods.

**Pile**. The cut or uncut loops which make the surface a pile fabric. Some common pile fabrics include velvet, corduroy, terry toweling, furniture covering, and rugs and carpets.

**Ply**. The number of single yarns twisted together to make a composite yarn. When applied to cloth, it means the number of layers of fabric combined to give the composite fabric.

**Point**. A term used in quoting the price of raw cotton. One point is equal to 1/100 of a cent.

**Price, raw cotton**. There are several different cotton price series, each of which represents a different time and space dimension in the market. All price series, ranging from U.S. farm prices to international prices, are linked by common fundamental demand and supply factors.

**Farm price**. The season-average price received by farmers for cotton is a sales-weighted average of prices received by farmers during the marketing season at the point of first sale, usually on the farm or at a local delivery point. This USDA series is available for both upland cotton by months and by State and for ELS cotton by marketing year and by State and is reported in Agricultural Prices, published by USDA's National Agricultural Statistics Service. An important use of upland cotton farm prices on a calendar year basis is to determine Government deficiency payments.

**Futures price**. The current price of cotton established at a futures exchange to be delivered at some future date. Futures contracts are primarily traded by merchants to hedge their price risks but are also used by growers, mills, and others to reduce risks of adverse price movements. The so-called No. 2 contract, covering SLM white 1-1/16-inch cotton, is traded daily on the New York Cotton Exchange. The Chicago Rice and Cotton Exchange's short staple cotton futures contract covers SLM Light Spotted 31/32-inch cotton.

**International price**. There is no statistically valid, single estimate of a world price. Two popular measures are reported by Cotlook, Ltd., Liverpool, England, publishers of Cotton Outlook. The Outlook "A" index is a simple arithmetic average of the five lowest priced growths of the 11 quoted for Middling 1-3/32-inch cotton delivered to northern Europe from various exporting countries. The "B" index is a simple average of the three lowest northern European prices of the six quoted for shorter staple coarse cotton varying in staple length from 1 inch to 1-3/32 inches. These prices are used to compare export competitiveness of American and foreign growths.

**Mill price**. The price for cotton delivered to mills in western North Carolina and South Carolina is commonly referred to as Group B mill price. These prices, including landing and brokerage costs, are quoted for cotton of given grades and staples from given regions. The SLM 1-1/16-inch price is often compared with polyester staple and rayon staple prices to indicate cotton's competitive position in the raw fiber market.

**Spot price**. A spot or cash market price represents the price for which cotton of various qualities was sold at warehouse locations in seven market areas designated by the Secretary of Agriculture. Spot market quotations are published daily by the Agricultural Marketing Service from price quotations furnished by cotton buyers. Spot prices are used to establish premiums and discounts for the Government's cotton loans to producers and for settling futures contracts. The spot market price also represents the market value of cotton in the early stages of the wholesale marketing chain.

**Price support**. Government price support programs for cotton and other farm commodities are administered by USDA's Agricultural Stabilization and Conservation Service. Various methods of supporting producers' price have been used over the years. Support has commonly been achieved through nonrecourse loans, purchases, and payments at announced levels. Recent legislation is designed to make export commodities more competitive in world markets through market price support at or near world price levels. At the same time, producers' incomes are enhanced through deficiency payments. Export competitiveness is further enhanced by issuing marketing certificates to first handlers if world prices fall below producers' loan repayment levels.

**Producer**. A person who, as owner, landlord, tenant, or sharecropper, is entitled to a share of the crops available for marketing from the farm or a share of the proceeds.

**Program (agricultural)**. Government activities aimed at accomplishing a certain result. Such activities

include agricultural price support loans, purchases and payments, commodity storage, transportation, exports, and acreage reduction.

**Program costs**. No single definition is applicable to all uses. Program costs may be gross or net expenditures of the CCC on a commodity during a fiscal year or other period. Program costs may be the realized loss on disposition of a commodity, plus other related net costs during a fiscal year or other period. Program costs may be the net costs attributed to a particular year's crop of a commodity during the marketing year for that commodity.

**Public Law 480 (PL 480)**. The principal legislative authority for channeling U.S. food and fiber to needy countries. First enacted in 1954, PL 480 was extended by the Food for Peace Act of 1966 and subsequent legislation.

**Quality**. See cotton quality.

**Raw fibers**. Textile fibers in their natural state before any manufacturing activity has taken place; for example, cotton as it comes from the bale.

**Referendum**. The referral of a question to voters to be resolved by balloting; for example, marketing quotas, acreage reduction, or marketing agreements.

**Residual supplier**. A country which furnishes supplies to another country only after the latter has obtained all it can from other preferred sources.

**Roving**. An intermediate stage of yarn making between sliver and yarn; the last operation before spinning into yarn.

**Running bale**. Any bale of varying lint weight as it comes from the gin.

**Sea Island**. See cotton.

**Seed cotton**. The raw product which has been harvested but not ginned, containing the lint, seed, and foreign matter.

**Skip-row planting**. The practice of planting one or more rows in uniform space, then skipping one or more rows, to conserve moisture in dryland areas or to increase yields on land actually planted, or both.

**Sliver**. A strand or rope of fibers without twist. In yarn manufacture, a sliver is formed by the carding machine and is of greater diameter than roving.

**Soft fibers**. Flexible fibers of soft texture obtained from the inner bark of dicotyledonous plants. Soft fibers are fine enough to be made into fabrics and cordage. Examples are flax, hemp, jute, kenaf, and ramie. See hard fibers.

**Spinning**. The process of drawing fibers that may be in roving or rope form, twisting the appropriate number of turns per inch, and winding the yarn on a bobbin or other suitable holder.

**Spinning quality**. The ease with which fibers lend themselves to yarn-manufacturing processes.

**Spot price**. See price, raw cotton.

**Staple fibers**. (1) Natural fibers whose length usually ranges from about 1 inch to 1-1/2 inches, such as cotton. (2) Manmade fibers which have been cut to the length of the various natural fibers to facilitate blending and further processing with other fibers.

**Strict Low Middling 1-1/16-inch cotton**. The grade and staple length used as the basis on which the CCC establishes its loan rates. Higher qualities receive loan premiums and generally higher market prices, while lower qualities receive lower loan rates and lower prices. See cotton quality.

**Supima**. Trademark of an ELS cotton, commonly referred to as American Pima cotton, produced in Arizona, New Mexico, and west Texas. Supima Association of America is a producer association headquartered in Phoenix, AZ.

**Synthetic fibers**. Fibers made from petroleum-derived chemicals that were never fibrous in form. They are categorized as noncellulosic fibers.

**Tare**. The weight of the ties (or bands) and wrapping materials that contain the bale of cotton. The quoted net weight of a bale excludes the tare, whereas the gross weight includes tare.

**Tex**. A system of yarn numbering that measures the weight in grams of 1,000 meters of yarn. A 30-tex yarn weighs 30 grams per 1,000 meters.

**Texture**. The number of warp threads (ends) and filling yarn (picks) per square inch in a woven fabric. For

example, 88x72 means there are 88 ends and 72 picks per square inch in the fabric.

**Textile.** Any product made from fibers, including yarns, fabrics, and end-use products such as apparel, home furnishings, and industrial applications.

**Twist.** The number of turns per unit of length of the fiber, strand, roving, or yarn. In the United States, twist is measured in terms of the number of turns per inch.

**Universal density bale.** A bale of cotton compressed to a density of 28 pounds per cubic foot.

**Upland cotton.** See cotton.

**Warp.** The yarns that run lengthwise in a woven or warp-knit fabric.

**Wash and wear.** A term applied to any garment which can be washed, dried, and then worn again with little or no ironing. Also called "durable press" or "permanent press."

**Weft.** The filling yarns that run crosswise in woven fabric or weft-knit fabric.

**Weight of fabric.** Three methods are used to measure fabric weight: (1) linear yards per pound, (2) ounces per linear yard, and (3) ounces per square yard.

**World price.** Often refers to the c.i.f. price of an imported agricultural commodity at the principal port of importation of a major importing country or area. See prices, raw cotton.

**Woven fabric.** Fabric made by interlacing two sets of yarn at right angles. The warp yarns run lengthwise in the fabric; the filling (weft) yarns are passed over and under the warp yarns.

**Yarn.** A continuous strand of twisted (spun) fibers of any kind and of varying staple length, usually used in the weaving or knitting of fabric.

**Yarn size.** Yarns, or threads, are numbered according to weight. The higher numbers denote fiber fineness. A "1s" cotton yarn has 840 yards in a pound; a "30s" cotton yarn has 25,200 yards in a pound. A "30/2" is a two-ply yarn containing two strands of 30s. See cotton count.

## Appendix table 1—Acreage, yield, and production of upland cotton, 1955-87

| Year | Planted | Harvested | Diverted | Yield per harvested acre | Production |
|---|---|---|---|---|---|
| | | *Million acres* | | *Pounds* | *1,000 bales*[1] |
| 1955 | 17.9 | 16.9 | --- | 417 | 14,501 |
| 1956 | 17.0 | 15.6 | 1.1[2] | 408 | 13,102 |
| 1957 | 14.2 | 13.5 | 3.0[2] | 387 | 10,801 |
| 1958 | 12.3 | 11.8 | 4.9[2] | 465 | 11,353 |
| 1959 | 15.8 | 15.1 | --- | 461 | 14,446 |
| 1960 | 16.0 | 15.2 | --- | 446 | 14,199 |
| 1961 | 16.5 | 15.6 | --- | 438 | 14,263 |
| 1962 | 16.2 | 15.5 | --- | 456 | 14,754 |
| 1963 | 14.7 | 14.1 | --- | 516 | 15,129 |
| 1964 | 14.7 | 13.9 | .5 | 517 | 15,025 |
| 1965 | 14.1 | 13.51 | .0 | 527 | 14,850 |
| 1966 | 10.3 | 9.54 | .6 | 480 | 9,484 |
| 1967 | 9.4 | 7.94 | .8 | 446 | 7,374 |
| 1968 | 10.8 | 10.13 | .3 | 516 | 10,847 |
| 1969 | 11.8 | 11.0 | --- | 433 | 9,913 |
| 1970 | 11.9 | 11.1 | --- | 439 | 10,135 |
| 1971 | 12.3 | 11.42 | .1 | 438 | 10,379 |
| 1972 | 13.9 | 12.92 | .0 | 507 | 13,608 |
| 1973 | 12.4 | 11.9 | --- | 521 | 12,896 |
| 1974 | 13.6 | 12.5 | --- | 441 | 11,450 |
| 1975 | 9.4 | 8.7 | --- | 453 | 8,247 |
| 1976 | 11.6 | 10.9 | --- | 464 | 10,517 |
| 1977 | 13.6 | 13.2 | --- | 519 | 14,277 |
| 1978 | 13.3 | 12.3 | .3 | 419 | 10,762 |
| 1979 | 13.9 | 12.7 | --- | 547 | 14,531 |
| 1980 | 14.5 | 13.1 | --- | 402 | 11,018 |
| 1981 | 14.3 | 13.8 | --- | 542 | 15,566 |
| 1982 | 11.3 | 9.7 | 1.6[3] | 589 | 11,864 |
| 1983 | 7.9 | 7.3 | 6.6[4] | 506 | 7,677 |
| 1984 | 11.1 | 10.3 | 2.5[3] | 599 | 12,852 |
| 1985 | 10.6 | 10.1 | 3.6[5] | 628 | 13,277 |
| 1986 | 9.9 | 8.4 | 4.3[6] | 547 | 9,520 |
| 1987 | 10.3 | 9.9 | 4.6[6] | 702 | 14,475 |
| 1988[7] | 12.3 | 9.2 | 3.2[6] | 616 | 15,077 |

--- = Not applicable.
[1]480-pound net-weight bales.
[2]Includes cotton acreage placed in acreage reserve program of the soil bank.
[3]Acreage reduction program.
[4]Includes 4.1 million acres in payment-in-kind program and 2.5 million acres in other acreage reduction programs.
[5]2.3 million acres acreage reduction program and 1.3 million acres paidland diversion.
[6]Acreage reduction program, conservation reserve program, and 50/92-0/92 program.
[7]Estimated.

**Appendix table 2—Use and ending stocks for upland cotton, 1950-87**

| Crop year | Mill use | Exports | Total use | Ending stocks | Stocks-to-use ratio |
|---|---|---|---|---|---|
| | | *1,000 bales*[1] | | | *Percent* |
| 1950 | 10,355 | 4,108 | 14,443 | 2,196 | 15 |
| 1951 | 9,117 | 5,515 | 14,632 | 2,741 | 19 |
| 1952 | 9,358 | 3,048 | 12,406 | 5,511 | 44 |
| 1953 | 8,475 | 3,760 | 12,235 | 9,570 | 78 |
| 1954 | 8,730 | 3,445 | 12,175 | 11,028 | 91 |
| 1955 | 9,085 | 2,194 | 11,279 | 14,55 | 129 |
| 1956 | 8,459 | 7,856 | 16,314 | 11,388 | 70 |
| 1957 | 7,975 | 5,949 | 13,924 | 8,666 | 62 |
| 1958 | 8,683 | 2,870 | 11,553 | 7,776 | 76 |
| 1959 | 8,888 | 7,393 | 16,281 | 7,410 | 46 |
| 1960 | 8,122 | 6,850 | 14,972 | 7,073 | 47 |
| 1961 | 8,756 | 5,049 | 13,805 | 7,717 | 56 |
| 1962 | 8,322 | 3,426 | 11,748 | 10,390 | 93 |
| 1963 | 8,554 | 5,773 | 14,327 | 12,091 | 84 |
| 1964 | 9,107 | 4,174 | 12,281 | 13,980 | 105 |
| 1965 | 9,454 | 3,029 | 12,483 | 16,734 | 134 |
| 1966 | 9,438 | 4,819 | 14,257 | 12,081 | 85 |
| 1967 | 8,948 | 4,316 | 13,264 | 6,379 | 48 |
| 1968 | 8,204 | 2,816 | 11,020 | 6,377 | 58 |
| 1969 | 8,001 | 2,863 | 10,864 | 5,727 | 53 |
| 1970 | 8,105 | 3,885 | 11,990 | 4,134 | 34 |
| 1971 | 8,163 | 3,376 | 11,539 | 3,182 | 28 |
| 1972 | 7,670 | 5,306 | 12,976 | 4,153 | 32 |
| 1973 | 7,384 | 6,111 | 13,495 | 3,753 | 28 |
| 1974 | 5,797 | 3,914 | 9,711 | 5,649 | 58 |
| 1975 | 7,160 | 3,300 | 10,438 | 3,615 | 35 |
| 1976 | 6,595 | 4,779 | 11,375 | 2,879 | 25 |
| 1977 | 6,416 | 5,459 | 11,874 | 5,278 | 44 |
| 1978 | 6,286 | 6,150 | 12,435 | 3,905 | 31 |
| 1979 | 6,440 | 9,177 | 15,617 | 2,962 | 19 |
| 1980 | 5,828 | 5,893 | 11,721 | 2,614 | 22 |
| 1981 | 5,216 | 6,555 | 11,771 | 6,567 | 56 |
| 1982 | 5,457 | 5,194 | 10,651 | 7,844 | 74 |
| 1983 | 5,861 | 6,750 | 12,611 | 2,693 | 21 |
| 1984 | 5,491 | 6,125 | 11,616 | 4,024 | 35 |
| 1985 | 6,338 | 1,855 | 8,193 | 9,289 | 113 |
| 1986 | 7,385 | 6,570 | 13,955 | 4,942 | 36 |
| 1987 | 7,565 | 6,345 | 13,910 | 5,718 | 41 |
| 1988 | 7,489 | 5,985 | 3,474 | 7,048 | 52 |

## Appendix table 3—Prices and ending stocks for upland cotton, 1950-87

| Crop year[1] | Ending stocks: CCC-owned | Ending stocks: Free[2] | Ending stocks: Total | Average price received[3] | Loan rate[4] | Target price | Direct payment |
|---|---|---|---|---|---|---|---|
| | *1,000 bales* | | | | *Cents per pound* | | |
| 1950 | 76 | 2,120 | 2,196 | 39.90 | 30.25 | --- | --- |
| 1951 | 2 | 2,739 | 2,741 | 37.69 | 32.36 | --- | --- |
| 1952 | 236 | 5,275 | 5,511 | 34.17 | 32.41 | --- | --- |
| 1953 | 129 | 9,441 | 9,570 | 32.10 | 33.50 | --- | --- |
| 1954 | 1,661 | 9,367 | 11,028 | 33.52 | 34.03 | --- | --- |
| 1955 | 5,952 | 8,601 | 14,553 | 32.27 | 34.55 | --- | --- |
| 1956 | 4,829 | 6,559 | 11,388 | 31.63 | 32.74 | --- | --- |
| 1957 | 937 | 7,729 | 8,666 | 29.46 | 32.31 | --- | --- |
| 1958 | 984 | 7,792 | 8,776 | 33.09 | 35.08 | --- | --- |
| 1959 | 4,967 | 2,443 | 7,410 | 31.56 | 34.10 | --- | --- |
| 1960 | 1,678 | 5,395 | 7,073 | 30.08 | 32.42 | --- | --- |
| 1961 | 1,449 | 6,155 | 7,604 | 32.80 | 33.04 | --- | --- |
| 1962 | 3,750 | 6,640 | 10,390 | 31.74 | 32.47 | --- | --- |
| 1963 | 4,303 | 7,788 | 12,091 | 32.02 | 32.47 | --- | --- |
| 1964 | 6,557 | 7,423 | 13,980 | 29.62 | 30.00 | --- | 3.50[5] |
| 1965 | 9,715 | 7,019 | 16,734 | 28.03 | 29.00 | --- | 4.35 |
| 1966 | 6,677 | 5,404 | 12,081 | 20.64 | 21.00 | --- | 9.42 |
| 1967 | 552 | 5,827 | 6,379 | 25.39 | 20.2 | --- | 11.53 |
| 1968 | 24 | 6,353 | 6,377 | 22.02 | 20.25 | --- | 12.24 |
| 1969 | 1,890 | 3,837 | 5,727 | 20.94 | 20.25 | --- | 14.73 |
| 1970 | 262 | 3,872 | 4,134 | 21.86 | 20.25 | --- | 16.80 |
| 1971 | 1 | 3,181 | 3,182 | 28.07 | 19.50 | --- | 5.00[6] |
| 1972 | 0 | 4,153 | 4,153 | 27.20 | 19.50 | --- | 15.00 |
| 1973 | 0 | 3,753 | 3,753 | 44.40 | 19.50 | --- | 15.00 |
| 1974 | 0 | 5,649 | 5,649 | 42.70 | 27.06 | 38.00 | [7] |
| 1975 | 0 | 3,615 | 3,615 | 51.10 | 36.12 | 38.00 | 0 |
| 1976 | 0 | 2,879 | 2,879 | 63.80 | 38.92 | 43.20 | 0 |
| 1977 | [8] | 5,278 | 5,278 | 52.10 | 44.63 | 47.80 | 0 |
| 1978 | [8] | 3,905 | 3,905 | 58.10 | 48.00 | 52.00 | 0 |
| 1979 | [8] | 2,962 | 2,962 | 62.30 | 50.23 | 57.70 | 0 |
| 1980 | [8] | 2,614 | 2,614 | 74.40 | 48.00 | 58.40 | 0 |
| 1981 | 1 | 6,566 | 6,567 | 54.00 | 52.46 | 70.87 | 7.67 |
| 1982 | 396 | 7,448 | 7,844 | 59.10 | 57.08 | 71.00 | 13.92 |
| 1983 | 158 | 2,535 | 2,693 | 66.00 | 55.00 | 76.00 | 12.10 |
| 1984 | 123 | 3,901 | 4,024 | 57.50 | 55.00 | 81.00 | 18.60 |
| 1985 | 767 | 8,552 | 9,289 | 56.80 | 57.30 | 81.00 | 23.50 |
| 1986 | 73 | 4,869 | 4,942 | 51.50 | 55.00 | 81.00 | 26.00 |
| 1987 | 3 | 5,715 | 5,718 | 63.70 | 52.25 | 79.40 | 17.30 |
| 1988 | 50 | 7,419 | 7,469 | 54.80 | 51.80 | 75.90 | 19.40 |

--- = Not applicable.

[1]Crop year beginning August 1.

[2]Includes ending stocks (July 31) of cotton in consuming establishments, public storage (including cotton under loan but excluding CCC-owned cotton), compresses, and cotton in transit.

[3]Season-average prices received by farmers for lint cotton, including an allowance for unredeemed loans.

[4]Loan rates shown for 1950-73 are basis Middling 1-inch, micronaire 3.5-4.9. Loan rates shown for 1974-85 are basis Strict Low Middling 1-1/16 inch, micronaire 3.5-4.9.

[5]From 1964-70, price support payments were available on the domestic allotment (67 percent of total allotment in 1964, 65 percent in 1965-70). Loans were available on the entire production within the allotment.

[6]From 1971-73, the direct payment represents the minimum payment rate available on the full base acreage allotment. Payments in 1971-72 were contingent on participation in the cropland set-aside program, while no set-aside requirement was imposed for 1973.

[7]From 1974-85, the direct payments represent deficiency payments: the difference between the target price and the higher of the calendar year average price or the base loan rate. Diversion payments, disaster payments, and payment-in-kind entitlements are excluded.

[8] Fewer than 500 bales.

**Appendix table 4—Farm related program costs for upland cotton, 1970-88[1]**

| Fiscal year | Direct price support or deficiency | Diversion | Disaster | Loan operations | | Total support and related expenditures[2] |
|---|---|---|---|---|---|---|
| | | | | Outlays | Repayments | |
| | | | *Million dollars* | | | |
| 1970 | 797.6 | 18.7 | --- | 383.0 | 247.6 | 891.4 |
| 1971 | 890.0 | 24.9 | --- | 247.2 | 263.7 | 603.2 |
| 1972 | 819.3 | .1 | --- | 106.6 | 115.4 | 760.4 |
| 1973 | 808.7 | .1 | --- | 170.3 | 165.3 | 824.0 |
| 1974 | 713.2 | .1 | --- | 163.1 | 154.8 | 724.6 |
| 1975 | --- | .1 | 127.0 | 292.7 | 189.9 | 232.8 |
| 1976[3] | --- | --- | 124.7 | 105.8 | 237.3 | -4.0 |
| 1977 | --- | --- | 95.2 | 168.5 | 159.3 | 104.3 |
| 1978 | [4] | 16.8 | 72.8 | 934.3 | 799.9 | 223.8 |
| 1979 | [4] | 23.6 | 189.2 | 332.8 | 404.4 | 141.2 |
| 1980 | [4] | --- | 104.0 | 401.5 | 441.6 | 64.3 |
| 1981 | [4] | .1 | 303.9 | 522.6 | 491.6 | 335.7 |
| 1982 | 467.4 | .1 | 99.9 | 1,394.7 | 770.1 | 1,189.7 |
| 1983 | 804.3 | 3.3 | 105.5 | 1,363.3 | 958.5 | 1,362.9 |
| 1984 | 145.1 | -1.1 | .5 | 1,431.8 | 1,282.1 | 244.0 |
| 1985 | 1,048.5 | 161.8 | --- | 808.6 | 449.2 | 1,552.7 |
| 1986 | 834.5 | 34.1 | [5] | 2,315.8 | 1,071.4 | 2,141.9 |
| 1987 | 987.4 | .2 | [5] | 2,668.7 | 2,021.8 | 1,785.7 |
| 1988 | 211.6 | -.1 | [5] | 1,539.9 | 1,281.7 | 665.8 |

--- = Not applicable (no outlays).

[1]Excludes PL 480 commodity costs.

[2]Direct price support or deficiency, diversion, or disaster payments plus Government expenditures on transportation, classing, loans, loan settlements, and other expenses less sale proceeds, loan repayments, and other receipts. Negative indicates net receipts.

[3]Includes July-Sept. 1976 to allow for shift from July/June to Oct./Sept. fiscal year.

[4]Net receipts of less than $1 million.

[5]Less than $50,000.

**Appendix table 5—Value comparisons for upland cotton, 1950-87**

| Crop year | Loan value per acre: Current dollars[1] | Loan value per acre: 1982 dollars[2] | Market value per acre: Current dollars[3] | Market value per acre: 1982 dollars[2] | Gross value of production: Current dollars[4] | Gross value of production: 1982 dollars[2] |
|---|---|---|---|---|---|---|
| | *Dollars* | | | | *Million dollars* | |
| 1950 | 81.37 | 340.46 | 131.98 | 552.22 | 2,336 | 9,774 |
| 1951 | 87.37 | 348.09 | 121.90 | 485.66 | 6,579 | 13,064 |
| 1952 | 90.75 | 355.88 | 116.01 | 454.94 | 2,993 | 11,737 |
| 1953 | 108.54 | 419.07 | 123.31 | 476.10 | 2,9[4] | 7,757 |
| 1954 | 116.04 | 441.22 | 136.98 | 520.84 | 2,630 | 10,000 |
| 1955 | 144.07 | 529.67 | 155.98 | 573.46 | 2,636 | 9,691 |
| 1956 | 133.58 | 475.37 | 152.82 | 543.84 | 2,384 | 8,484 |
| 1957 | 125.04 | 429.69 | 135.85 | 466.84 | 1,834 | 6,302 |
| 1958 | 163.12 | 549.26 | 173.14 | 582.96 | 2,043 | 6,879 |
| 1959 | 157.20 | 517.11 | 166.62 | 548.09 | 2,516 | 8,276 |
| 1960 | 144.59 | 467.93 | 156.84 | 507.57 | 2,384 | 7,715 |
| 1961 | 144.72 | 463.85 | 169.30 | 542.63 | 2,641 | 8,465 |
| 1962 | 148.06 | 464.14 | 169.74 | 532.10 | 2,631 | 8,248 |
| 1963 | 167.55 | 517.13 | 194.11 | 599.10 | 2,737 | 8,448 |
| 1964 | 155.10 | 471.43 | 181.22 | 550.82 | 2,510 | 7,629 |
| 1965 | 152.83 | 205.53 | 175.33 | 518.73 | 2,367 | 7,003 |
| 1966 | 100.80 | 288.00 | 130.32 | 372.34 | 1,238 | 3,537 |
| 1967 | 90.32 | 251.59 | 140.76 | 392.09 | 1,112 | 3,097 |
| 1968 | 104.49 | 277.16 | 141.39 | 375.04 | 1,428 | 3,788 |
| 1969 | 87.68 | 220.30 | 109.55 | 275.25 | 1,205 | 3,028 |
| 1970 | 88.90 | 211.69 | 120.54 | 287.00 | 1,338 | 3,183 |
| 1971 | 85.41 | 192.36 | 143.51 | 323.22 | 1,636 | 3,685 |
| 1972 | 93.60 | 201.29 | 158.30 | 340.43 | 2,042 | 4,391 |
| 1973 | 101.60 | 205.25 | 272.52 | 550.55 | 3,243 | 6,552 |
| 1974 | 119.33 | 220.98 | 236.00 | 437.04 | 2,950 | 5,436 |
| 1975 | 162.62 | 274.23 | 268.05 | 452.02 | 2,332 | 3,933 |
| 1976 | 180.59 | 286.20 | 334.31 | 529.81 | 3,644 | 5,775 |
| 1977 | 231.63 | 344.18 | 299.32 | 444.75 | 3,951 | 5,871 |
| 1978 | 201.12 | 278.56 | 283.17 | 392.20 | 3,483 | 4,824 |
| 1979 | 271.76 | 345.75 | 396.46 | 504.40 | 5,035 | 6,406 |
| 1980 | 193.44 | 225.72 | 343.51 | 400.83 | 4,500 | 5,251 |
| 1981 | 284.33 | 302.48 | 332.03 | 353.22 | 4,582 | 4,873 |
| 1982 | 336.20 | 336.20 | 384.12 | 384.12 | 3,762 | 3,762 |
| 1983 | 277.20 | 128.27 | 402.33 | 186.18 | 2,937 | 1,359 |
| 1984 | 329.45 | 354.82 | 392.33 | 422.53 | 4,041 | 4,352 |
| 1985 | 359.84 | 399.06 | 380.18 | 421.62 | 3,857 | 4,277 |
| 1986 | 300.85 | 342.67 | 312.97 | 356.47 | 2,614 | 2,977 |
| 1987 | 365.75 | 430.49 | 500.41 | 588.66 | 4,998 | 5,882 |

[1]Loan values per harvested acre obtained by multiplying appropriate base loan rates per pound (from appendix table 3) by average yields per harvested acre.

[2]Current dollars deflated by the GNP implicit price deflator (1972 = 100).

[3]Gross value of production of upland cotton lint and seed, divided by harvested acres. Excludes Government payments.

[4]Total value of upland cotton lint and seed produced, excluding Government payments. The value of cottonseed produced averaged about 13 percent of the total value of lint and seed in 1974-83.

**Appendix table 6—World production, consumption, exports, and ending stocks for cotton, 1960-87**

| Crop year | Production | Consumption | Exports | Ending stocks | Stocks-to-use ratio |
|---|---|---|---|---|---|
| | | *1,000 bales* | | | *Percent* |
| 1960 | 45,069 | 46,169 | 17,121 | 20,375 | 41.2 |
| 1961 | 44,466 | 45,217 | 15,619 | 19,037 | 41.5 |
| 1962 | 46,958 | 43,923 | 15,933 | 18,774 | 51.7 |
| 1963 | 50,894 | 48,032 | 17,930 | 25,726 | 53.6 |
| 1964 | 53,934 | 51,462 | 16,857 | 28,750 | 55.8 |
| 1965 | 57,110 | 54,013 | 16,946 | 32,293 | 60.0 |
| 1966 | 52,496 | 55,987 | 18,229 | 28,539 | 51.1 |
| 1967 | 51,748 | 56,136 | 17,493 | 24,038 | 42.8 |
| 1968 | 57,096 | 56,526 | 16,983 | 24,509 | 43.4 |
| 1969 | 54,923 | 56,166 | 17,708 | 23,316 | 41.5 |
| 1970 | 55,304 | 57,295 | 17,748 | 22,357 | 39.1 |
| 1971 | 59,367 | 58,618 | 18,685 | 22,852 | 39.0 |
| 1972 | 62,023 | 59,791 | 21,196 | 24,916 | 41.7 |
| 1973 | 63,169 | 60,874 | 19,583 | 27,716 | 45.5 |
| 1974 | 64,222 | 57,897 | 17,497 | 33,435 | 57.7 |
| 1975 | 54,195 | 61,907 | 19,093 | 26,014 | 40.4 |
| 1976 | 56,623 | 60,938 | 17,568 | 21,942 | 36.0 |
| 1977 | 64,112 | 60,900 | 19,149 | 25,227 | 41.4 |
| 1978 | 59,881 | 61,242 | 19,791 | 21,697 | 35.4 |
| 1979 | 65,726 | 63,535 | 23,233 | 21,132 | 33.3 |
| 1980 | 64,928 | 66,172 | 19,699 | 20,454 | 30.9 |
| 1981 | 71,197 | 66,118 | 20,239 | 25,284 | 38.2 |
| 1982 | 68,125 | 66,127 | 19,449 | 25,198 | 38.1 |
| 1983 | 65,558 | 68,258 | 19,166 | 23,952 | 35.1 |
| 1984 | 88,216 | 69,872 | 20,198 | 42,437 | 60.7 |
| 1985 | 79,562 | 76,911 | 20,237 | 46,098 | 59.9 |
| 1986 | 70,452 | 82,435 | 25,944 | 33,581 | 40.7 |
| 1987 | 80,835 | 83,872 | 23,230 | 30,777 | 36.7 |
| 1988[1] | 84,000 | 83,799 | 25,627 | 30,142 | 36.0 |
| 1989[2] | 80,780 | 85,342 | 24,953 | 25,196 | 29.5 |

[1]Preliminary
[2]Estimate

**Appendix table 7—Provisions of upland cotton programs, 1961-89**

| Provision | 1961 | 1962 | 1963 | 1964 |
|---|---|---|---|---|
| Parity price (c/lb) | 38.80 | 39.20 | 40.20 | 40.70 |
| Support price (c/lb) | --- | --- | --- | 33.50 |
| Payment rate (c/lb) | --- | --- | --- | 3.5 |
| Payment ($) | --- | --- | --- | .0350*Yld*Dom[15] |
| Target price (c/lb) | --- | --- | --- | --- |
| Deficiency payment:[1] | | | | |
| Advance payment (c/lb) | --- | --- | --- | --- |
| Final payment (c/lb) | --- | --- | --- | --- |
| Allocation factor (%)[2] | --- | --- | --- | --- |
| Nonrecourse loan: | | | | |
| Loan rate (c/lb)[3] | 33.04 | 32.47 | 32.47 | 30.00 |
| Repayment rate (c/lb)[4] | --- | --- | --- | --- |
| CCC domestic sales:[5] | | | | |
| Legislated minimum price (c/lb)[6] | 38.00+CC | 37.34+CC | 37.34+CC | 31.50+CC |
| Actual price (c/lb)[7] | --- | --- | --- | --- |
| Acreage diversion (%) | --- | --- | --- | --- |
| Payment rate (c/lb) | --- | --- | --- | --- |
| Payment ($) | --- | --- | --- | --- |
| Acreage diversion optional (%) | --- | --- | --- | --- |
| Payment rate (c/lb) | --- | --- | --- | --- |
| Payment ($) | --- | --- | --- | --- |
| Set-aside (%) | --- | --- | --- | --- |
| Payment rate (c/lb) | --- | --- | --- | --- |
| Payment ($) | --- | --- | --- | --- |
| Set-aside voluntary (%) | --- | --- | --- | --- |
| Payment rate (c/lb) | --- | --- | --- | --- |
| Payment ($) | --- | --- | --- | --- |
| Acreage reduction (%) | --- | --- | --- | --- |
| Payment rate (c/lb) | --- | --- | --- | --- |
| Payment ($) | --- | --- | --- | --- |
| Acreage reduction voluntary (%) | --- | --- | --- | --- |
| Payment rate (c/lb) | --- | --- | --- | --- |
| Payment ($) | --- | --- | --- | --- |
| PIK acreage diversion (%) | --- | --- | --- | --- |
| Payment rate (ba) | --- | --- | --- | --- |
| Payment (ba) | --- | --- | --- | --- |
| Compliance restrictions: | | | | |
| Soil conserving base[8] | --- | --- | --- | --- |
| Cross-compliance[9] | --- | --- | --- | --- |
| Offsetting-compliance[10] | --- | --- | --- | --- |
| National marketing quota (1,000 ba)[11] | 15,562 | 15,714 | 14,367 | 14,267 |
| Marketing quota penalty (c/lb)[12] | 19.5 | 50% of parity | 50% of parity | 50% of parity |
| National allotment acres (1,000)[13] | 18,458.4 | 18,101.7 | 16,250.0 | 16,200.0 |
| Acres allocated from national acreage reserve (1,000) | 60.0 | 100.0 | 250.0 | 200.0 |
| Farm allotment acres: | | | | |
| Domestic (% of total) | --- | --- | --- | 67 |
| Export (% of total) | --- | --- | --- | 5[16] |
| National base allotment acres (1,000) | --- | --- | --- | --- |
| National program acres (1,000) | --- | --- | --- | --- |
| National base acres (1,000) | --- | --- | --- | --- |
| Base acres in CRP (1,000) | --- | --- | --- | --- |
| National export market acres reserve (1,000) | --- | --- | --- | --- |
| National program yield (lbs/ac) | --- | --- | --- | 434 |
| Disaster program:[14] | | | | |
| Prevented plantings payment (c/lb) | --- | --- | --- | --- |
| Low yield criterion (%) | --- | --- | --- | --- |
| Low yield payment (c/lb) | --- | --- | --- | --- |
| Payment limitation ($) | --- | --- | --- | --- |
| Advanced payment (%) | --- | --- | --- | --- |
| Support payment limitation ($) | --- | --- | --- | --- |

See footnotes at end of table.

Continued—

**Appendix table 7—Provisions of upland cotton programs, 1961-89—Continued**

| Provision | 1965 | 1966 | 1967 | 1968 |
|---|---|---|---|---|
| Parity price (c/lb) | 41.70 | 42.80 | 42.90 | 44.50 |
| Support price (c/lb) | 33.35 | 30.42 | 31.78 | 32.49 |
| Payment rate (c/lb) | 4.35 | 9.42 | 11.53 | 12.24 |
| Payment ($) | .0435*Yld*Dom[15] | .0942*Yld*Dom[18] | .1153*Yld*Dom[18] | .1224*Yld*Dom[18] |
| Target price (c/lb) | --- | --- | --- | --- |
| Deficiency payment:[1] | | | | |
| Advance payment (c/lb) | --- | --- | --- | --- |
| Final payment (c/lb) | --- | --- | --- | --- |
| Allocation factor (%)[2] | --- | --- | --- | --- |
| Nonrecourse loan: | | | | |
| Loan rate (c/lb)[3] | 29.00 | 21.00 | 20.25 | 20.25 |
| Repayment rate (c/lb)[4] | --- | --- | --- | --- |
| CCC domestic sales:[5] | | | | |
| Legislated minimum price (c/lb)[6] | 30.45+CC | 23.10+CC | 22.27+CC | 22.27+CC |
| Actual price (c/lb)[7] | --- | --- | --- | --- |
| Acreage diversion (%) | --- | 12.5, 25, or 35 | 12.5-35 | 5 |
| Payment rate (c/lb) | --- | 10.5 | 10.78 | 10.76 |
| Payment ($) | --- | .105*Yld*Div | .1078*Yld*Div | .1076*Yld*Div |
| Acreage diversion optional (%) | --- | --- | --- | 0-30 |
| Payment rate (c/lb) | --- | --- | --- | 6.00 |
| Payment ($) | --- | --- | --- | .06*Yld*Div |
| Set-aside (%) | --- | --- | --- | --- |
| Payment rate (c/lb) | --- | --- | --- | --- |
| Payment ($) | --- | --- | --- | --- |
| Set-aside voluntary (%) | --- | --- | --- | --- |
| Payment rate (c/lb) | --- | --- | --- | --- |
| Payment ($) | --- | --- | --- | --- |
| Acreage reduction (%) | --- | --- | --- | --- |
| Payment rate (c/lb) | --- | --- | --- | --- |
| Payment ($) | --- | --- | --- | --- |
| Acreage reduction voluntary (%) | --- | --- | --- | --- |
| Payment rate (c/lb) | --- | --- | --- | --- |
| Payment ($) | --- | --- | --- | --- |
| PIK acreage diversion (%) | --- | --- | --- | --- |
| Payment rate (ba) | --- | --- | --- | --- |
| Payment (ba) | --- | --- | --- | --- |
| Compliance restrictions: | | | | |
| Soil conserving base[8] | --- | Yes | Yes | Yes |
| Cross-compliance[9] | Yes[17] | No | No | No |
| Offsetting-compliance[10] | --- | --- | Yes | --- |
| National marketing quota (1,000 ba)[11] | 14,733 | 15,267 | 16,033 | 16,100 |
| Marketing quota penalty (c/lb)[12] | 50% of parity | 50% of parity | 50% of parity | 50% of parity |
| National allotment acres (1,000)[13] | 16,200.0 | 16,200.0 | 16,200.0 | 16,200.0 |
| Acres allocated from national acreage reserve (1,000) | 200.0 | 200.0 | 200.0 | 200.0 |
| Farm allotment acres: | | | | |
| Domestic (% of total) | 65 | 65 | 65 | 65 |
| Export (% of total) | --- | --- | --- | --- |
| National base allotment acres (1,000) | --- | --- | --- | --- |
| National program acres (1,000) | --- | --- | --- | --- |
| National base acres (1,000) | --- | --- | --- | --- |
| Base acres in CRP (1,000) | --- | --- | --- | --- |
| National export market acres reserve (1,000) | --- | 250[16,19] | 250[16,19] | 250[16,19] |
| National program yield (lbs/ac) | 446 | 527 | 545 | 545 |
| Disaster program:[14] | | | | |
| Prevented plantings payment (c/lb) | --- | ---[20] | ---[20] | ---[20] |
| Low yield criterion (%) | --- | --- | --- | --- |
| Low yield payment (c/lb) | --- | --- | --- | --- |
| Payment limitation ($) | --- | --- | --- | --- |
| Advanced payment (%) | --- | --- | --- | --- |
| Support payment limitation ($) | --- | --- | --- | --- |

See footnotes at end of table.

Continued—

**Appendix table 7—Provisions of upland cotton programs, 1961-89—Continued**

| Provision | 1969 | 1970 | 1971 | 1972 |
|---|---|---|---|---|
| Parity price (c/lb) | 47.60 | 48.90 | 51.90 | 55.10 |
| Support price (c/lb) | 34.98 | 37.05 | 35.00 | 35.85 |
| Payment rate (c/lb) | 14.73 | 16.80 | --- | --- |
| Payment ($) | .1473*Yld*Dom[18] | .1680*Yld*Dom[18] | --- | --- |
| Target price (c/lb) | --- | --- | --- | --- |
| Deficiency payment:[1] | | | | |
| Advance payment (c/lb) | --- | --- | --- | --- |
| Final payment (c/lb) | --- | --- | --- | --- |
| Allocation factor (%)[2] | --- | --- | --- | --- |
| Nonrecourse loan: | | | | |
| Loan rate (c/lb)[3] | 20.25 | 20.25 | 19.5[21] | 19.50 |
| Repayment rate (c/lb)[4] | --- | --- | --- | --- |
| CCC domestic sales:[5] | | | | |
| Legislated minimum price (c/lb)[6] | 22.27+CC | 22.27+CC | 22.42+CC | 22.42+CC |
| Actual price (c/lb)[7] | --- | --- | --- | --- |
| Acreage diversion (%) | None | None | --- | --- |
| Payment rate (c/lb) | --- | --- | --- | --- |
| Payment ($) | --- | --- | --- | --- |
| Acreage diversion optional (%) | --- | --- | --- | --- |
| Payment rate (c/lb) | --- | --- | --- | --- |
| Payment ($) | --- | --- | --- | --- |
| Set-aside (%) | --- | --- | 20 | 20 |
| Payment rate (c/lb) | --- | --- | 15.00[22] | 15.00[22] |
| Payment ($) | --- | --- | 15.00*Yld*Plt[23] | 15.00*Yld*Plt[23] |
| Set-aside voluntary (%) | --- | --- | --- | --- |
| Payment rate (c/lb) | --- | --- | --- | --- |
| Payment ($) | --- | --- | --- | --- |
| Acreage reduction (%) | --- | --- | --- | --- |
| Payment rate (c/lb) | --- | --- | --- | --- |
| Payment ($) | --- | --- | --- | --- |
| Acreage reduction voluntary (%) | --- | --- | --- | --- |
| Payment rate (c/lb) | --- | --- | --- | --- |
| Payment ($) | --- | --- | --- | --- |
| PIK acreage diversion (%) | --- | --- | --- | --- |
| Payment rate (ba) | --- | --- | --- | --- |
| Payment (ba) | --- | --- | --- | --- |
| Compliance restrictions: | | | | |
| Soil conserving base[8] | Yes | Yes | Yes | Yes |
| Cross-compliance[9] | No | --- | --- | --- |
| Offsetting-compliance[10] | --- | --- | --- | --- |
| National marketing quota (1,000 ba)[11] | 15,133 | 16,008 | None | None |
| Marketing quota penalty (c/lb)[12] | 50% of parity | 50% of parity | --- | --- |
| National allotment acres (1,000)[13] | 16,200.0 | 17,150.0 | --- | --- |
| Acres allocated from national acreage reserve (1,000) | 200.0 | 150.0 | --- | --- |
| Farm allotment acres: | | | | |
| Domestic (% of total) | 65 | 65 | --- | --- |
| Export (% of total) | --- | --- | --- | --- |
| National base allotment acres (1,000) | --- | --- | 11,500[24] | 11,500[24] |
| National program acres (1,000) | --- | --- | --- | --- |
| National base acres (1,000) | --- | --- | --- | --- |
| Base acres in CRP (1,000) | --- | --- | --- | --- |
| National export market acres reserve (1,000) | 187.5[16,19] | 62.5[16,19] | --- | --- |
| National program yield (lbs/ac) | 545 | 500 | 532 | 527 |
| Disaster program:[14] | | | | |
| Prevented plantings payment (c/lb) | ---[20] | ---[20] | --- | --- |
| Low yield criterion (%) | --- | --- | --- | --- |
| Low yield payment (c/lb) | --- | --- | --- | --- |
| Payment limitation ($) | --- | --- | --- | --- |
| Advanced payment (%) | --- | --- | --- | --- |
| Support payment limitation ($) | --- | --- | 55,000[25] | 55,000[25] |

See footnotes at end of table.

Continued—

**Appendix table 7—Provisions of upland cotton programs, 1961-89—Continued**

| Provision | 1973 | 1974 | 1975 | 1976 |
|---|---|---|---|---|
| Parity price (c/lb) | 66.00 | 73.10 | 78.60 | 79.50 |
| Support price (c/lb) | 41.52 | --- | --- | --- |
| Payment rate (c/lb) | --- | --- | --- | --- |
| Payment ($) | --- | --- | --- | --- |
| Target price (c/lb) | --- | 38.00 | 38.00 | 43.20 |
| Deficiency payment:[1] | | | | |
| Advance payment (c/lb) | --- | --- | --- | --- |
| Final payment (c/lb) | --- | 0.00 | 0.00 | 0.00 |
| Allocation factor (%)[2] | --- | --- | --- | --- |
| Nonrecourse loan: | | | | |
| Loan rate (c/lb)[3] | 19.50 | 27.06 | 36.12 | 38.92 |
| Repayment rate (c/lb)[4] | --- | --- | --- | --- |
| CCC domestic sales:[5] | | | | |
| Legislated minimum price (c/lb)[6] | 21.45+CC | 31.12+CC | 43.70+CC | 49.68+CC |
| Actual price (c/lb)[7] | --- | --- | --- | --- |
| Acreage diversion (%) | --- | --- | --- | --- |
| Payment rate (c/lb) | --- | --- | --- | |
| Payment ($) | --- | --- | --- | --- |
| Acreage diversion optional (%) | --- | --- | 10 | --- |
| Payment rate (c/lb) | --- | --- | --- | --- |
| Payment ($) | --- | --- | --- | --- |
| Set-aside (%) | None | None | None | None |
| Payment rate (c/lb) | 15.00[22] | Def | Def | Def |
| Payment ($) | 15.00*Yld*Plt[23] | 0.00*Yld*Plt[23] | 0.00*Yld*Plt[23] | 0.00*Yld*Plt[23] |
| Set-aside voluntary (%) | --- | --- | --- | --- |
| Payment rate (c/lb) | --- | --- | --- | --- |
| Payment ($) | --- | --- | --- | --- |
| Acreage reduction (%) | --- | --- | --- | --- |
| Payment rate (c/lb) | --- | --- | --- | --- |
| Payment ($) | --- | --- | --- | --- |
| Acreage reduction voluntary (%) | --- | --- | --- | --- |
| Payment rate (c/lb) | --- | --- | --- | --- |
| Payment ($) | --- | --- | --- | --- |
| PIK acreage diversion (%) | --- | --- | --- | --- |
| Payment rate (ba) | --- | --- | --- | --- |
| Payment (ba) | --- | --- | --- | --- |
| Compliance restrictions: | | | | |
| Soil conserving base[8] | Yes | No | No | No |
| Cross-compliance[9] | --- | --- | --- | --- |
| Offsetting-compliance[10] | --- | --- | --- | --- |
| National marketing quota (1,000 ba)[11] | None | None | None | None |
| Marketing quota penalty (c/lb)[12] | --- | --- | --- | --- |
| National allotment acres (1,000)[13] | --- | --- | --- | --- |
| Acres allocated from national acreage reserve (1,000) | --- | --- | --- | --- |
| Farm allotment acres: | | | | |
| Domestic (% of total) | --- | --- | --- | --- |
| Export (% of total) | --- | --- | --- | --- |
| National base allotment acres (1,000) | 10,000[24] | 11,000[24] | 11,000[24] | 11,000[24] |
| National program acres (1,000) | --- | --- | --- | --- |
| National base acres (1,000) | --- | --- | --- | --- |
| Base acres in CRP (1,000) | --- | --- | --- | --- |
| National export market acres reserve (1,000) | --- | --- | --- | --- |
| National program yield (lbs/ac) | 540 | 527 | 536 | 517 |
| Disaster program:[14] | | | | |
| Prevented plantings payment (c/lb) | 23.62 on 75% | normal yield | ---[33] | ---[33] |
| +Low yield criterion (%) | 75 | --- | --- | --- |
| Low yield payment (c/lb) | 23.62 on the | shortfall | ---[33] | ---[33] |
| Payment limitation ($) | 100,000[31] | 100,000[31] | 100,000[31] | 100,000[31] |
| Advanced payment (%) | --- | --- | 50/50[36] | --- |
| Support payment limitation ($) | 50,000[30] | 50,000[30] | 50,000[30] | 50,000[30] |

See footnotes at end of table.

Continued—

**Appendix table 7—Provisions of upland cotton programs, 1961-89—Continued**

| Provision | 1977 | 1978 | 1979 | 1980 |
|---|---|---|---|---|
| Parity price (c/lb) | 83.70 | 90.60 | 99.70 | 110.00 |
| Support price (c/lb) | --- | --- | --- | --- |
| Payment rate (c/lb) | --- | --- | --- | --- |
| Payment ($) | --- | --- | --- | --- |
| Target price (c/lb) | 47.80 | 52.00 | 57.70 | 58.40 |
| Deficiency payment:[1] | | | | |
| Advance payment (c/lb) | --- | --- | --- | --- |
| Final payment (c/lb) | 0.00 | 0.00 | 0.00 | 0.00 |
| Allocation factor (%)[2] | --- | --- | --- | --- |
| Nonrecourse loan: | | | | |
| Loan rate (c/lb)[3] | 44.63 | 48.00[27] | 50.23[27] | 48.00[27] |
| Repayment rate (c/lb)[4] | --- | --- | --- | --- |
| CCC domestic sales:[5] | | | | |
| Legislated minimum price (c/lb)[6] | 54.90+CC | 55.24+CC | 57.76+CC | 55.20+CC |
| Actual price (c/lb)[7] | --- | --- | --- | --- |
| Acreage diversion (%) | --- | --- | --- | --- |
| Payment rate (c/lb) | --- | --- | --- | --- |
| Payment ($) | --- | ---- | --- | --- |
| Acreage diversion optional (%) | --- | 10 | 10 | --- |
| Payment rate (c/lb) | --- | 0.02 | 0.02 | --- |
| Payment ($) | --- | .02*Yld*Plt | .02*Yld*Plt | --- |
| Set-aside (%) | None | None | None | None |
| Payment rate (c/lb) | Def | AF*Def | AF*Def | Af.Def |
| Payment ($) | 0.00*Yld*Plt[23] | 0.00*Yld*Plt | 0.00*Yld*Plt[23] | 0.00*Yld*Plt |
| Set-aside voluntary (%) | --- | 20[28] | 20[28] | [28]10 |
| Payment rate (c/lb) | --- | Def | Def | Def |
| Payment ($) | --- | 0.00*Yld*Plt | 0.00*Yld*Plt | 0.00*Yld*Plt |
| Acreage reduction (%) | --- | --- | --- | --- |
| Payment rate (c/lb) | --- | --- | --- | --- |
| Payment ($) | --- | --- | --- | --- |
| Acreage reduction voluntary (%) | --- | --- | --- | --- |
| Payment rate (c/lb) | --- | --- | --- | --- |
| Payment ($) | --- | --- | --- | --- |
| PIK acreage diversion (%) | --- | --- | --- | --- |
| Payment rate (ba) | --- | --- | --- | --- |
| Payment (ba) | --- | --- | --- | --- |
| Compliance restrictions: | | | | |
| Soil conserving base[8] | no | No | No | No |
| Cross-compliance[9] | --- | --- | --- | --- |
| Offsetting-compliance[10] | --- | Yes[29] | Yes[29] | Yes[29] |
| National marketing quota (1,000 ba)[11] | None | Suspended | Suspended | Suspended |
| Marketing quota penalty (c/lb)[12] | --- | Suspended | Suspended | Suspended |
| National allotment acres (1,000)[13] | --- | Suspended | Suspended | Suspended |
| Acres allocated from national acreage reserve (1,000) | --- | --- | --- | --- |
| Farm allotment acres: | | | | |
| Domestic (% of total) | --- | --- | --- | --- |
| Export (% of total) | --- | --- | --- | --- |
| National base allotment acres (1,000) | 11,000[24] | 11,000[24] | --- | --- |
| National program acres (1,000) | --- | --- | 10,000 | 13,476 |
| National base acres (1,000) | --- | --- | --- | --- |
| Base acres in CRP (1,000) | --- | --- | --- | --- |
| National export market acres reserve (1,000) | --- | --- | --- | --- |
| National program yield (lbs/ac) | 510 | 581 | 549 | 553 |
| Disaster program:[14] | | | | |
| Prevented plantings payment (c/lb) | 15.93 | 75% normal yield | 17.30 on 75% Normal Yield | 19.23 on 75% Normal Yield |
| Low yield criterion (%) | 66.7 | 75 | 75 | --- |
| Low yield payment (c/lb) | 15.93 on the shortfall | 17.30 on the shortfall | 19.23 on the shortfall | 19.47 on the shortfall |
| Payment limitation ($) | --- | --- | --- | --- |
| Advanced payment (%) | --- | --- | --- | --- |
| Support payment limitation ($) | 20,000[26] | 40,000[26] | 45,000[30] | 50,000[30] |

See footnotes at end of table.

Continued—

**Appendix table 7—Provisions of upland cotton programs, 1961-89—Continued**

| Provision | 1981 | 1982 | 1983 | 1984 |
|---|---|---|---|---|
| Parity price (c/lb) | 117.00 | 119.00 | 119.00 | 125.00 |
| Support price (c/lb) | --- | --- | --- | --- |
| Payment rate (c/lb) | --- | --- | --- | --- |
| Payment ($) | --- | --- | --- | --- |
| Target price (c/lb) | 70.87 | 71.00 | 76.00 | 81.00 |
| Deficiency payment:[1] | | | | |
| Advance payment (c/lb) | --- | 9.70 | 10.00 | --- |
| Final payment (c/lb) | 7.67 | 13.92 | 12.10 | 18.60 |
| Allocation factor (%)[2] | --- | --- | --- | --- |
| Nonrecourse loan: | | | | |
| Loan rate (c/lb)[3] | 52.46 | 57.08 | 55.00 | 55.00 |
| Repayment rate (c/lb)[4] | --- | --- | --- | --- |
| CCC domestic sales:[5] | | | | |
| Legislated minimum price (c/lb)[6] | 60.32+CC | 65.64+CC | 71.50+CC | 71.50+CC |
| Actual price (c/lb)[7] | --- | --- | --- | --- |
| Acreage diversion (%) | --- | --- | --- | --- |
| Payment rate (c/lb) | --- | --- | --- | --- |
| Payment ($) | --- | --- | --- | --- |
| Acreage diversion optional (%) | --- | --- | 5 | --- |
| Payment rate (c/lb) | --- | --- | 25.00 | --- |
| Payment ($) | - | --- | 25.00*Div | --- |
| Set-aside (%) | None | --- | --- | --- |
| Payment rate (c/lb) | Af*Def | --- | --- | --- |
| Payment ($) | AF*Def*Plt | --- | --- | --- |
| Set-aside voluntary (%) | 28/0 | --- | --- | --- |
| Payment rate (c/lb) | Def | --- | --- | --- |
| Payment ($) | .0767*Yld*Plt | --- | --- | --- |
| Acreage reduction (%) | --- | 15 | 20 | 25 |
| Payment rate (c/lb) | --- | Def | Def | Def |
| Payment ($) | --- | .1392*Yld*Plt | .121*Yld*Plt | .186*Yld*Plt |
| Acreage reduction voluntary (%) | --- | --- | --- | --- |
| Payment rate (c/lb) | --- | --- | --- | --- |
| Payment ($) | --- | --- | --- | --- |
| PIK acreage diversion (%) | --- | --- | 10-30[34] | --- |
| Payment rate (ba) | --- | --- | .80*Yld[35] | --- |
| Payment (ba) | --- | --- | .80*Yld*PIK[35] | --- |
| Compliance restrictions: | | | | |
| Soil conserving base[8] | --- | --- | --- | --- |
| Cross-compliance[9] | No | No | No | No |
| Offsetting-compliance[10] | No | No | No | No |
| National marketing quota (1,000 ba)[11] | Suspended | Suspended | Suspended | Suspended |
| Marketing quota penalty (c/lb)[12] | Suspended | Suspended | Suspended | Suspended |
| National allotment acres (1,000)[13] | Suspended | Suspended | Suspended | Suspended |
| Acres allocated from national acreage reserve (1,000) | --- | --- | --- | --- |
| Farm allotment acres: | | | | |
| Domestic (% of total) | --- | --- | --- | --- |
| Export (% of total) | --- | --- | --- | --- |
| National base allotment acres (1,000) | --- | --- | 11,000[24] | 11,000[24] |
| National program acres (1,000) | 14,022/12,838 | NA[32] | NA[32] | NA[32] |
| National base acres (1,000) | --- | 15,000 | 15,600 | 15,800 |
| Base acres in CRP (1,000) | --- | --- | --- | --- |
| National export market acres reserve (1,000) | --- | --- | --- | --- |
| National program yield (lbs/ac) | 545 | 581 | 580 | 600 |
| Disaster program:[14] | | | | |
| Prevented plantings payment (c/lb) | 23.62 on 75% normal yield | ---[33] | ---[33] | ---[33] |
| Low yield criterion (%) | 75 | --- | --- | --- |
| Low yield payment (c/lb) | 23.62 on the shortfall | ---[33] | ---[33] | ---[33] |
| Payment limitation ($) | 100,000[31] | 100,000[31] | 100,000[31] | 100,000[31] |
| Advanced payment (%) | --- | --- | 50/50[36] | --- |
| Support payment limitation ($) | 50,000[30] | 50,000[30] | 45,000[30] | 50,000[30] |

See footnotes at end of table.

Continued—

**Appendix table 7—Provisions of upland cotton programs, 1961-89—Continued**

| Provision | 1985 | 1986[37] | 1987 | 1988 |
|---|---|---|---|---|
| Parity price (c/lb) | 123.00 | 124.00 | 128.00 | 134.00 |
| Support price (c/lb) | --- | --- | --- | --- |
| Payment rate (c/lb) | --- | --- | --- | --- |
| Payment ($) | --- | --- | --- | --- |
| Target price (c/lb) | 81.00 | 81.00 | 79.40 | 75.90 |
| Deficiency payment:[1] | | | | |
| Advance payment (c/lb) | 9.90 | 7.80 | 8.145 | 6.40 |
| Final payment (c/lb) | 23.70 | 26.00 | 17.30 | 19.40 |
| Allocation factor (%)[2] | --- | --- | --- | --- |
| Nonrecourse loan: | | | | |
| Loan rate (c/lb)[3] | 57.30 | 55.00 | 52.25 | 51.80 |
| Repayment rate (c/lb)[4] | --- | 44.00 | AWP | AWP |
| CCC domestic sales:[5] | | | | |
| Legislated minimum price (c/lb)[6] | 73.34+CC | 50.60+CC | 75.60+CC | 64.77+CC |
| Actual price (c/lb)[7] | --- | --- | --- | --- |
| Acreage diversion (%) | --- | --- | --- | --- |
| Payment rate (c/lb) | --- | --- | --- | --- |
| Payment ($) | --- | --- | --- | --- |
| Acreage diversion optional (%) | 10 | --- | --- | --- |
| Payment rate (c/lb) | 30.00 | --- | --- | --- |
| Payment ($) | 30.00*Div | --- | --- | --- |
| Set-aside (%) | --- | --- | --- | --- |
| Payment rate (c/lb) | --- | --- | --- | --- |
| Payment ($) | --- | --- | --- | --- |
| Set-aside voluntary (%) | --- | --- | --- | --- |
| Payment rate (c/lb) | --- | --- | --- | --- |
| Payment ($) | --- | --- | --- | --- |
| Acreage reduction (%) | 20 | 25 | 25 | 12.5 |
| Payment rate (c/lb) | Def | Def | Def | Def |
| Payment ($) | .237*Yld*Plt | .26*Yld*Plt | .173*Yld*Plt | .194*Yld*Plt |
| Acreage reduction voluntary (%) | --- | 50-92[38] | 50-92[38] | 50-92[38] |
| Payment rate (c/lb) | --- | Def | Def | Def |
| Payment ($) | --- | .2392*Yld*Bas | .24978*Yld*Bas | .1472*Yld*Bas |
| PIK acreage diversion (%) | --- | --- | --- | --- |
| Payment rate (ba) | --- | --- | --- | --- |
| Payment (ba) | --- | --- | --- | --- |
| Compliance restrictions: | | | | |
| Soil conserving base[8] | --- | --- | --- | --- |
| Cross-compliance[9] | No | No | Limited[41] | Limited[41] |
| Offsetting-compliance[10] | No | No | No | No |
| National marketing quota (1,000 ba)[11] | Suspended | Suspended | Suspended | Suspended |
| Marketing quota penalty (c/lb)[12] | Suspended | Suspended | Suspended | Suspended |
| National allotment acres (1,000)[13] | Suspended | Suspended | Suspended | Suspended |
| Acres allocated from national acreage reserve (1,000) | --- | --- | --- | --- |
| Farm allotment acres: | | | | |
| Domestic (% of total) | --- | --- | --- | --- |
| Export (% of total) | --- | --- | --- | --- |
| National base allotment acres (1,000) | --- | --- | --- | --- |
| National program acres (1,000) | NA[32] | NA[32] | NA[32] | NA[32] |
| National base acres (1,000) | 15,800 | 15,531 | 14,474 | 14,575 |
| Base acres in CRP (1,000) | --- | 50 | 633 | 339 |
| National export market acres reserve (1,000) | --- | --- | --- | --- |
| National program yield (lbs/ac) | 613 | 608[39] | 593[42] | 590[46] |
| Disaster program:[14] | | | | |
| Prevented plantings payment (c/lb) | ---[33] | ---[33] | ---[33] | ---[33] |
| Low yield criterion (%) | --- | --- | --- | --- |
| Low yield payment (c/lb) | ---[33] | ---[33] | ---[33] | ---[33] |
| Payment limitation ($) | 100,000[31] | 100,000[31] | Yes[43] | Yes[43] |
| Advanced payment (%) | 50/50[36] | --- | 30[44] | 40[47] |
| Support payment limitation ($) | 50,000[30] | 50,000[40] | 50,000[45] | 50,000[45] |

See footnotes at end of table.

Continued—

## Appendix table 7—Provisions of upland cotton programs, 1961-89—Continued

| Provision | 1989 |
|---|---|
| Parity price (c/lb) | --- |
| Support price (c/lb) | --- |
| Payment rate (c/lb) | --- |
| Payment ($) | --- |
| Target price (c/lb) | 73.40 |
| Deficiency payment:[1] | |
| Advance payment (c/lb) | 6.42 |
| Final payment (c/lb) | --- |
| Allocation factor (%)[2] | NA[32] |
| Nonrecourse loan: | |
| Loan rate (c/lb)[3] | 50.00 |
| Repayment rate (c/lb)[4] | AWP |
| CCC domestic sales:[5] | |
| Legislated minimum price (c/lb)[6] | --- |
| Actual price (c/lb)[7] | --- |
| Acreage diversion (%) | --- |
| Payment rate (c/lb) | --- |
| Payment ($) | --- |
| Acreage diversion optional (%) | --- |
| Payment rate (c/lb) | --- |
| Payment ($) | --- |
| Set-aside (%) | --- |
| Payment rate (c/lb) | --- |
| Payment ($) | --- |
| Set-aside voluntary (%) | --- |
| Payment rate (c/lb) | --- |
| Payment ($) | --- |
| Acreage reduction (%) | 25 |
| Payment rate (c/lb) | Def |
| Payment ($) | .214*Yld*Plt |
| Acreage reduction voluntary (%) | 50-92[38] |
| Payment rate (c/lb) | Def |
| Payment ($) | .1969*Yld*Bas |
| PIK acreage diversion (%) | --- |
| Payment rate (ba) | --- |
| Payment (ba) | --- |
| Compliance restrictions: | |
| Soil conserving base[8] | --- |
| Cross-compliance[9] | Limited[41] |
| Offsetting-compliance[10] | No |
| National marketing quota (1,000 ba)[11] | Suspended |
| Marketing quota penalty (c/lb)[12] | Suspended |
| National allotment acres (1,000)[13] | Suspended |
| Acres allocated from national acreage reserve (1,000) | --- |
| Farm allotment acres: | |
| Domestic (% of total) | --- |
| Export (% of total) | --- |
| National base allotment acres (1,000) | --- |
| National program acres (1,000) | NA[32] |
| National base acres (1,000) | 14,700 |
| Base acres in CRP (1,000) | 137 |
| National export market acres reserve (1,000) | --- |
| National program yield (lbs/ac) | 590 |
| Disaster program:[14] | |
| Prevented plantings payment (c/lb) | ----[33] |
| Low yield criterion (%) | --- |
| Low yield payment (c/lb) | ---[33] |
| Payment limitation ($) | Yes[43] |
| Advanced payment (%) | 30[48] |
| Support payment limitation ($) | 50,000 |

Footnotes for appendix table 7---Provisions of upland cotton programs.

Abbreviations used are as follows: AF = allocation factor, AWP = adjusted world price, Ba = base acres, CC = carrying charges, Div = diverted acres, Def = deficiency payment, Dom = domestic allotment, NA = not applicable, PIK = payment-in-kind, Plt = planted acres, Yld = yield.

[1]Deficiency payment is the difference between the target price and the higher of the calendar year average market price received by farmers or the loan rate. Starting in 1986, eligible producers who agreed to forego CCC loans may receive loan deficiency payments on their production otherwise eligible for loan, not to exceed the farm program acreage times the farm program payment yield. The loan deficiency payment rate is equal to the difference between the loan rate and the loan repayment rate. Up to one)half of the loan deficiency payment may be made in negotiable marketing certificates. Loan deficiency payments are subject to the overall $250,000 payment limitation.

[2]The allocation factor, ranging from 80 to 100, is determined by dividing national program acres by number of acres harvested.

[3]This is the national average loan rate. Prior to 1961, support was based on Middling 7/8 inch cotton. Loans shown for 1961 through 1973 are basis Middling 1 inch, micronaire 3.5 through 4.9. Loans shown for 1974 through 1989 are basis Strict Low Middling 1-1/16 inch, micronaire 3.5 through 4.9. Prior to 1971, loans were on a gross weight basis. Since then, loans have been based on net weight at average location. Under the 1985 Act, the loan rate is determined by the legislated formula (lower of 85 percent of the average spot market price for Strict Low Middling 1-1/16 inch upland cotton (micronaire 3.5-4.9) at average U.S. location during the 5 preceding years, excluding the high and the low or 90 percent of the average of the 5 lowest priced growths among the growths quoted for Middling 1-3/32 inch cotton,c.i.f. northern Europe, adjusted downward by the average difference between the northern Europe prices and the U.S. spot market prices of SLM 1-1/16 cotton.

[4]If the Secretary determines that the adjusted world price is below the loan rate, then the Secretary has the authority, as granted by the 1985 Act, to implement either Plan A or Plan B for the repayment of loans. Under Plan A, the Secretary announces a loan repayment rate of 80-100 percent of the loan rate, which may not be changed subsequent to announcement. Under Plan B, the loan repayment rate is the lower of the loan rate or the current adjusted world price.

[5]Sales made at fixed prices or through competitive bids.

[6]In any event, the CCC cannot sell stockholdings for less than the going market price. In many years the announced minimum price was higher than the legislated minimum price.

[7]Simple average of actual sales.

[8]Producer must maintain soil conserving base in addition to planting diverted acres to conserving uses.

[9]Producer must be in compliance with programs for all program crops planted on the farm.

[10]Producer must be in compliance with upland cotton program requirements on other farms either owned or with an interest in.

[11]When marketing quotas are in effect, a farmer who does not comply with the cotton acreage allotment established for the kind of cotton grown on the farm is subject to a penalty on the farm marketing excess. The cotton crop from the farm is also ineligible for price support under CCC programs. Each type of cotton is treated independently. Extra long staple cotton cannot be substituted for upland cotton or visa versa.

[12]Marketing quota penalty rate for upland cotton is 50 percent of the parity price effective as of June 15 of the calendar year in which the cotton is produced.

[13]Includes acres allocated from the national acreage reserve provided to take care of minimum farm allotments as provided by cotton legislation.

[14]Bad weather or unavoidable hazard.

[15]Payment by CCC sight draft or payment)in)kind certificate at the election of the producer available on domestic allotment.

[16]Farmers who plant export acreage are not eligible for the additional price support payment.

Export cotton is not eligible for price support loan. However, the amount of cotton represented by the farm yield times the acres in the effective farm allotment is eligible for the regular price support loan.

[17]Producer cannot exceed feed grain base.

[18]Payment is available only on planted acreage if less than 90 percent of the allotment is planted.

[19]All cotton produced on farms receiving export acreage must be exported.

[20]If flood, drought, or other natural disaster conditions make it impossible for a farm operator to plant cotton on a participating farm, the ASC county committee determines the acreage that would have

been planted on the farm and payments are made on that basis, provided the acreage is not planted to an income producing crop.

[21]The term of the loan is 10 months from the first day of the month which the loan is made. In prior years, the loan maturity date was July 31 following the year in which the cotton was produced.

[22]Preliminary payment rate. The final payment rate is equal to the difference between the parity price for upland cotton as of August 1 and the average market price for Middling 1-inch upland cotton, micronaire 3.5-4.9 in the designated spot market during the first 5 months of the marketing year (August 1). No refund of this payment is required in the event the final payment rate calculates at less than 15 cents.

[23]If 90 percent or more of the allotment is planted, the entire allotment is considered as planted forpayment purposes.

[24]A producer who plants less than 90 percent of the cotton acreage allotment will lose a portion of it the following year equivalent to the percentage underplanted up to 20 percent. After 3 consecutive years of zero planting, the entire allotment would be removed. Allotment acreage not planted because of natural disaster or a condition beyond the control of the producer will be regarded as planted.

[25]Limitation does not include loans or purchases per person per commodity (cotton, wheat, feed grain).

[26]Limitation on total payments to eligible upland cotton, wheat, and feed grain producers per person. Does not include loans.

[27]The loan period is 10 months, but producers have the option, during the 10th month, of extending the loan for an additional 8 months whenever the spot market average price in the preceding month is 130 percent or less of the average for the previous 36 months.

[28]Voluntary set-aside requirement applies to previous year's plantings.

[29]Producers must assure that the NCA is not exceeded on nonparticipating farms they own or operate that produce a set-aside crop.

[30]Limitation on total payments to eligible upland cotton, wheat, feed grain, and rice producers per person. Does not include loans or disaster payments.

[31]Limitation on total disaster payments under the upland cotton, wheat, feed grain, and rice programs per person.

[32]National program acres, allocation factors, and voluntary acreage reductions are not applicable when an acreage reduction is in effect.

[33]Beginning with 1982 crops, disaster payments were made only to upland cotton producers to whom Federal crop insurance is unavailable. However, at the Secretary's discretion disaster emergency assistance may be paid to producers when conditions are too serious to be relieved by crop insurance or other Federal aid.

[34]Farmers complying with the 20-percent acreage reduction program are also eligible to participate in the payment-in-kind program. Producers can receive payment-in-kind either by reducing their planted acreage by an additional 10-30 percent of the base or by bidding to remove their entire bases from production.

[35]For the whole base bid program, payment is made on the entire base times the percent of the accepted bid times the farm program payment yield. Bids were evaluated on a comparative basis within each county with the restriction that total acreage removed from production under the combined acreage reduction and the payment-in-kind could not exceed 45 percent of that county's cotton acreage base.

[36]Advanced deficiency payments are made at half the projected rate. Advanced diversion payments are made at half the diversion payment rate.

[37]All cash payments subject to reductions of 4.3%, Gramm-Rudman-Hollings Act.

[38]Under the 50-92 rule, growers who plant between 50 and 92 percent of the permitted acreage to upland cotton and devote the remaining permitted acres to a conserving use are eligible to receive deficiency payments on 92 percent of the permitted acreage.

[39]Any producers whose 1986 program yield is reduced below 97 percent of their 1985 program yield received deficiency payments in the form of cotton certificates (called "additional yield certificates") sufficient to guarantee a return equal to 97 percent of their 1985 program yield.

[40]Limitation on total payments to eligible upland cotton, wheat, feed grain, rice, and extra long staple cotton producers per person. The limitation does not apply to loans, purchases, loan deficiency payments, first handler certificates, or inventory protection certificates or deficiency payments resulting from the lowering the basic (statutory) loan rate for wheat and feed grain.

[41]To be eligible for loans, purchases, and payments for wheat, feed grains, upland cotton, or rice, the acreage planted for harvest on a farm to other program crops, excluding extra long staple cotton and oats, may not exceed the crop acreage bases of those crops.

[42]Any producers, whose 1987 program yield is reduced below 95 percent of their 1985 program yield, received deficiency payments in the form of cotton certificates (called "additional yield certificates") sufficient to guarantee a return equal to 95 percent of their 1985 program yield.

[43]The total of the following payments, combined with the total deficiency and diversion payments, is limited to $250,000 per person: (1) disaster payments; (2) gain realized by repayment of a loan at a lower level than the original loan level; (3) any deficiency payment for wheat or feed grains attributed to a reduction in the statutory loan rate; (4) any loan deficiency payment; (5) any inventory reduction payment; and (6) any payment representing compensation for resource adjustment or public access for recreation.

[44]At signup, participants may request 30 percent (half in cash and half in generic certificates) of their projected 1987 deficiency payments.

[45]Total deficiency and diversion payments under the wheat, feed grain, upland cotton, extra long staple cotton, and rice programs are limited to $50,000 per person.

[46]Any producers whose 1988 program yield is reduced below 90 percent of their 1985 program yield will receive deficiency payments in the form of cotton certificates (called "additional yield certificates") sufficient to guarantee a return equal to 90 percent of their 1985 program yield.

[47]At signup, participants may request 40 percent (half in cash and half in generic certificates) of their projected 1988 deficiency payments.

[48]At signup, participants may request 30 percent of their projected 1989 deficiency payments in cash and after May 15, 1989, an additional 10 percent in generic certificates.

Source: Robert C. Green, *A Database for Support Programs of Program Crops, 1961-90.* Staff Report (forthcoming). U.S. Department of Agriculture, Economic Research Service.

# Part II: Wool and Mohair

John V. Lawler
Robert A. Skinner

**Abstract**

**Wool and mohair** have been declining industries. Sheep inventories are a fifth of their World War II level; goat numbers are a third of their mid-1960's level. High lamb prices and a strong demand for wool increased producers' net returns in the late 1980's. Government payments to wool producers in 1988 were the lowest since 1980 because of a record high wool price. Policymakers have had limited control over wool program costs given the formula-based Government support price, the trend of declining textile market share, rising raw wool textile imports, stagnant lamb and mutton consumption, and the dominance of Australia and New Zealand in the world wool market. Issues for 1990 include whether to continue the program and, if so, the level and method of determining support prices.

## Summary

Annual U.S. wool production is equivalent to only about one-tenth of 1 percent of the value of principal crops produced in the United States, and sheep marketings are about 1 percent of the value of total livestock marketings. The value of mohair produced is but half of wool's value. However, the significance of these fibers is substantial in production areas, particularly in parts of Texas and the Rocky Mountain States where crops would fare poorly or cannot be grown.

The Food Security Act of 1985 authorized the wool and mohair program through 1990. The performance of the wool market and experience with wool support programs of the past decade have raised issues to consider when assessing policies for the future.

(1) Should there be a wool and mohair program?

(2) If so, how should support price levels be determined? Should the formula based on the parity index of prices paid by farmers be retained, or should support prices reflect market imbalance? Should an adjustment be made for productivity growth?

(3) Should price-support payments continue to be made for unshorn lambs (lambs sold to a feedlot for fattening and slaughtering)?

(4) Have wool and mohair program costs, due to escalation of price-support levels, exceeded acceptable limits?

(5) What is the economic status of wool and mohair producers?

Many of these questions involve judgments that can best be made through an understanding of trends in the U.S. wool and mohair industries.

(1) Wool has been a declining industry since World War II. Sheep inventories fell from a record high of 56 million in 1942 to a low of 10 million in 1986. Adoption of manmade fibers accelerated the decline.

(2) Wool accounts for only 2 percent of final consumption of total fibers, compared with 10 percent three decades ago.

(3) Mohair has also been in decline. There are 2.3 million Angora goats now, half as many as 20 years ago.

(4) Imports of wool--both raw and in the form of textiles --made sharp inroads in the mid-1980's, due to the dollar's appreciation, lower tariffs on raw wool, and ample foreign wool supplies. Of the wool textiles used in the United States during 1988, more than four-fifths were imported or made from imported raw wool.

(5) Per capita consumption of lamb and mutton in 1988 is slight, only 1.4 pounds out of total meat consumption of 220 pounds. Yet, meat sales accounted for an average of 70 percent of a sheep producer's receipts in 1985-87. Wool program payments serve as supplementary income.

Policymakers have limited control over current wool program costs, given the formula-based support price. Trends of declining textile market share, stagnant lamb and mutton consumption, growth in wool imports, and the dominance of Australia and New Zealand in the world wool market are key factors influencing prices received which, in turn, affect Government payments.

Foreign market developments are also critical for mohair, because 90 percent of U.S. output is exported. Recent program payments have moderated the effects of highly volatile prices. Mohair prices are influenced by the size of the U.S. and South African clips, changes in fashion demand, variations in overall economic activity, and currency fluctuations.

Wool producer prices in the 1980's varied somewhat with raw wool mill demand. They ranged from a low of $0.61 per pound in 1983 to a record high of $1.38 in 1988. Rising wool prices in 1987 ($0.92) and 1988 reflected the strong overseas and domestic wool demand in those 2 years. Domestic wool prices, especially for the finer grades, are sensitive to world prices because about 70 percent of raw wool used by mills is imported. Government wool support payments for 1988, at $41.4 million, were at an 8-year low.

Mohair's price has declined since 1984 to $1.89 in 1988, a 13-year low. Mohair's price is very sensitive to fashion demands and the popularity of hand-knitting. Declining mohair prices in 1986-88 resulted in high government payments. This 3-year total was almost 56 percent of the total paid since 1962.

Large imports of raw wool and wool textiles will likely continue and, at best, there will be only limited growth in sheep numbers. Mohair production also has limited expansion potential. Both wool and mohair will continue to face formidable competition from manmade fiber technological developments and from increased

manmade fiber production and use in textile exporting countries.

The history of the wool and mohair programs is characterized by wool prices that have been consistently below support levels, requiring sustained Government payments. Mohair payments have been less frequent and smaller. Price support functions purely as an income supplement to producers; wool and mohair legislation has encouraged production, not required production cutbacks in return for support payments as in the case for other commodities. Wool legislation has resulted in support levels for wool consistently above world prices in an attempt to revitalize the declining wool industry. The wool and mohair programs have raised wool and mohair production and farm income, compared with levels under no program. The wool output increase has been small, because wool production is relatively unresponsive to changes in producer prices. Most Government expenditures on wool have benefited producers rather than wool consumers. The program has probably affected wool market prices only slightly if at all because the production increase has been relatively small, and because world wool prices are an important determinant of U.S. prices. The production increase has probably offset raw wool imports.

Wool consumers are adversely affected by the tariff on imported textiles but are affected little by the wool support program. The value of raw wool is often less than 5 percent of the value of its final processed product. Imports from many countries and for many wool apparel items and fabrics are subject to tariff rates in excess of 25 percent of value. The tariffs on wool textiles and on raw wool boost U.S. consumer prices of wool products and raise producer prices of raw wool.

Government expenditures on wool and mohair are taxpayer costs. These expenditures have risen during the last several years. Wool act expenditures per taxpayer, when adjusted for inflation, are also up but are less than during the late 1960's and early 1970's. During fiscal year 1988, Government outlays on all price support and related programs totaled an estimated $12.5 billion. Wool and mohair outlays are estimated at $130.6 million.

## Introduction

The price-support program for wool and mohair has been in effect since 1955. The Food Security Act of 1985 reauthorized the program through December 31, 1990. Experience with its provisions and knowledge of economic conditions in the wool and mohair markets will provide the basis for assessing alternative programs for the future.

U.S. wool and mohair production has fallen dramatically. Wool's share of U.S. fiber use was 10 percent in 1950, compared with 1 percent in 1988. This trend calls into question a basic objective of the program: encouraging wool production and consumption. This report accordingly examines the intended beneficiaries of the program: those who produce and consume wool and mohair. Factors which have limited wool and mohair production are also examined.

Because U.S. wool demand and supply are small in size compared with the world wool market, and because raw wool imports account for about two-thirds of U.S. textile mill use of wool, U.S. raw wool prices hinge on foreign developments. Likewise, almost all U.S. mohair is exported, so foreign demand is the key to domestic mohair prices. In any year, U.S. prices--and consequently Government program costs--depend more on foreign developments than on U.S. production changes. Thus, this report examines the foreign sector for wool and mohair and establishes the links between U.S. and foreign markets.

Finally, this report traces the history of the wool and mohair programs, showing that Government attempts to encourage wool production have been made at the same time U.S. production and use have declined. Program effects on producers, consumers, and taxpayers are examined.

## Structure of the Wool Industry

Annual U.S. wool production is equivalent to only about one-tenth of 1 percent of the value of principal crops produced in the United States, and sheep marketings are about 1 percent of the value of total livestock marketings. Sheep and wool are produced in all States, but significant output is confined to two regions: the territory wool States and the fleece wool States. About 75 percent of the sheep are in Texas, South Dakota, the Rocky Mountains, and the Pacific Coast States. Wool from these areas is called "territory" wool. These grades are used to make better quality apparel. Most other sheep are in Virginia, West Virginia, Pennsylvania, States north of the Ohio River, and the Great Plains area. Wools from these areas, known as "fleece" wool, are medium grades used to make coats, blankets, and sweaters.

## Wool Production

The U.S. sheep inventory declined from a record high 56 million head in 1942 to a record low 10 million in 1986. The drop resulted both from declining wool demand by the U.S. textile industry as manmade fibers became pervasive and from reduced consumption of lamb and mutton. Since 1970, the number of sheep and lambs has been cut nearly in half, average flock size has fallen, and there are one-third fewer operators with sheep (table 1).

Most revenue from raising sheep comes from the sale of meat. Only about a third of cash receipts comes from wool. Consequently, changes in wool prices have only a small effect on the number of sheep and the level of wool production. The decline of lamb and mutton in the U.S. consumers' diet is a critical factor in the drop in sheep numbers. In 1970, lamb and mutton accounted for 2.9 pounds out of the 200 pounds of meat (red meat plus poultry) consumed per person, retail. In 1988, lamb and mutton were down to 1.4 pounds out of the total of 219 pounds of meat consumed. The long downward trend in sheep numbers was interrupted in the late 1970's. The reduction in livestock numbers during 1974-75 caused by rising grain prices and economic recession led to higher meat prices and flock rebuilding in the later 1970's. Lamb prices rose 40 percent and wool prices 30 percent between 1976 and 1979. However, steep drops in lamb prices beginning in 1981 and in wool prices beginning in 1982 halted the recovery in sheep numbers. Flock numbers increased in 1987 and 1988 from the record low in 1986 when lamb prices began to rise in 1985. Livestock numbers may be stabilized now with this upturn.

Wool production has followed the decline in sheep numbers, with the production drop exacerbated slightly by a drop in productivity (table 2). Shorn wool production in 1988 was about 89 million pounds, greasy, less than a quarter of the record 388 million pounds set in 1942. U.S. average fleece weights of about 8 pounds are low relative to the yields in two of the three largest wool-producing countries, Australia and New Zealand, which average 11-12 pounds. Fleece weights in the USSR, the second largest producer, have averaged 7.5 pounds in recent years.

Shorn wool now accounts for essentially all of U.S. wool production, but that has not always been the case. In the 1940's and 1950's, 10-15 percent of total production was "pulled" wool, wool pulled from the pelts of slaughtered lambs (app. table 1). By 1983, pulled wool production was estimated at only 1 million pounds, greasy, 1 percent of total wool production. The drop reflects the growing demand for the pelts with the wool intact. These sheepskins are used for everything from coat liners to automobile seat covers.

The size of domestic sheep flocks varies greatly. The 1982 Census of Agriculture indicated that only 1.4 percent of farms and ranches with sheep had a flock size of over 1,000 producing ewes 1 year old or older. But, 44 percent of all such ewes were in flocks of 1,000 or more. At the other end of the scale, 87 percent of

**Table 1—Number of sheep and operations, 1970-89**

| Year | Sheep and lambs on January 1 | Operations with sheep | Average flock size |
|---|---|---|---|
| | *Million head* | *Thousand* | *Head per operator* |
| 1970 | 20.4 | 179.6 | 112 |
| 1975 | 14.5 | 129.6 | 107 |
| 1980 | 12.7 | 120.1 | 107 |
| 1981 | 12.9 | 125.9 | 103 |
| 1982 | 13.0 | 128.2 | 98 |
| 1983 | 12.1 | 126.4 | 93 |
| 1984 | 11.5 | 123.5 | 89 |
| 1985 | 10.4 | 117.4 | 87 |
| 1986 | 10.0 | 115.3 | 88 |
| 1987 | 10.3 | 114.8 | 93 |
| 1988 | 10.8 | 115.5 | 93 |
| 1989 | 10.8 | --- | --- |

--- = Not available.

**Table 2—Sheep shorn and wool production, 1970-88**

| Year | Sheep shorn | Shorn wool production | Average fleece weight |
|---|---|---|---|
| | *Million head* | *Million pounds, greasy*[1] | *Pounds, greasy*[1] |
| 1970 | 19.2 | 161.6 | 8.43 |
| 1975 | 14.4 | 119.5 | 8.30 |
| 1980 | 13.3 | 105.4 | 7.95 |
| 1981 | 13.5 | 109.8 | 8.14 |
| 1982 | 13.2 | 106.1 | 8.04 |
| 1983 | 12.9 | 102.9 | 8.00 |
| 1984 | 12.3 | 95.5 | 7.77 |
| 1985 | 11.2 | 87.9 | 7.88 |
| 1986 | 10.9 | 84.8 | 7.82 |
| 1987 | 10.9 | 84.7 | 7.75 |
| 1988 | 11.5 | 89.2 | 7.78 |

[1]Greasy basis is wool directly from the sheep. It has not been cleaned and scoured.

farms and ranches with sheep had between 1 and 99 head. Twenty-three percent of ewes 1 year or older were in such flocks.

There is a sharp contrast in the size of sheep operations between the territory and fleece wool States (table 3). The typical flock size in the Western States ranges from 150 to 400 sheep, with some operations having several thousand sheep. The typical flock size in the fleece area is 20-50 sheep and is often only a small part of the farming operation, along with cattle and hog raising and crop production.

Along with the decline in sheep numbers and average flock size over the years, there has been a shift in the distribution of sheep numbers toward the territory wool States. In the early 1950's, 65-70 percent of all sheep were in the territory wool states; this figure has recently risen to 75-80 percent. Although weak demand for lamb and mutton and the adoption of manmade fibers have been the principal reasons for declining production, some wool production characteristics have also contributed to the decline. Profitability has been hurt by predator losses, high hired labor costs, and labor shortages.

Labor is costly and hard to find because sheepherding is a demanding job. In the Rocky Mountain area, where sheep flocks are large, flocks are moved to higher altitude, unfenced grasslands in the summer. In winter, the sheep are brought down to lower level, fenced pastures. To accomplish these seasonal moves and to care for the flock requires presence of a sheepherder and often the assistance of two or three dogs. Sheep, small and very passive, are subject to attacks by coyotes and eagles. Also, sheep experience hoof and skin problems. The level of care and protection required by sheep and death loss have been factors in the drop in U.S. wool production.

**Table 3—Average flock size, 1988**

| Territory wool States | | Fleece wool States[1] | |
|---|---|---|---|
| | *Head* | | *Head* |
| Wyoming | 608 | Kansas | 135 |
| Arizona | 568 | Oregon | 95 |
| New Mexico | 419 | North Dakota | 93 |
| Nevada | 305 | Alaska | 64 |
| Colorado | 282 | Minnesota | 54 |
| Utah | 234 | Virginia | 51 |
| Texas | 230 | Nebraska | 50 |
| Montana | 177 | Oklahoma | 48 |
| California | 148 | Michigan | 44 |
| South Dakota | 125 | Ohio | 36 |
| Idaho | 122 | Iowa | 34 |
| | | New York | 34 |
| Region average | 219 | Missouri | 33 |
| | | Washington | 33 |
| | | West Virginia | 32 |
| | | Maryland | 31 |
| | | U.S. average[2] | 42 |

[1]Fleece wool States whose average flock size is greater than 30.
[2]Average flock size of all non-territory wool States.

Table 4 shows U.S. production in relation to supply and demand in the U.S. wool market. The sheep and lamb inventory on January 1, 1989, was 10.8 million head, essentially unchanged from a year earlier. The lowest inventory on record was slightly less than 10 million as of January 1, 1986.

**Domestic Wool Use**

U.S. wool use has declined dramatically since World War II (app. table 3). The principal reason has been the widespread consumer acceptance of noncellulosic manmade fibers, such as nylon, polyester, and acrylic, in wool textile products (fig. 1). Cotton has not been a factor. Wool and cotton do not compete for most end uses, and the fibers are rarely blended. Annual consumption of raw wool by U.S. textile mills declined from 650 million pounds, clean, in the late 1940's to an average of 134 million during 1984-88.

***Factors Causing Consumption Trends***

Price and performance explain the success of manmade fibers in penetrating the wool market. Although wool has wrinkle resistance because of the resiliency of the wool fiber, manmade fibers offer drip-dry washing, no shrinkage, and no moth damage. Relative price stability has also given manmade fibers some advantages.

Wool prices tend to be more uncertain than manmade fiber prices. They depend on economic forces affecting sheep numbers (such as lamb prices) in addition to forces affecting overall textile demand. Because about 70 percent of the wool consumed by U.S. mills is imported, changes in foreign production and demand can cause substantial swings in U.S. prices.

In contrast, the manmade fiber production process is continuous; it does not depend on biological lags and once or twice a year shearing. The quality of the product does not vary much either. Because a very high percentage of the manmade fibers used by U.S. mills is produced domestically, foreign supply and demand

**Table 4—The U.S. wool market, 1984-88**

| Item | 1984 | 1985 | 1986 | 1987 | 1988 |
|---|---|---|---|---|---|
| Sheep shorn (mil.) | 12.3 | 11.2 | 10.9 | 11.0 | 11.5 |
| Yield (lbs/head, greasy) | 7.8 | 7.9 | 7.8 | 7.8 | 7.8 |
| | | | *Million pounds, clean*[2] | | |
| Beginning stocks (Jan. 1) | 58.9 | 51.6 | 50.6 | 46.8 | 45.3 |
| Production | 51.1 | 47.1 | 45.5 | 46.0 | 47.8 |
| Imports | 94.2 | 79.5 | 97.0 | 105.1 | 96.7 |
| Supply[1] | 194.2 | 168.6 | 184.3 | 189.1 | 189.8 |
| Mill use | 142.1 | 116.6 | 136.7 | 142.8 | 132.7 |
| Exports | .5 | 1.4 | .8 | 1.0 | 1.2 |
| Total use | 142.6 | 118.0 | 137.5 | 143.8 | 133.9 |
| Carryover stocks | 51.6 | 50.6 | 46.8 | 45.3 | 55.9 |
| | | | *Cents per pound, greasy* | | |
| Average producer price | 79.5 | 63.3 | 66.8 | 91.7 | 138.0 |
| Support price | 165.0 | 165.0 | 178.0 | 181.0 | 178.0 |

[1]Includes unaccounted. [2]Clean wool is greasy wool that has been scoured. A pound of greasy wool yields an average of 0.53 pound of clean wool.

fluctuations for manmade fiber have very little effect on U.S. manmade fiber prices.

Major factors affecting the demand for wool today are fashion, relative fiber prices, price variability, and overall economic activity. Mills dislike price variability--even more than high, but stable, prices--because they can get caught in an uncompetitive position. A rival may be able to acquire raw fiber at a lower price because of a sudden price drop, giving the rival an edge in the retail textile market. Mill demand is probably less sensitive to the level of wool prices today than during the period when manmade fibers were being rapidly adopted. Desirable blend levels have been achieved, and there are simply fewer available markets for manmade fibers to penetrate.

There is a wide range of statistical estimates of the relationship between mill demand for wool and the price of wool. A typical study suggests a 10-percent change in wool price is associated with a 2- to 4-percent change in the opposite direction in the quantity of wool demanded. Economic activity is probably a more important factor, as indicated by the sharp drop in mill use during the 1982 recession and the rise in use during the 1983 recovery.

The wool used by mills is basically of two kinds: apparel and carpet. Apparel wool includes the finer fibers and is used to make yarns and fabrics used primarily for apparel. Two textile production processes use the apparel wool: the woolen and the worsted systems, each accounting for about half of the apparel wool used by mills today (table 5). Carpet wools are coarser and are used in the production of carpets and rugs. In the 1950's, nearly a third of U.S. wool use went for carpets and rugs. Today, such use is between 5 and 10 percent of total U.S. mill use of wool.

The worsted system manufactures spun yarns from wool fibers that are usually over 3 inches long. The worsted system first cards the fibers, which cleans, separates, and aligns them. The system has a second process known as combing which removes the shorter fibers and arranges the longer fibers in parallel order. The resulting strand is then put through several drawing (for elongation) and twisting (for strength) operations to make a yarn. Combing results in a yarn that is more even, stronger, finer, and smoother than a carded yarn. Worsted yarns make fabrics which are woven tightly and have a crisp feel, such as gabardines, sharkskins, and serge. Worsted fabrics are almost entirely used to make fine-quality suiting.

The woolen system makes yarns from wool fibers that are less than 3 inches in length and more highly crimped. The fibers are first carded and then made into yarn, but they are not combed. The resulting yarn contains shorter fibers and is not as uniform or strong as combed yarns. Woolen yarns produce fabrics that are soft, bulky, and have a fuzziness or nap. The nap makes the fabric feel warm and soft. Tweed, felt, and many knitted wool products are examples of woolens.

Figure 1
**U.S. per capita fiber mill consumption, 1950-88**

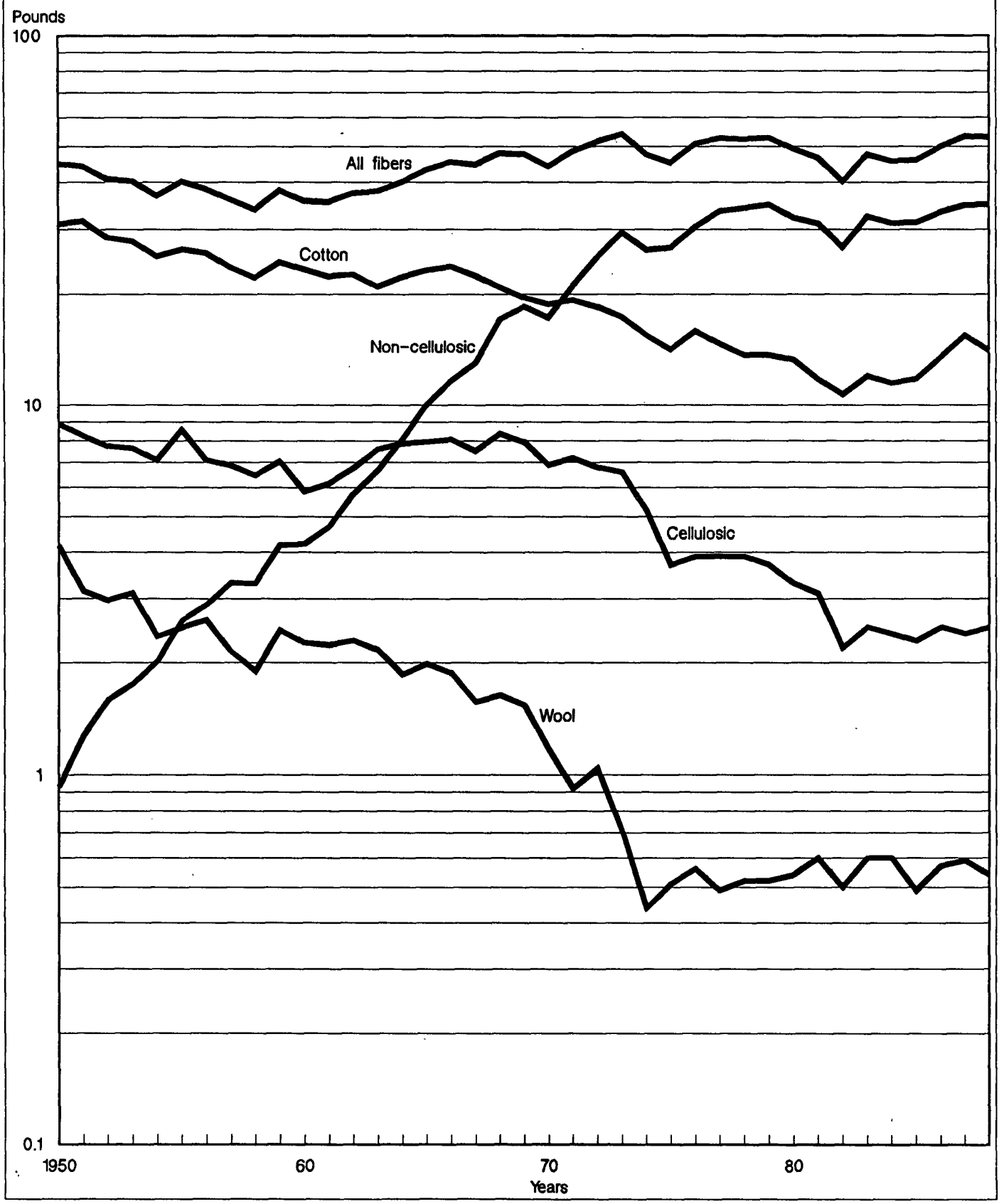

**Table 5—U.S. mill consumption of raw wool, 1982-88**

| Product description | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 |
|---|---|---|---|---|---|---|---|
| | | | | *1,000 pounds* | | | |
| All fibers | 558,001 | 665,484 | 628,405 | 569,962 | 676,791 | 720,105 | 730,022 |
| Raw wool[1] | 115,682 | 140,580 | 142,070 | 116,613 | 136,728 | 142,769 | 132,702 |
| Apparel class | 105,857 | 126,729 | 128,982 | 106,051 | 126,768 | 129,677 | 117,069 |
| Woolen system | 48,345 | 60,681 | 65,160 | 55,740 | 66,289 | 61,014 | 44,645 |
| Worsted combing | 57,512 | 66,048 | 63,822 | 50,311 | 60,479 | 68,663 | 72,424 |
| Carpet class | 9,825 | 13,851 | 13,088 | 10,562 | 9,960 | 13,092 | 15,633 |
| Noils, reprocessed and reused wool, and fiber[2] | 25,351 | 32,188 | 38,087 | 25,166 | 34,574 | 29,669 | 23,890 |
| Other fibers | 416,968 | 492,716 | 448,248 | 428,183 | 505,489 | 547,667 | 573,430 |

[1]Clean basis. [2]Noils are short fibers from carding and combing operations.

Woolen system fabrics are used for such items as overcoats, suits, dresses, sweaters, and blankets.

A major factor in the decline of U.S. wool use was the loss of the carpet market to noncellulosic fibers, mainly nylon. U.S. wool use today would be twice as large if carpet use of wool were the same as in the decade following World War II. The lower cost tufting process (yarns drawn in and out of a backing material and then cut, or left uncut) was commercially developed in the 1950's. Manmade fibers were quickly adapted to this process, offering a durable, competitively priced carpet. During the 1980's, carpet use of wool was about 12 million pounds a year, compared with 147 million pounds averaged during the decade following World War II.

Noncarpet use of wool has been about 120 million pounds a year in the 1980's, with about 80 percent of this used for apparel. The rest is used for such items as drapes, upholstery, felts, and blankets. About 75 percent of wool apparel is in the "bottomweight" category, heavier weight fabrics that generally weigh more than 5 ounces per square yard. In recent years, there has been strong demand for suiting fabrics, boosting demand for the finer grades of wool relative to the medium grades.

The long-term downward trend in per capita consumption of wool appears to have bottomed out in 1980 and stabilized at a slightly higher level since (table 6). Wool accounted for 10 percent of end-use fiber consumption in the United States in 1950. Cotton and wool combined had nearly 80 percent of the market. By 1988, the natural fiber share had dropped to about 38 percent, and wool's share was 2 percent. Wool is expected to maintain its present level of per capita consumption but continues to account for a declining share of a growing market for fibers. Aggressive advertising by the wool industry could educate consumers to be more aware of the fiber content of the textiles they purchase, perhaps helping to maintain market share. A major research effort by the wool industry might result in a significant improvement of wool's performance, such as resistance to moth damage and easy washing properties.

**Table 6—Per capita U.S. domestic consumption of fibers, 1950-88[1]**

| Year | Cotton | Manmade fiber | Wool | Flax/silk | Total |
|---|---|---|---|---|---|
| | | *Pounds per person[2]* | | | |
| 1950 | 29.4 | 9.5 | 4.6 | --- | 43.5 |
| 1960 | 23.5 | 10.0 | 3.0 | --- | 36.6 |
| 1970 | 20.1 | 25.2 | 1.7 | --- | 47.0 |
| 1980 | 14.6 | 34.4 | .9 | --- | 49.9 |
| 1981 | 14.4 | 34.2 | 1.0 | --- | 49.7 |
| 1982 | 13.5 | 30.8 | .9 | --- | 45.2 |
| 1983 | 15.9 | 37.5 | 1.2 | --- | 54.6 |
| 1984 | 16.8 | 37.2 | 1.4 | --- | 55.4 |
| 1985 | 17.7 | 38.7 | 1.5 | --- | 57.9 |
| 1986 | 20.2 | 40.7 | 1.6 | 2.6 | 65.2 |
| 1987 | 23.8 | 42.1 | 1.6 | 2.9 | 70.4 |
| 1988 | 21.4 | 41.7 | 1.4 | 2.5 | 67.0 |

--- = Not available.
[1]Raw fiber equivalent of end-use consumption of textiles.
[2]Totals may not add due to rounding.

Even so, trends of noncellulosic fiber penetration into existing wool textile products are expected to continue,

although at slower rates. The major manufacturers of noncellulosic fibers will continue their massive budgets for advertising and for research efforts to solve technological problems limiting the current use of their fibers. Further, developing countries, especially in East Asia, will greatly increase their manmade fiber production.

***Use of Imported Wool***

Not only has wool lost markets to manmade fiber, but U.S. wool has lost markets to foreign wool (table 7 and app. table 5). Over four-fifths of the wool textiles purchased by U.S. consumers during 1988 were foreign produced or made from imported raw wool. In recent years, imported raw wool and the raw wool content of textile imports have each exceeded U.S. wool production. The growth of imports has been both a consequence of and a contributor to the decline in domestic raw wool production. During 1979-88, Australia and New Zealand were the source of 85-90 percent of imported raw wool. Argentina, Uruguay, and the United Kingdom together constituted 8-10 percent.

Imported raw wool is divided into two classes, duty-free and dutiable. The duty-free wool is the coarser grades of wool. There is no duty because very little domestic wool of these grades is produced. The dutiable wool is the finer grades, which compete with domestic wool. Dutiable wool imports have been almost twice the quantity of duty-free imports, reflecting the increasing U.S. demand in recent years for the higher quality apparel which requires the finer wool grades.

Several important factors have accounted for the import growth. First, foreign wool quality is high and prices are competitive with U.S. prices even with duties, which average 10 cents a pound, clean, and represent less than 5 percent of the dutiable raw wool price. The duties provide some restraint on imports. The U.S. tariff has been reduced sharply since 1979, when it averaged 25.5 cents a pound, as a result of the Tokyo Round negotiations under the General Agreement on Tariffs and Trade (GATT). Second, in the early and mid-1980's, the dramatic appreciation of the U.S. dollar caused a surge in most U.S. imports, such as textiles, and a drop in commodity exports. Third, a growing demand for high-quality wool, such as merino, boosted use of wool from Australia, which produces a high proportion of the finest qualities.

**Table 7—U.S. production, imports, and mill use of raw wool; wool textile trade; and domestic consumption, 1984-88**

| Item | 1984 | 1985 | 1986 | 1987 | 1988 |
|---|---|---|---|---|---|
| | *Million pounds* | | | | |
| Raw wool:[1] | | | | | |
| Production | 51.1 | 47.1 | 45.5 | 45.5 | 47.8 |
| Imports | 94.2 | 79.5 | 97.0 | 105.1 | 96.7 |
| Mill use | 142.1 | 116.6 | 136.7 | 142.8 | 132.7 |
| Wool textiles:[2] | | | | | |
| Imports | 210.2 | 264.8 | 275.6 | 276.1 | 242.4 |
| Exports | 12.0 | 17.8 | 16.0 | 23.5 | 30.6 |
| Domestic wool: | | | | | |
| Consumption[3] | 340.3 | 363.6 | 396.3 | 395.4 | 344.5 |

[1]Clean basis. [2]Raw fiber equivalent. [3]Mill use plus textile imports less textile exports.

A major development in the 1970's and 1980's has been the growth in imported wool textiles, mostly apparel. In 1977, the raw wool content of imported wool textiles was 117 million pounds, clean, twice domestic raw wool production. By the late 1980's, imports more than doubled from the average level of 114 million equivalent pounds of raw wool in 1977-82 to the record high of 276 million pounds in both 1986 and 1987, more than five times domestic raw wool production. Textile imports in 1988 were 242 equivalent million pounds. Major sources of these wool-containing textile imports, ranked by volume, were: (1) Hong Kong, (2) China, (3) Korea, (4) Italy, (5) Taiwan, and (6) the United Kingdom.

Relatively little domestic wool is exported. Except for a few years in the early 1970's, the price of U.S. wool has not been competitive with foreign prices. Likewise, the quantity of exported wool textile products has been small, 5-10 percent of wool textile imports, a result of higher domestic textile costs.

**The World Wool Market**

U.S. demand, supply, and policy changes do not significantly affect world markets for wool, since the U.S. industry is small. Australia is the dominant producer and exporter (tables 8 and 9 and app. tables 10 and 11). In 1988, U.S. sheep numbers and wool production accounted for only 0.9 percent and 1.3 percent of the respective world totals.

World wool production in the 1970's averaged about 6 billion pounds, greasy. During the 1980's, production has steadily increased, totaling a record 7.1 billion pounds in 1988-89. Australia produced 2.1 billion pounds in 1988-89. This record Australian output resulted from record sheep numbers and record clips. The USSR, ranking second, produced 1.1 billion

**Table 8—World, top seven countries, and the United States: Sheep, wool production, and wool trade, clean basis, 1983-88**

| Item | 1983/84 | 1984/85 | 1985/86 | 1986/87 | 1987/88 | 1988/89 |
|---|---|---|---|---|---|---|
| | | | *Million head* | | | |
| Sheep numbers[1] | 1,100 | 1,097 | 1,103 | 1,122 | 1,145 | --- |
| Australia | 133 | 144 | 150 | 153 | 160 | 161 |
| USSR | 145 | 143 | 141 | 142 | 141 | 139 |
| China | 99 | 96 | 94 | 100 | 108 | 111 |
| New Zealand | 70 | 68 | 68 | 64 | 65 | 63 |
| Argentina | 34 | 29 | 29 | 29 | 29 | --- |
| Uruguay | 21 | 21 | 23 | 24 | 26 | --- |
| South Africa | 24 | 23 | 23 | 24 | 25 | --- |
| United States | 12 | 10 | 10 | 10 | 11 | 11 |
| | | | *Million pounds, clean* | | | |
| Wool production[1] | 3,702 | 3,847 | 3,836 | 3,922 | 4,017 | 4,090 |
| Australia | 1,014 | 1,153 | 1,177 | 1,259 | 1,307 | 1,354 |
| New Zealand | 597 | 611 | 586 | 578 | 573 | 551 |
| USSR | 483 | 485 | 465 | 487 | 474 | 481 |
| China | 214 | 203 | 198 | 205 | 231 | 247 |
| Argentina | 214 | 198 | 201 | 198 | 207 | 220 |
| Uruguay | 119 | 104 | 126 | 130 | 130 | 126 |
| South Africa | 134 | 132 | 123 | 115 | 119 | 126 |
| United States | 53 | 51 | 46 | 46 | 46 | 49 |
| Wool exports from five main exporting countries[2] | 1,613 | 1,681 | 1,731 | 1,882 | 1,799 | --- |
| Australia | 784 | 876 | 977 | 1,096 | 1,079 | --- |
| New Zealand | 570 | 591 | 530 | 571 | 521 | --- |
| Argentina | 120 | 96 | 111 | 99 | 101 | --- |
| South Africa | 82 | 80 | 60 | 50 | 47 | --- |
| Uruguay | 57 | 38 | 54 | 66 | 50 | --- |
| United States | 1 | 1 | 1 | 1 | 1 | --- |

--- = Not available
[1]World total. [2]Five-country total.

pounds. Its output has averaged slightly more than a billion pounds over each of the last 10 years. New Zealand, the third largest, produced 739 million pounds in 1988-89. Because of lower economic returns, its output has declined every year since 1982-83. Successful state incentives boosted Chinese production in 1988-89 to a record high 492 million pounds, up 7 percent from the previous year.

The Soviet Union is the largest consumer of wool, accounting for about 18 percent of world mill use of wool during 1988. China was second with about 17 percent of world use. Soviet use has been growing slowly in recent years, but Chinese use more than doubled between 1980 and 1988. While part of this tremendous growth reflects increased domestic needs, China's emphasis on textile exports is the major factor. The European Community (EC) and Japan accounted for 30 percent of world wool use in 1988, about the same share of the previous 4 years.

The share of world raw wool imports claimed by the major industrial countries--the United States, the EC, and Japan--has declined from a combined total of 84 percent in 1966 to 59 percent in 1988 (table 10). The growth markets for raw wool have been the Soviet Union and the East Asian textile exporters (Taiwan, South Korea, Malaysia, and China). The Soviet import share more than doubled since 1966, while the East Asian share expanded nearly ninefold. Wool imports in the Soviet Union are destined exclusively for domestic textile consumption, while a large portion of East Asian imports are re-exported as textiles. Wool imports have an uncertain future in both markets as the Soviet Union has the potential to become more self-sufficient, and East Asian importers are rapidly increasing their man-made fiber production capacity.

**Table 9—World, top seven countries, and the United States: Wool production and wool trade, greasy basis, 1983-88**

| Item | 1983/84 | 1984/85 | 1985/86 | 1986/87 | 1987/88 | 1988/89 |
|---|---|---|---|---|---|---|
| | | | *Million pounds, greasy* | | | |
| Wool production, total[1] | 6,510 | 6,695 | 6,698 | 6,832 | 6,969 | 7,121 |
| Australia | 1,605 | 1,795 | 1,830 | 1,955 | 2,015 | 2,088 |
| USSR | 1,069 | 1,076 | 1,032 | 1,085 | 1,052 | 1,067 |
| New Zealand | 802 | 822 | 789 | 772 | 763 | 739 |
| China | 428 | 403 | 392 | 408 | 461 | 494 |
| Argentina | 357 | 331 | 335 | 331 | 346 | 368 |
| Uruguay | 181 | 157 | 192 | 198 | 196 | 192 |
| South Africa | 238 | 229 | 216 | 198 | 203 | 216 |
| United States | 104 | 97 | 90 | 86 | 86 | 90 |
| Wool exports from five main exporting countries[2] | 2,311 | 2,403 | 2,489 | 2,694 | 2,584 | --- |
| Australia | 1,244 | 1,389 | 1,540 | 1,724 | 1,696 | --- |
| New Zealand | 680 | 700 | 620 | 662 | 607 | --- |
| Argentina | 166 | 132 | 153 | 132 | 133 | --- |
| South Africa | 136 | 129 | 99 | 82 | 77 | --- |
| Uruguay | 85 | 54 | 77 | 94 | 72 | --- |
| United States | 1 | 1 | 1 | 1 | 1 | --- |
| Wool imports into the principal importing countries[3] | 2,414 | 2,640 | 2,747 | 2,971 | 2,832 | --- |
| Japan | 406 | 404 | 390 | 451 | 385 | --- |
| China | 123 | 250 | 336 | 336 | 413 | --- |
| United Kingdom | 257 | 282 | 261 | 306 | 280 | --- |
| USSR | 197 | 241 | 254 | 295 | 282 | --- |
| Italy | 233 | 265 | 241 | 269 | 252 | --- |
| France | 282 | 291 | 290 | 261 | 253 | --- |
| West Germany | 165 | 170 | 161 | 176 | 167 | --- |
| Belgium-Luxembourg | 103 | 122 | 128 | 141 | 147 | --- |
| Taiwan | 79 | 89 | 110 | 114 | 78 | --- |
| United States | 116 | 94 | 122 | 128 | 117 | --- |
| South Korea | 61 | 69 | 84 | 99 | 84 | --- |
| Yugoslavia | 40 | 46 | 46 | 36 | 27 | --- |

--- = Not available
[1]World total. [2]Five-country total. [3]Total of 32 countries.

World raw wool exports primarily originate in southern hemisphere countries, destined for the industrialized countries of the northern hemisphere. Five countries--Australia, New Zealand, Argentina, South Africa, and Uruguay--account for 96-98 percent of world raw wool exports. Market shares have changed over the past 5 years. Australia's share of the five-country total increased from 54 percent in 1983-84 to almost 66 percent in 1987-88. New Zealand's share declined from 29 percent to less than 23 percent.

World wool prices are a major determinant of U.S. prices (table 11). Australia, New Zealand, and South Africa influence world prices through marketing boards. The Australian reserve price system is designed to keep Australian auction prices stable and reflective of world supply and demand. The Australian Wool Corporation (AWC) buys all wool offered at auction when bids do not reach minimum reserve prices, which are set annually. The AWC sells wool when demand and auction prices improve. South Africa and New Zealand have similar systems, and their reserve prices tend to follow those set by the AWC.

Even though Australian wool is more expensive than U.S. wool, much is imported because of its quality. It is better graded and sorted than U.S. wool. Shorter fibers are removed, it has less belly fiber, and it has fewer black fibers which are undesirable to textile mills. Fewer such undesirable fibers reduce the processing costs in U.S. mills.

Average quality of U.S. wool is also lower than dutiable imported wool because of breeding. Most U.S. sheep

**Table 10—World raw wool imports and import market shares, 1966-88**

| Year | World imports | United States | EC-12[1] | Japan | USSR | East Asian textile exporters[2] |
|---|---|---|---|---|---|---|
| | *Billion lbs., greasy* | | | Percent | | |
| 1966 | 3.23 | 11.7 | 52.4 | 19.6 | 4.2 | --- |
| 1971 | 3.01 | 5.3 | 49.6 | 22.6 | --- | 0.2 |
| 1976 | 2.91 | 206 | 50.5 | 20.5 | 8.3 | 3.3 |
| 1981 | 2.57 | 3.7 | 43.0 | 14.4 | 10.8 | 9.3 |
| 1984 | 2.41 | 4.8 | 47.1 | 16.8 | 8.2 | 5.0 |
| 1985 | 2.70 | 3.5 | 46.0 | 15.1 | 8.9 | 6.9 |
| 1986 | 2.81 | 4.3 | 42.8 | 13.9 | 9.0 | 8.6 |
| 1987 | 3.04 | 4.2 | 41.9 | 14.8 | 9.7 | 8.5 |
| 1988 | 2.91 | 4.0 | 41.4 | 13.2 | 9.7 | 9.3 |

--- = Not available.
[1]Includes the United Kingdom, Ireland, France, Portugal, Spain, West Germany, Denmark, Greece, Belgium, Luxembourg, the Netherlands, and Italy.
[2]Malaysia, South Korea, Taiwan, and China.

**Table 11—U.S. and Australian wool prices, 1983-88[1]**

| Item | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 |
|---|---|---|---|---|---|---|
| | | | *U.S. dollars per pound, clean* | | | |
| United States[1] | 2.12 | 2.29 | 1.92 | 1.91 | 2.65 | 4.38 |
| Australia[2] | 2.74 | 2.78 | 2.59 | 2.48 | 3.67 | 5.84 |
| Duty | .10 | .10 | .10 | .10 | .10 | .10 |

[1]Mill-delivered graded territory 64's. [2]Australian 64's, type 62; loaded on trucks in South Carolina, includes duty.

are crossbreeds, which produce a coarser wool than sheep types such as merino. The U.S. industry emphasizes high lamb output per breeding ewe, and the crossbred carcass has a higher volume of the desirable lamb cuts than other types.

## Prices and Producer Returns

During the 1950's and 1960's, producer prices for shorn wool generally averaged between 40 and 50 cents a pound and were fairly stable (fig. 2 and app. table 7). However, wool prices fluctuated sharply during the 1970's, as did other commodity prices. Prices ranged from 19 to 86 cents a pound. During the 1980's, prices have remained volatile, ranging from $0.61 to $1.38. Imported raw wool and wool textiles in the 1970's and 1980's accounted for an increasing share of U.S. wool use, which magnified the impacts of foreign developments on the U.S. market.

Because the United States exports little wool and produces only one-third what U.S. mills use, foreign supply, demand, and prices (reflected through exchange rates), rather than U.S. supplies, are major determinants of U.S. prices. Also, changes in U.S. raw wool stocks provide only a partial indication of the relative tightness of the U.S. market and thus prices. Instead of U.S. stocks rising or falling significantly in times of surplus or shortage, raw wool imports tend to change, and this lessens the U.S. stocks change. End-of-year stocks between 1986 and 1988 were an ample 45 to 56 million pounds--about 4 months' mill use--yet prices set successive records of 92 to 138 cents a pound. In 1987 and 1988, foreign wool production was fairly stable, but very strong demand reduced world stocks and pulled up prices.

### *Costs and Returns*

The price of meat--not wool--is the major factor determining the average U.S. sheep producer's income. Average cash receipts per ewe were $58 in 1984 but rose to a high of $73 in 1987 (table 12). Wool market receipts and Government payments to wool producers to support their incomes (made on the basis of each producer's sales value of shorn wool and hundredweight of live unshorn lambs marketed) accounted for around one-third or less of gross receipts. Because of relatively high sheep prices in 1984-87, revenue from

Figure 2
**Weighted average price received by producers for wool and mohair, 1950-88**

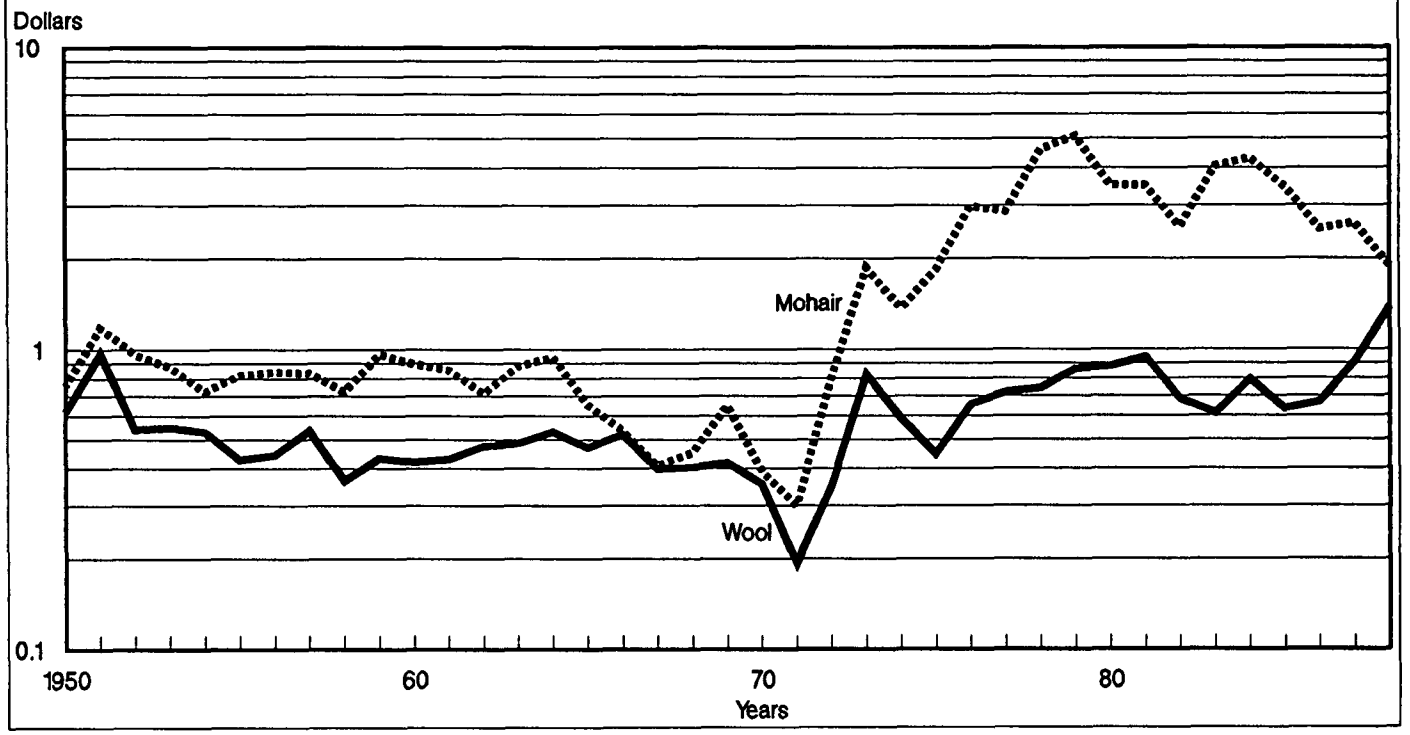


**Table 12—U.S. sheep production receipts and costs, average per ewe, 1984-87**

| Item | 1984 | 1985 | 1986 | 1987 |
|---|---|---|---|---|
| | | *Dollars* | | |
| Cash receipts: | | | | |
| Meat | 38.15 | 46.12 | 45.59 | 53.16 |
| Wool | 8.81 | 6.84 | 7.35 | 7.62 |
| Shorn wool payment | 9.47 | 10.99 | 11.78 | 10.48 |
| Unshorn lamb payment | 1.81 | 2.21 | 2.40 | 1.79 |
| Total | 58.24 | 66.16 | 67.12 | 73.05 |
| | | *Percent* | | |
| Wool share | 34.50 | 30.29 | 32.08 | 27.23 |
| | | *Dollars* | | |
| Cash expenses: | | | | |
| Fixed | 11.43 | 9.87 | 14.84 | 16.07 |
| Variable | 29.47 | 29.40 | 28.43 | 28.59 |
| Total | 40.90 | 39.27 | 43.27 | 44.66 |
| Receipts less cash expenses | 17.34 | 26.89 | 23.85 | 28.39 |
| Net receipts for sales of meat and wool | 6.06 | 13.69 | 9.67 | 16.12 |
| Wool support payments | 11.28 | 13.20 | 14.18 | 12.27 |

meat and wool sales was sufficient to cover cash expenses.

Total cash expenses per ewe ranged from about $39 to $45 between 1984 and 1987. Inflationary pressures in the economy affected most input costs. Three items constituted nearly two-thirds of total cash expenses during 1985-87: interest, hired labor, and feed. Feed was the largest expense, varying from about 35 percent in 1984 and 1985 to 28 percent in 1987. Interest expense ranged from 12 percent in 1985 to 20 percent in 1987. Hired labor expenses averaged about 16 percent each year.

With receipts rising faster than costs, average net returns after paying cash expenses rose from $17 to $28 per ewe between 1984 and 1987. However, without a Government price-support program, sheep producers' average receipts would have ranged from $6 in 1984 to $16 per ewe in 1987. Thus, wool support payments remain very important to sheep producers, representing about 50 percent of net cash receipts.

## Structure of the Mohair Industry

Mohair is the fleece of the Angora goat. About 80 percent of the Angora goats in the United States are

raised in Texas, mainly in the Edwards Plateau region in the southwestern part of the State. Texas is especially suited for mohair production, because it has the native shrubbery and plants and a warm, dry climate which Angora goats favor. New Mexico with 7.4 percent and Arizona with 5.5 percent were a distant second and third in Angora goat populations.

**Mohair Production**

The number of Angora goats clipped in Texas exceeded 4 million during World War II, but dropped sharply to a low of 2.1 million in the early 1950's (app. table 2). Economic growth spurred total fiber use during the late 1950's and 1960's and mohair use benefited, pushing the number of goats clipped to a peak of 4.6 million in 1965. Rapid adoption of manmade fibers caused steady declines until the late 1970's. The number clipped about stabilized between 1977 and 1983. High mohair prices in the mid-1980's encouraged goat numbers to increase (table 13). On January 1, 1989, the total U.S. Angora goat inventory was 1.82 million head, of which 82 percent were in Texas.

The 1982 Census of Agriculture provided data on the average size of a goat-producing operation. There were 3,247 farms with a total of 1.2 million Angora goats, or 382 head per farm. Texas had 75 percent of the farms with an average of 434 goats per farm.

The trend in mohair production has reflected the trend in the number of goats clipped, dropping sharply since 1965. However, the mohair yield per goat clipped has increased since World War II. Goats are clipped once or twice a year, and the average weight of fleece clipped has grown from 4.9 pounds per goat during the 1940's to a record 8.1 pounds in 1987.

**Domestic Mohair Use**

Domestic mill use of mohair varies depending on available supplies, mohair prices, and fashion. In recent years, annual use has been between 100,000 and 200,000 pounds, clean, which is only 1-2 percent of U.S. mohair production. Exports are the major market for U.S. mohair (app. table 4). Domestic use of imported mohair is minor, usually less than 10 percent of total domestic use.

Mohair is virtually insignificant in relation to the total U.S. fiber market. In 1988, U.S. per capita mill consumption of all fibers was 52 pounds. Per capita consumption of U.S. mohair has been only 1 part in 100,000 (0.001 percent). Mohair is a specialty fiber and its price, which may be two or three times greater than wool, cotton, and polyester, limits wide acceptance.

Mohair is generally blended with other fibers when producing a textile product. Rarely used alone because of its brittleness, it is most often blended with wool and, to

**Table 13—The U.S. mohair market, 1984-88**

| Item | 1984 | 1985 | 1986 | 1987 | 1988 |
|---|---|---|---|---|---|
| Goats clipped (mil.) | 1.45 | 1.73 | 2.00 | 2.00 | 2.32 |
| Yield (lbs/head, greasy) | 7.72 | 7.70 | 8.00 | 8.10 | 7.50 |
| | | | *Million pounds, clean*[3] | | |
| Beginning stocks (Jan. 1) | 1.25 | 1.02 | 1.30 | 1.54 | 1.78 |
| Production | 9.25 | 10.99 | 13.51 | 13.99 | 13.17 |
| Imports | 0 | .02 | .01 | 0 | .06 |
| Supply[1] | 9.47 | 11.00 | 16.26 | 15.89 | 15.98 |
| Domestic use[2] | .70 | .70 | .10 | .10 | .20 |
| Exports | 7.75 | 8.99 | 14.62 | 14.01 | 14.38 |
| Total use | 8.45 | 9.69 | 14.72 | 14.11 | 14.58 |
| Carryover stocks | 1.02 | 1.30 | 1.54 | 1.78 | 1.40 |
| | | | *Dollars per pound, greasy* | | |
| Average producer price | 4.30 | 3.45 | 2.51 | 2.63 | 1.89 |
| Support price | 5.17 | 4.43 | 4.93 | 4.95 | 4.69 |

[1]Includes unaccounted. [2]Estimated actual mill use provided by industry sources; not computed as a residual as in appendix table 4. [3]Clean basis is 76 percent of greasy basis. Totals may not add due to rounding.

a lesser extent, manmade fibers, such as acrylic. Because manmade fibers and high-quality lustrous wools can substitute for mohair, the relative prices of mohair and these other fibers can affect mohair demand. The properties that make mohair desirable in blends are its luster, resilience, wrinkle resistance, durability, and feel. The finer grades (thin diameters) are used in blends that contain a high percentage of mohair, in summer-weight apparel, and in sweaters. The coarser grades are used in coats and suits.

South African production accounts for about 50 percent of world production (table 14). South Africa and the United States produce a premium mohair and both have the world's highest yields. South African production is marketed through the South African Mohair Board. Turkey, with about a quarter of world production, saw mohair production rise in the late 1970's and then fall in the 1980's. Turkish yields are about half of U.S. yields as a result of crossbreeding and only one shearing per year. The Turkish government operates cooperatives that purchase mohair from the producer, which allows the government to provide a minimum price floor.

**World Mohair Market**

The major producers--South Africa, the United States, and Turkey--are also the major exporters of raw mohair. Smaller quantities are produced in Argentina, Lesotho, Australia, and New Zealand (table 14). Although there has been an increase in exports of processed mohair, such as top (a continuous, untwisted strand of scoured mohair fibers from which shorter fibers have been removed) and yarn, most of the world's production is exported as raw fiber.

The United States accounts for about 35 percent of the exports of the major traders. U.S. exports in the late 1980's soared to record levels because of reduced production in South Africa and a drop in its exports.

Virtually all U.S. mohair exports are to Europe, with much going to the United Kingdom, the world's major importer of raw mohair. The main processing center is in Bradford, England, where raw mohair is turned into top and yarn, of which a sizable portion is re-exported. South Africa is the major U.S. competitor in the U.K. market.

Growth in U.S. mohair output will depend on the export market which is in developed countries. With continued economic growth, U.S. exports could increase in the 1990's. However, mohair's volatile price will tend to keep it a specialty fiber for only high-priced, better quality applications.

**Prices**

Average market prices of mohair rose from a low of 30 cents per pound in 1971 to a high of $5.10 in 1979 (app. table 7). With 90 percent of U.S. mohair production exported, swings in foreign production and demand cause a continued pattern of instability. A growing preference for mohair in Europe and Japan in the 1970's accounted for the rising prices and generally increasing world use. The growing demand, in turn, reduced demand for substitute fibers. Thus, prices in the mohair market were more independent of prices in other fiber markets.

Since 1983, mohair prices have declined substantially. During 1988, producer prices averaged only $1.89 a pound, a 28-percent decline from the previous season. Despite strong exports and declining carryover stocks, the average price dropped $2.80 a pound below the Government price-support level, the basis for Government price-support payments made to mohair produc-

**Table 14—World mohair production, 1984-88**

| Country | 1984 | 1985 | 1986 | 1987 | 1988 |
|---|---|---|---|---|---|
| | | | *Million pounds, greasy* | | |
| United States[1] | 11.2 | 13.3 | 17.8 | 18.4 | 17.3 |
| South Africa | 17.1 | 19.2 | 22.3 | 26.2 | 27.0 |
| Turkey | 8.0 | 7.7 | 7.7 | 7.7 | 6.0 |
| Argentina | 2.7 | 2.5 | 2.7 | 2.6 | 2.5 |
| Australia | 1.1 | 1.2 | 1.3 | 2.1 | 1.8 |
| Lesotho | 1.0 | 1.0 | 1.0 | 1.3 | 1.0 |
| New Zealand | .1 | .2 | .2 | .4 | .7 |
| Seven-country total | 41.2 | 47.4 | 55.0 | 57.9 | 55.4 |

[1]Estimates for 1984-87 included Texas production and an estimate for other States using Agricultural Stabilization and Conservation Service (ASCS) payment data.

ers. Changes in fashion and a decline in the popularity of hand-knitting partially account for the drop in mohair prices.

## History of the Wool and Mohair Programs

Today's wool and mohair price-support programs are the consequence of several laws passed between 1938 and 1985. Most significant was the National Wool Act of 1954, which created the wool and mohair program provisions that are essentially in effect today.

### Early Legislation

Wool and mohair were not covered by early farm legislation. The Agricultural Adjustment Act of 1933 did not include them among the "basic" commodities. It was not until the Agricultural Adjustment Act of 1938 that price-support loan programs for wool and mohair were authorized. Programs were then implemented but were not mandatory, as were those for wheat, corn, and cotton.

Price support became mandatory for wool as a result of a law passed in 1947, and such support was continued in the Agricultural Act of 1948. The Agricultural Act of 1949 added mohair to the list of commodities requiring mandatory price support and set the support level for wool and mohair at between 60 and 90 percent of parity. Parity prices were established to provide a specific level of purchasing power, and they were changed according to a formula that considered changes in farm and nonfarm prices over the most recent 10 years. The 1949 Act also required that wool be supported at a price that would encourage annual production of 360 million pounds of shorn wool, greasy basis. Although production exceeded that level during World War II, it dropped sharply afterward, falling to 217 million pounds in 1950. Thus, the legislated production goal required support to be set at the maximum 90 percent of parity. But, even at that level, production fell short of the goal.

### The 1954 Act and Support Payments

The National Wool Act of 1954 (Title VII of the Agricultural Act of 1954) established a new price-support program for wool and mohair. The rationale stated in the act was: "wool is an essential and strategic commodity which is not produced in quantities and grades in the United States to meet the domestic needs and that the desired domestic production of wool is impaired by the depressing effects of wide fluctuations in the price of wool in the world markets." The significant feature of the program for producers was that direct payments were authorized as a method of supporting incomes and, since 1955, it has been the only method used. Earlier, support was accomplished using only Government loans and purchases.

Under the new act, shorn wool was to be supported at between 60 and 110 percent of the parity price, if payments were used. Support was to be established at a level between 60 and 90 percent of parity only if loans and purchases were to be used. The support price was to be set to encourage annual production of 300 million pounds of shorn wool. Pulled wool and mohair were to be supported at roughly comparable levels. The Secretary of Agriculture had discretion to set the support price for shorn wool, "after consultation with producer representatives, and after taking into consideration prices paid and other cost conditions affecting sheep production."

The support price was set at 62 cents a pound for shorn wool for 1955, about 19 cents above the average market price received by producers (table 15). Prior to 1955, market prices were near or even above the support price. However, maintaining this level of support with loans and purchases had built Government-owned woolstocks to over 50 percent of a year's production by the time the 1954 Act was implemented. The change to supporting prices with direct payments, rather than loans and purchases, allowed market prices to fall below the support price. The support price remained at 62 cents a pound through 1965, well above the market price during the period. The support price and the direct payment were forerunners of the target price and deficiency payment concepts implemented for grains and cotton in the 1970's.

The method of computing wool and mohair payments, established in the 1954 Act and used today, differs from that used for other major crops where producers receive a fixed payment per unit of production. The wool and mohair payment per unit of production increases as the value per unit of the producer's wool and mohair increases. This payment to wool and mohair producers is supposed to encourage the production of higher quality (higher value) fiber and improve marketing. The payment rate is based on the percentage needed to bring the national average market price received by producers up to the support price.

For example, the 1988 support price for shorn wool was 29 percent above the average market price. So,

each producer received a payment equal to 0.29 times the producer's dollar return from the sale of wool. Thus, the greater the price a producer receives for wool, the greater is the per pound support payment.

### Changes in the Support Price

The major legislative changes in the wool and mohair program since 1955 have centered on the method used to compute the support price on which the sup-

**Table 15—Wool and mohair: Marketing year prices and Government payments, 1955-89[1]**

| Year | Wool | | | Mohair | | |
|---|---|---|---|---|---|---|
| | Support price | Average market price received by producers | Government payments | Support price | Average market price received by producers | Government payments |
| | *Cents per pound, greasy* | | *Mil. dol.* | *Cents per pound, greasy* | | *Mil. dol.* |
| 1955 | 62 | 42.8 | 57.6 | 70.0 | 82.2 | NP |
| 1956 | 62 | 44.3 | 51.9 | 70.0 | 84.4 | NP |
| 1957 | 62 | 53.7 | 16.1 | 70.0 | 83.7 | NP |
| 1958 | 62 | 36.4 | 85.1 | 70.0 | 72.3 | NP |
| 1959 | 62 | 43.3 | 53.9 | 70.0 | 96.4 | NP |
| 1960 | 62 | 42.0 | 59.5 | 70.0 | 89.7 | NP |
| 1961 | 62 | 42.9 | 56.9 | 73.0 | 85.6 | NP |
| 1962 | 62 | 47.7 | 39.2 | 74.0 | 71.4 | 0.8 |
| 1963 | 62 | 48.5 | 27.2 | 76.0 | 88.1 | NP |
| 1964 | 62 | 53.2 | 20.3 | 72.0 | 94.3 | NP |
| 1965 | 62 | 47.1 | 34.2 | 72.0 | 65.5 | 2.0 |
| 1966 | 65 | 52.1 | 26.2 | 75.8 | 53.7 | 6.5 |
| 1967 | 66 | 39.8 | 57.7 | 76.4 | 40.9 | 11.5 |
| 1968 | 67 | 40.5 | 54.4 | 77.4 | 45.2 | 10.6 |
| 1969 | 69 | 41.8 | 50.6 | 77.4 | 65.1 | 2.0 |
| 1970 | 72 | 35.5 | 64.0 | 80.2 | 39.1 | 7.8 |
| 1971 | 72 | 19.4 | 102.3 | 80.2 | 30.1 | 10.0 |
| 1972 | 72 | 35.0 | 68.0 | 80.2 | 81.4 | NP |
| 1973 | 72 | 82.7 | NP | 80.2 | 187.0 | NP |
| 1974 | 72 | 59.1 | 14.5 | 80.2 | 137.0 | NP |
| 1975 | 72 | 44.7 | 40.9 | 80.2 | 185.0 | NP |
| 1976 | 72 | 65.7 | 7.0 | 80.2 | 298.0 | NP |
| 1977 | 99 | 72.0 | 28.9 | 149.8 | 287.0 | NP |
| 1978 | 108 | 74.5 | 36.1 | 164.7 | 459.0 | NP |
| 1979 | 115 | 86.3 | 30.8 | 194.3 | 510.0 | NP |
| 1980 | 123 | 88.1 | 37.5 | 290.3 | 350.0 | NP |
| 1981 | 135 | 94.5 | 47.0 | 371.8 | 350.0 | 1.9 |
| 1982 | 137 | 68.4 | 71.9 | 397.7 | 255.0 | 16.8 |
| 1983 | 153 | 61.3 | 116.9 | 462.7 | 405.0 | 6.3 |
| 1984 | 165 | 79.5 | 92.3 | 516.9 | 430.0 | 10.3 |
| 1985 | 165 | 63.3 | 103.8 | 443.0 | 345.0 | 12.6 |
| 1986 | 178 | 66.8 | 106.9 | 493.0 | 251.0 | 42.7 |
| 1987 | 181 | 91.7 | 84.5 | 495.0 | 263.0 | 35.3 |
| 1988 | 178 | 138.0 | 41.4 | 469.0 | 189.0 | 47.1 |
| 1989 | 177 | | | 458.8 | | |

NP = No payment because average price exceeded support price.

[1]Support prices and Government payments are for marketing years beginning April 1 for 1955-62; the 9 months April through December for 1963; and calendar years beginning in 1964. Market prices are for calendar years 1955-56 and 1964-88; April-May marketing years for 1957-62; and April-December for 1963. Government payment includes deduction for promotion.

port payment is based. From 1955 through 1965, the support price was set by the Secretary of Agriculture at 62 cents a pound for shorn wool (table 15).

The Food and Agriculture Act of 1965 introduced a formula for determining the support price. The formula adjusted the 62-cent price by the percentage change in the index of prices paid by all farmers for production inputs during the 3 most recent years, compared with that index during 3 base years, 1958, 1959, and 1960. There was no adjustment in the formula for productivity changes (changes in output per sheep or goat). The use of the formula resulted in a slow rise in the support price during the late 1960's and, by 1972, it was 72 cents a pound.

With the gap widening each year between the growing support price and the lower market price, the Agricultural Act of 1970 abandoned the formula and fixed the support price at 72 cents a pound for shorn wool and 80.2 cents for mohair. The passage of the Agriculture and Consumer Protection Act of 1973 continued these fixed prices through 1976. The Food and Agriculture Act of 1977 returned to the formula, setting the support price for 1977-81 at 85 percent of the amount calculated by the formula. The Agriculture and Food Act of 1981 revised this computation, basing the support price on 77.5 percent of the amount indicated by the formula for the years 1982-85. The Food Security Act of 1985 continued this formula calculation through 1990. The 77.5 percent was specified for the years 1986 through 1990. The most recent legislation, the Omnibus Budget Reconciliation Act of 1987, modified the percentage to 76.4 percent for 1988 and 1989, reflecting an across-the-board reduction in all commodity support prices. For 1990, the percentage reverts to 77.5 as specified under the Food Security Act of 1985.

Today, the wool program is under scrutiny because of its objectives and its rising costs. The objective of the National Wool Act is to "encourage production of wool at prices that will assure a viable domestic industry in the future." Other stated program justifications include its contribution to national security, general economic welfare, balance of trade, efficient use of resources, and better wool quality. One question is whether the current wool program is needed for a viable domestic industry.

A major concern is the escalation of wool support prices. Since 1983, support prices have more than doubled from the pre-1977 level. In the last decade the support price/wool market price ratio increased, reaching a peak of 2.665 in 1986. The rapid rise of wool prices in 1988 dropped the ratio to 1.29. During the 5 years, 1983-1987, annual Government payments averaged slightly more than $100 million. The record high farm wool price of $1.38 a pound in 1988 caused Government payments to drop to $41 million that year, the lowest since 1980.

The mohair program has had several periods during which no Government payments were made. However, substantial Government payments were made to mohair producers during the past 3 years (1986-88), averaging $42 million a year. Mohair market prices were the lowest in more than a decade while the support price averaged $4.86. The 1989 support level was set at $4.59.

Another concern is whether to continue the payment for unshorn lambs. The National Wool Act requires the Secretary to establish a support price for pulled wool at a level relative to the shorn wool support price so as to "maintain normal marketing practices for pulled wool." Since 1955, this provision has been implemented through payments made per hundredweight of live unshorn lambs marketed. The General Accounting Office concluded that such payments are not necessary to maintain normal pulled wool marketing practices. Further, the payments are very costly to administer, and many feedlots prefer shorn lambs, because they can avoid the costs of pulling and marketing the wool from the unshorn pelt. Elimination of the unshorn lamb payment might cause some producers to shear lambs prior to selling to the feedlot, thus collecting a payment for shorn wool in lieu of the unshorn lamb payment. If so, elimination of the payment would have little effect on program costs as rising wool payments would offset declining unshorn lamb payments. The unshorn lamb payment rate is determined by taking 80 percent of the difference between the shorn wool support price and the average shorn wool market price multiplied by 5 pounds (the amount of wool pulled from the pelt of an average 100-lb. unshorn lamb). The payment rate for 1988 was $1.60 per cwt of live, unshorn lambs sold. The total unshorn lamb payment is estimated at $16.8 million, or 18 percent of total wool program payments. In 1987, unshorn lamb payments were 19 percent of total payments, and in 1986, 18 percent.

Payments authorized by the wool act are not subject to a payment limit. The combined payments for wheat, feed grains, cotton, and rice are limited to $50,000 per person, per year, for all payments except disaster payments, loans, and purchases. If wool and mohair payments are continued, an issue for future legislation is

whether the payments should be subject to a limit, such as that for crops.

Starting in 1985, however, a cap was placed, by regulation, on the per-pound net sales proceeds allowable for the purpose of calculating Government wool and mohair payments. The cap is determined and announced annually by USDA's Agricultural Stabilization and Conservation Service. As in the past, payments are determined by multiplying the dollar value of net proceeds from the sale of shorn wool or mohair by the respective announced payment rate. However, since 1985, the maximum allowable net sales proceeds cap has been set at four times the national average price for the commodity. For example, the national average price for shorn wool in 1988 was $1.38 per pound. Producers who sold their wool for up to $5.52 per pound (4 X $1.38) that year received a Government payment equal to their active net sales proceeds times 0.29 (1988 shorn wool payment rate). However, producers who sold their wool for more than $5.52 per pound had their payment capped at $5.52 times 0.29 or the equivalent of $1.60 per pound.

## Effects of Wool and Mohair Programs

The National Wool Act aims to encourage wool production and contribute to economic welfare, efficient resource use, and the balance of trade. How has the wool act affected producers in trying to meet these objectives?

### Effects on Producers

Wool production depends on the expected profitability of raising sheep relative to the next best alternative, usually cattle or field crops. Expected sheep profitability depends on expected wool prices, wool support payment rates, lamb and sheep prices, and production costs. Because only 20-30 percent of the production value of a sheep operation comes from wool, a 10-percent increase in wool receipts raises operators' income only 2-3 percent (table 16). Thus, large changes in the expected wool price are required to elicit only modest changes in wool output.

When market prices are below the support price, wool producers expect to receive a price about equal to the

**Table 16—U.S. production value of wool, sheep, and lambs and Government payments, 1970-88**

| | | | | | Share of total | | |
|---|---|---|---|---|---|---|---|
| Year | Wool | Sheep and lambs | Price support payments | Total | Wool value | Payments | Wool plus payments |
| | | *Million dollars* | | | | *Percent* | |
| 1970 | 57.2 | 260.4 | 64.0 | 381.6 | 15.0 | 16.8 | 31.8 |
| 1971 | 31.4 | 250.2 | 102.3 | 383.9 | 8.2 | 26.7 | 34.9 |
| 1972 | 55.6 | 271.4 | 68.0 | 395.0 | 14.1 | 17.2 | 31.3 |
| 1973 | 120.1 | 293.7 | NP | 413.8 | 29.0 | NP | 29.0 |
| 1974 | 78.6 | 272.0 | 14.5 | 365.1 | 21.5 | 4.0 | 25.5 |
| 1975 | 53.6 | 303.3 | 40.9 | 397.8 | 13.5 | 10.3 | 23.8 |
| 1976 | 73.1 | 315.6 | 7.0 | 395.7 | 18.5 | 17.7 | 20.2 |
| 1977 | 77.1 | 320.3 | 28.9 | 426.3 | 18.1 | 6.8 | 24.9 |
| 1978 | 76.7 | 381.6 | 36.1 | 494.4 | 15.5 | 7.3 | 22.8 |
| 1979 | 90.5 | 406.8 | 30.8 | 528.1 | 17.1 | 5.8 | 22.9 |
| 1980 | 92.8 | 402.7 | 37.5 | 533.0 | 17.4 | 7.0 | 24.4 |
| 1981 | 103.7 | 359.1 | 47.0 | 509.8 | 20.3 | 9.2 | 29.5 |
| 1982 | 72.8 | 355.7 | 71.9 | 500.4 | 14.5 | 14.4 | 28.9 |
| 1983 | 63.0 | 356.7 | 116.9 | 536.6 | 11.8 | 21.7 | 33.5 |
| 1984 | 75.9 | 376.5 | 92.3 | 544.7 | 13.9 | 16.9 | 30.8 |
| 1985 | 55.7 | 427.8 | 103.8 | 587.3 | 9.5 | 17.7 | 27.2 |
| 1986 | 56.6 | 443.9 | 106.9 | 607.4 | 9.3 | 17.6 | 26.9 |
| 1987 | 77.1 | 489.1 | 84.5 | 650.7 | 11.8 | 13.0 | 24.8 |
| 1988[1] | 124.6 | 418.6 | 41.4 | 584.6 | 21.3 | 7.1 | 28.4 |

NP = No payment.
[1]Payments are estimated.

support price. However, it is likely that market prices for wool would be similar with or without the support program. As a result, the producer receives almost the full benefit of the support payments. Total per unit receipts for a producer rise by about the amount of the support payment rate. The wool consumer receives little price benefit because the market price would be about the same with or without the program.

There are two reasons why the program benefits accrue almost entirely to the wool producer. First, and most important, is raw wool imports. U.S. wool prices depend greatly on foreign wool prices, and the extra output caused by the wool program tends to substitute for imported wool, rather than drive down U.S. wool prices. Second, the quantity of wool demanded likely responds more to price changes than does the quantity of U.S. wool produced. This means it takes only a small drop in market price to raise demand enough to absorb the extra production caused by a large support payment.

***Producer Benefits and Production Effects***

The wool price-support level began a sharp escalation in 1977 and peaked in 1987. However, price-support levels were approximately the same for the 1986 through 1988 seasons. Average levels of market variables during 1986-88 can be used to demonstrate the economic effects of the wool program. The average shorn wool support payment rate was 81 cents a pound, compared with the average market price of 99 cents. World wool prices and the responsiveness of U.S. wool demand to price changes could be expected to have kept average prices near 99 cents a pound in the absence of the program. Thus, the 81-cent average wool payment during 1986-88 raised producer returns by 82 percent. This would likely have boosted wool production by 16 percent. This production change is based on the assumption that a 10-percent rise in per pound producer receipts for wool is associated with a 2-percent rise in wool production. Production averaged 87 million pounds, greasy, during 1986-88. Thus, production under no program would have averaged an estimated 73 million pounds a year.

Program benefits to producers are the support payment rate, 80 cents per pound, times the 73 million pounds that would be produced without a program, or $58 million. Additional benefits come from the returns above production costs on the additional 14 million pounds of wool produced in response to the support payment. The production/price relationship used above can be used to derive this benefit, about $2 million.

Producer benefits total an annual average of $60 million ($58 million plus $2 million, or an average of $800 per recipient of shorn wool program payments), 3 percent less than the average Government payments of $62 million made during 1986-88. The difference--$2 million--is the resource cost of producing the additional 14 million pounds above what it would have cost to purchase imported wool. This $2 million is the average social cost (net welfare loss) of the shorn wool program during 1986-88, and it excludes the administrative costs of the program. The $62 million in payments divided by the additional output of 14 million pounds is $4.43 a pound, the average cost per pound to the taxpayer to raise wool production during 1986-88.

The wool program has modestly raised production and has boosted producer income, compared with no program. Deflated wool returns--real market price plus the average support payment-- declined from the inception of the current wool program through 1976 (table 17 and app. tables 7 and 8). The return to the formula in 1977 for setting the support price level halted the decline. Real market prices continued to drop, but the rising real support payment rate bolstered farm income.

The mohair program has not had as large a cumulative effect on producers as the wool program. Government payments have been far less frequent as the real value of mohair generally has risen since the late 1960's (app. table 9). However, the support level has been above the market price since 1981. Compared with no program, this difference has encouraged production, lowered market prices, raised producer receipts, and increased mohair exports.

***Distribution of Producer Benefits***

The increase in producer receipts attributed to the wool and mohair programs has varied effects on individual producers. Compared with no program, the rise in income tends to raise the value of land that is especially suited to sheep and goats. This capitalization of the expected program benefits into the value of land increases the wealth of landowners and prevents subsequent owners, who must pay a higher price for the land, from benefiting fully from the program. For part-owners and tenants, the program can lead to higher rents, which transfer program benefits from the renter to the landowner. New entrants into sheep and goat raising also fail to benefit fully; they pay a premium for the ranch which reflects the value of the expected

**Table 17—Nominal and deflated wool prices and payments, 1955-88**

| Year | Market price | | Average support payment[1] | | Total | |
|---|---|---|---|---|---|---|
| | Nominal | Real[2] | Nominal | Real[2] | Nominal | Real[2] |
| | | | *Cents per pound, greasy* | | | |
| 1955 | 42.8 | 157.3 | 20.4 | 75.0 | 63.2 | 232.3 |
| 1960 | 42.0 | 135.9 | 19.9 | 64.4 | 61.9 | 200.3 |
| 1965 | 47.1 | 139.4 | 15.2 | 45.0 | 62.3 | 184.4 |
| 1970 | 35.5 | 84.5 | 36.2 | 86.2 | 71.7 | 170.7 |
| 1975 | 44.7 | 75.4 | 32.6 | 55.0 | 77.3 | 130.4 |
| 1976 | 65.7 | 104.1 | 6.0 | 9.5 | 71.7 | 113.6 |
| 1977 | 72.0 | 107.0 | 26.3 | 39.1 | 98.3 | 146.1 |
| 1978 | 74.5 | 103.2 | 34.7 | 48.1 | 109.2 | 151.3 |
| 1979 | 86.3 | 109.8 | 29.1 | 37.0 | 115.4 | 146.8 |
| 1980 | 88.1 | 102.8 | 35.5 | 41.4 | 123.6 | 144.2 |
| 1981 | 94.5 | 100.5 | 42.8 | 45.5 | 137.3 | 146.0 |
| 1982 | 68.4 | 68.4 | 67.8 | 67.8 | 136.2 | 136.2 |
| 1983 | 61.3 | 59.0 | 113.6 | 109.3 | 174.9 | 168.3 |
| 1984 | 79.5 | 73.8 | 96.6 | 89.7 | 176.1 | 163.5 |
| 1985 | 63.3 | 57.1 | 118.1 | 106.5 | 181.4 | 163.6 |
| 1986 | 66.8 | 58.7 | 126.1 | 110.7 | 192.9 | 169.4 |
| 1987 | 91.7 | 77.9 | 99.8 | 84.8 | 191.5 | 162.7 |
| 1988[3] | 138.0 | 114.0 | 46.4 | 38.4 | 184.4 | 152.4 |

[1]Payment per pound produced, not per pound marketed. [2]Deflated using gross national product deflator, 1982 = 1.0. [3]Payments are estimated.

program benefits. In 1982, 59 percent of the 101,373 operations owning sheep and lambs were full-owners, 31 percent were part-owners, and 10 percent were tenants. Of the 28,000 operations owning goats, 69 percent were full-owners, 24 percent were part-owners, and 7 percent were tenants.

Because support payments are based on sales volume, large operations receive greater payments than small operations. Table 18 shows that most price support payments for shorn wool go to a very small number of producers. The average payment per recipient for shorn wool was about $1,100 in 1986. However the large producers, those receiving 72 percent of the payments, received an average payment of about $14,800.

Mohair payments also show a pattern similar to shorn wool (table 18). The average U.S. payment per recipient was around $3,500 in 1986. However, recipients accounting for 86 percent of the payments had an average payment of $23,000.

**Table 18—Shorn wool and mohair producers and support payments, 1986**

| Payment | Payees | | Payment | |
|---|---|---|---|---|
| | Number | Share | Amount | Share |
| | *Thousand* | Pct. | *Mil. dol.* | Pct. |
| Shorn wool: | | | | |
| Less than $100 | 24.5 | 33 | 1.33 | 2 |
| $100-$999 | 40.0 | 54 | 12.65 | 15 |
| $1,000-$2,999 | 5.7 | 8 | 9.59 | 11 |
| $3,000 and greater | 4.1 | 5 | 60.82 | 72 |
| Total | 74.3 | 100 | 84.39 | 100 |
| Mohair: | | | | |
| Less than $5,000 | 10.5 | 87 | 5.8 | 14 |
| $5,000 and greater | 1.6 | 13 | 36.5 | 86 |
| Total | 12.1 | 100 | 42.3 | 100 |

### Effects on Consumers

The effect of the wool program on wool consumers is likely negligible. Program effects on consumers are measured by the changes in prices paid and quantities consumed that are attributable to the program. The small size of the U.S. wool market in relation to the world market and the substantial volume of U.S. wool imports suggest that U.S. wool prices are more related to world wool prices than to the support prices. The additional U.S. wool production caused by the support price exceeding market price probably has only a small

long-term effect on U.S. wool prices and likely causes U.S. wool to replace imported wool in U.S. textile mills. However, consumers benefit to the extent that the higher output causes a short-term drop in U.S. wool prices.

Lamb and mutton consumers benefit from the wool program. The increase in the number of sheep caused by wool program payments raises the supply of lamb and mutton. Because only 10 percent of the lamb supply is imported and less is exported, the greater supply lowers U.S. lamb and mutton prices, providing consumers with more at a lower price than if there were no wool program. From the perspective of meat consumers, the benefit is quite small because lamb and mutton's share of the meat market is so small.

The mohair program has benefited mohair consumers. U.S. production changes affect both U.S. and world mohair prices. Since 1981, the mohair support price has exceeded market price, causing greater mohair production than if there were no price support program. The higher output has lowered U.S. mohair prices, enabling U.S. consumers to buy more at lower prices.

Unlike programs for other commodities, the wool and mohair price-support programs do not have the potential to make consumers worse off. Programs that support commodities through nonrecourse loans and production control can cause consumer prices to exceed levels that would prevail under no program. Wool and mohair are supported solely with direct payments, which only have the potential to raise production and lower consumer prices.

The effect on final consumers of any decline in raw wool and mohair prices caused by the program is lessened because textile products are highly processed. A typical wool sport coat selling for $250 may contain only 4 pounds of raw wool, greasy, with farm value of about $5. A mohair sweater selling for $250 may contain only a pound of raw mohair, greasy, having a farm value of $3. Because they account for so little of final product value, changes in raw fiber prices are undiscernible to the final purchaser for a wide variety of textile items.

While the wool program may be of some benefit to consumers, the tariffs charged on imported raw wool and wool textiles are not. The tariffs raise the U.S. price of raw wool paid by textile mills and raise the price of manufactured wool textiles. Thus, wool price-support payments are lower than if there were no tariffs, and changes in tariffs affect the size of wool program payments. The tariff on raw wool averages 10 cents a pound, and the tariffs on wool textiles vary by textile item and country of origin. During 1986, the average tariff on woven wool fabrics imported by the United States was 27 percent of the value of the imports (foreign port value, not loaded on ships). This compares with an average tariff of 13 percent for woven fabrics made with manmade fibers and 11 percent for cotton. Thus, wool tariffs raise prices and reduce consumer welfare. However, the tariffs provide a very significant level of protection for the domestic wool industry, reduce Government expenditures on the wool program, and raise revenue that more than offsets wool program expenditures. Tariff revenue on wool textiles was $417 million in 1987 and $422 million in 1988.

**Effects on Taxpayers**

Taxpayers bear the cost of Government expenditures on the wool and mohair program. (Table 15 shows support payments for calendar year production. A more complete accounting of program costs by fiscal year is in app. table 6). The Government expenditures are primarily a transfer of income from taxpayers to wool producers and mohair producers and consumers. As indicated in the section on producer effects, the taxpayer costs slightly exceed the benefits received by wool and mohair producers and consumers.

Support payments account for almost all wool and mohair program costs. Payments per pound of U.S. production have risen in recent years, reaching a record $1.26 a pound for wool in 1986 (table 19). Nominal and real payments per taxpayer fell from the late 1960's through the 1970's. Despite rising in the early 1980's, inflation-adjusted program payments per taxpayer through 1988 were still well below payments in the late 1960's and early 1970's.

Total wool and mohair program costs to taxpayers were about $131 million during fiscal 1988. Total net expenditures of the Commodity Credit Corporation for price-support and related activities for all commodities were $12.5 billion. Thus, the wool and mohair program accounted for about 1 percent of public expenditures on price-support and related programs during 1988.

## Additional Readings

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**Table 19—Wool support payments per pound produced and per taxpayer, 1965-88**

| Year | Payment per pound produced | | Payment per taxpayer[1] | |
|---|---|---|---|---|
| | Nominal | Real[2] | Nominal | Real[2] |
| | *Cents per pound, greasy* | | *Cents per person* | |
| 1965 | 15.2 | 45.0 | 45.9 | 135.8 |
| 1966 | 12.0 | 34.3 | 34.6 | 98.9 |
| 1967 | 27.3 | 76.0 | 74.6 | 207.8 |
| 1968 | 27.5 | 72.9 | 69.1 | 183.3 |
| 1969 | 27.7 | 69.6 | 62.7 | 157.5 |
| 1970 | 36.2 | 86.2 | 77.3 | 184.1 |
| 1971 | 59.4 | 133.8 | 121.2 | 273.0 |
| 1972 | 40.4 | 86.9 | 78.1 | 168.0 |
| 1973 | NP | NP | NP | NP |
| 1974 | 10.6 | 19.6 | 15.8 | 29.3 |
| 1975 | 32.6 | 55.0 | 43.6 | 73.5 |
| 1976 | 6.0 | 9.5 | 7.3 | 11.6 |
| 1977 | 26.3 | 39.1 | 29.2 | 43.4 |
| 1978 | 34.7 | 48.1 | 35.3 | 48.9 |
| 1979 | 29.1 | 37.0 | 29.3 | 37.3 |
| 1980 | 35.2 | 41.1 | 35.1 | 41.0 |
| 1981 | 42.4 | 45.1 | 43.3 | 46.1 |
| 1982 | 67.7 | 67.7 | 65.2 | 62.8 |
| 1983 | 113.6 | 109.3 | 104.8 | 100.9 |
| 1984 | 96.7 | 89.8 | 81.3 | 75.5 |
| 1985 | 118.0 | 106.4 | 89.9 | 81.1 |
| 1986 | 126.0 | 110.6 | 90.7 | 79.6 |
| 1987 | 99.8 | 84.8 | 70.5 | 59.9 |
| 1988 | 46.4 | 38.4 | 34.0 | 28.1 |

NP = No payments.
[1]The number of taxpayers is assumed to be the number of people in the labor force. [2]Deflated using gross national product deflator, 1982 = 1.0.


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## Glossary

**Cost of Production.** The sum, measured in dollars, of all purchased inputs, allowances for management, and rent that is necessary to produce farm products. Cost of production statistics may be expressed as an average per animal, per acre, or per bushel for all farms in an area or in the country.

**European Community (EC).** An organization established by the Treaty of Rome in 1957 and also known as the European Economic Community and the Common Market. Originally composed of 6 European

nations, it has expanded to 12. The EC attempts to unify and integrate member economies by establishing a customs union and common economic policies. Member nations include the original six countries of Belgium, West Germany, France, Italy, Luxembourg, and the Netherlands, as well as Denmark, Greece, Ireland, Portugal, Spain, and the United Kingdom.

**General Agreement on Tariffs and Trade (GATT).** An agreement, originally negotiated in Geneva, in 1947 among 23 countries, including the United States, to increase international trade by reducing tariffs and other trade barriers. This multilateral agreement provides a code of conduct for international commerce. GATT also provides a framework for periodic multilateral negotiations on trade liberalization and expansion. The eighth and most recent round of negotiations began in Punta del Este, Uruguay, in 1986. Currently, 105 nations are participating in the talks, including most of the industrialized market economies, most of the less developed countries, and several centrally planned economies in Eastern Europe.

**Grease mohair.** Mohair as it comes from the Angora goat or the kid of an Angora goat before applying any process to remove the natural oils or fats.

**Grease wool.** Wool as it comes from the sheep or lambs before applying any process to remove the natural oils or fats.

**Lamb.** A young ovine animal which has not cut the second pair of permanent teeth. The term includes animals referred to in the livestock trade as lambs, yearlings, or yearling lambs.

**Mohair.** The hair of the Angora goat and also includes the hair of a kid of an Angora goat.

**Mohair support payment rate.** The percentage required to bring the national average price received by all producers for the sale of mohair up to the support price.

**Parity price.** A measurement of the purchasing power of a unit (bushel, pound, or hundredweight) of farm product. Parity was originally defined as the price that gives a unit of a commodity the same purchasing power today as it had in the 1910-14 base period. In 1948, the parity price formula was revised to allow parity prices for individual commodities to reflect a more recent relationship of farm and nonfarm prices by making the base price dependent on the most recent 10-year average price for commodities. Except for wool, mohair, and certain minor tobaccos, parity is not currently used to set price-support levels for any program commodities. However, parity remains part of a permanent legislation.

**Shorn mohair.** Grease mohair sheared from a live Angora goat or the kid of an Angora goat. Shorn mohair does not include pelts or mohair removed from pelts, scoured, or dyed mohair or yarn, skeins or other terms which identify the mohair as being other than in its natural greasy state.

**Shorn wool.** Grease wool sheared from live sheep or lambs, including black wool, tags, crutchings, and murrain or other wool removed from dead animals. Shorn wool does not include pelts or wool removed from pelts, scoured, carbonized, or dyed wool or yarn, skeins or other terms which identify the wool as being other than in its natural greasy state.

**Tariffs.** Taxes imposed on commodity imports by a government. A tariff may be either a fixed charge per unit of product imported (specific tariff) or a fixed percentage of value (ad valorem).

**Unshorn lambs.** Lambs which have never been shorn.

**Wool price-support payment rate.** The percentage required to bring the national average price received by all producers for the sale of shorn wool up to the support price.

**Appendix table 1—Number of sheep and wool yield and production, 1950-88**

| Year | Number of sheep shorn | Yield per fleece | Production, greasy | | | Production, clean | | |
|---|---|---|---|---|---|---|---|---|
| | | | Shorn | Pulled[1] | Total | Shorn | Pulled[1] | Total |
| | *Thous.* | *Lbs., greasy* | | | *1,000 pounds* | | | |
| 1950 | 26,380 | 8.22 | 216,944 | 32,400 | 249,344 | 103,482 | 23,620 | 127,102 |
| 1951 | 27,347 | 8.34 | 228,091 | 25,900 | 253,991 | 108,799 | 18,881 | 127,680 |
| 1952 | 28,051 | 8.32 | 233,309 | 33,600 | 266,909 | 111,288 | 24,494 | 135,782 |
| 1953 | 27,845 | 8.34 | 232,258 | 42,200 | 274,458 | 110,787 | 30,764 | 141,551 |
| 1954 | 27,692 | 8.52 | 235,807 | 43,500 | 279,307 | 112,480 | 31,712 | 144,192 |
| 1955 | 28,149 | 8.57 | 241,284 | 41,600 | 282,884 | 115,092 | 30,326 | 145,418 |
| 1956 | 28,469 | 8.51 | 242,177 | 40,500 | 282,677 | 115,518 | 29,525 | 145,043 |
| 1957 | 28,415 | 8.41 | 239,101 | 33,600 | 272,701 | 114,051 | 24,494 | 138,413 |
| 1958 | 29,403 | 8.29 | 243,713 | 30,400 | 274,113 | 116,251 | 22,162 | 138,413 |
| 1959 | 30,763 | 8.45 | 259,939 | 34,500 | 294,439 | 123,991 | 25,151 | 149,142 |
| 1960 | 31,081 | 8.54 | 265,277 | 33,600 | 298,877 | 126,537 | 24,494 | 151,031 |
| 1961 | 30,454 | 8.51 | 259,161 | 34,500 | 293,661 | 123,620 | 25,151 | 148,771 |
| 1962 | 29,193 | 8.45 | 246,636 | 29,900 | 276,536 | 117,645 | 21,797 | 139,442 |
| 1963 | 27,264 | 8.53 | 232,446 | 28,800 | 261,246 | 110,877 | 20,995 | 131,872 |
| 1964 | 25,455 | 8.34 | 212,333 | 25,100 | 237,433 | 101,283 | 18,298 | 119,581 |
| 1965 | 23,756 | 8.48 | 201,463 | 23,300 | 224,763 | 96,098 | 16,986 | 113,084 |
| 1966 | 22,923 | 8.51 | 195,053 | 24,100 | 219,153 | 93,040 | 17,569 | 110,609 |
| 1967 | 22,056 | 8.57 | 188,984 | 22,400 | 211,384 | 90,145 | 16,330 | 106,475 |
| 1968 | 20,759 | 8.55 | 177,396 | 20,500 | 197,896 | 84,618 | 14,945 | 99,563 |
| 1969 | 19,584 | 8.46 | 165,749 | 17,100 | 182,849 | 79,062 | 12,466 | 91,528 |
| 1970 | 19,163 | 8.43 | 161,587 | 15,200 | 176,787 | 77,077 | 11,081 | 88,158 |
| 1971 | 19,036 | 8.41 | 160,156 | 12,000 | 172,156 | 76,394 | 8,748 | 85,142 |
| 1972 | 18,770 | 8.44 | 158,506 | 9,700 | 168,206 | 83,691 | 7,071 | 90,762 |
| 1973 | 17,425 | 8.25 | 143,738 | 8,000 | 151,738 | 75,894 | 5,832 | 81,726 |
| 1974 | 15,956 | 8.23 | 131,382 | 5,700 | 137,082 | 69,370 | 4,155 | 73,525 |
| 1975 | 14,403 | 8.30 | 119,535 | 6,000 | 125,535 | 63,114 | 4,374 | 67,488 |
| 1976 | 13,536 | 8.21 | 111,100 | 4,850 | 115,950 | 58,661 | 3,536 | 62,197 |
| 1977 | 13,217 | 8.12 | 107,328 | 2,450 | 109,778 | 56,669 | 1,786 | 58,455 |
| 1978 | 12,719 | 8.09 | 102,942 | 1,000 | 103,942 | 54,353 | 729 | 55,082 |
| 1979 | 13,069 | 8.02 | 104,867 | 900 | 105,767 | 55,370 | 656 | 56,026 |
| 1980 | 13,263 | 7.95 | 105,419 | 1,050 | 106,469 | 55,661 | 765 | 56,426 |
| 1981 | 13,493 | 8.14 | 109,787 | 1,150 | 110,937 | 57,968 | 838 | 58,806 |
| 1982 | 13,199 | 8.04 | 106,129 | 1,000 | 107,129 | 56,036 | 729 | 56,765 |
| 1983 | 12,865 | 8.00 | 102,886 | 1,000 | 103,886 | 54,324 | 729 | 55,053 |
| 1984 | 12,284 | 7.77 | 95,471 | 1,000 | 96,471 | 50,409 | 729 | 51,138 |
| 1985 | 11,158 | 7.88 | 87,941 | 1,000 | 88,941 | 46,433 | 729 | 47,162 |
| 1986 | 10,852 | 7.82 | 84,829 | 1,000 | 85,829 | 44,790 | 729 | 45,519 |
| 1987 | 10,921 | 7.75 | 84,669 | 1,000 | 85,669 | 44,705 | 729 | 45,434 |
| 1988 | 11,465 | 7.78 | 89,235 | 1,000 | 90,235 | 47,116 | 729 | 47,845 |

[1]Pulled wool production not reported after 1981. Data for 1982-88 are estimated. Greasy.

**Appendix table 2—Number of Angora goats and mohair yield and production, Texas, 1950-88**

| Year | Number of Angora goats clipped | Yield per goat clipped | Mohair production | |
|---|---|---|---|---|
| | | | Greasy | Clean |
| | *Thousand* | *Lbs., greasy* | *1,000 pounds* | |
| 1950 | 2,350 | 5.4 | 12,643 | 10,114 |
| 1951 | 2,294 | 5.4 | 12,280 | 9,824 |
| 1952 | 2,125 | 5.5 | 11,670 | 9,336 |
| 1953 | 2,167 | 5.6 | 12,160 | 9,728 |
| 1954 | 2,458 | 5.7 | 13,997 | 11,198 |
| 1955 | 2,831 | 5.8 | 16,401 | 13,121 |
| 1956 | 2,990 | 5.9 | 17,616 | 14,093 |
| 1957 | 3,062 | 6.0 | 18,432 | 14,746 |
| 1958 | 3,247 | 6.2 | 20,207 | 16,166 |
| 1959 | 3,586 | 6.6 | 23,512 | 18,810 |
| 1960 | 3,711 | 6.4 | 23,750 | 19,000 |
| 1961 | 3,841 | 6.7 | 25,690 | 20,552 |
| 1962 | 4,049 | 6.5 | 26,418 | 21,134 |
| 1963 | 4,164 | 6.8 | 28,153 | 22,810 |
| 1964 | 4,363 | 6.6 | 28,872 | 23,098 |
| 1965 | 4,612 | 6.8 | 31,584 | 25,267 |
| 1966 | 4,477 | 6.4 | 28,770 | 23,016 |
| 1967 | 3,928 | 6.7 | 26,335 | 21,068 |
| 1968 | 3,784 | 6.7 | 25,272 | 20,218 |
| 1969 | 3,000 | 6.7 | 20,100 | 16,080 |
| 1970 | 2,725 | 6.6 | 17,985 | 14,388 |
| 1971 | 2,189 | 6.8 | 14,885 | 11,908 |
| 1972 | 1,521 | 6.7 | 10,190 | 8,152 |
| 1973 | 1,450 | 6.8 | 9,930 | 7,944 |
| 1974 | 1,175 | 7.1 | 8,400 | 6,720 |
| 1975 | 1,215 | 7.1 | 8,600 | 6,880 |
| 1976 | 1,100 | 7.4 | 8,100 | 6,480 |
| 1977 | 1,215 | 6.5 | 8,000 | 6,400 |
| 1978 | 1,188 | 6.8 | 8,100 | 6,480 |
| 1979 | 1,275 | 7.3 | 9,300 | 7,440 |
| 1980 | 1,240 | 7.1 | 8,800 | 7,040 |
| 1981 | 1,300 | 7.6 | 9,900 | 7,920 |
| 1982 | 1,330 | 7.5 | 10,000 | 7,600 |
| 1983 | 1,360 | 7.8 | 10,600 | 8,056 |
| 1984 | 1,450 | 7.7 | 11,200 | 8,512 |
| 1985 | 1,730 | 7.7 | 13,300 | 10,108 |
| 1986 | 2,000 | 8.0 | 16,000 | 12,160 |
| 1987 | 2,000 | 8.1 | 16,200 | 12,312 |
| 1988 | 2,000 | 7.7 | 15,400 | 11,704 |

**Appendix table 3—Imports, use, and ending stocks for wool, 1950-88**

| Year | Imports | Use | | | Ending stocks[1] | Stocks-to-use ratio |
|---|---|---|---|---|---|---|
| | | Mill | Exports | Total | | |
| | | *Million pounds, clean* | | | | *Percent* |
| 1950 | 446.8 | 634.8 | 6.7 | 641.5 | 175.2 | 27.3 |
| 1951 | 361.2 | 484.2 | .2 | 484.4 | 173.5 | 35.8 |
| 1952 | 367.1 | 466.4 | .1 | 466.4 | 205.0 | 44.0 |
| 1953 | 294.3 | 494.0 | 1.4 | 495.4 | 226.5 | 45.7 |
| 1954 | 206.0 | 384.1 | 1.2 | 385.3 | 242.7 | 63.0 |
| 1955 | 248.8 | 413.8 | .3 | 414.1 | 249.5 | 60.3 |
| 1956 | 246.9 | 440.8 | .3 | 441.1 | 186.1 | 42.2 |
| 1957 | 199.2 | 368.8 | 2.5 | 371.3 | 151.9 | 40.9 |
| 1958 | 189.7 | 331.1 | 5.2 | 336.3 | 125.5 | 37.3 |
| 1959 | 292.2 | 453.3 | .1 | 453.4 | 151.4 | 33.4 |
| 1960 | 228.2 | 411.0 | .3 | 411.3 | 132.0 | 32.1 |
| 1961 | 247.6 | 412.1 | .3 | 412.4 | 131.8 | 32.0 |
| 1962 | 269.3 | 429.1 | .1 | 429.2 | 118.3 | 27.6 |
| 1963 | 277.2 | 411.7 | .2 | 411.9 | 113.8 | 27.6 |
| 1964 | 212.3 | 356.7 | .1 | 356.8 | 103.3 | 29.0 |
| 1965 | 271.6 | 387.0 | .6 | 387.6 | 118.9 | 30.7 |
| 1966 | 277.1 | 370.2 | .1 | 370.3 | 117.8 | 31.8 |
| 1967 | 187.3 | 312.5 | .1 | 312.6 | 104.5 | 33.4 |
| 1968 | 249.3 | 329.7 | .5 | 330.2 | 117.3 | 35.5 |
| 1969 | 189.3 | 312.8 | .2 | 313.0 | 96.4 | 30.8 |
| 1970 | 153.1 | 240.3 | .2 | 240.5 | 79.3 | 33.0 |
| 1971 | 126.6 | 191.0 | 6.3 | 197.3 | 86.0 | 43.6 |
| 1972 | 96.6 | 218.6 | 11.2 | 229.8 | 71.2 | 31.0 |
| 1973 | 60.1 | 151.3 | 3.7 | 155.0 | 53.3 | 34.4 |
| 1974 | 26.9 | 93.5 | 4.3 | 97.8 | 51.5 | 52.7 |
| 1975 | 33.6 | 110.0 | 7.7 | 117.7 | 47.5 | 40.4 |
| 1976 | 57.5 | 121.7 | 1.1 | 122.8 | 41.6 | 33.9 |
| 1977 | 53.0 | 108.0 | .4 | 108.4 | 42.0 | 38.7 |
| 1978 | 50.4 | 115.3 | .4 | 115.7 | 48.5 | 41.9 |
| 1979 | 42.3 | 117.0 | .3 | 117.3 | 46.8 | 39.9 |
| 1980 | 56.5 | 123.4 | .3 | 123.7 | 45.9 | 37.1 |
| 1981 | 74.3 | 138.6 | .3 | 138.9 | 49.8 | 35.9 |
| 1982 | 61.4 | 115.7 | 1.4 | 117.1 | 58.4 | 49.9 |
| 1983 | 78.1 | 140.6 | 1.0 | 141.6 | 58.9 | 41.6 |
| 1984 | 94.2 | 142.1 | .5 | 142.6 | 51.6 | 36.2 |
| 1985 | 79.5 | 116.6 | 1.4 | 118.0 | 50.6 | 42.9 |
| 1986 | 97.0 | 136.7 | .8 | 137.5 | 46.8 | 34.0 |
| 1987 | 105.1 | 142.8 | 1.0 | 143.8 | 45.3 | 31.5 |
| 1988 | 96.7 | 132.7 | 1.2 | 133.9 | 55.9 | 41.7 |

[1]December 31, except for the following: 1950, stocks are as of April 1; 1951, December 29, 1951; 1952, December 27, 1952; and 1953-56, April 1, 1954-57.

## Appendix table 4—Use and ending stocks for mohair, 1950-88

| Year | Domestic use[1] | Exports | Total use | Ending stocks | Stocks-to-use ratio |
|---|---|---|---|---|---|
| | | *1,000 pounds, clean* | | | *Percent* |
| 1950 | 16,252 | 90 | 16,342 | 3,080 | 18.8 |
| 1951 | 10,876 | 33 | 10,909 | 4,225 | 38.7 |
| 1952 | 10,778 | 24 | 10,802 | 4,192 | 38.8 |
| 1953 | 9,385 | 883 | 10,268 | 5,150 | 50.2 |
| 1954 | 7,116 | 2,536 | 9,652 | 6,784 | 70.2 |
| 1955 | 6,807 | 6,053 | 12,860 | 7,058 | 54.9 |
| 1956 | 4,368 | 11,835 | 16,203 | 4,951 | 30.6 |
| 1957 | 4,004 | 9,992 | 13,996 | 5,701 | 40.7 |
| 1958 | 3,851 | 13,210 | 17,061 | 4,806 | 28.2 |
| 1959 | 2,963 | 18,561 | 21,524 | 2,098 | 9.7 |
| 1960 | 3,512 | 13,511 | 17,023 | 4,104 | 24.1 |
| 1961 | 4,962 | 13,523 | 18,485 | 6,171 | 33.4 |
| 1962 | 8,017 | 12,540 | 20,557 | 6,789 | 33.0 |
| 1963 | 11,236 | 14,200 | 25,436 | 4,167 | 16.4 |
| 1964 | 17,006 | 2,657 | 19,663 | 7,663 | 39.0 |
| 1965 | 16,375 | 7,690 | 24,065 | 8,869 | 36.9 |
| 1966 | 6,913 | 9,953 | 16,866 | 15,029 | 89.1 |
| 1967 | 10,642 | 10,098 | 20,740 | 15,357 | 74.0 |
| 1968 | 8,151 | 15,005 | 23,156 | 12,430 | 53.7 |
| 1969 | 10,877 | 7,129 | 18,006 | 10,506 | 58.3 |
| 1970 | 3,151 | 10,571 | 13,722 | 11,174 | 81.4 |
| 1971 | 283 | 12,199 | 12,482 | 10,600 | 84.9 |
| 1972 | -6,587 | 18,846 | 12,259 | 6,493 | 53.0 |
| 1973 | 2,735 | 9,324 | 12,059 | 2,378 | 19.7 |
| 1974 | -2,241 | 7,421 | 5,180 | 3,909 | 75.5 |
| 1975 | 1,088 | 8,828 | 9,916 | 892 | 9.0 |
| 1976 | -1,372 | 7,161 | 5,789 | 1,620 | 20.3 |
| 1977 | 743 | 6,190 | 6,933 | 1,147 | 16.5 |
| 1978 | 171 | 6,557 | 6,728 | 905 | 12.8 |
| 1979 | 181 | 6,452 | 6,633 | 1,719 | 24.1 |
| 1980 | 864 | 6,221 | 7,085 | 1,719 | 24.8 |
| 1981 | 1,465 | 7,124 | 8,589 | 1,776 | 22.4 |
| 1982 | -121 | 7,743 | 7,622 | 2,178 | 26.1 |
| 1983 | -21 | 9,654 | 9,633 | 1,250 | 12.1 |
| 1984 | 1,735 | 7,750 | 9,485 | 1,020 | 12.1 |
| 1985 | 1,735 | 8,991 | 10,726 | 1,304 | 13.5 |
| 1986 | -1,336 | 14,622 | 13,286 | 1,541 | 10.5 |
| 1987 | -252 | 14,012 | 13,760 | 1,778 | 12.6 |
| 1988 | -775 | 14,378 | 13,603 | 1,404 | 9.6 |

[1]Computed as beginning stocks, production, and imports less exports and ending stocks. Negative indicates errors in data or unaccounted-for supplies.

**Appendix table 5—Raw wool and wool textile imports, 1950-88**

| Year | Raw wool, clean basis | | | Raw wool equivalent of of imported textiles |
|---|---|---|---|---|
| | Duty-free | Dutiable | Total | |
| | *Million pounds* | | | |
| 1950 | 216.7 | 250.1 | 466.8 | 63.8 |
| 1951 | 89.2 | 272.0 | 361.2 | 56.4 |
| 1952 | 118.6 | 248.5 | 367.1 | 58.0 |
| 1953 | 128.6 | 165.7 | 294.3 | 62.0 |
| 1954 | 102.1 | 103.9 | 206.0 | 61.1 |
| 1955 | 136.0 | 112.8 | 248.8 | 81.4 |
| 1956 | 143.1 | 103.8 | 246.9 | 81.1 |
| 1957 | 121.0 | 78.2 | 119.2 | 85.2 |
| 1958 | 122.6 | 67.1 | 189.7 | 90.2 |
| 1959 | 191.6 | 100.5 | 292.2 | 126.9 |
| 1960 | 153.9 | 74.3 | 228.2 | 132.1 |
| 1961 | 157.3 | 90.3 | 247.6 | 127.5 |
| 1962 | 143.5 | 125.8 | 269.3 | 145.6 |
| 1963 | 168.0 | 109.2 | 277.2 | 152.5 |
| 1964 | 113.9 | 98.4 | 212.3 | 141.1 |
| 1965 | 108.9 | 162.6 | 271.6 | 156.7 |
| 1966 | 114.6 | 162.5 | 277.1 | 144.3 |
| 1967 | 78.2 | 109.1 | 187.3 | 123.4 |
| 1968 | 119.6 | 129.7 | 249.3 | 146.0 |
| 1969 | 95.7 | 93.5 | 189.2 | 129.7 |
| 1970 | 73.3 | 79.8 | 153.1 | 116.6 |
| 1971 | 83.9 | 42.7 | 126.6 | 89.7 |
| 1972 | 71.8 | 24.8 | 96.6 | 95.4 |
| 1973 | 40.5 | 19.6 | 60.1 | 90.0 |
| 1974 | 15.1 | 11.8 | 26.9 | 74.2 |
| 1975 | 17.0 | 16.6 | 33.6 | 68.4 |
| 1976 | 19.1 | 38.4 | 57.5 | 98.6 |
| 1977 | 18.8 | 34.2 | 53.0 | 116.6 |
| 1978 | 23.4 | 27.0 | 50.4 | 129.3 |
| 1979 | 22.0 | 20.3 | 42.3 | 109.5 |
| 1980 | 26.0 | 30.5 | 56.5 | 103.3 |
| 1981 | 26.2 | 48.1 | 74.3 | 113.6 |
| 1982 | 21.4 | 40.0 | 61.4 | 112.2 |
| 1983 | 28.7 | 49.4 | 78.1 | 149.8 |
| 1984 | 30.9 | 63.3 | 94.2 | 210.2 |
| 1985 | 29.3 | 50.2 | 79.5 | 264.8 |
| 1986 | 30.9 | 66.1 | 97.0 | 275.6 |
| 1987 | 31.0 | 74.1 | 105.1 | 276.1 |
| 1988 | 24.4 | 72.3 | 96.7 | 242.4 |

**Appendix table 6—Farm-related program costs for wool and mohair**

| Fiscal year | Support payments | | | Net price support and related expenditures[1] |
|---|---|---|---|---|
| | Shorn wool | Unshorn lambs | Mohair | |
| | *Million dollars* | | | |
| 1961 | 45.4 | 8.5 | NP | 60.9 |
| 1962 | 49.9 | 9.6 | NP | 65.3 |
| 1963 | 47.8 | 9.1 | NP | 63.2 |
| 1964 | 55.0 | 11.5 | .8 | 73.2 |
| 1965 | 16.6 | 3.6 | NP | 22.6 |
| 1966 | 28.1 | 6.1 | 2.0 | 38.2 |
| 1967 | 21.1 | 5.1 | 6.4 | 35.1 |
| 1968 | 48.0 | 9.9 | 11.5 | 72.5 |
| 1969 | 44.8 | 9.6 | 10.7 | 67.9 |
| 1970 | 41.6 | 9.1 | 1.9 | 56.3 |
| 1971 | 52.0 | 12.0 | 7.9 | 75.4 |
| 1972 | 85.6 | 17.2 | 10.0 | 116.6 |
| 1973 | 56.2 | 11.8 | NP | 74.0 |
| 1974 | .1 | NP | NP | 7.8 |
| 1975 | 12.2 | 2.5 | NP | 18.9 |
| 1976[2] | 35.7 | 5.9 | NP | 45.5 |
| 1977 | 5.6 | 1.2 | NP | 10.4 |
| 1978 | 24.4 | 4.4 | NP | 33.0 |
| 1979 | 30.7 | 5.4 | NP | 39.4 |
| 1980 | 26.5 | 4.5 | NP | 34.5 |
| 1981 | 32.1 | 5.5 | NP | 42.1 |
| 1982 | 40.7 | 6.3 | 1.8 | 53.9 |
| 1983 | 59.1 | 12.4 | 16.8 | 93.6 |
| 1984 | 99.4 | 17.4 | 6.4 | 132.0 |
| 1985 | 76.7 | 15.6 | 10.3 | 109.4 |
| 1986 | 85.0 | 18.9 | 12.6 | 122.7 |
| 1987 | 83.1 | 19.3 | 42.9 | 152.1 |
| 1988[3] | 74.6 | 16.8 | 36.6 | 130.6 |

NP = No payments.
[1]Payments for shorn wool, unshorn lambs, and mohair plus administrative and interest expenses.
[2]Includes July-September to allow for shift from July-June to Oct.-Sep. fiscal year.
[3]Estimated.

## Appendix table 7—Wool and mohair: Prices and Government payments[1]

| Year | Wool | | | Mohair | | |
|---|---|---|---|---|---|---|
| | Support price | Average market price received by producers | Average direct payment | Support price | Average market price received by producers | Average direct payment |
| | | | *Cents per pound, greasy* | | | |
| 1950 | 45.2 | 62.1 | NP | 49.1 | 76.0 | NP |
| 1951 | 50.7 | 97.1 | NP | 53.4 | 118.0 | NP |
| 1952 | 54.2 | 54.1 | NP | 57.2 | 96.3 | NP |
| 1953 | 53.1 | 54.9 | NP | 60.7 | 87.7 | NP |
| 1954 | 53.2 | 53.2 | NP | 64.3 | 72.4 | NP |
| 1955 | 62.0 | 42.8 | 20.4 | 70.0 | 82.2 | NP |
| 1956 | 62.0 | 53.7 | 18.4 | 70.0 | 84.4 | NP |
| 1957 | 62.0 | 53.7 | 5.9 | 70.0 | 83.7 | NP |
| 1958 | 62.0 | 36.4 | 31.0 | 70.0 | 72.3 | NP |
| 1959 | 62.0 | 43.3 | 18.3 | 70.0 | 96.4 | NP |
| 1960 | 62.0 | 42.0 | 19.9 | 70.0 | 89.7 | NP |
| 1961 | 62.0 | 42.9 | 19.4 | 73.0 | 85.6 | NP |
| 1962 | 62.0 | 47.7 | 14.2 | 74.0 | 71.4 | 3.0 |
| 1963 | 62.0 | 48.5 | 10.4 | 76.0 | 88.1 | NP |
| 1964 | 62.0 | 53.2 | 8.5 | 72.0 | 94.3 | NP |
| 1965 | 62.0 | 47.1 | 15.2 | 72.0 | 65.5 | 6.3 |
| 1966 | 65.0 | 52.1 | 12.0 | 75.8 | 53.7 | 22.6 |
| 1967 | 66.0 | 39.8 | 27.3 | 76.4 | 40.9 | 43.7 |
| 1968 | 67.0 | 40.5 | 27.5 | 77.4 | 45.2 | 41.9 |
| 1969 | 69.0 | 41.8 | 27.7 | 77.4 | 65.1 | 10.0 |
| 1970 | 72.0 | 35.5 | 36.2 | 80.2 | 39.1 | 43.4 |
| 1971 | 72.0 | | | | | |
| 19.4 | 59.4 | 80.2 | 30.1 | 67.2 | | |
| 1972 | 72.0 | 35.0 | 40.4 | 80.2 | 81.4 | NP |
| 1973 | 72.0 | 82.7 | NP | 80.2 | 187.0 | NP |
| 1974 | 72.0 | 59.1 | 10.6 | 80.2 | 137.0 | NP |
| 1975 | 72.0 | 44.7 | 32.6 | 80.2 | 185.0 | NP |
| 1976 | 72.0 | 65.7 | 6.0 | 80.2 | 298.0 | NP |
| 1977 | 99.0 | 72.0 | 26.3 | 149.8 | 287.0 | NP |
| 1978 | 108.0 | 74.5 | 34.7 | 164.7 | 459.0 | NP |
| 1979 | 115.0 | 86.3 | 29.1 | 194.3 | 510.0 | NP |
| 1980 | 123.0 | 88.1 | 35.3 | 290.3 | 350.0 | NP |
| 1981 | 135.0 | 94.5 | 42.5 | 371.8 | 350.0 | 18.8 |
| 1982 | 137.0 | 68.4 | 67.5 | 397.7 | 255.0 | 168.0 |
| 1983 | 153.0 | 61.3 | 114.7 | 462.7 | 405.0 | 59.4 |
| 1984 | 165.0 | 79.5 | 96.7 | 516.9 | 430.0 | 92.0 |
| 1985 | 165.0 | 63.3 | 118.0 | 443.0 | 345.0 | 94.7 |
| 1986 | 178.0 | 66.8 | 126.0 | 493.0 | 251.0 | 266.9 |
| 1987 | 181.0 | 91.7 | 99.8 | 495.0 | 263.0 | 217.9 |
| 1988 | 178.0 | 138.0 | 46.4 | 469.0 | 189.0 | 305.8 |
| 1989 | 177.0 | --- | --- | 458.8 | --- | --- |

--- = Not available.
NP = No payment.
[1]Support prices are average loan rates 1950-54. Support was carried out through loans or purchases, rather than direct payments. Support prices and Government payments are for marketing years beginning April 1 for 1955-62; the 9 months April through December for 1963; and calendar years beginning in 1964. Market prices are for calendar years for 1955-56 and 1964-83; April-May marketing years for 1957-62; and April-December for 1963. Payment rate is computed as total payments divided by U.S. wool production and Texas mohair production.

**Appendix table 8—Value comparisons for wool, 1950-88**

| Year | Market value per sheep shorn | | Gross value of shorn wool[1] | |
|---|---|---|---|---|
| | Nominal | Real[2] | Nominal | Real[2] |
| | *Dollars* | | *Million dollars* | |
| 1950 | 5.10 | 21.34 | 134.6 | 563.2 |
| 1951 | 8.10 | 32.27 | 221.5 | 882.4 |
| 1952 | 4.50 | 17.65 | 126.3 | 495.3 |
| 1953 | 4.58 | 17.68 | 127.5 | 492.3 |
| 1954 | 4.53 | 17.22 | 125.5 | 477.2 |
| 1955 | 3.66 | 13.46 | 103.0 | 378.7 |
| 1956 | 3.77 | 13.42 | 107.2 | 381.5 |
| 1957 | 4.50 | 15.46 | 127.8 | 439.2 |
| 1958 | 3.01 | 10.13 | 88.6 | 298.3 |
| 1959 | 3.65 | 12.01 | 112.3 | 369.4 |
| 1960 | 3.58 | 11.59 | 111.4 | 360.5 |
| 1961 | 3.66 | 11.73 | 111.4 | 357.1 |
| 1962 | 4.03 | 12.63 | 117.6 | 368.7 |
| 1963 | 4.12 | 12.72 | 112.4 | 346.9 |
| 1964 | 4.43 | 13.47 | 112.9 | 343.2 |
| 1965 | 4.00 | 11.83 | 95.0 | 281.1 |
| 1966 | 4.41 | 12.60 | 101.2 | 259.1 |
| 1967 | 3.41 | 9.50 | 75.2 | 209.5 |
| 1968 | 3.46 | 9.18 | 71.8 | 190.5 |
| 1969 | 3.55 | 8.92 | 69.5 | 174.6 |
| 1970 | 2.98 | 7.10 | 57.2 | 136.2 |
| 1971 | 1.65 | 3.72 | 31.4 | 70.7 |
| 1972 | 2.96 | 6.37 | 55.5 | 119.4 |
| 1973 | 6.82 | 13.78 | 118.8 | 240.0 |
| 1974 | 4.88 | 9.04 | 77.8 | 144.1 |
| 1975 | 3.71 | 6.26 | 53.5 | 90.2 |
| 1976 | 5.42 | 8.59 | 73.3 | 116.2 |
| 1977 | 5.85 | 8.69 | 77.3 | 114.9 |
| 1978 | 6.03 | 8.35 | 76.7 | 106.2 |
| 1979 | 6.93 | 8.82 | 90.5 | 115.1 |
| 1980 | 7.00 | 8.17 | 92.8 | 108.3 |
| 1981 | 7.68 | 8.17 | 103.7 | 110.3 |
| 1982 | 5.51 | 5.51 | 72.8 | 72.8 |
| 1983 | 4.90 | 4.72 | 63.0 | 60.6 |
| 1984 | 6.18 | 5.74 | 75.9 | 70.5 |
| 1985 | 4.99 | 4.50 | 55.7 | 50.2 |
| 1986 | 5.22 | 4.58 | 56.6 | 49.7 |
| 1987 | 7.06 | 6.00 | 77.1 | 65.5 |
| 1988 | 10.87 | 8.98 | 124.6 | 103.0 |

[1]Average market price times production, greasy basis.
[2]Deflated using the gross national product deflator, 1982 = 1.0.

**Appendix table 9—Value comparisons for mohair, 1950-88**

| Year | Market value per goat clipped | | Gross value of production[1] | |
|---|---|---|---|---|
| | Nominal | Real[2] | Nominal | Real[2] |
| | *Dollars* | | *Million dollars* | |
| 1950 | 4.14 | 17.32 | 10.1 | 42.3 |
| 1951 | 6.37 | 25.38 | 15.2 | 60.6 |
| 1952 | 5.38 | 21.10 | 11.8 | 46.3 |
| 1953 | 4.99 | 19.27 | 11.2 | 43.2 |
| 1954 | 4.16 | 15.82 | 10.5 | 39.9 |
| 1955 | 4.81 | 17.68 | 13.9 | 51.1 |
| 1956 | 5.01 | 17.83 | 15.4 | 54.5 |
| 1957 | 5.06 | 17.39 | 16.0 | 55.0 |
| 1958 | 4.54 | 15.29 | 15.0 | 50.5 |
| 1959 | 6.36 | 20.92 | 23.3 | 76.6 |
| 1960 | 5.64 | 18.25 | 21.9 | 70.9 |
| 1961 | 5.62 | 18.01 | 22.6 | 72.4 |
| 1962 | 4.59 | 14.39 | 19.4 | 60.8 |
| 1963 | 5.86 | 18.09 | 25.6 | 79.0 |
| 1964 | 6.14 | 18.66 | 28.1 | 85.4 |
| 1965 | 4.42 | 13.08 | 21.3 | 63.0 |
| 1966 | 3.41 | 9.74 | 15.9 | 45.4 |
| 1967 | 2.70 | 7.52 | 11.1 | 30.9 |
| 1968 | 2.96 | 7.85 | 11.8 | 31.3 |
| 1969 | 4.27 | 10.73 | 13.5 | 33.9 |
| 1970 | 2.52 | 6.00 | 7.3 | 17.4 |
| 1971 | 2.05 | 4.62 | 4.5 | 10.1 |
| 1972 | 5.56 | 11.96 | 8.5 | 18.3 |
| 1973 | 12.81 | 25.88 | 18.6 | 37.6 |
| 1974 | 9.79 | 18.13 | 11.5 | 21.3 |
| 1975 | 13.09 | 22.07 | 15.9 | 26.8 |
| 1976 | 21.87 | 34.66 | 24.1 | 38.2 |
| 1977 | 18.90 | 28.08 | 23.0 | 34.2 |
| 1978 | 31.30 | 43.35 | 37.2 | 51.5 |
| 1979 | 37.20 | 47.33 | 47.4 | 60.3 |
| 1980 | 24.84 | 28.98 | 30.8 | 35.9 |
| 1981 | 27.19 | 28.92 | 35.4 | 37.7 |
| 1982 | 19.17 | 19.17 | 25.5 | 25.5 |
| 1983 | 31.57 | 30.38 | 42.9 | 41.3 |
| 1984 | 33.21 | 30.84 | 48.2 | 44.8 |
| 1985 | 26.68 | 24.06 | 45.9 | 41.4 |
| 1986 | 20.08 | 17.63 | 40.2 | 35.3 |
| 1987 | 21.30 | 18.10 | 42.6 | 36.2 |
| 1988 | 14.12 | 11.67 | 32.8 | 27.1 |

[1]Average market price times production, greasy basis.
[2]Deflated using the gross national product deflator, 1982 = 1.0

**Appendix table 10—World sheep population and world production, use, and ending stocks for wool, 1965-88[1]**

| Year | Sheep population | Production | Production | Consumption | Exports | Ending stocks |
|---|---|---|---|---|---|---|
| | *Mil. head* | *Mil. lbs., greasy* | *Mil. lbs., clean* | | *Mil. lbs., greasy* | *Mil. lbs., clean* |
| 1965/66 | 928 | 5,731 | 3,291 | 3,405 | 3,200 | 154 |
| 1966/67 | 942 | 5,853 | 3,388 | 3,248 | 2,967 | 106 |
| 1967/68 | 951 | 5,997 | 3,470 | 3,453 | 3,354 | 322 |
| 1968/69 | 958 | 6,175 | 3,571 | 3,325 | 3,423 | 311 |
| 1969/70 | 962 | 6,131 | 3,543 | 3,308 | 3,141 | 249 |
| 1970/71 | 950 | 6,107 | 3,532 | 3,263 | 3,074 | 225 |
| 1971/72 | 937 | 5,972 | 3,452 | 3,480 | 3,304 | 287 |
| 1972/73 | 912 | 5,560 | 3,212 | 3,201 | 2,662 | 165 |
| 1973/74 | 921 | 5,474 | 3,157 | 2,783 | 2,209 | 86 |
| 1974/75 | 960 | 5,769 | 3,331 | 2,993 | 2,633 | 234 |
| 1975/76 | 943 | 5,911 | 3,391 | 3,341 | 3,043 | 558 |
| 1976/77 | 938 | 5,827 | 3,325 | 3,258 | 2,602 | 445 |
| 1977/78 | 1,012 | 5,838 | 3,276 | 3,264 | 2,715 | 381 |
| 1978/79 | 1,032 | 5,992 | 3,375 | 3,435 | 2,750 | 315 |
| 1979/80 | 1,081 | 6,172 | 3,472 | 3,456 | 2,631 | 207 |
| 1980/81 | 1,087 | 6,268 | 3,525 | 3,489 | 2,715 | 220 |
| 1981/82 | 1,105 | 6,334 | 3,563 | 3,431 | 2,624 | 269 |
| 1982/83 | 1,097 | 6,464 | 3,649 | 3,554 | 2,730 | 368 |
| 1983/84 | 1,100 | 6,510 | 3,702 | 3,514 | 2,660 | 456 |
| 1984/85 | 1,097 | 6,695 | 3,847 | 3,602 | 2,991 | 456 |
| 1985/86 | 1,103 | 6,698 | 3,836 | 3,741 | 3,054 | 386 |
| 1986/87 | 1,122 | 6,832 | 3,922 | 3,844 | 3,239 | 390 |
| 1987/88 | 1,145 | 6,969 | 4,017 | 3,909 | 3,090 | 212 |
| 1988/89 | --- | 7,121 | 4,090 | --- | --- | 150 |

--- = Not available.

[1]Sheep population during April-June of second year indicated for most countries. Consumption and exports are calendar year for the second year indicated for most countries. Stocks are for the countries that are both major producers and exporters.

**Appendix table 11—Wool production and exports for three major foreign exporters, 1965-88**

| Year | Australia | | New Zealand | | Argentina | |
|---|---|---|---|---|---|---|
| | Production | Exports | Production | Exports | Production | Exports |
| | | | *Million pounds, greasy* | | | |
| 1965/66 | 1,663 | 1,431 | 695 | 611 | 430 | 324 |
| 1966/67 | 1,762 | 1,448 | 709 | 500 | 441 | 242 |
| 1967/68 | 1,770 | 1,484 | 728 | 580 | 494 | 272 |
| 1968/69 | 1,949 | 1,556 | 732 | 680 | 461 | 249 |
| 1969/70 | 2,035 | 1,664 | 723 | 669 | 445 | 212 |
| 1970/71 | 1,964 | 1,508 | 736 | 649 | 441 | 178 |
| 1971/72 | 1,940 | 1,612 | 710 | 695 | 417 | 163 |
| 1972/73 | 1,620 | 1,546 | 681 | 635 | 390 | 179 |
| 1973/74 | 1,545 | 1,134 | 628 | 472 | 397 | 80 |
| 1974/75 | 1,750 | 1,091 | 648 | 482 | 406 | 138 |
| 1975/76 | 1,662 | 1,386 | 688 | 599 | 414 | 185 |
| 1976/77 | 1,550 | 1,606 | 668 | 557 | 388 | 179 |
| 1977/78 | 1,493 | 1,189 | 686 | 535 | 379 | 218 |
| 1978/79 | 1,552 | 1,381 | 708 | 571 | 377 | 172 |
| 1979/80 | 1,563 | 1,250 | 787 | 629 | 377 | 177 |
| 1980/81 | 1,545 | 1,324 | 840 | 618 | 375 | 222 |
| 1981/82 | 1,581 | 1,238 | 800 | 628 | 370 | 177 |
| 1982/83 | 1,548 | 1,196 | 818 | 710 | 357 | 144 |
| 1983/84 | 1,605 | 1,244 | 802 | 680 | 357 | 166 |
| 1984/85 | 1,795 | 1,389 | 822 | 700 | 331 | 132 |
| 1985/86 | 1,830 | 1,540 | 789 | 620 | 335 | 153 |
| 1986/87 | 1,955 | 1,724 | 772 | 662 | 331 | 132 |
| 1987/88 | 2,015 | 1,696 | 763 | 607 | 346 | 133 |
| 1988/89 | 2,088 | --- | 730 | --- | 368 | --- |
| 1989/90 | 2,242 | --- | --- | --- | --- | --- |

--- = Not available.

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