Pat Krug

National Agricultural Statistics Service
Fact Finding for Agriculture

AGRICULTURAL PRODUCTION AND PRICES - 125 YEARS

A HISTORICAL REVIEW

UNITED STATES DEPARTMENT OF AGRICULTURE

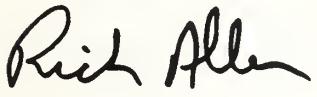
JUNE 1989

FOREWORD

In 1988, the National Agricultural Statistics Service commemorated 125 continuous years of agricultural statistics in the United States Department of Agriculture. The celebration took many forms including a new video tape on the Agency, special publicity materials, displays at national meetings, and a 3-day open house centered around the July crop report. One of the extra aspects added to the celebration effort was a series of historical articles tracing acreage, production, and price trends for statistics that have been available for most of the 125 years.

This publication compiles all of the historical articles into one volume. It is designed to serve as a multi-purpose reference guide to American agricultural trends. (At least as far as trends for those items which have remained important throughout the full period. No effort was made to trace the demise of cowpeas, broom corn, and the numbers of horses and mules used for power or to chart the rise in this century of soybean production.) This publication is also designed to aid future agricultural statisticians when the USDA celebrates 150 years, 200 years, etc., of reports.

This was an interesting project and I believe it was educational to all of those who participated in its success. I want to thank everyone who contributed to the research, writing, graphics, and printing.



RICH ALLEN
Deputy Administrator
for Programs

WHEAT ESTIMATES - A HISTORY

Wheat is the chief food grain grown in this country. Wheat flour is used to make bread products, pasta, and pastries. The milling byproducts (bran, shorts, and middlings) are used in animal feeds. Five major classes are produced by U.S. farmers: Hard Red Winter, Hard Red Spring, Soft Red Winter, White, and Durum wheat. Each class has unique end-use qualities and each is marketed and priced separately. The Hard Red wheats are used primarily to produce bread flour. Soft Red winter produces cake and pastry flour. Durum wheat is used to make pasta products. White wheat is used mainly for pastry flour, and shredded and puffed breakfast foods.

The National Agricultural Statistics Service estimates of wheat acreage and production date from 1866. Most of the wheat harvested that year was located east of the Mississippi River with the heaviest concentrations in Illinois, Indiana, Michigan, Ohio, and Wisconsin.

Introduction of a Hard Red Winter variety by Russian Mennonites settling Kansas in 1873-74 triggered the expansion of wheat west of the Mississippi. This wheat, known as Turkey Red, proved superior to previously grown varieties. By 1890, it had spread across the Great Plains.

Area for grain averaged 36.3 million acres during the 1880's and 44.0 million a decade later. The trend continued through World War I, peaking at 73.7 million acres in 1919. That level was not exceeded, nor even approached, until after World War II when harvested area reached 75.9 million acres in 1949.

The NASS estimating series through 1908 consisted solely of total wheat acres for harvest, yield, and production, with no breakout by type. Winter and all Spring wheat estimates ran from 1909-1918. Then in 1919 separate estimates were added for Durum and other spring wheat acres, yield, and production. The production by class series also started with the 1919 crop.

Planted acreage estimates started in 1909, but were limited to winter wheat through 1918. The introduction of spring planted estimates in 1919 allowed for all wheat planted estimates to begin. The spring planted series was separated into durum and other spring planted acres estimates starting in 1926.

Prior to 1940, wheat production rose and fell in concert with fluctuations in harvested acreage. Harvest practices had evolved from the horse-drawn binder and stationary thresher

era to that of increasing mechanization. Nearly half the wheat was harvested and threshed by pull-type combines by 1940.

Overproduction in the fifties was an after-effect of World War II. Wartime demand had exceeded production by substantial margins. Farmers reacted by increasing acreages, seeding improved varieties, and using commercial fertilizers. Rising yields and high support prices made wheat the most profitable crop for many growers. By 1950, a huge production capacity existed. Production continued at wartime levels despite declines in domestic demand. Surpluses began to mount.

The Agricultural Act of 1954 limited the national wheat allotment to 55 million acres, but increasing yields kept pushing up production levels. Although other programs removed cropland from production, ending stocks continued to rise, reaching 1.4 billion bushels in 1960.

Growing export demand finally aided the acreage controls in reversing the stocks build-up. Carryovers were sharply reduced by 1966. But then the continued heavy overseas demand raised concerns about the ability to meet domestic needs and still maintain export market shares. Allotted acres were increased. Producers quickly responded, spurring another round of overproduction. Seeded acreage for 1967 was the highest in 14 years. Both the 1967 and 1968 crops set production records, each topping 1.5 billion bushels. The rapid over-correction set stocks on an upward spiral. Harvested area was cut to 47 million acres in 1969, 14 percent less than 1968. Acreage remained below 48 million through 1972. Production levels stabilized once again.

Adverse weather in many countries during 1972 caused worldwide wheat shortages in 1973. U.S. wheat prices doubled. Farmers planted more land when acreage allotments were lifted. This, along with improving yields, pushed production above 2 billion bushels by 1975. When the world weather conditions improved, reduced demand had stocks climbing once again.

Yields were a relatively constant 12-16 bushels per acre prior to 1941. They have trended steadily higher since then through use of commercial fertilizers and constantly improving varietal selection. The 1956 crop was the first to average over 20 bushels per acre. Yield averages have dipped below 30 bushels only once since 1969. Recent averages have hovered in the mid- to upper- 30- bushel range.

Production practices have evolved from pull-type combines to the self-propelled machinery used on large, modern farms.

Wheat production now runs three to four times the 1900 level and twice that of 1944. Total production has been less than 2 billion bushels only once since 1975.

In 1981, the winter wheat crop was 2.097 billion bushels and all wheat production reached 2.785 billion bushels, both records that still stand. The 1981 season's harvested area is also the record for winter and all wheat at 58.476 and 80.642 million acres, respectively.

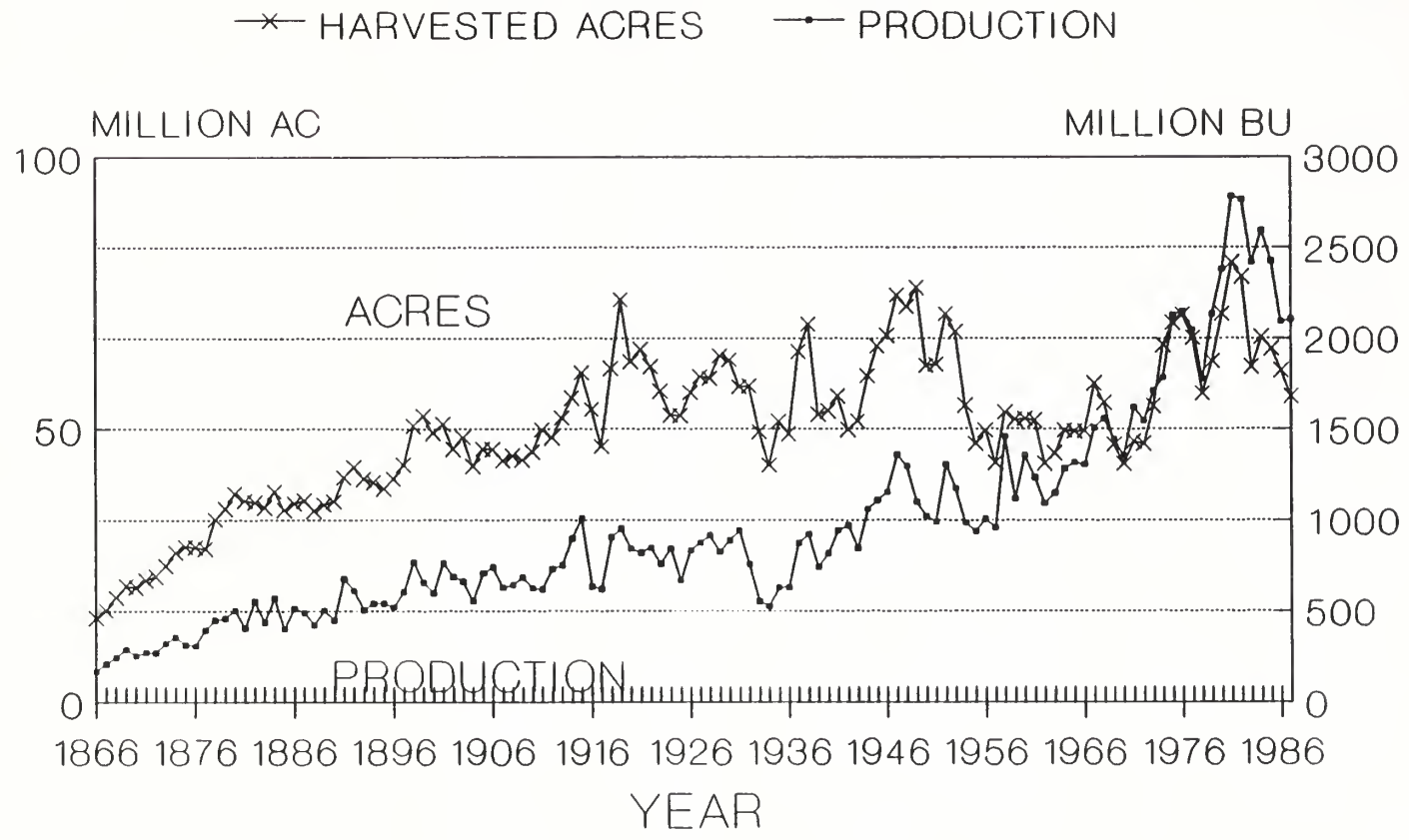
The record production for other spring wheat is 546 million bushels in 1982. The 183-million bushel crop of 1981 is the Durum production high. Harvested area records are 19.612 million acres of other spring wheat in 1919 and 6.775 million acres of Durum wheat in 1928.

Winter and all wheat record yields occurred in 1983. The winter crop averaged 41.8 bushels per acre helping the all wheat average reach 39.4 bushels. Spring wheat high yields are from the 1985 crop when Durum averaged 36.4 bushels per acre and other spring 35.4 bushels.

Currently, there are forty-two States in the wheat estimating program.

(Based on the "U.S. Wheat Industry," Agricultural Economic Report 432, by Walter G. Heid, Jr., April 1980.)

U S ALL WHEAT
1866-1987



BARLEY PRODUCTION AND ESTIMATES - A HISTORY

In the United States barley is used for livestock feed, food products, alcohol, and seed. Approximately two-thirds of the domestic use is for livestock feed. It is largely produced in the Northern States with the five major producing States (North Dakota, Montana, Idaho, Minnesota, and Washington) accounting for nearly three-fourths of the U.S. production.

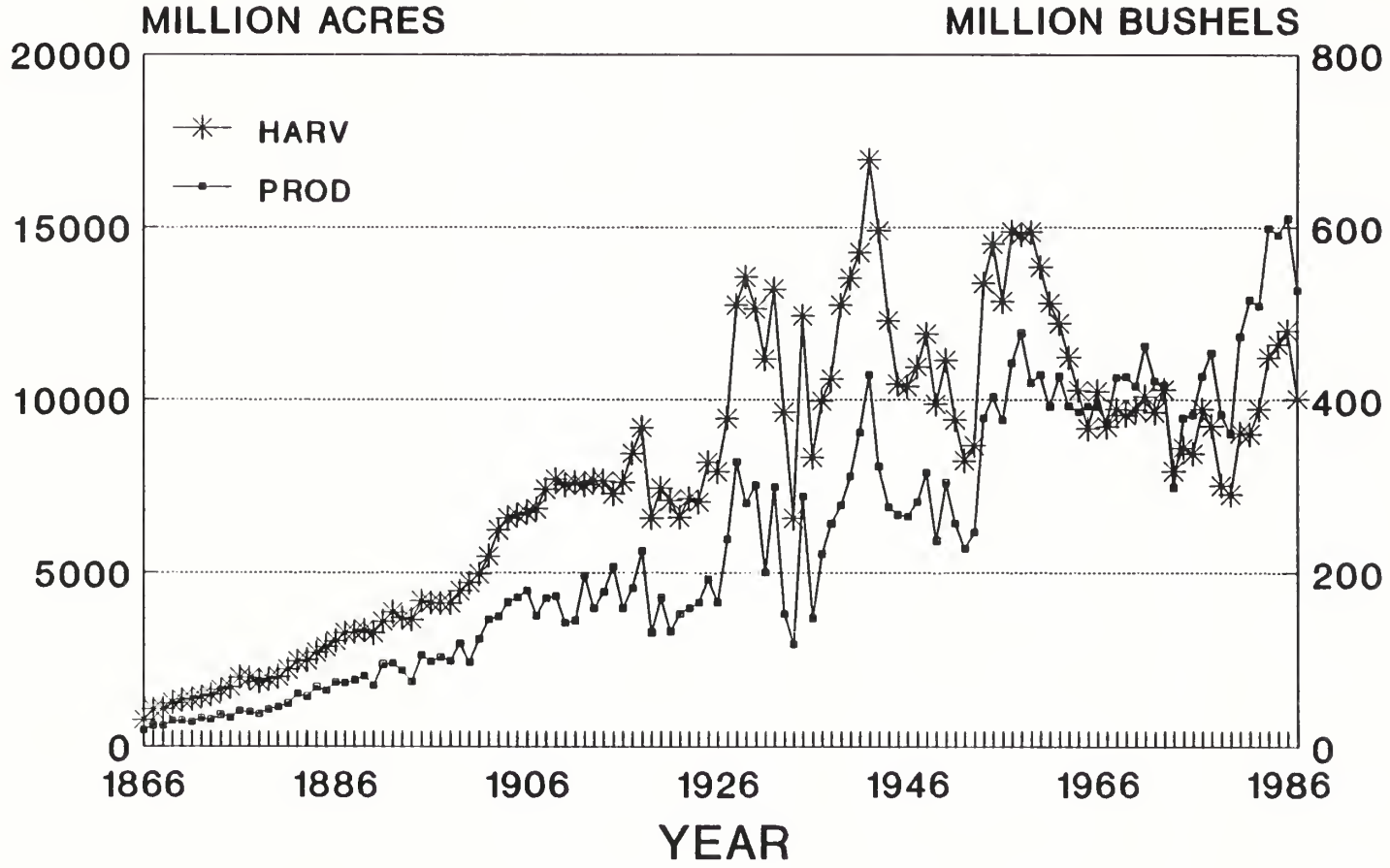
Estimates of acreage harvested, yield, and production of barley have been made since 1866. Acreage planted was first estimated in 1926.

Harvested barley acreage increased steadily from 1866 until 1918 when it reached a level of 9.2 million acres. After some acreage decline in the early 1920's, acreage harvested exceeded 10 million acres for the first time in 1928. While acreage has been quite variable since 1930, acreage has been about 10 million acres or higher in most years. The acreage harvested peaked in 1942 at 17.0 million acres. Increasing yields have resulted in high production in the eighties, and the largest production was in 1986, when 611 million bushels were produced.

Use of barley for feed and alcohol has increased while per capita consumption of barley food products has dropped considerably. Since 1972, per capita consumption has dropped about one-third.

The United States produces over 7 percent of the world's barley. Barley has accounted for about 4 percent of all acreage planted to principal crops in recent years. The 1987 barley crop of 527 million bushels was the fourth largest on record.

U.S. BARLEY
1866-1987



OAT PRODUCTION AND ESTIMATES - A HISTORY

The United States produces about 14 percent of the world's oats. In the U.S. oats are primarily used for livestock feed, food products, and seed. Approximately 85 percent of domestic use is for livestock feed. Oats are principally fed to dairy cows and horses.

Estimates of acreage harvested, yield, and production of oats have been made since 1866. Acreage planted to oats was first estimated in 1926.

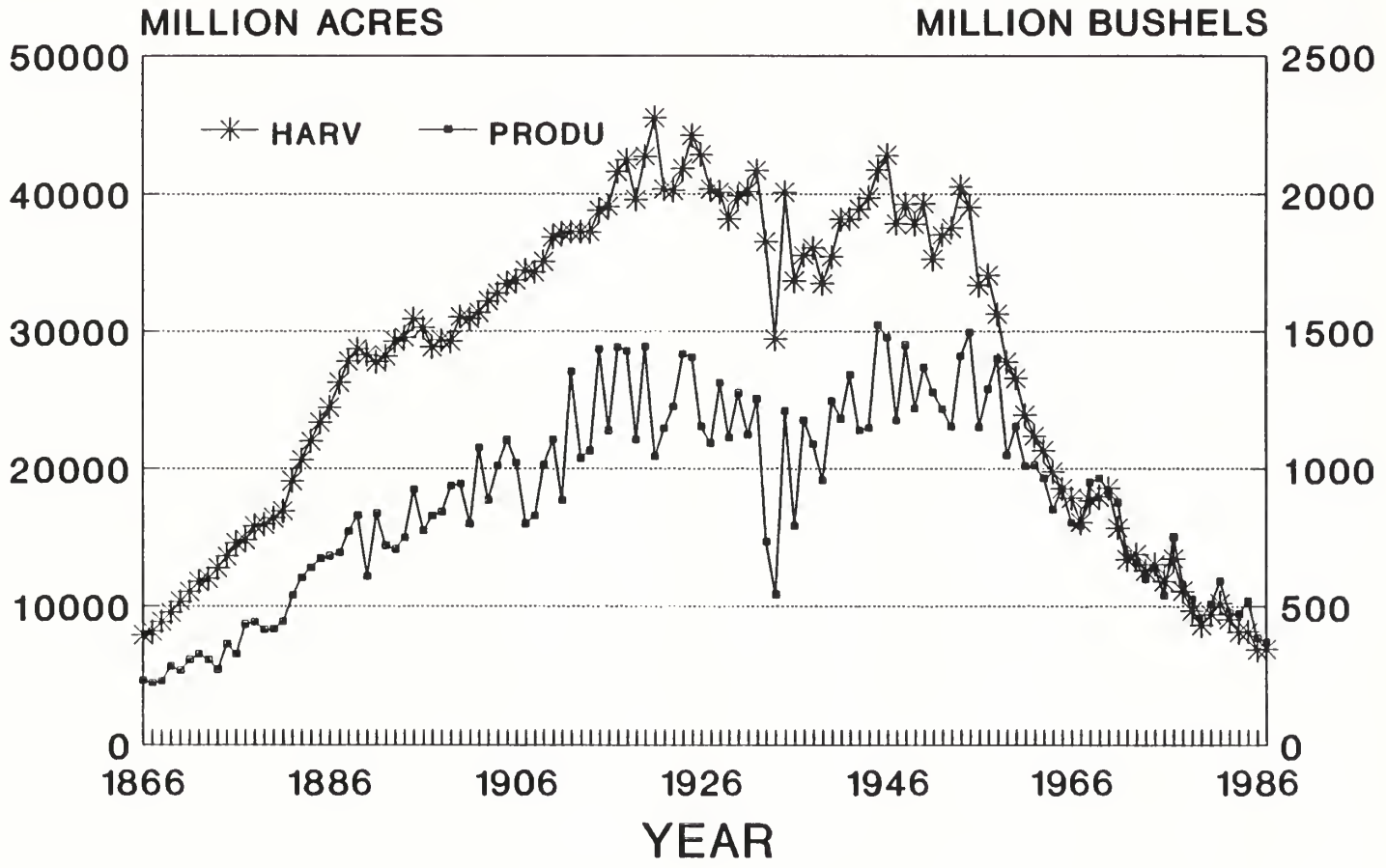
Oats were a major crop from colonial days until the 1950's. The harvested acreage actually peaked in 1921 at 45.5 million acres, but remained in the 30-40 million range until the late 50's. Production peaked in 1945 at 1.52 billion bushels.

Decreased numbers of dairy cows, work horses, and mules have greatly reduced the demand for oats for use as a feed grain. The profitability of soybeans, corn, and wheat have also helped reduce the size of the oat crop.

Per capita consumption of oat food products has remained fairly steady over time. Oats are one of the most nutritious cereals and based on recent medical research oat bran or whole oats made become a more important part of U.S. diets.

The 1987 oat crop of 374 million bushels was the smallest since 1876 when 327 million bushels were produced. Five major producing States (South Dakota, Minnesota, Wisconsin, North Dakota, and Iowa) accounted for 57 percent of the U.S. production. Oats have accounted for about 5 percent of all acreage planted to principal crops in recent years.

U.S. OATS
1866-1987



RYE PRODUCTION AND ESTIMATES - A HISTORY

Rye is a "minor" food grain crop in nearly all of the States where grown. The main use of the acreage seeded each fall is as a cover crop. Harvested grain production is utilized in rye flour for bread products and alcohol production.

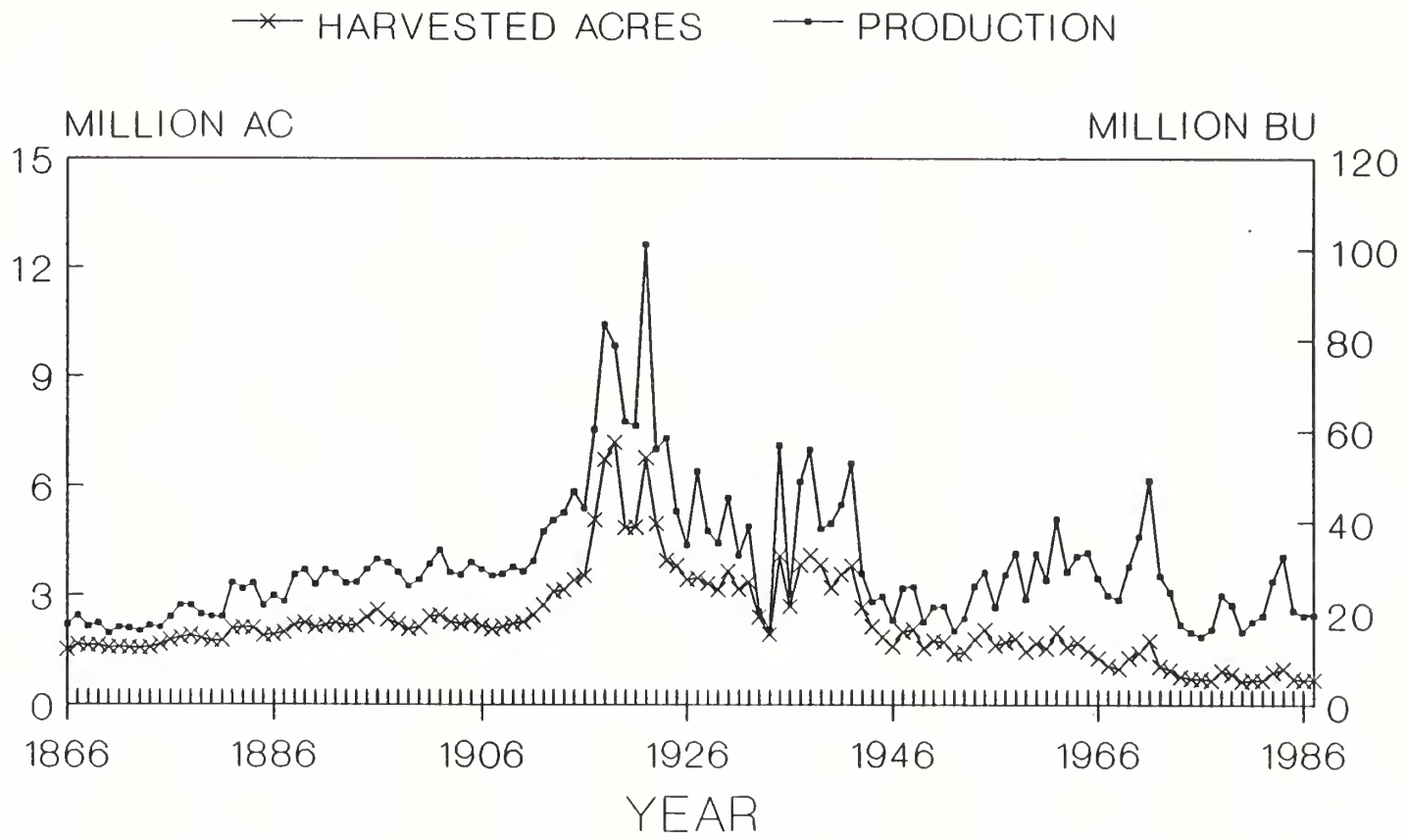
U.S. rye estimates date from 1866. The series consisted of harvested acreage, yield, and production through 1930. Planted acreage estimates were added in 1931.

Harvested acres ranged between 1.5 and 3.0 million acres until 1913. A rapid upturn saw the acreage reach 7.2 million acres in 1919. Acreage has trended steadily downward since 1922. The 1956 crop was the last to exceed 2 million acres for grain; harvested area has not topped a million acres since 1972.

Production rarely reached 30 million bushels prior to 1910. It increased with the acreage upswing through World War I, hitting a high of 101 million bushels in 1922. The 1942 crop was the last to surpass 50 million bushels. Annual productions have reached 40 million bushels just twice since then.

Yield advances were limited during the first 90 years of the rye series, exceeding 14.0 bushels per acre only 5 times prior to 1955. The 1962 crop was the first to hit 20 bushels per acre. Average yields have stayed above the 20 bushel benchmark since 1965, peaking at 33.1 bushels per acre in 1984.

U S RYE
1866-1987



CORN PRODUCTION AND ESTIMATES - A HISTORY

The United States produces about 40 percent of the world's corn. Corn has accounted for about 25 percent of all acreage planted to principal crops in recent years. The major uses of corn in the U.S. are livestock feed, food products, sweeteners, alcohol-ethanol production, and seed. Approximately 80 percent of domestic use is for livestock and poultry feed.

The U.S. Department of Agriculture began crop and livestock estimates at the time of the War between the States to help farmers better judge the value of their production. The National Agricultural Statistics Service has records of acreage of corn harvested, yield, and production by States dating back to 1866. Most of the corn for grain harvested that year was south of the Great Lakes States and east of the Mississippi River.

The acreage of corn for grain trended upward for several decades, reaching a peak of nearly 111 million acres in 1932. From 1866 to 1932, corn acreage increased tremendously in the area just west of the Mississippi River now called the Western Corn Belt (Iowa, Missouri, Nebraska, Kansas, Minnesota, and South Dakota). Other States in the Corn Belt are Illinois, Indiana, Michigan, North Dakota, Ohio, and Wisconsin.

The estimates from 1866 through 1925 consisted of acreage harvested for all purposes, yield, and production. In 1919 the first estimates of corn silage acreage harvested, yield, and production were made. Beginning in 1926 estimates of all corn planted were added.

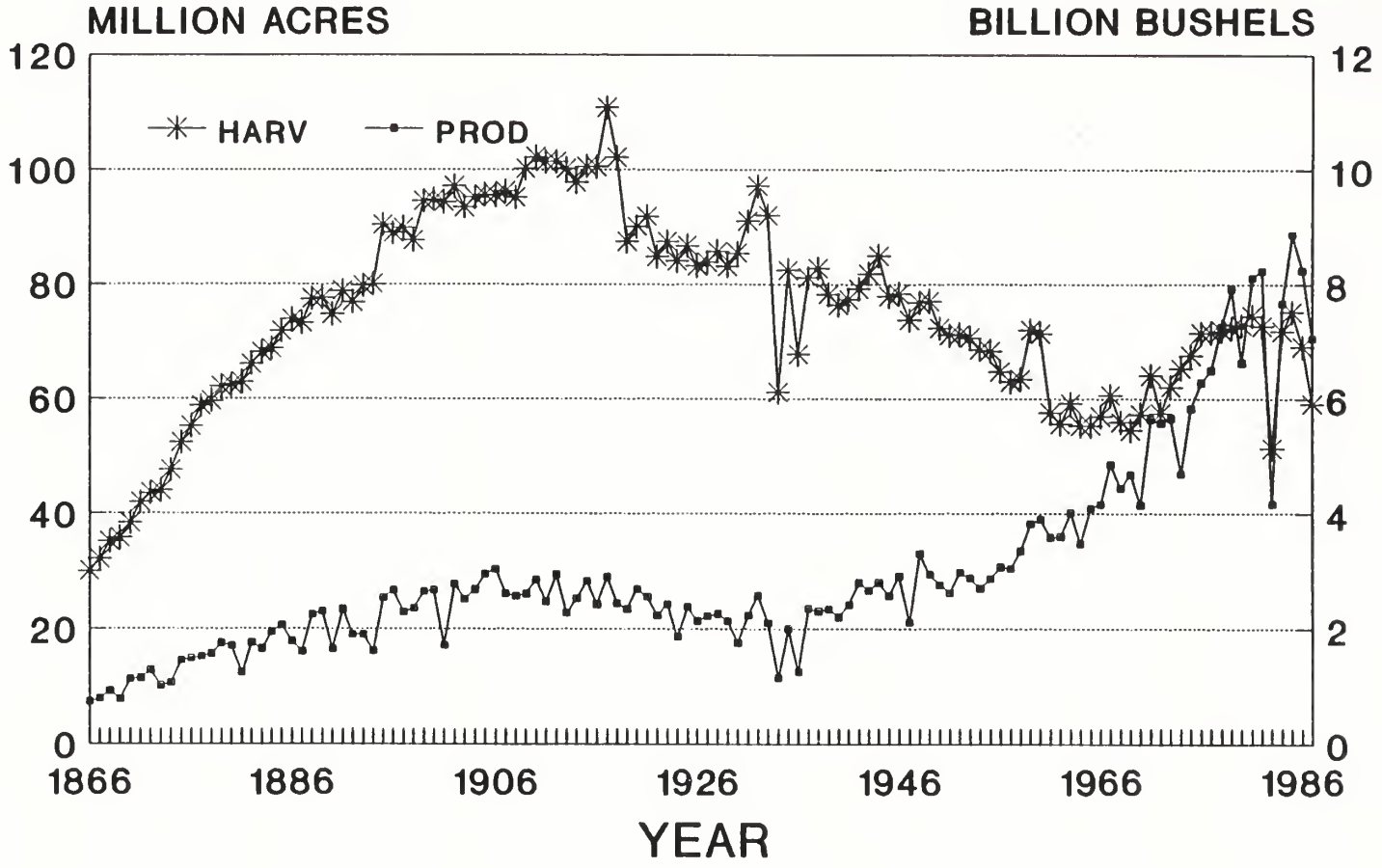
U.S. corn for grain yields were generally in the 20-30 bushels per acre from 1866 to 1940. During the early forties the trend toward greater use of double cross hybrids increased yields. National estimates of corn acreage planted with hybrid seed were made from 1933 through 1960. In 1935 slightly over 1 percent of the total acreage was planted with hybrid seed. This increased to nearly 31 percent by 1940 and 78 percent by 1950. In 1960, 96 percent of the acreage was planted with hybrid seed.

The greater use of chemical fertilizers, especially nitrogen fertilizers, spread across the Corn Belt during the fifties and sixties resulting in dramatic increases in yields. Variability in yields during the seventies and eighties has been caused mostly by weather conditions. Drought conditions in 1974, 1980, and 1983 reduced yields significantly.

Extreme favorable weather conditions in 1985, 1986, and 1987 produced record yields. By 1987, the National average yield per acre of corn for grain was up to 119.4 bushels, nearly five times the 1866 yield.

The production of corn since the early thirties has been greatly affected by government farm programs. Most government programs have involved acreage controls, guaranteed prices, and government purchases of surplus production. While acreage has varied significantly from year to year, total corn production has trended upward. A record 8.9 billion bushels were produced in 1985. The 1987 crop of 7.1 billion bushels was the eight largest on record. Five major producing States (Iowa, Illinois, Nebraska, Minnesota, and Indiana) account for 65 percent of the total U.S. production.

U.S. CORN
1866-1987



COTTON PRODUCTION AND ESTIMATES - A HISTORY

Cotton has played a major role in the development of America. From the planting of cotton in the gardens of Virginia settlers in 1607 to providing biological insulation suits for astronauts, cotton has been a "perennial patriot" in the growth of this country. It is considered the single most important textile fiber in the world, accounting for about 50 percent of total world fiber production.

Cotton is a perennial plant, though grown as an annual in the United States. There are two types of cotton grown in the U.S. Upland cotton, Gossypium Hirsutum, is the most prevalent type accounting for about 99 percent of the U.S. cotton crop. American-Pima or extra long staple (ELS) cotton, Gossypium Barbadense, is grown in west Texas, California, New Mexico, and Arizona. The first commercial American strain of ELS cotton was produced in 1912 in the Salt River Valley of Arizona and the Imperial Valley of California.

Upland cotton is grown throughout the U.S. Cotton Belt consisting of 17 States from Florida to California to Virginia. Major concentrations of production are 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. The northern limit of cotton growth in the U.S. is established by a need for at least 200 days between killing frosts and a minimum average summer temperature of 77 degrees. Cotton's growing season of about 150 days is the longest of any annually planted crop in the country.

The fiber (lint) of cotton varies by type. Upland varieties usually range in staple length from 7/8 inch to about 1 1/4 inches while ELS lint generally ranges from 1 3/8 inches to 1 3/4 inches. ELS cotton is more desirable for high-value products such as sewing thread and expensive apparel items.

An often overlooked part of the crop is the vast amount of cottonseed that is produced along with the fiber. Annual cottonseed production averages 5 million tons. More than 5 billion pounds of cottonseed meal are used in feed for livestock, dairy cattle, and poultry. Two million gallons of cottonseed oil are used for food products ranging from margarine to salad dressing.

At the time Eli Whitney invented the cotton gin in 1793, cotton production was estimated at 10,000 bales. In 1789, the U.S. textile industry began in a small plant in Rhode Island and by 1847, more people worked in textiles than in

any other industry. Production ranged from about 2 million bales in 1866 to a record high in 1937 of 18.9 million bales. Since 1937, U.S. production has averaged over 12.4 million bales a year, fluctuating from a low of 7.4 million bales in 1967 to a high of 15.6 million bales in 1981. While government programs and prices of cotton and competing crops have influenced acreage, weather has been the chief determinent of year-to-year variability in yields.

With the completion of the transcontinental railroad in 1869, the Cotton Belt began to move westward. By 1880, Texas had become the chief cotton producing State. Since 1882, Texas has been the leading cotton State with the exceptions of 1974 and 1982 when California was the leading State.

U.S. cotton production continued to shift westward until 1979 when the Southwest (Texas and Oklahoma) and the West (Arizona, New Mexico, and California) accounted for 75 percent of the total production. Since 1979, the Southeastern and Delta States have regained a small portion of the share of production lost to the westward expansion. In 1987, Southeastern and Delta States accounted for 38 percent of total production and the Southwest and West accounted for 62 percent.

After the Civil War, cotton acreage expanded steadily from about 5 million acres to a record high 44.6 million in 1926. It then declined to about 14 million acres in the mid-1960's and to 10.4 million in 1987.

During the 1866-1930 period, cotton yields averaged about 180 pounds per harvested acre and rarely exceeded 200 pounds. From 1930 to the mid-1960's, acreage trended down but yields moved upward. An uptrend, beginning in 1937, boosted yields above 200 pounds. They exceeded 300 pounds in 1948, 400 pounds in 1955, and 500 pounds in 1965. Since 1965, yields have fluctuated considerably but reached a record high in 1987 of 706 pounds per harvested acre. Increases in yields can be attributed to more of the crop being grown on land well adapted to cotton, to improved technology and management, and to a larger proportion of the crop being produced on irrigated land.

In 1987, cotton ranked fifth ($4.6 billion) among the major field crops in value of farm production following corn ($12.1 billion), soybeans ($10.4 billion), baled hay ($9.1 billion), and wheat ($5.4 billion). Cotton acres harvested represented over 3 percent of U.S. total acreage of principal crops harvested. In an average year, the crop covers some 12 million acres or nearly 19,000 square miles. That is roughly equivalent to the combined land areas of Vermont, New Hampshire, and Rhode Island. The number of farms harvesting

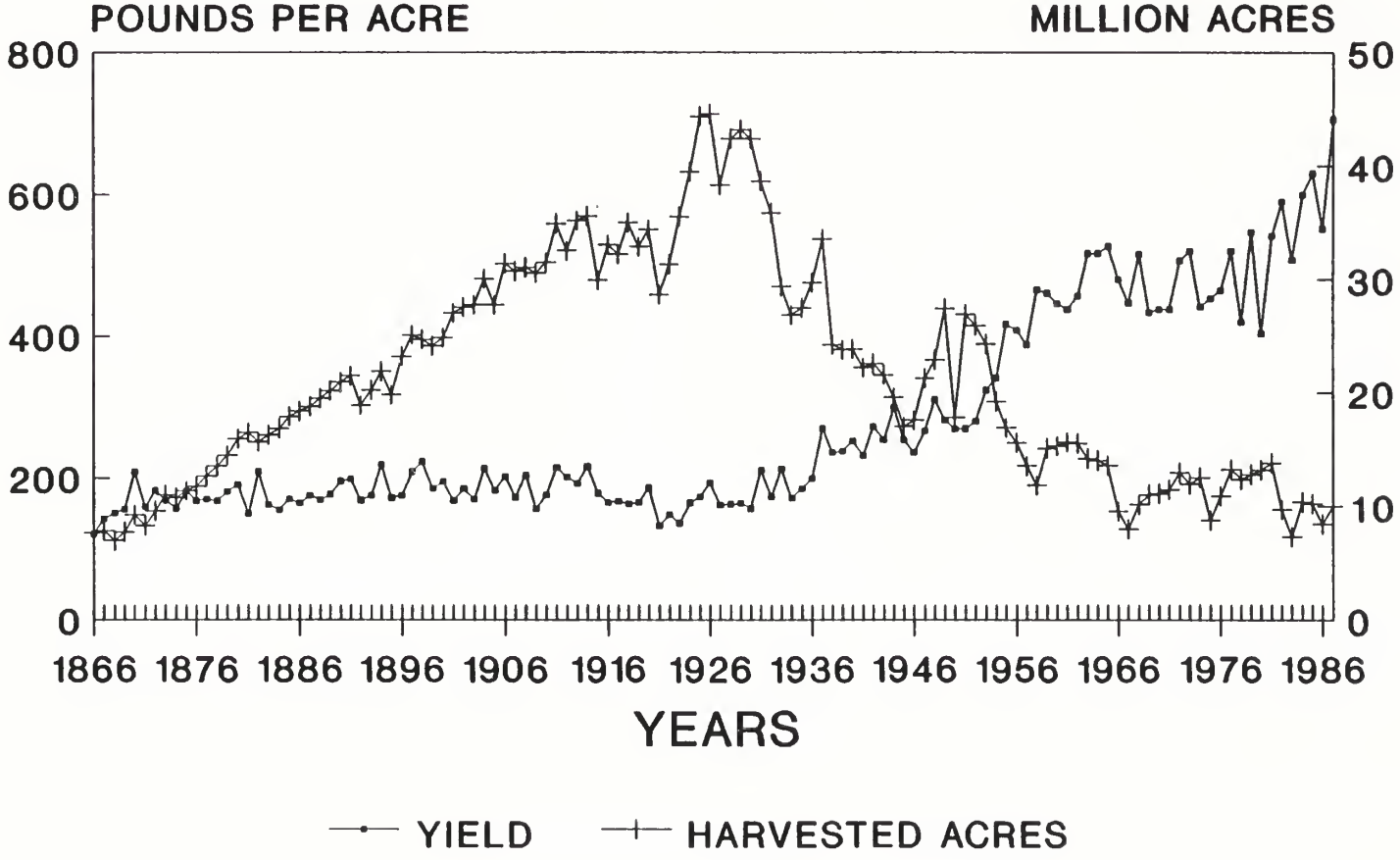
cotton have declined drastically over the years while the average harvested acreage per farm has increased. For example, in 1949 1.1 million farms harvested an average of 24 acres of cotton each. By 1982, only 38,000 farms harvested cotton but the average acreage harvested had increased to 256.

The following three charts depict cotton acreage, production, yield, and price over time. The fourth chart shows Upland cotton record high yields by State. From 1969 to date, cotton production is estimated in 480-pound net weight bales.

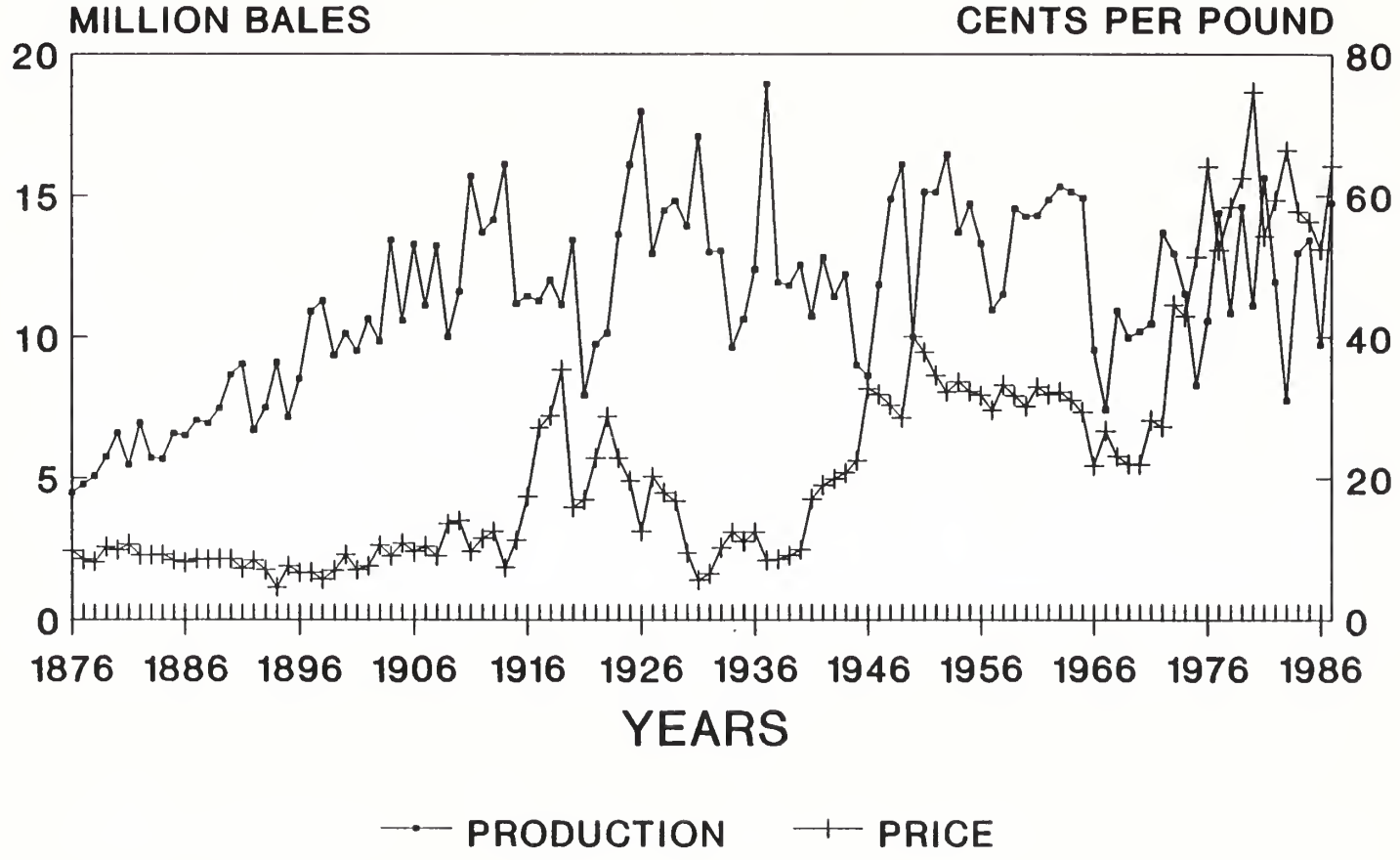
Prior to 1969, production was estimated in 500-pound gross weight bales.

(Based on "The U.S. Cotton Industry," Agricultural Economic Report 567, by Irving R. Starbird, Edward H. Glade, Jr., W. C. McArthur, Fred T. Cooke, Jr., and Terry Townsend, June 1987, and information provided by the National Cotton Council.)

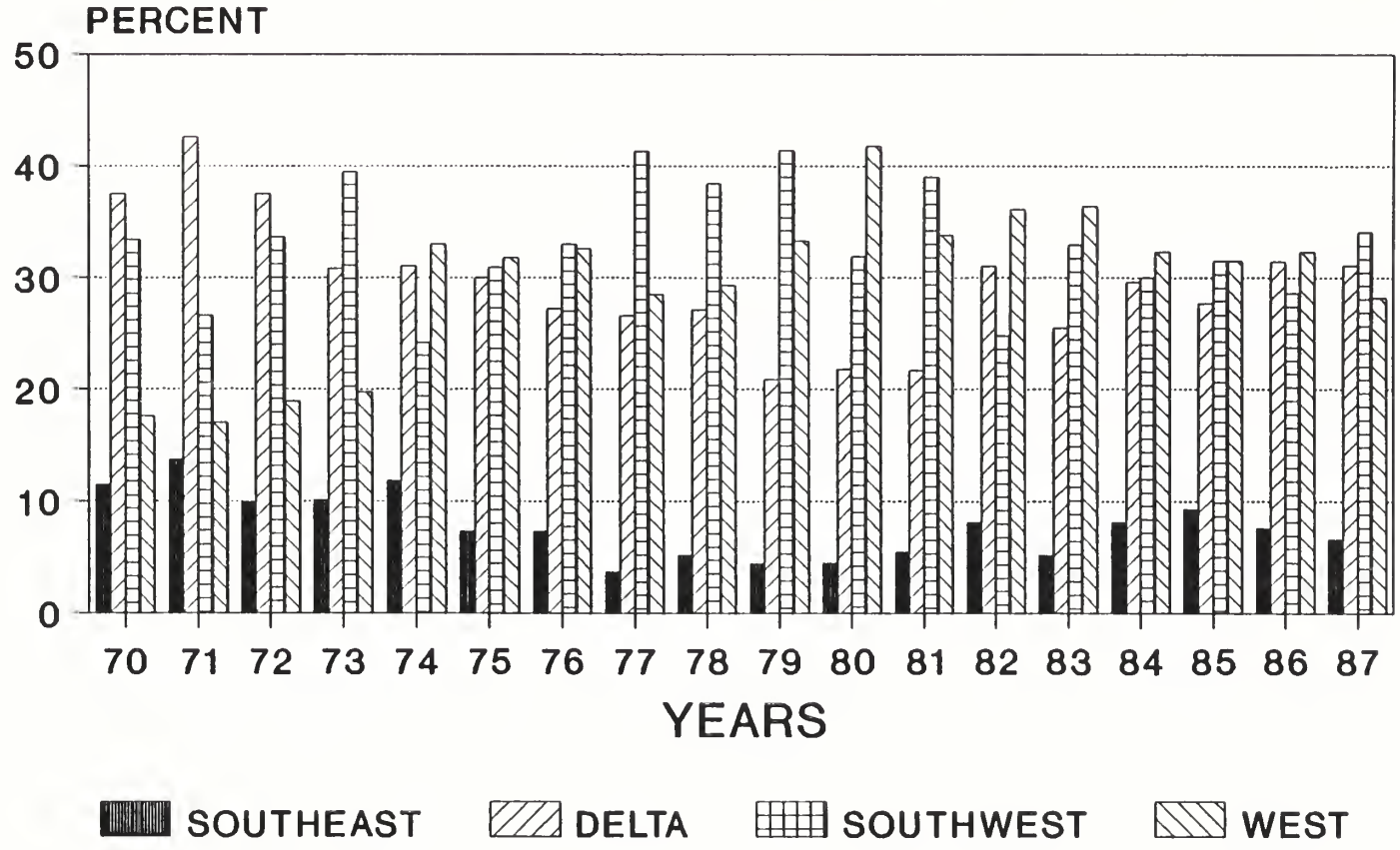
U. S. ALL COTTON, 1866 - 1987
YIELD AND AREA HARVESTED



U.S. ALL COTTON, 1876 - 1987
PRODUCTION AND PRICE

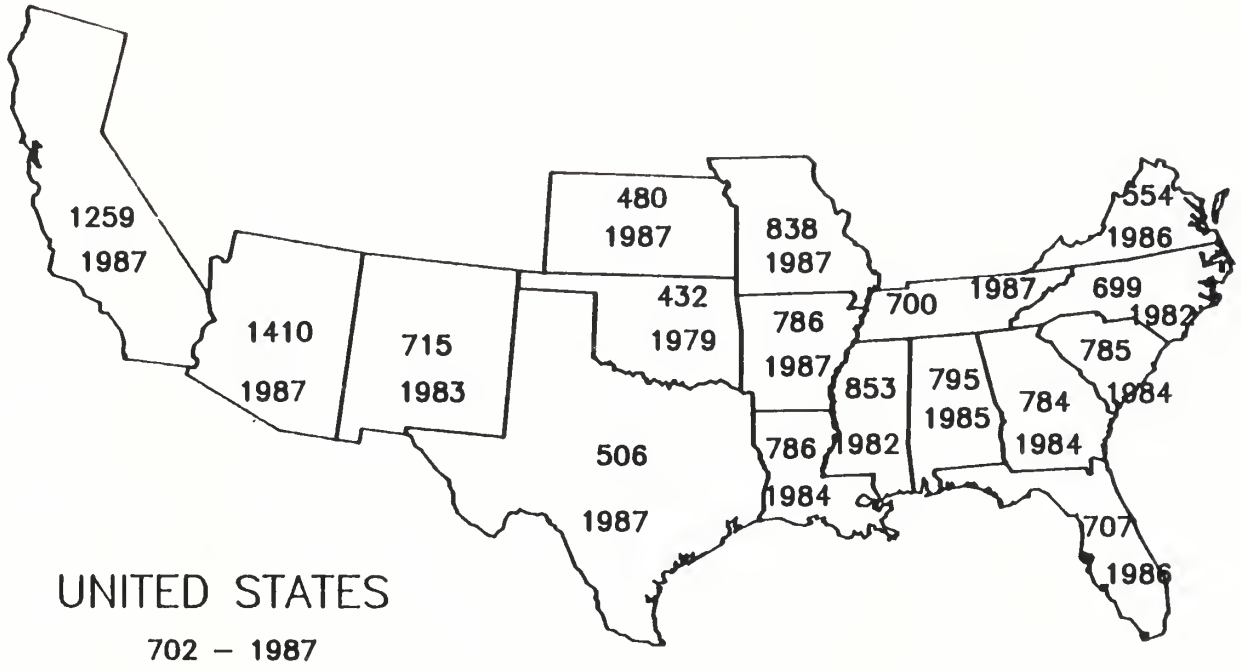


A COMPARISON OF ALL COTTON PRODUCTION BY REGIONS



UPLAND RECORD HIGH YIELDS

POUNDS PER HARVESTED ACRE AND YEAR



HAY, A HISTORICAL REVIEW

Hay and pasture serve as the primary food for most livestock. As the colonists, settlers, and pioneers began to inhabit our country, their cattle grazed the meadows and our vast grasslands. During the cold months when the grass didn't grow, they fed on the mature growth that remained along with grass that these early pioneers cut, cured, and stored to carry their cattle through the winter. The settlers also brought along seeds for many plants familiar to them. Researchers brought in more seeds and developed improved varieties. Over time, many introduced grasses and legumes came into production providing pasture and hay. The National Agricultural Statistics Service (NASS) began a series of estimates for acreage, yield, and production of "All Tame Hay" with the 1866 crop. Expansion in acreage is evidenced by the fact that 1866 was the lowest acreage and production of record. This series was continued through 1938 and was the only series until "Wild Hay" and "All Hay" estimates began in 1909.

Haying operations changed as the hand sickle and other man powered tools gave way to horse drawn equipment and finally to today's large variety of faster, less labor intensive equipment for putting up hay. Making of silage and haylage, baling, and dehydration gradually became widespread methods of preserving the winter time feed supply. With the modern dairy operation, feed lot fattening of beef animals, and the advent of green chopping, feeding of various forms of roughage other than hay is also now widespread.

Because of the wide range of temperatures, rainfall, and soils that exist in the United States, some legume and grass species may flourish in one area and do poorly in another. As a consequence, a type of hay very common in one place may be either non-existent or rare in another place. However, some types of hay are produced in widespread areas. Alfalfa and mixtures of alfalfa with other legumes and grasses is the most widely grown hay crop today. NASS once compiled statistics on a wide variety of hay crops but statistics are now published for only two categories, namely "Alfalfa and alfalfa mixtures" and "All other hay".

Alfalfa is generally believed to have originated in southwestern Asia but forms from which it may have developed are found in China and Siberia. Historical accounts indicate it was first cultivated in Persia. From Persia, it was taken to the Mediterranean countries and finally to North and South America. The first recorded attempt to grow alfalfa in the United States was made in Georgia in 1736. It was not until about 1850 that Chilean alfalfa was brought to California.

It proved successful and has since spread throughout the country. Expansion was such that acreage is said to have doubled every ten years from 1899 to 1919. The 1919 crop was the first year for which NASS published hay statistics on the acreage, yield, and production for "Alfalfa and Alfalfa Mixtures". Acreage continued to increase until it reached a record high in 1957 that was nearly 3 1/2 times the 1919 area harvested. Since the peak in 1957, acreage has remained relatively stable. Yields have gradually increased over time with improved varieties; use of lime, phosphate, and potash; expansion of irrigation and improved cultural practices.

The NASS "All Other Hay" series dates back to the 1919 crop. It is an interesting and diverse category including all the hay crops not in the "Alfalfa and Alfalfa mixtures" grouping. For example, hay from wild grasses, oats, clover, timothy, redtop, and bromegrass all fall into this series. The total area harvested has generally declined throughout the period records have been kept. The high was 66.2 million acres in 1922 and the low was 32.5 million acres in 1972. However, higher yields have largely offset the declining area and the resulting production has shown less change.

A large number of legume species are also included in the "All Other Hay" group. These include a number of different types of true clovers such as red clover, alsike clover, white clover, ladino, and persian clover. Also, such varying legumes as sweetclover, lespedeza, soybeans, birdsfoot trefoil, and vetches, are grown for hay.

The grass family includes most of the plant species important to the agricultural industry including wheat, barley, rye, oats, corn, sorghum, and sugarcane. Many of these same crops contribute to the pasture, hay, and roughage fed to livestock. However, a large number of other grass species are used primarily to feed livestock as hay or pasture. This list includes the bromegrasses, fescues, bluegrasses, orchardgrass, timothy, red top, bentgrass, buffalo grass, the grama's, canary grass, bluestems, sudangrass, Johnsongrass, and Indiangrass.

With the wide variety of plant species, the various preservation methods and the alternative uses, it is important to define hay. NASS uses the following official definition: "Hay production consists of grasses, small grains, and legumes dehydrated and/or cured for use as animal feed. Hay must be fully cured before utilization except when used for dehydration. After curing, hay may be pelletized, chopped, mixed with other ingredients for feeding or fed directly to livestock without further processing. Hay may be baled or stored loose in stacks or shelter. Quantity of hay production is determined by the cured weight at the time

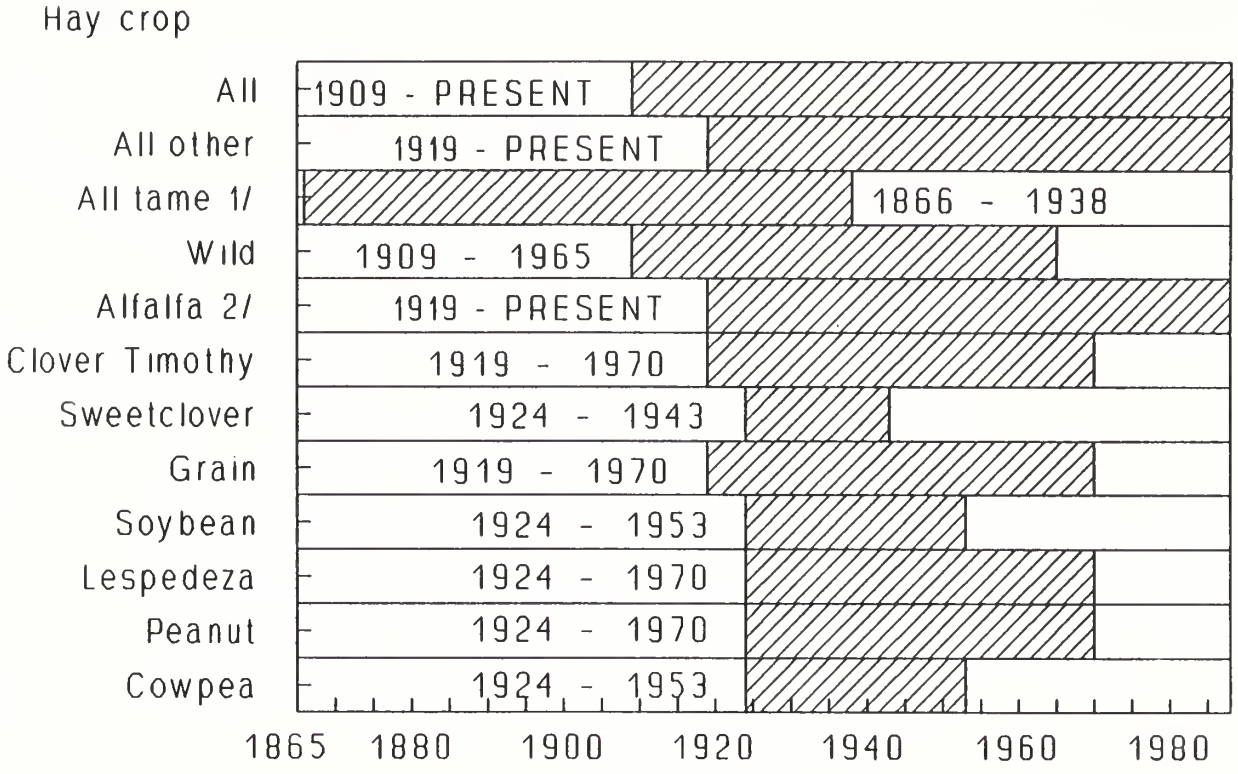
it is hauled from the field, or if stored at or in the field, the cured weight at the time of such storage. Crops for dehydration should be included in hay production on an equivalent cured weight basis. Hay production excludes silage, green chop, haylage, and other forms of crops that are not fully cured. Small grain straw, other plants harvested for non-feed purposes, and corn and sorghum fodder or forage are not included in hay production."

Much of the hay produced annually is consumed before the next crop is harvested. However, 'need' does not always match 'supply'. Consequently, varying quantities are carried over. The supply of hay is vital to farmers and ranchers in determining the quantity of livestock that can be fed through the winter. Consequently, farm stocks of hay are measured twice a year. This has usually been done on May 1 and January 1. However, the January 1 date was changed to December 1 in 1986 in order to utilize an improved survey procedure.

At various times during the history of hay estimates, 12 different classification have been used. Hay falling in many of these categories are not produced nation wide but are grown in areas in which they are better adapted. These various groupings and the years in which statistical series were maintained are shown in a table below.

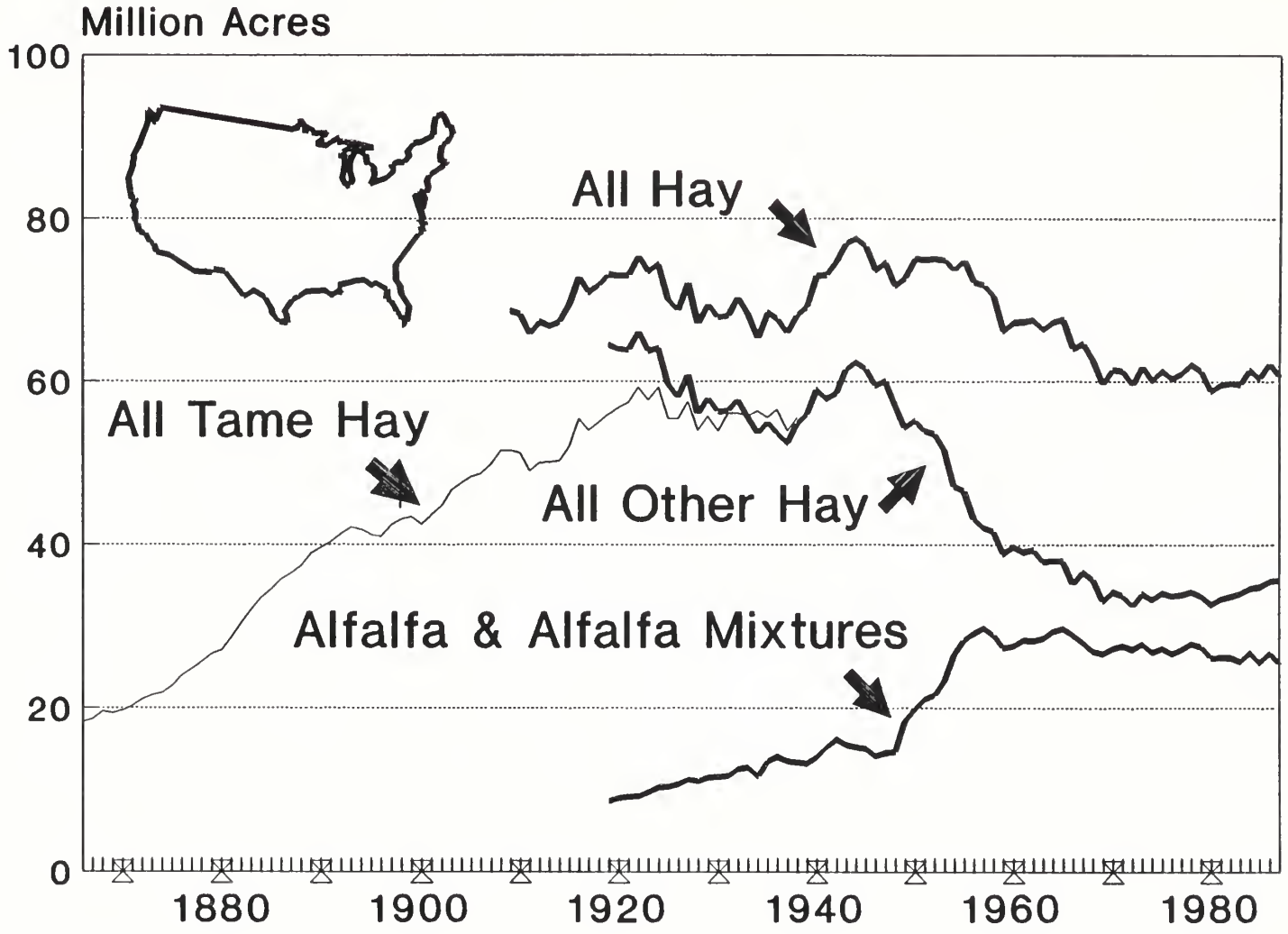
The drought and dust bowl years of the 1930's set record lows for the yield and production of hay. Both the lowest yield and lowest total production for "Wild", "Alfalfa and Alfalfa Mixtures", "Clover Timothy", "Grain", "Sweetclover", "All Other", and "All" Hay were recorded in 1934. During the 73 years that "All Tame Hay" was estimated, the lowest yield of record was in 1895. The long time trend to higher yields is reflected in the fact that the record high yields for most of the hay categories occurred either in recent years or near the end of the time that records were maintained. Two very notable exceptions to this are the record high yield for wild hay set in 1909 and for all tame hay achieved in 1916. The acreage, yield, and production for the current series is shown in the charts below.

Historic Statistical Series For Hay
1866 to Present

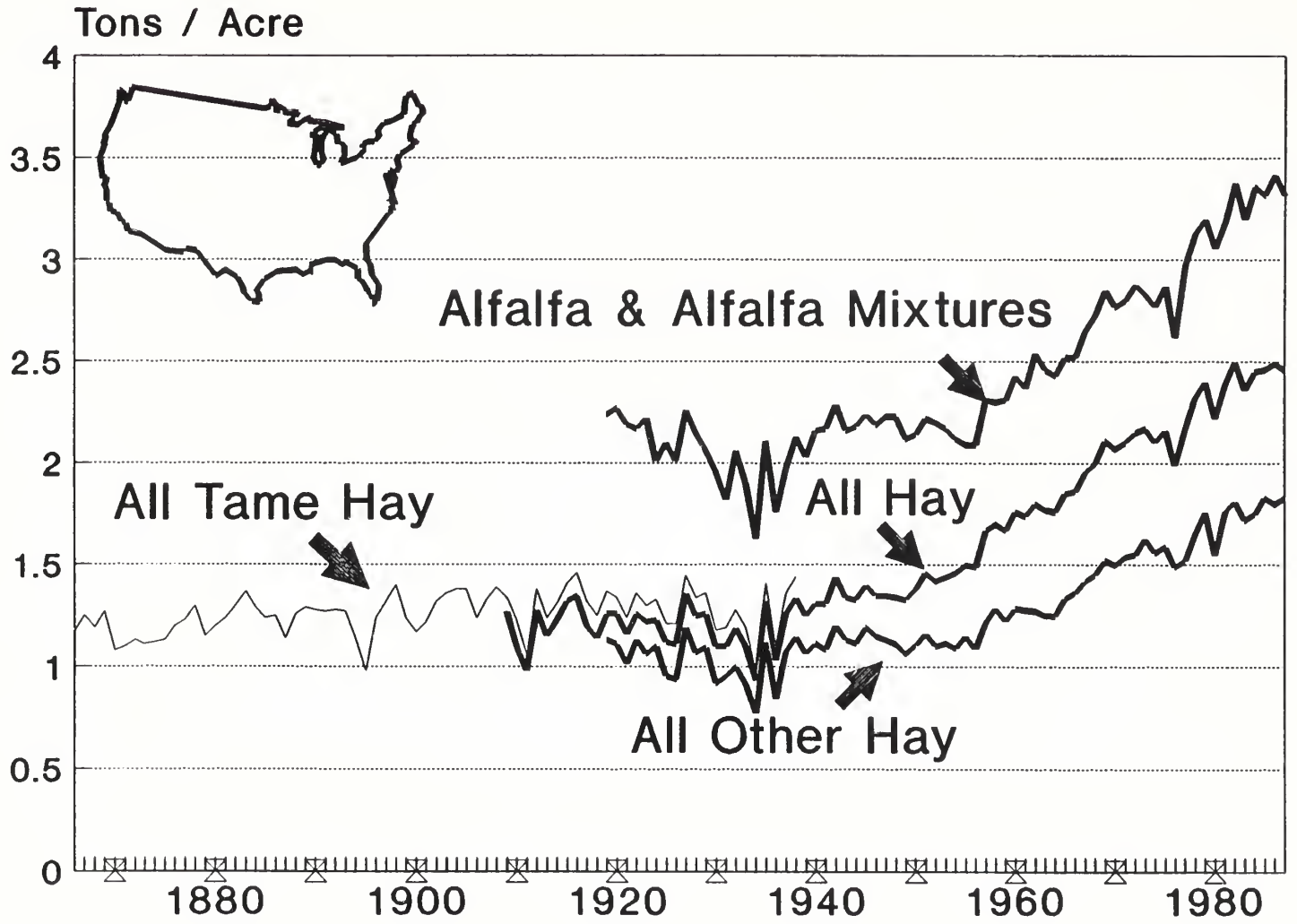


1/ All hay except wild
2/ Includes alfalfa mixtures ▨ = Years estimated

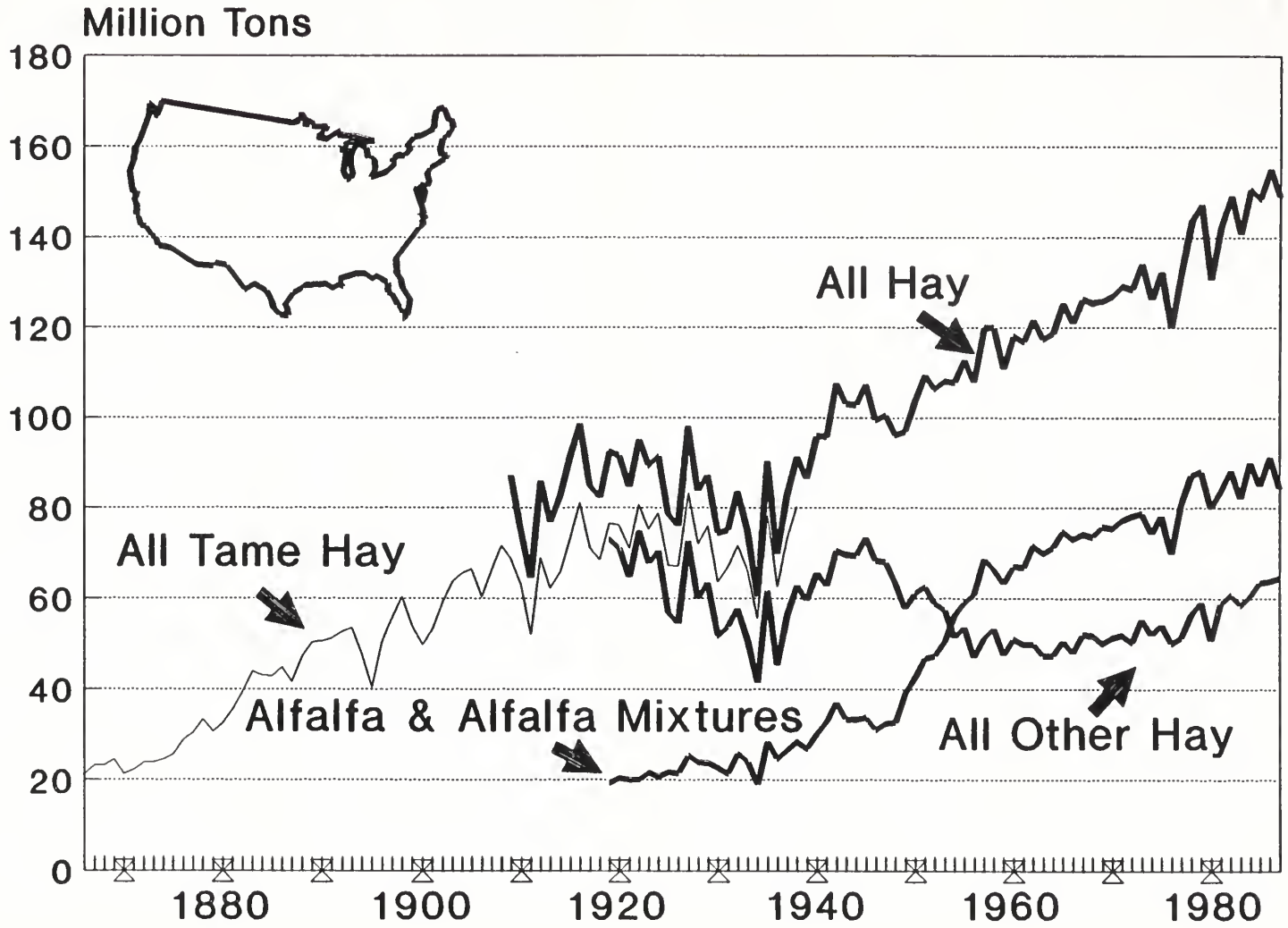
U S HAY: Area Harvested, 1866 - 1987



U S HAY: Yield, 1866 - 1987



U S HAY: Production, 1866 - 1987



POTATOES - A HISTORY

Potatoes were discovered in Peru by Spanish Conquistadors in 1537, although the Incas had been cultivating them for centuries with evidence dating back to the 2nd century A.D. The Spanish shipped potatoes back to Europe as a new food crop. Three centuries later, the potato's prime importance in some European countries was tragically demonstrated with the massive failure of the Irish crop from blight in 1845-46 and the widespread famine that followed. As many as 2 1/2 million people perished from starvation and disease. Another million made their way to the United States.

Ireland was the source of the first potatoes introduced to North Americans. A group of Presbyterian Scotch/Irish brought the potato along with them when they arrived in America in 1719 and settled near Londonderry, New Hampshire.

Although slow to catch on because of superstition and prejudice, potatoes have become the most important vegetable crop in the United States, providing vegetable producers with one-fifth of their cash receipts. Potatoes have returned $1.5 to $2.0 billion to U.S. growers in recent years and rank seventh in importance among American crops.

Potatoes were among the first crops estimated in 1866 by the Department of Agriculture. Interestingly enough, potato acreage then was about one and a quarter million acres, the same as it is today. Production was nearly 67 million cwt in 1866, equal to the amount grown last year in the State of Washington. Production increased steadily from 1866 to the 1920's on the strength of expanding acreage. In 1922, acreage for harvest hit its peak at 3.90 million acres, then showed a steady decline toward its present level of approximately 1.1 million acres. The production trend continued steadily upward as acreage decreased because of improved yields. Current U.S. production is near 400 million cwt, as shown by the chart below.

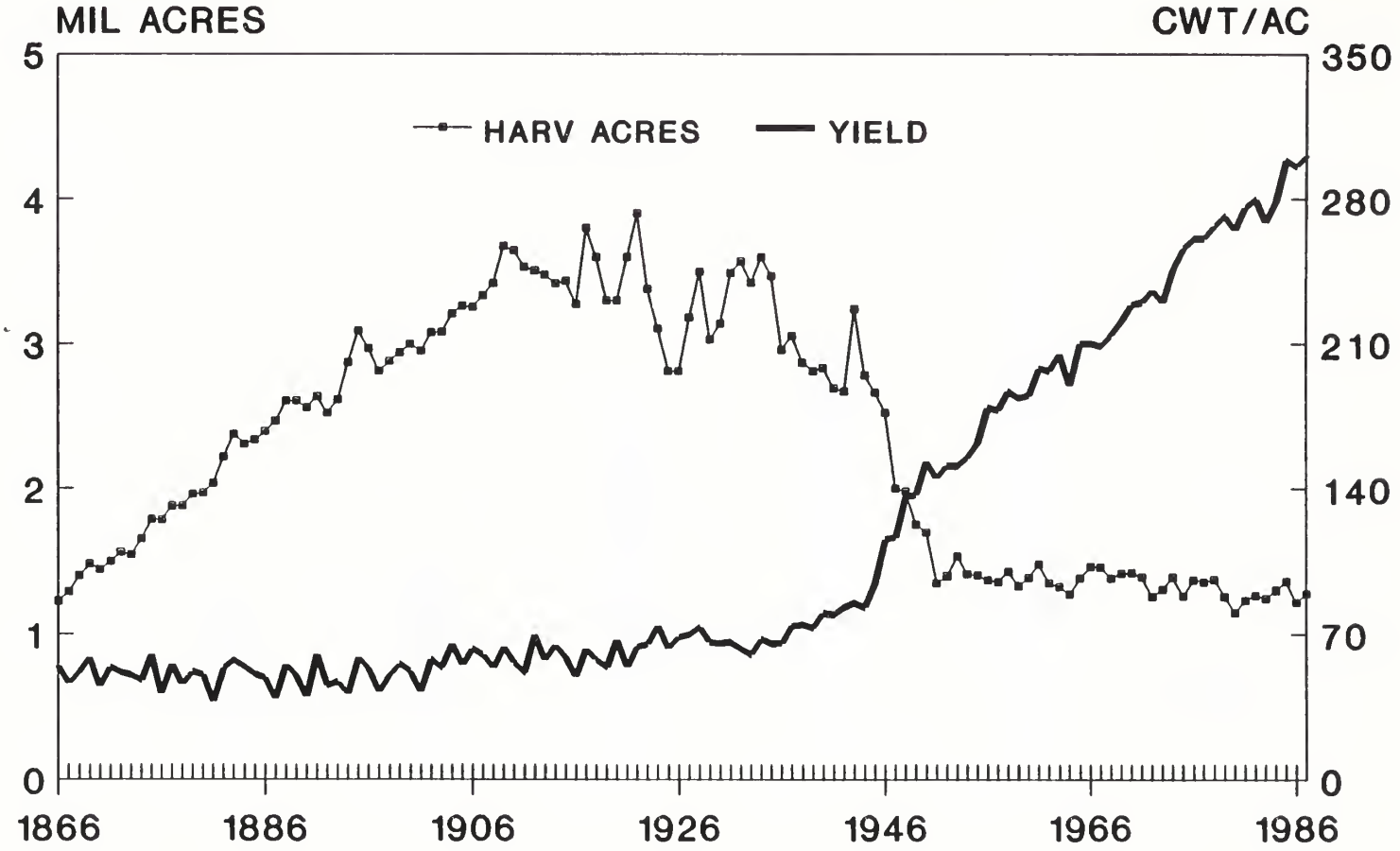
Early yields were about 50 cwt per acre and held at about that level until the 1920's. It was about this time when Luther Burbank made improvements in potato breeding, leading to the development of the Russet Burbank variety, which is the leading variety today. Average yields began to soar in the mid-1940's and now average over 300 cwt per acre at the U.S. level. Yields were boosted to present levels by the use of commercial fertilizer, improved breeding and cultural practices, the shift of acreage to Western States where irrigation is used extensively, and increased utilization for processing.

Production in the late 1800's was centered in New York, Pennsylvania, and Ohio. As the population moved west, so did potatoes. Michigan and Wisconsin came onto the scene in the early 1900's, but New York remained the leading State until Maine took over in the mid-1920's. Rail transportation and the refrigerated car helped Idaho, Colorado, and California compete in far away markets during the 30's and 40's. Maine remained the leading producer, however, until the late 1950's when processing vaulted Idaho into the lead. Currently Idaho, Washington, and Oregon lead National production, combining to produce half the U.S. crop, largely on the strength of French fried potatoes. Chips from North Dakota and Minnesota, along with new seed varieties, have pushed the Red River Valley into a heavy supporting role.

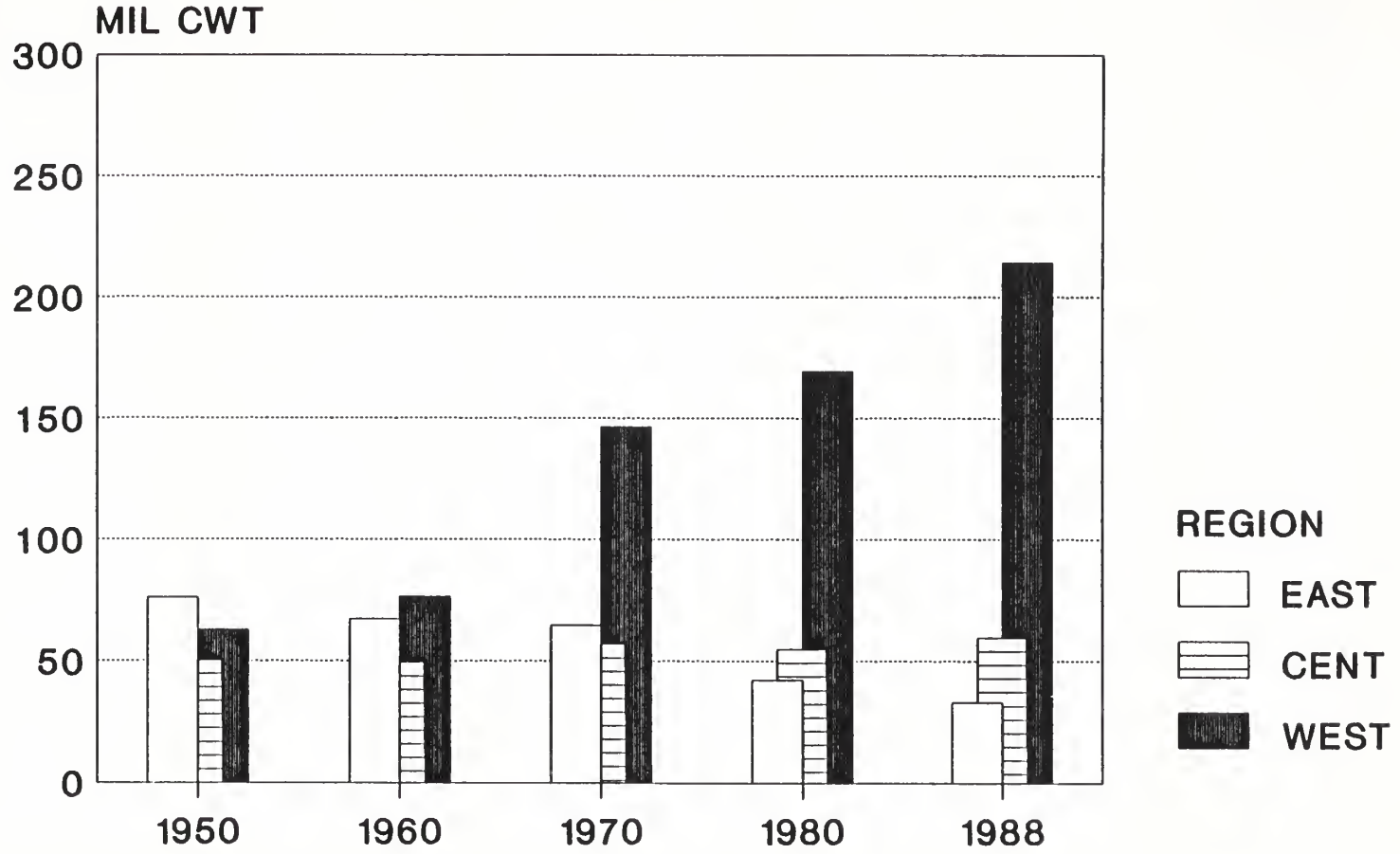
The versatile potato is grown commercially in nearly every State in the United States, with USDA production estimates covering the most important 38 States. The Crop Production report carries estimates on potatoes every month of the year except December, when potato production totals are published in the Potato Stocks report. Four seasonal groupings (winter, spring, summer, and fall) are reported with the fall crop typically accounting for over 85 percent of the total. Much of the fall crop is stored through the winter to provide a steady supply for food and seed for the next year's crops. Regional production of fall potatoes is outlined in the chart below showing the shift of production from the East to the West from 1950 to the present.

The first USDA reports published in 1866 carried estimates of harvested acreage, yield, production, price, and value. Disposition reports were added in 1909 showing the important shrink and loss factors along with home and seed use. Estimates of planted acres and January 1 stocks on hand were initiated in 1929. From 1866 to 1948, State and National estimates were for the total crop without reference to seasons. In 1949, six seasonal groupings were added. These were reduced to four (winter, spring, summer, fall) in 1969. December 1 through March 1 stocks on hand reports did not follow until 1954; April 1 stocks were added in 1972 and May 1 in 1979. Enumeration of processing plant use started in 1959 to identify utilization of potatoes for chips, frozen, dehydrated, canned, and other products.

U.S. POTATOES
1866 - 1987



U.S. FALL POTATOES
REGIONAL PRODUCTION



TOBACCO, A HISTORIC REVIEW

Tobacco and the peace pipe were American traditions long before the rest of the world knew that either America or tobacco existed. Spanish traders sent it to Europe as early as 1531. Seeds were carried to Europe and the Orient before 1600 and tobacco growing became established in many parts of the world.

Prices of the first tobacco carried into England from the Spanish possessions of the Caribbean area were fabulously high. Retail sales were as high as 90 shillings per pound. In comparison, wheat averaged about 1 shilling per bushel during the 1551 to 1557 period. These high prices were conducive to the establishment and rapid expansion of tobacco growing in the English colonies. Tobacco served as a means of exchange and was used in lieu of gold or currency. Exports increased from 20,000 pounds from the 1618 crop to 500,000 in 1628. By 1669, England imported 9 million pounds from the American colonies.

The expansion in tobacco production in the colonies resulted in reduced prices and recurring depressions. These lower prices made smoking and snuff more popular in England and Europe where it had been a luxury. Colonial Virginia and Maryland growers demanded stringent regulations to limit production and some were instituted. Planting quotas on a per capita basis were established and at least partly enforced. These limits of a specific number of tobacco plants per person was apparently the first attempt at control of production of any agricultural crop in America.

The federal government has operated programs continuously since the early 1930's to support and stabilize tobacco prices. There have been many legislative changes in these programs over the years. The Agricultural Adjustment Act of 1933 provided cash payment to growers who restricted production. Marketing quotas were authorized in 1938. Legislation in 1962 permitted lease and transfer of acreage allotments.

In the seventeenth century, colonists usually packed their tobacco in hogsheads, consigned it to an English merchant who sold it on a commission basis and supplied needed manufactured goods in return. During the eighteenth century, a method developed whereby a local British agent purchased the crop and also maintained a 'store' from which planters secured needed supplies. After the Revolutionary War, domestic manufacture first assumed importance. Today, the majority of the crop is marketed to the highest bidder at

auction warehouses. Bidders are usually manufacturers or dealers.

The National Agricultural Statistics Service (NASS) has a continuous series of tobacco statistics by States for acreage, yield, production, price and value of production beginning with the 1866 crop.

The tobacco in common use today differs greatly from that the early Virginia settlers found growing in Indian villages along the James, Rappahannock, and other rivers of Tidewater Virginia. This was a strong type belonging to the species Nicotinia Rustica L. and is believed to have originated in Mexico. The English colonists over time adopted the milder and more aromatic varieties of the species Nicotinia Tabacum L. that is believed to have originated in Brazil.

During the eighteenth century, Virginia and Maryland grew the bulk of the country's crop. At the outbreak of the Revolutionary War, about 100 million tons were exported annually. Soon after the war, culture began to expand into other areas. Today, nearly two-thirds of the production comes from Kentucky and North Carolina. Most of the remainder comes from Georgia, South Carolina, Tennessee, and Virginia. Another 10 States also produce tobacco but their combined total only accounted for 7 percent of the total 1987 national output. These States are Pennsylvania, Florida, Maryland, Ohio, Wisconsin, Missouri, Connecticut, West Virginia, Indiana, and Massachusetts.

Tobacco seeds are so small that one ounce contains 300 to 350 thousand seeds. This seed is sown in seed beds. These beds are covered with cloth or plastic. The tobacco plants are transplanted to the fields when they are 6 to 8 inches high. Spacing varies with the type of tobacco but 5000 to 11000 plants per acre is common. Two methods of harvest are employed, "priming" and "stalk cutting". In 'priming', leaves are picked individually from the plant as they mature. Flue-cured and cigar wrapper are harvested in this manner. With 'stalk cutting', the entire plant or stalk is cut. Burley, Maryland, fire-cured, dark air-cured and cigar leaf are harvested this way. There are 3 basic methods of curing tobacco. In air-curing, the tobacco is primarily cured with natural air. In flue-curing, air heated at gradually increasing temperatures is used to cure the leaf but the tobacco is not subjected to smoke. Fire-cured tobacco is mostly cured with wood fires and the smoke comes in contact with the leaf.

The characteristics of tobacco vary with strain, soil, climate, method of growing, topping, curing, and handling. Tobacco is really a group of crops with each having its

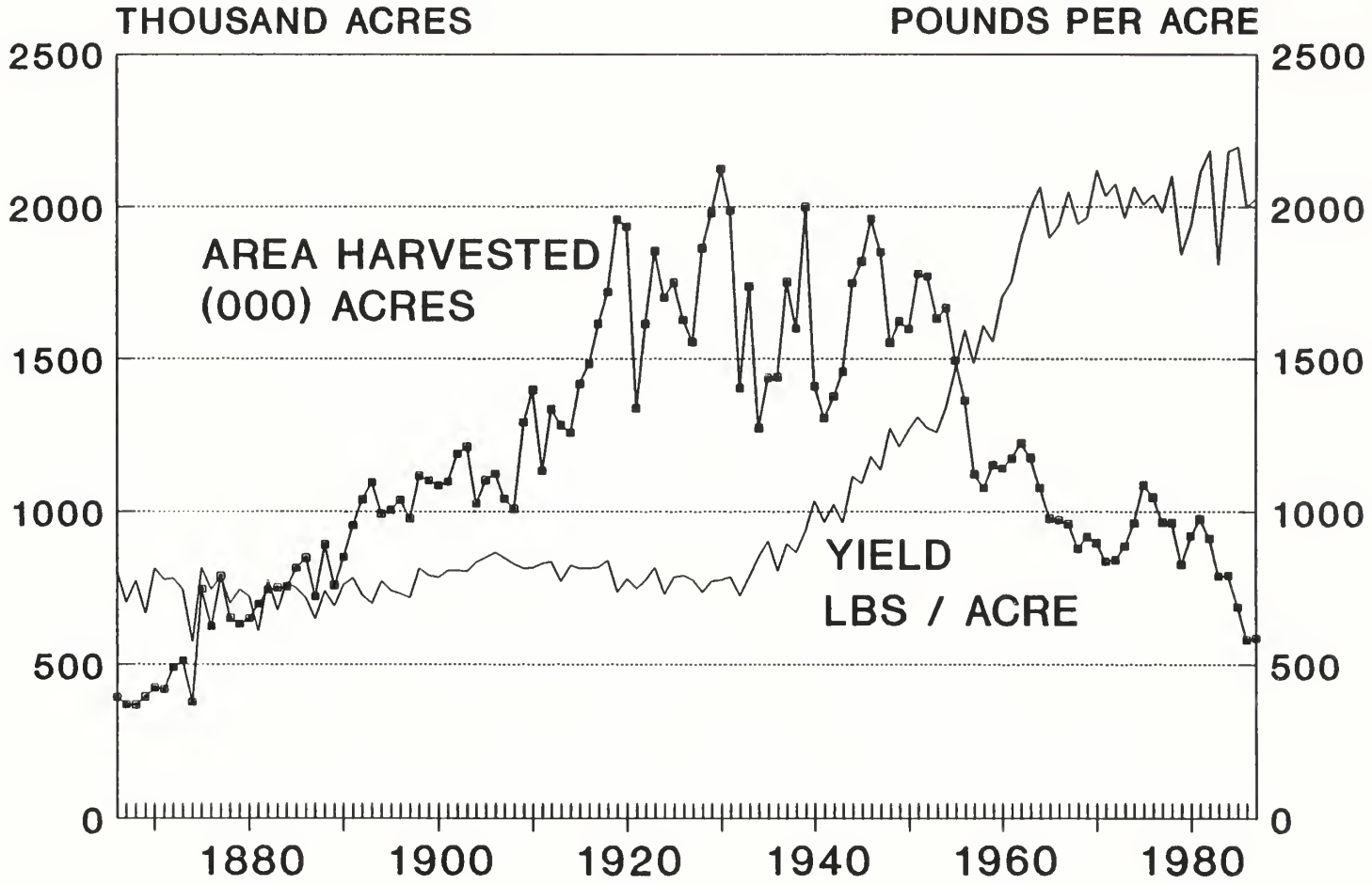
distinctive characteristics and uses. Consequently, these individual crops are divided into a complex series of classes, sub classes and types. Beginning with 1919 crop, the NASS series of statistics was expanded from 'All Tobacco' to include detail by type and class. A total of 7 classes and 29 types were established. Over the years, the number of types being produced has declined. Currently, 6 classes and 18 types are included in the NASS estimates.

When estimates by type and class began in 1919 a breakdown of production by types put 33 percent into flue-cured, 21 percent into burley, 20 percent was dark fire-cured, 15 percent was cigar types, 9 percent dark air-cured, and 2 percent was in the remaining types. This distribution has shifted over the years and that in 1987 flue-cured accounted for 58 percent of the total, burley 35 percent and other types 7 percent.

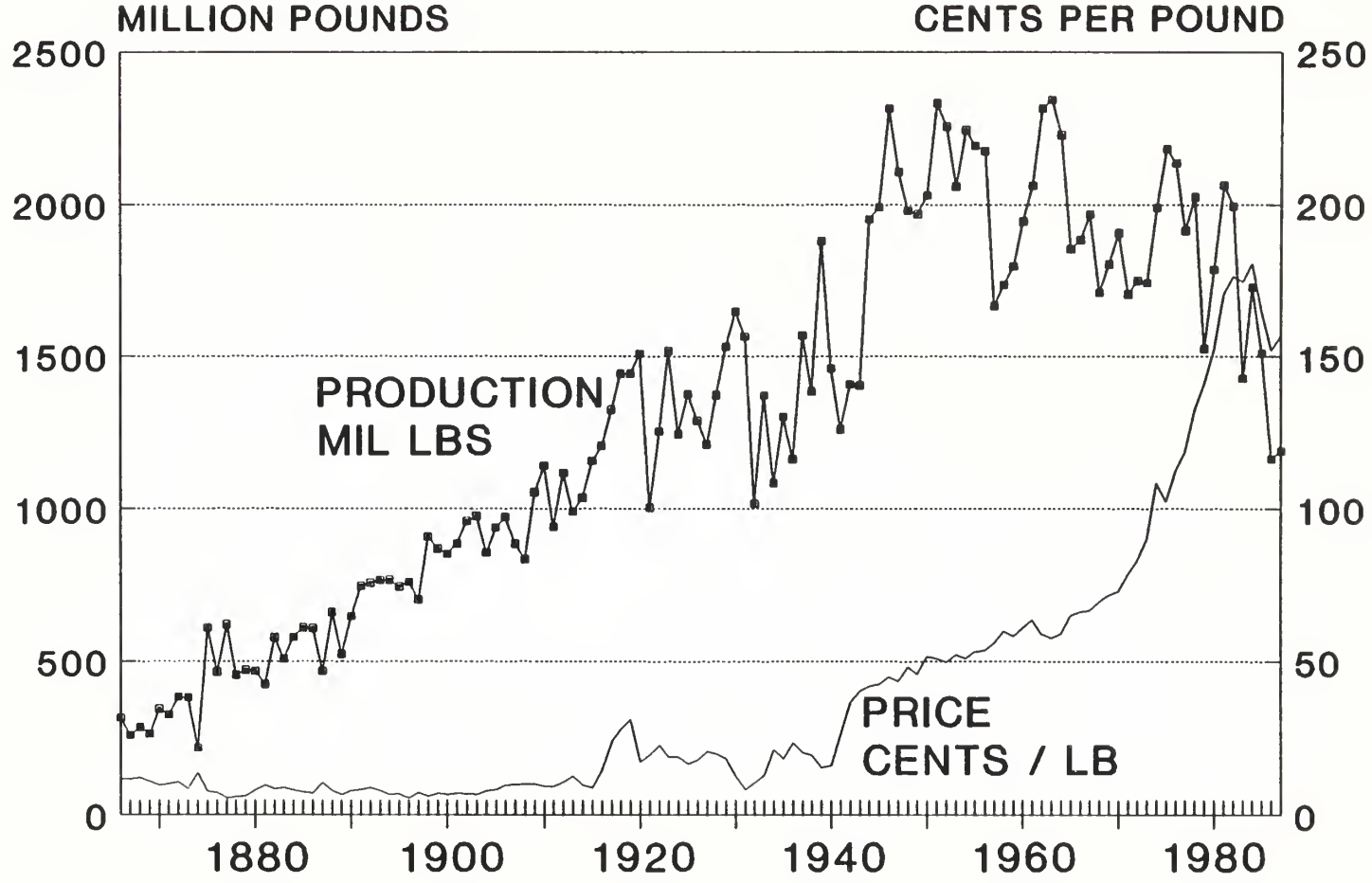
The acreage devoted to tobacco tended upward from 1866 until it leveled out somewhat from 1919 thru 1954 and has tended downward since. Acreage peaked at 2.12 million acres in 1930. On the other hand, yield per acre remained rather static with most years averaging 600 850 pounds per acre from 1866 to the early 1930's. With acreage controls, fertilizer, insecticides and improved varieties; yields began to climb until reaching a plateau of around 2000 pounds where it remains today. The highest average yield per acre was 2197 pounds in 1985 and the lowest was 575 pounds in 1874. The resulting production gradually increased until the late 1940's at which time it leveled out. A decline during the 1980's is apparent. Prices averaged 6 to 12 cents per pound most years from 1866 thru 1915, then rose to 31.2 in 1919, dropped to 8.2 in 1931 and have increased quite steadily since. The lowest average price was 5.4 cents per pound for the 1877 crop and the highest was 180.6 cents for the 1984 crop.

Three of the following charts show tobacco area, production and price over time. The pie chart depicts 1987 production by State.

U.S. TOBACCO, 1866 - 1987
AREA AND YIELD

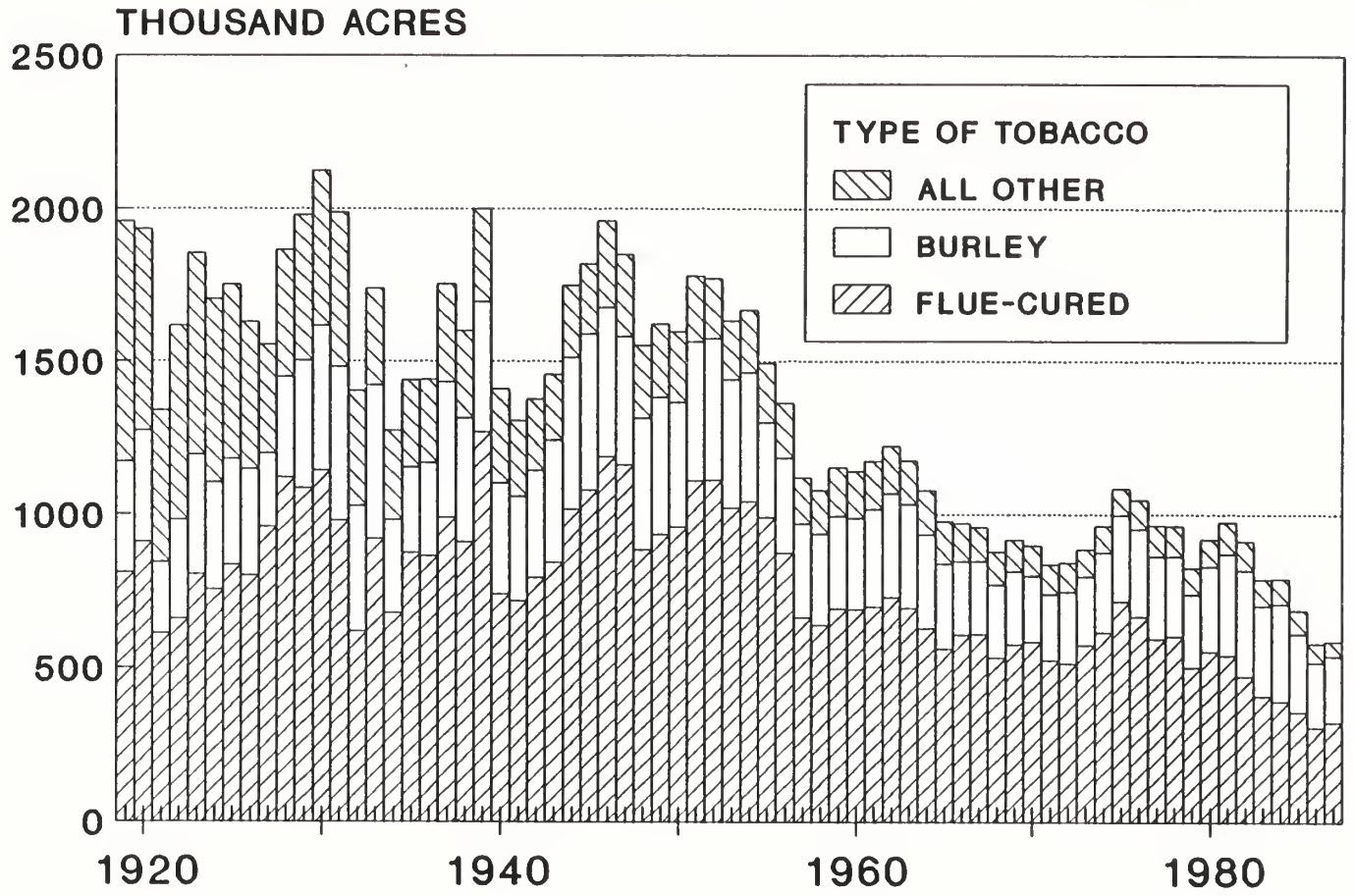


U.S. TOBACCO, 1866 - 1987
PRODUCTION AND PRICE



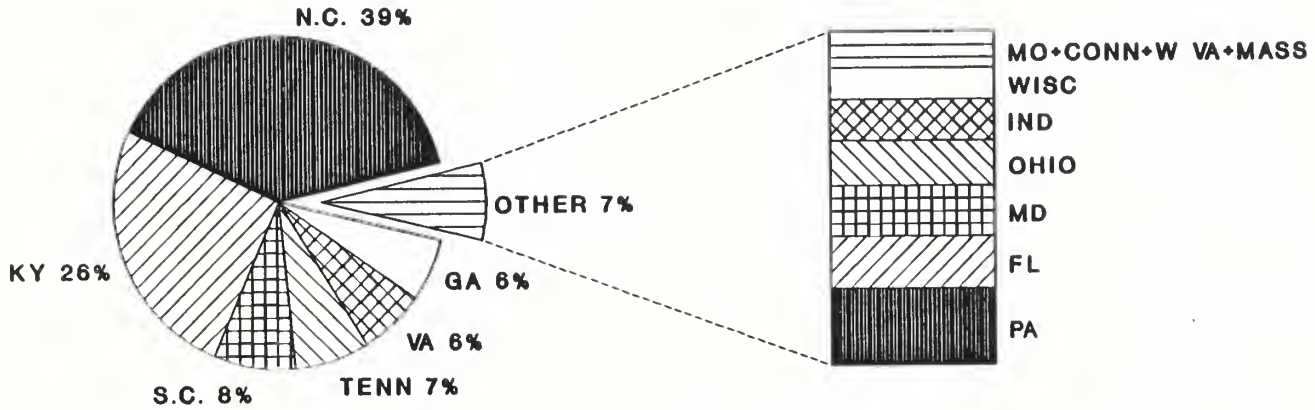
U.S. TOBACCO, 1919 - 1987

AREA - FLUE-CURED, BURLEY AND ALL OTHER



TOBACCO
PRODUCTION BY STATE
1987

PERCENT OF U.S. TOTAL

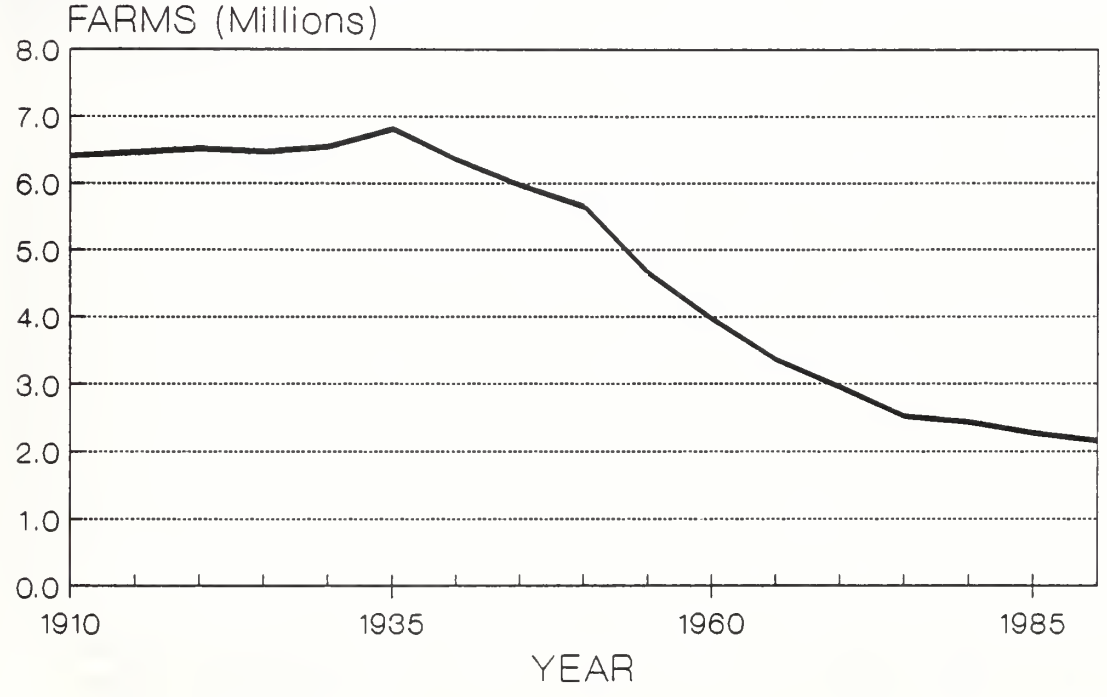


PROPORTION OF THE
REMAINING 7 PERCENT

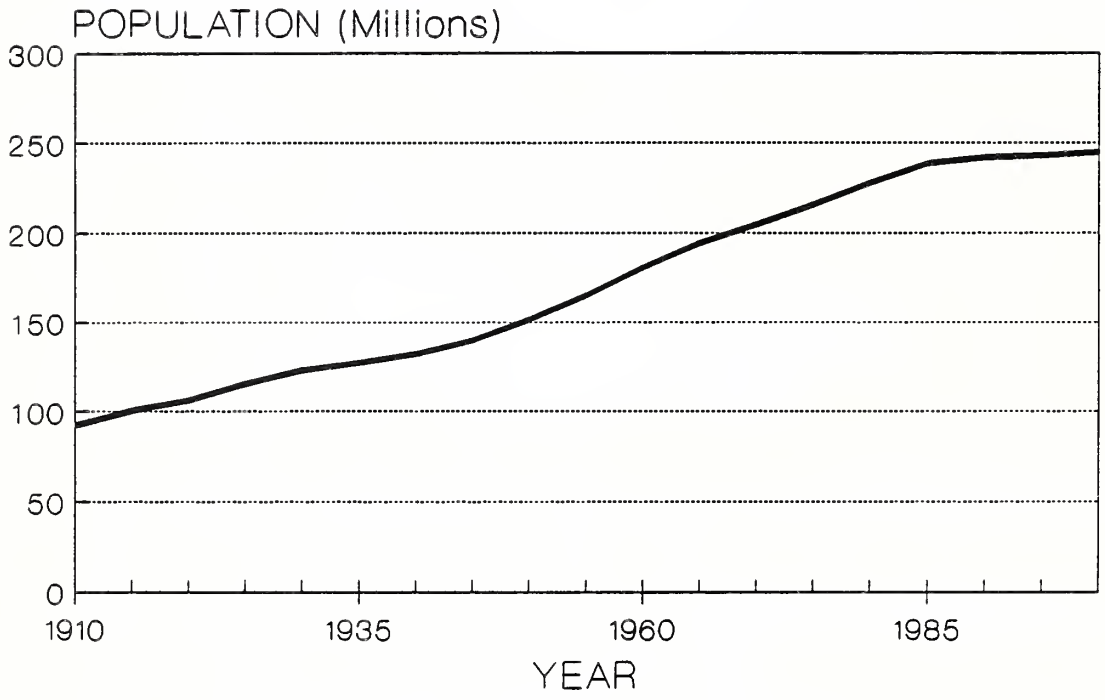
A SHORT HISTORY OF THE ESTIMATES
OF NUMBER OF FARMS AND LAND IN FARMS

The structure of the agricultural industry has changed dramatically over the 125-year history of the National Agricultural Statistics Service (NASS). This fact is seen graphically in the following charts showing a dramatic decline in the number of farms during a time period when the U.S. population, fed by those farms, more than doubled.

FARM NUMBERS
1910 - Present



U.S. POPULATION
1910 - Present



Annual estimates of the number of farms and land in farms produced by NASS make this and other vital comparisons of the farm sector possible. These estimates are published each year in the August Crop Production Report. They include U.S. and individual State statistics for the current year and revised estimates for the previous year. Accompanying tables break down the U.S. totals to show the percent in different classes based on economic size, as well as average size (number of acres) of farms in each economic class. These estimates do not show how many farms have gone out of

business or started into business, but only how many farms exist at a certain point each year.

Farm number statistics are based on the official definition of a farm which is also used by the Census of Agriculture: "any establishment from which $1,000 or more of agricultural products were sold or would normally be sold during the year." Estimates of land include all cropland, pasture, woodland and wasteland operated as part of these establishments. The data are collected each year as part of the June Agricultural Survey, and estimates are plotted on time series charts for each State, multi-State region, and for the United States' total. Estimates are reviewed every five years when data becomes available from the Census of Agriculture.

The series of USDA farm number estimates dates back to 1910, and estimates of land in farms to 1950. The procedures for making these estimates have changed over the years, including changes in the basic definition of a farm. The following table shows the level of agricultural activity that was necessary to be classified as a "farm" during different periods of our history.

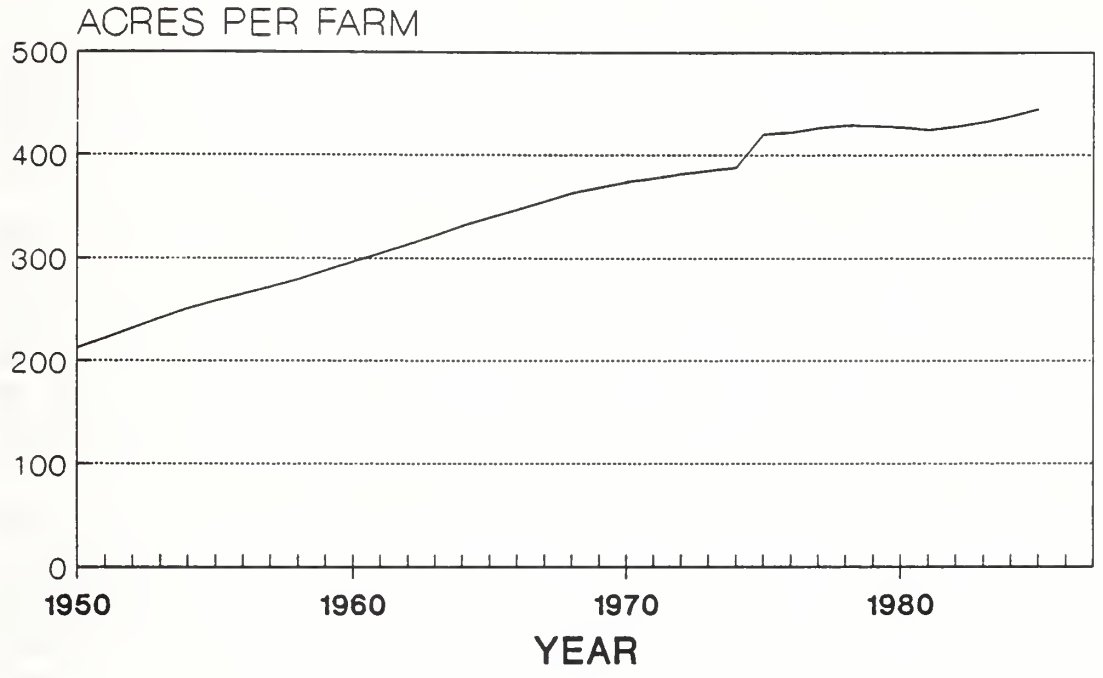
WHAT IT TOOK TO BE CALLED A "FARM"

TIME PERIOD	AGRICULTURAL ACTIVITY NEEDED TO BE COUNTED AS A FARM *
1910-1924	3 or more acres -or- $250 or greater value of production (sales or home use) -or- Full time services of at least one person
1925-1949	3 or more acres -or- $250 or greater value of production (sales or home use)
1950-1954	3 or more acres and $150 or greater value of production (sales or home use) -or- $250 or more sales
1955-1974	10 or more acres and $50 or more sales -or- $250 or more sales
1975-Present	$1,000 or more sales

* Certain exceptions were made for establishments not having a normal production year.

One can clearly see the effect of the 1975 definitional change in the following graph showing average size of farm. USDA has sought to keep such disruptions in the data series to a minimum.

AVERAGE SIZE OF FARM
(1950 - 1987)



In overview, this century has seen a dramatic trend downward in the number of farms. The current count is about one-third of the number estimated in the early 1900's. Land in farms has also been on the decline, but to a lesser extent than number of farms, while the average size of farms has doubled since 1950.

'COUNTING HOGS FOR MORE THAN A CENTURY'

One hundred twenty five years ago, nearly every household in the States and territories that later became the conterminous 48 States had a few pigs for their own use. The hogs and pigs provided pork, cured and preserved as ham for the dinner table, and lard for cooking. Lard was also used as a lubricant and a basic ingredient for making soap for washing dishes, scrubbing floors, taking baths, and doing the laundry. In 1867, just after the Civil War, there were about 35 million hogs and pigs reported in the first annual livestock inventory count and about 37 million people in the population. The swine inventory was valued at $136 million, just under $4.00 per head.

At the turn of the century, the swine inventory was over 51 million head while the population exceeded 76 million persons. In 1919, near the end of World War I, the hog inventory exceeded 64 million and the population had grown to over 105 million persons.

Hog inventory numbers generally ranged in the upper 50 millions and lower 60 millions until the Great Depression. By 1935 the swine inventory fell below 40 million head for the first time since 1877. The inventory rebounded during World War II to an all time record high of near 84 million by the end of 1944. During the post WWII years, from 1945 to present, inventory numbers have generally ranged from 50 million to 60 million.

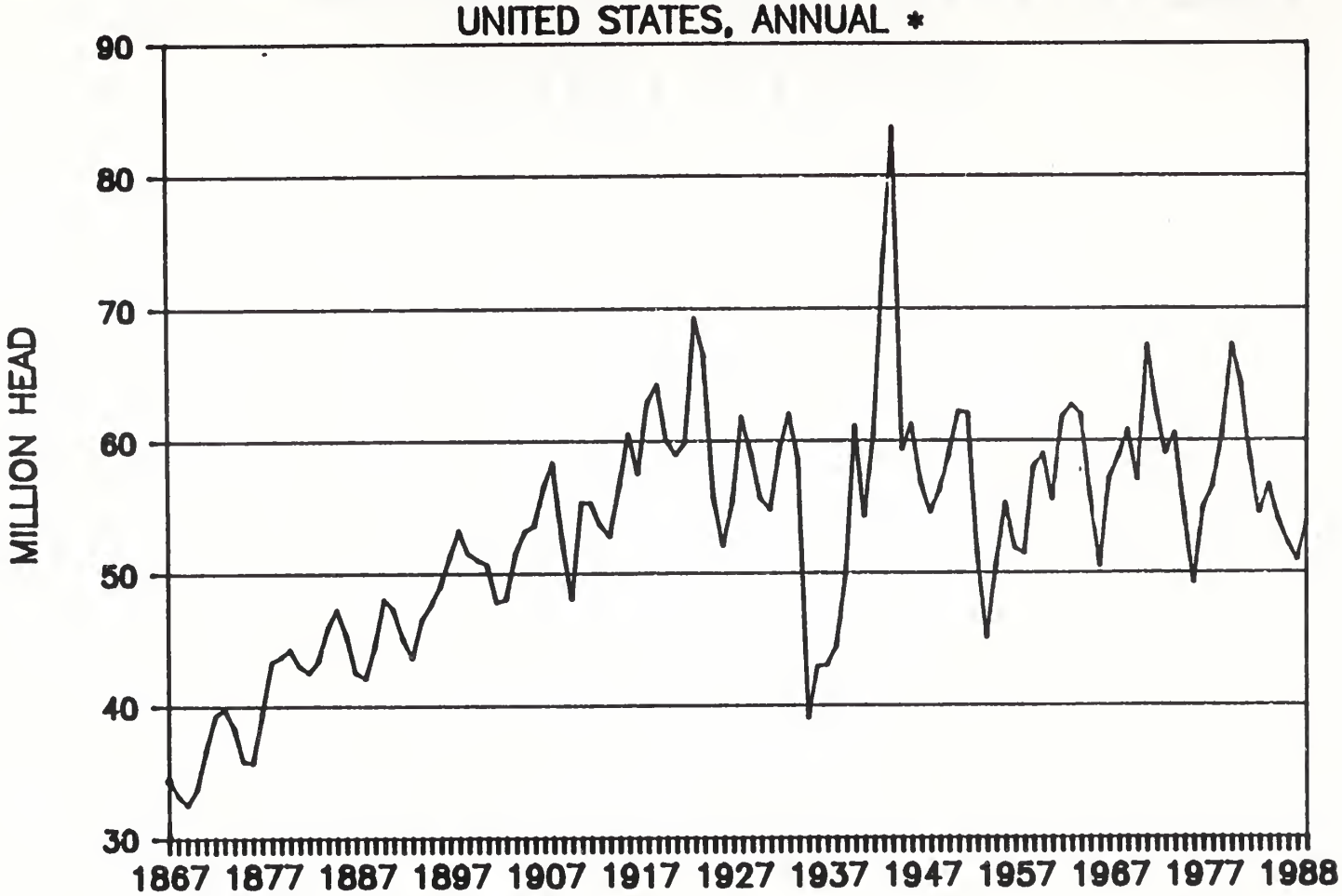
The nearly 54 million head of hogs and pigs in the December 1, 1987, inventory were valued at $76.00 per head for a total value of over $4 billion. During 1987, fewer than 350,000 operations marketed over 84 million hogs and pigs. Slaughter trends have dramatically shifted away from the farm locations toward the commercial faculties. Prior to WWII, 20-30 percent of all hog slaughter was done on farms. Presently, less than half of 1 percent are killed on farms. Eighty-one million head were commercially slaughtered during 1987 to produce over 14 billion pounds of pork--more than 62 pounds of pork and pork products for each person in the U.S. population.

Hog and pig inventory numbers during the late 1800's and early 1900's demonstrated cyclical tendencies with each cycle lasting about 5 years. Each new cycle was at a level higher than the preceding cycle until the early 1920's. These cycles continue today although the inventory levels no longer indicate such upward trends.

Prior to 1920, the estimates of the swine population were based on interpolating annual data for years between enumerations conducted every 10 years as part of the Census of Agriculture. These interim annual estimates of change were based on reports from field agents and reporters giving their estimates of the percentage change from the previous year. During the period of the 1920's through early 1960's annual estimates were based primarily on survey returns from livestock producers, obtained mostly in cooperation with rural mail carriers. During the 1920's, questions on the age and sex of hogs and pigs on hand were added. Estimates of sows farrowing, pigs per litter, and pigs saved began in 1924 along with monthly distribution of farrowings. The reports were also issued more frequently. Quarterly inventory reports for major hog producing States were initiated in the 1950's as hog production became more concentrated in the Corn Belt States of the midwest. In 1961, the estimate reference date was changed from January 1 to December 1. Statistical probability sampling principles were initiated in 1967 to provide improved survey precision. Current surveys provide sampling errors of less than 2 percent.

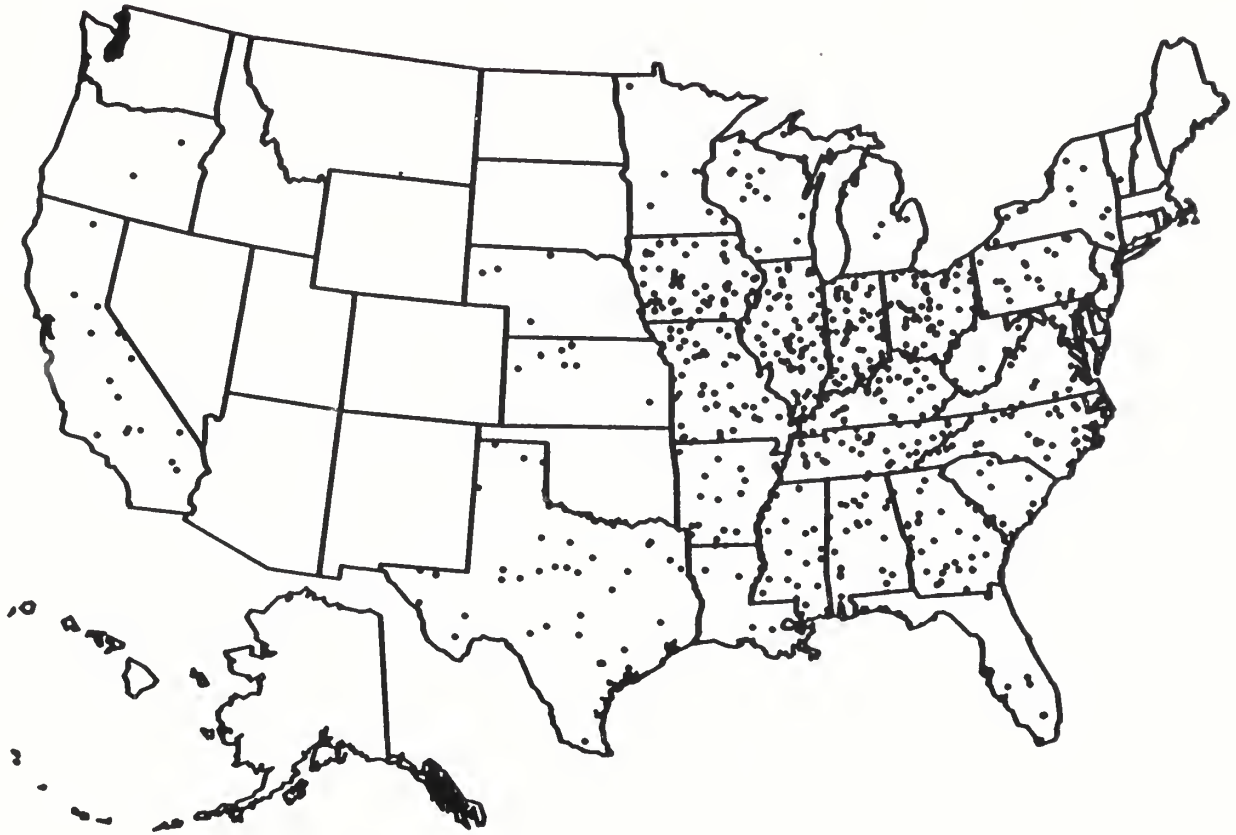
Over time, improved management practices have increased efficiencies of production, requiring fewer hogs to fulfill the needs of the expanding population. The average pigs per litter increased from less than 6 pigs per sow farrowed in 1930 to average nearly 8 pigs per litter by 1987. The seasonality of sows farrowing has been modified from being concentrated in late winter and early spring to nearly uniform distribution throughout the year. This adds more stability to pork supplies and more efficiently utilizes the resources of an investment intensive industry. Throughout time, the one thing that has not changed is the importance of farmers and ranchers who voluntarily supply information about their operations.

HOGS & PIGS INVENTORY



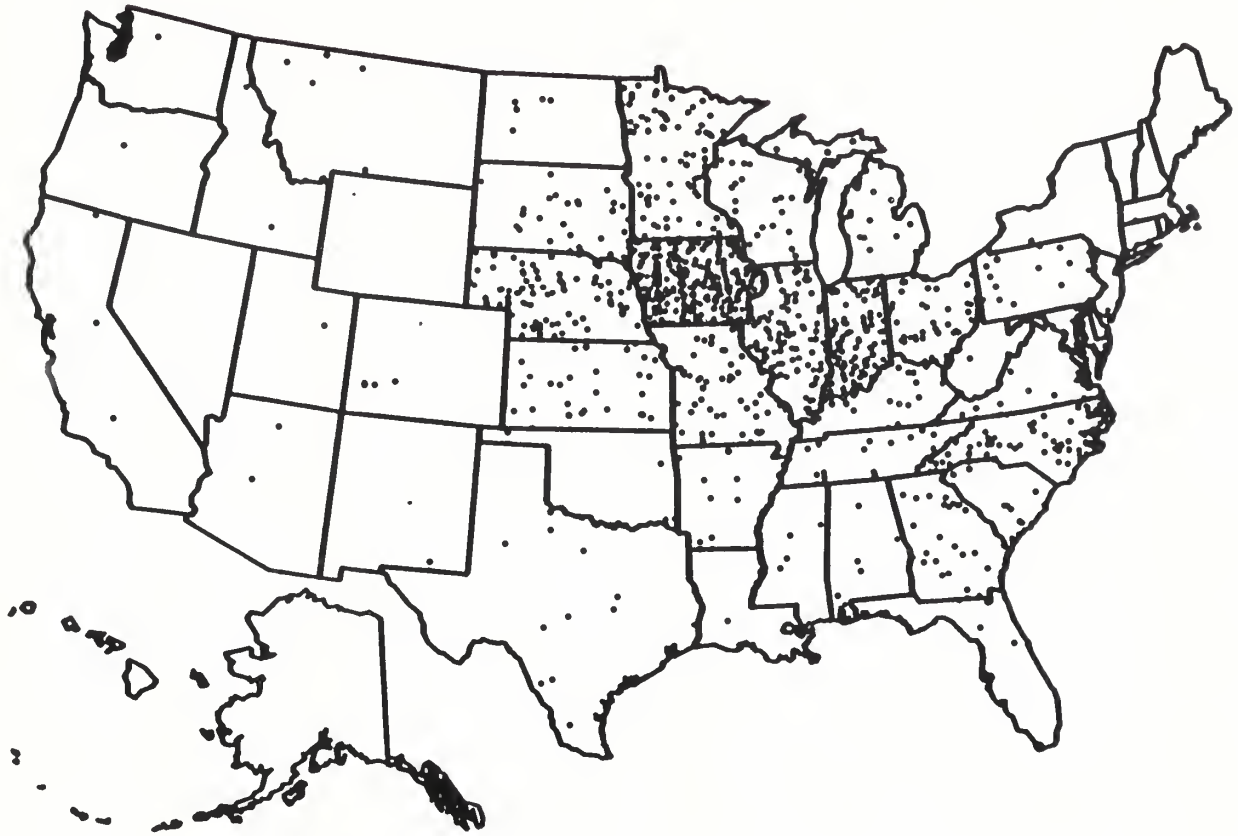
* JANUARY 1 PRIOR TO 1962.
* DECEMBER 1 PRECEEDING YEAR STARTING IN 1962.

1867 HOGS & PIGS INVENTORY
UNITED STATES



1 Dot = 50,000 HEAD

1987 HOGS & PIGS INVENTORY
UNITED STATES = 54.4 MILLION



1 Dot = 50,000 HEAD

125 YEARS OF CATTLE COUNTS

The earliest count of the cattle inventory in 1867 included 28.6 million oxen, "milche" cows, and all other cattle. The cattle inventory was heavily concentrated in the North and South Central States around the Mississippi and Ohio Rivers agricultural population centers. The cattle provided power for field work, milk and beef and had earlier been instrumental in exploring and settling the farthest reaches of the new Nation. About a quarter of the inventory was 8.3 million milk cows leaving 20.0 million other cattle that numbered about 2 1/2 times the total 7.8 million horse and mule inventory. It was not until 1885 that cattle outnumbered sheep in the annual count.

Cattle inventory numbers in the U.S. show a definite pattern. Nine very pronounced cattle cycles occurred between 1867 and 1988. Each of the cycles has peaked at a level higher than the previous cycles, except for the one that began in 1979. The all time high annual inventory number of 132 million head was recorded on January 1, 1975. The cattle cycle occurs because of the biological time lag in the production process coupled with production decisions of producers in reaction to economic forces. In addition, the impact of weather, forage supplies, competing meats, consumer preference, income and expenditures, and world trade can lead to sharp adjustments in inventories. During the 1980's, many factors in combination with each other contributed to a January 1, 1988, inventory of less than 100 million for the first time since 1961.

The estimates of the cattle and calf population by States in the year's prior to 1920 were based on interpolating annual data for years between enumerations conducted every 10 years as part of the Census of Agriculture. These interim annual estimates of change were based on reports from field agents and reporters giving their estimates of the percentage change from the previous year. During the period of the 1920's through early 1970's annual estimates were based primarily on survey returns from livestock producers, obtained mostly in cooperation with rural mail carriers.

In 1920, additional information was collected to provide separate estimates of beef and dairy cattle by class, age, and sex. Estimates of births (calf crop) were started in 1924 and the program for cattle on feed in 1930.

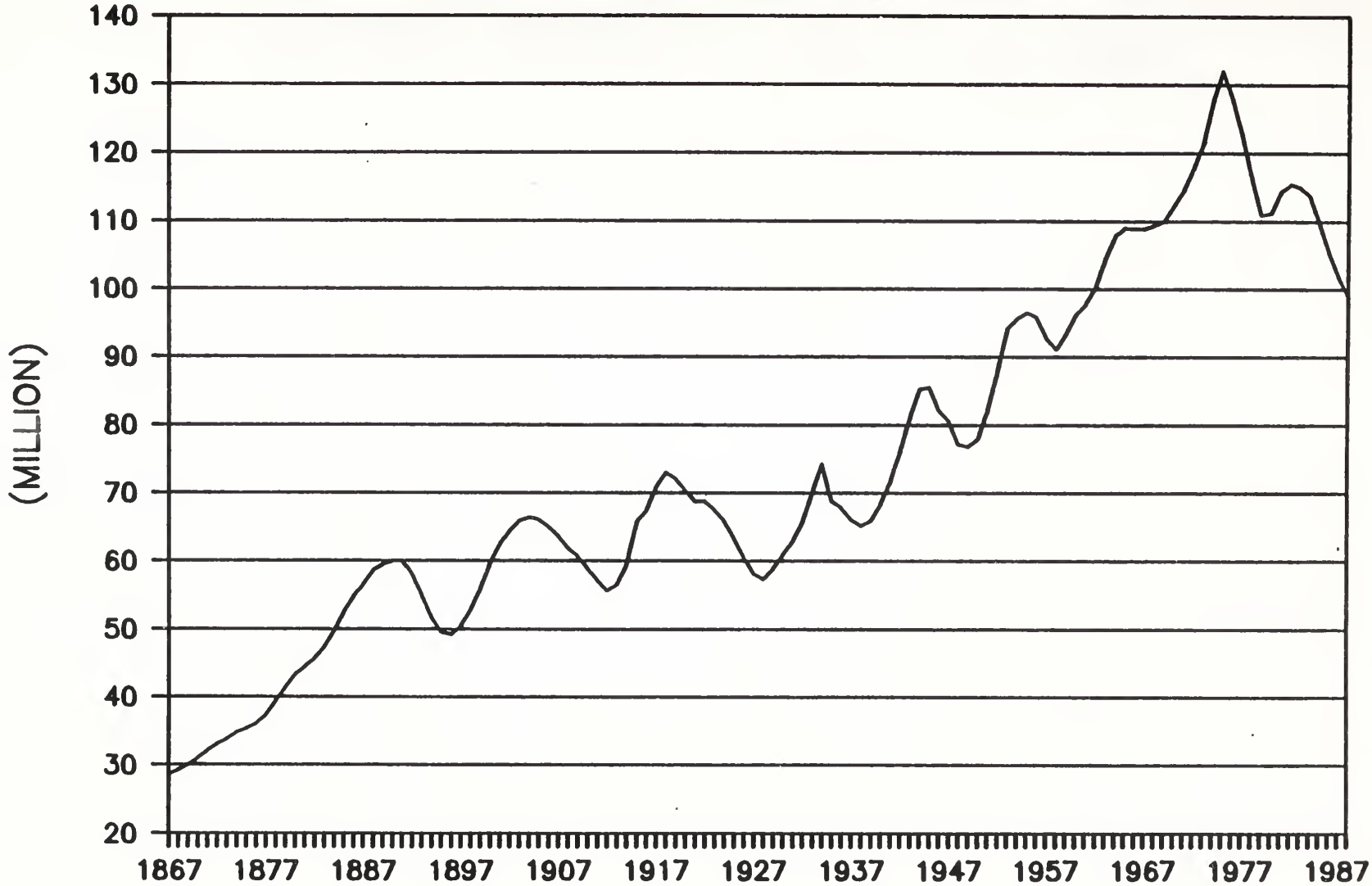
Statistical probability sampling procedures were initiated in 1967 to improve survey precision. The current survey methodology provides sampling errors of less than 1 percent

at the national level for all cattle and calves inventory indications.

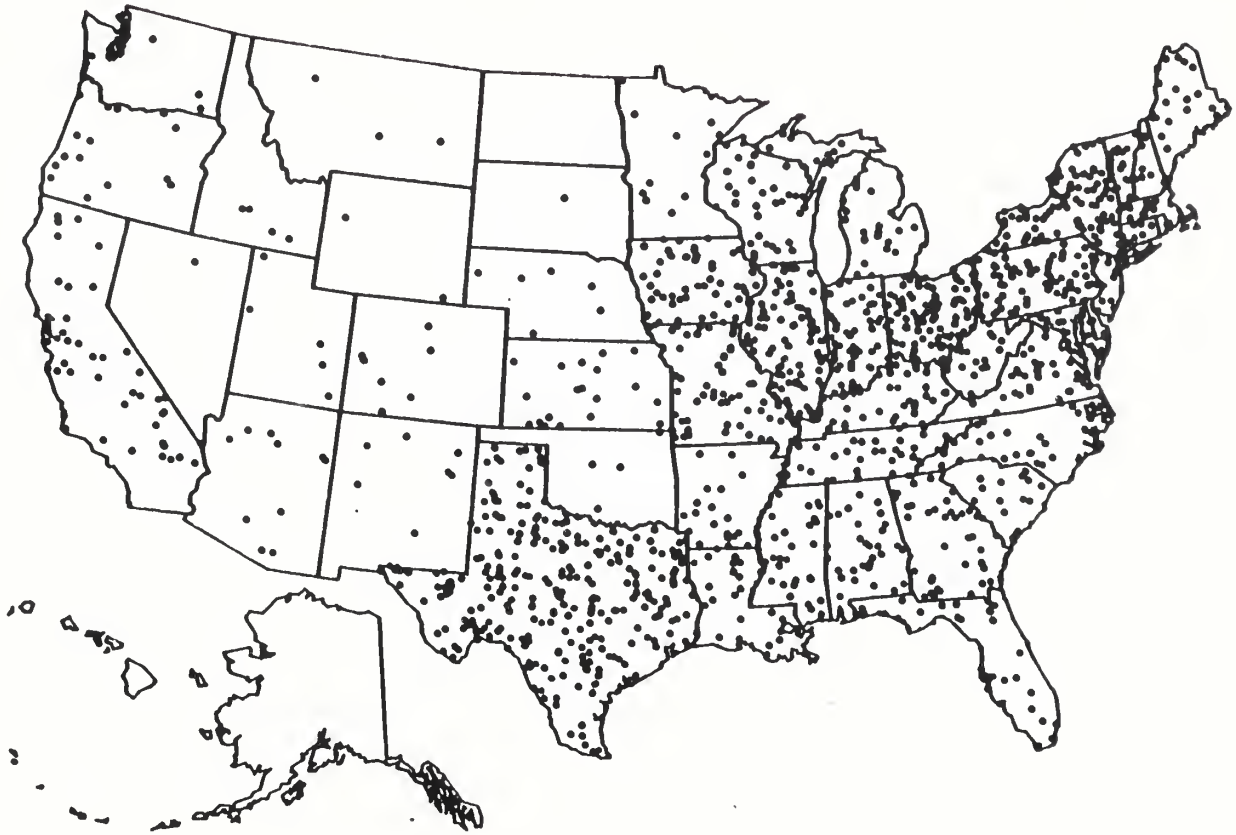
During the late 1800's the open range lands of the western and southwestern States were particularly inviting for cattle production but the trend reversed toward the less harsh climates of the Southern and Great Plains regions. Texas remains the leading cattle State. Dairy cattle are predominate in Northeastern and North Central States. Most of the cattle being fed for slaughter are produced closer to feed supplies in the Great Plains and Corn Belt States.

CATTLE INVENTORY

UNITED STATES, JANUARY 1



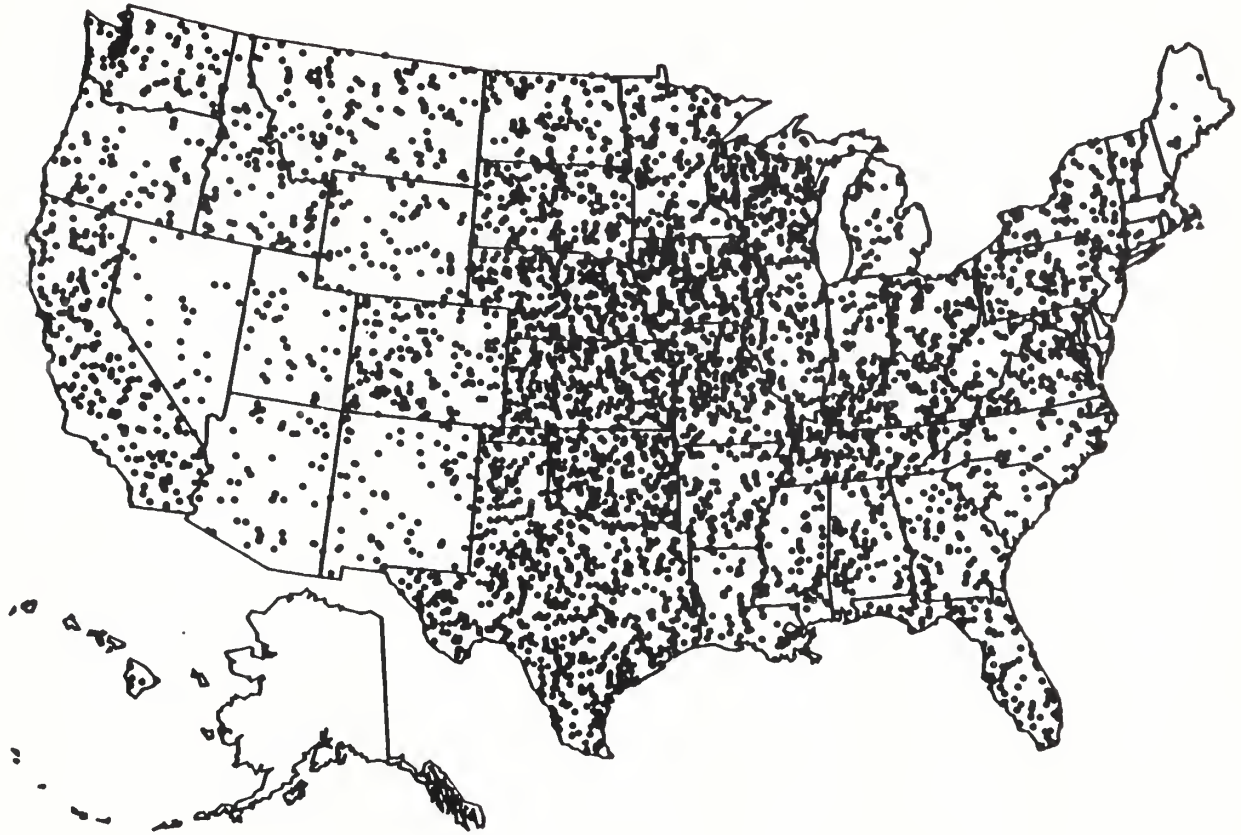
1867 CATTLE INVENTORY
UNITED STATES = 28.6 MILLION



1 Dot = 20,000 HEAD

1988 CATTLE INVENTORY

UNITED STATES = 99.0 MILLION



1 Dot = 20,000 HEAD

125 YEARS OF COUNTING SHEEP

Sheep and lamb production has long been an important segment of our economy. Since colonial times, production of sheep and lamb for meat and wool has substantially contributed to our food and fiber industry. Prior to the early 1900's production of wool was of primary importance and the production of slaughter animals was incidental. There was a marked change in the character sheep industry from 1870 to 1920. After 1890 the production of lambs for slaughter became increasingly important.

The total count of sheep and lambs on January 1, 1867, just after the Civil War, was 46.3 million head valued at $108 million. This was about $2.40 per head. There were about one-third more sheep than cattle in this earliest count. By 1884, sheep and lamb numbers increased to 53.3 million head but exceeded cattle numbers for the last time.

Sheep and lamb numbers passed through many cyclical phases. Inventory declined after 1884 until 1897 and then increased again until 1909, when almost 50.8 million head were on U.S. farms and ranches.

The next inventory peak was in 1932, when nearly 54.0 million sheep and lambs were on farms and ranches with over 6 million head on feed. The alltime high was in 1942 when farmers, ranchers, and feeders had 56.2 million head on hand.

The inventory numbers dropped in the post World War II years of the late 1940's, declining to below 30 million head by 1950. Inventory numbers generally leveled off throughout the 1950's. After 1960, and throughout the 1960's and most of the 1970's, inventory numbers continued to decline to hover just below 13 million head from 1977 to 1982. Inventory numbers declined below 10 million head on January 1, 1986, to an all-time low. The industry recovered modestly to 10.8 million sheep and lambs on January 1, 1988. The inventory was valued at $970 million, averaging near $90 per head.

Wool production during 1987 from 11 million head shorn totaled 86 million pounds. The fleece weight was near 8 pounds per head and averaged over 90 cents per pound. The need for information concerning wool production resulted in initiation of a new series in 1909. That year nearly 45 million sheep were shorn producing 310 million pounds of wool which sold for 22 cents per pound. The fleece weight was less than 7 pounds per sheep shorn. Estimates of the inventory by class and age began in 1920 and estimates of births (lamb crop) were added in 1924.

The declining importance of sheep and lambs has been attributed to a number of causes. Primarily the decline stems from less demand for wool as more synthetics and cheaper substitute materials were introduced and the declining demand for lamb in consumer diets. Second, there has been increased difficulty in obtaining and keeping reliable herders to manage and care for range flocks, and increased competing uses for public-owned range land. Another important factor which has contributed to the decline is the increasing problem of predators in many range and farm-flock producing States. Also, relatively large imports of lamb and mutton has contributed to the decline of the domestic sheep industry.

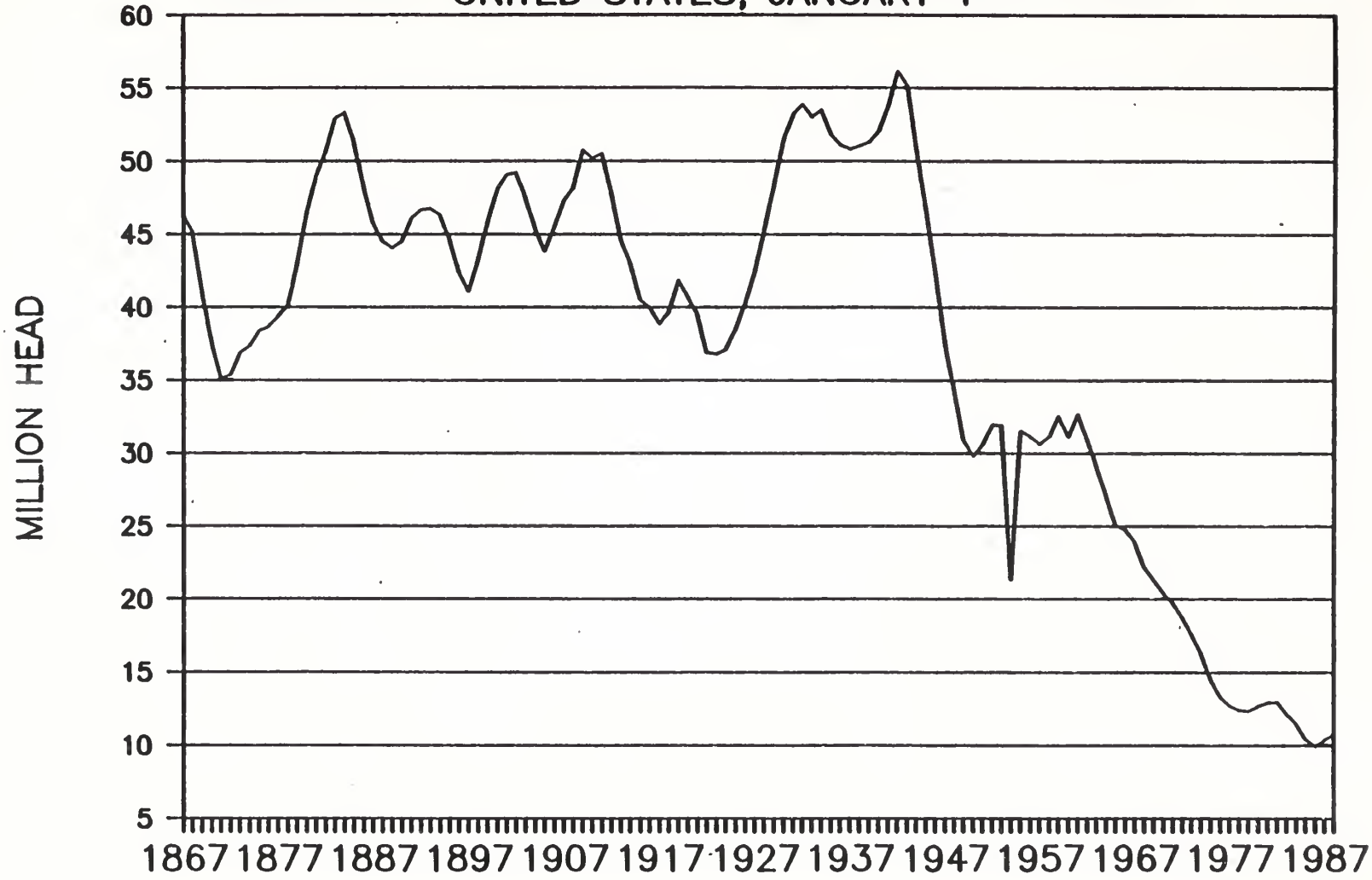
Estimates of the total sheep and lamb population by States in the year's prior to 1920 were based on interpolating annual data for years between enumerations conducted every 10 years as part of the Census of Agriculture. These interim annual estimates of change were based on reports from field agents and reporters giving their estimates of the percentage change from the previous year. During the period of the 1920's through early 1970's annual estimates were based primarily on survey returns from livestock producers, obtained mostly in cooperation with rural mail carriers.

Probability sampling procedures were initiated in 1970 with samples selected from the nearly complete list of producers stratified by size. Fully operational probability sampling principles to improve survey precision were initiated in 1987.

The survey procedures and estimates have continued to monitor the western movement of the sheep inventory. The open-range lands of the western and southwestern States were particularly inviting for sheep production. The distribution of sheep and lamb inventory shifted from the East North Central States to western States in 1890. Texas is now the leading sheep State.

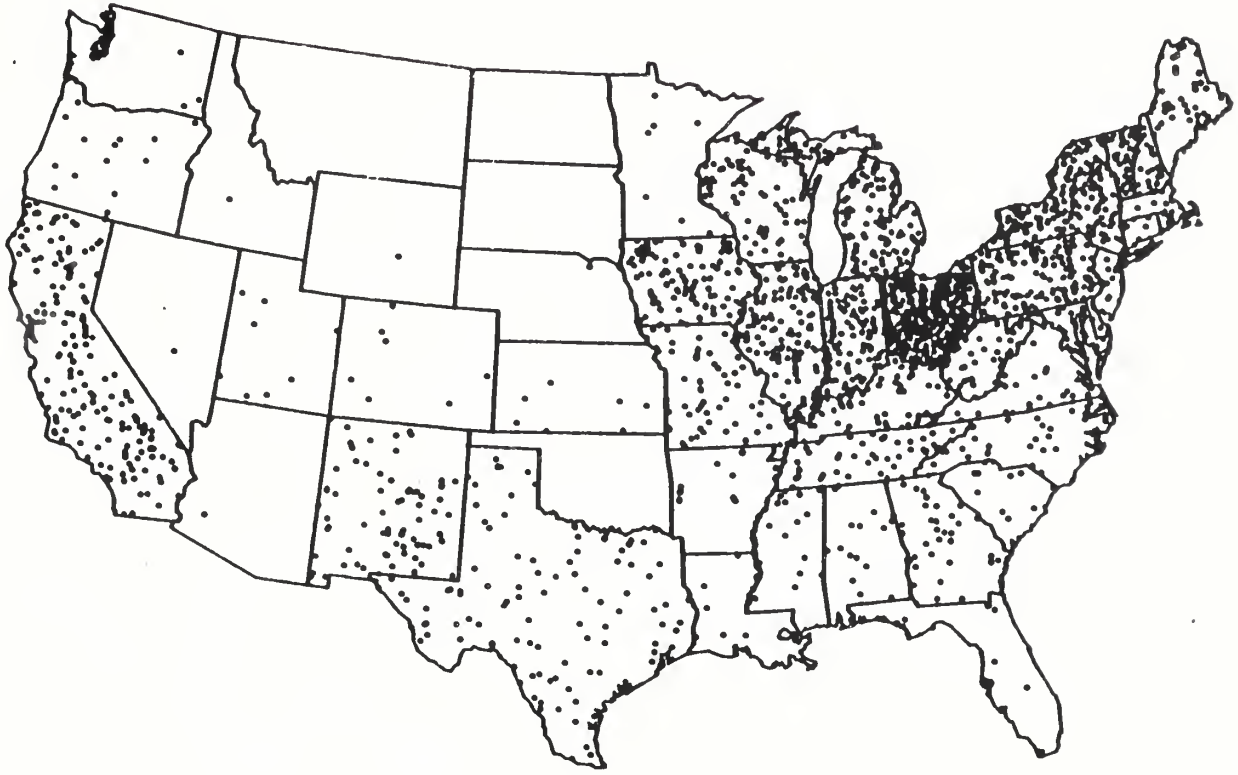
SHEEP & LAMBS INVENTORY

UNITED STATES, JANUARY 1



1867 SHEEP INVENTORY

UNITED STATES = 46.3 MILLION



1 Dot = 20,000 HEAD

1988 SHEEP INVENTORY
UNITED STATES = 10.8 MILLION

1 Dot = 20,000 HEAD

A HISTORY OF CORN AND WHEAT PRICES

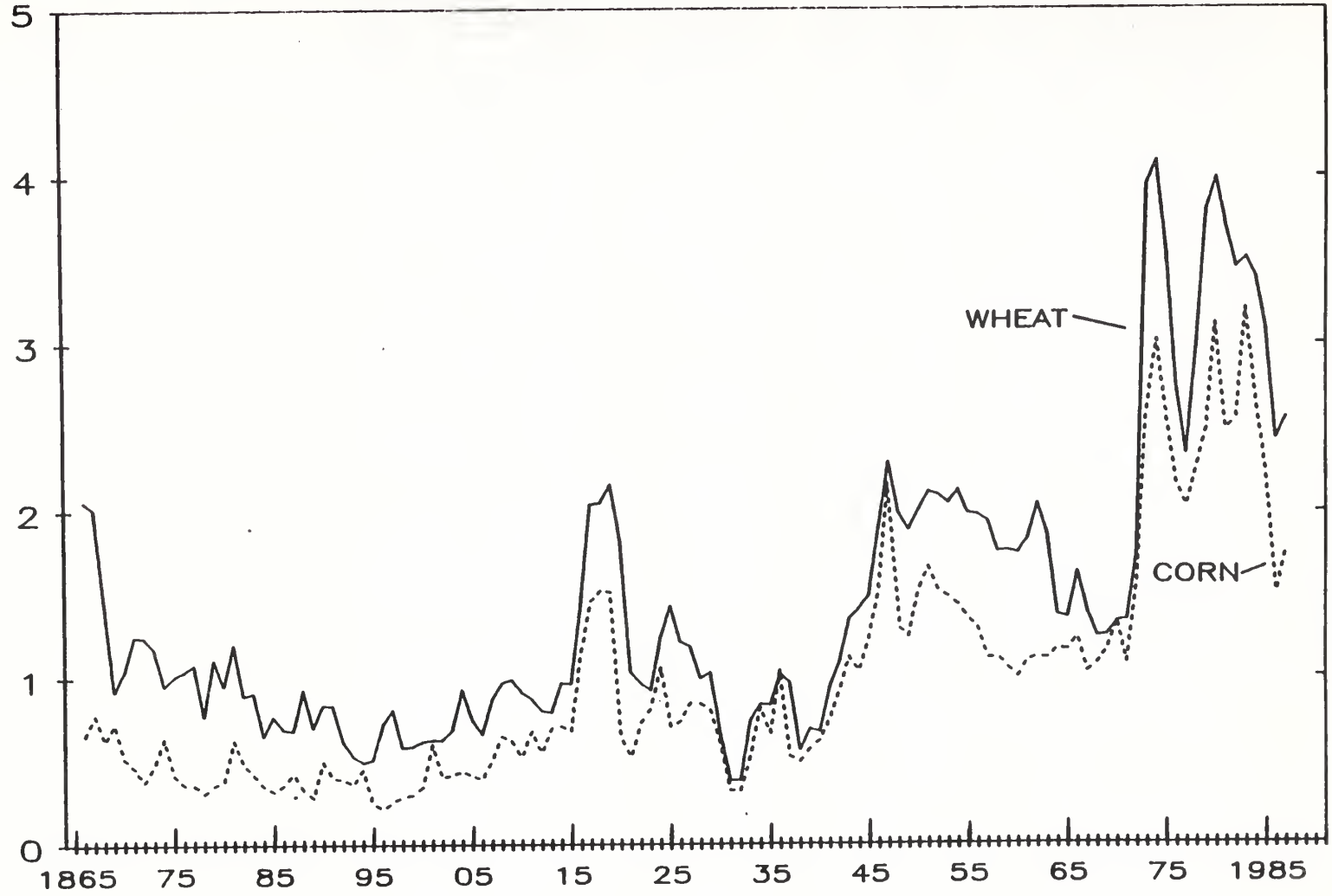
USDA began collecting prices received by farmers in 1866. Wheat and corn were among the first crops covered. The prices were published once a year for December 1 until 1908 when they were replaced by monthly prices. Monthly prices from 1908 to 1977 represented sales during a 5-day period around the 15th of the month. At that time, the program was strengthened considerably by revising the previous month's prices using actual sales by farmers to mills and elevators during the entire previous month. The current month's prices continued to reflect sales during the five day period around the 15th of the month. From 1908 to present, marketing year average prices have been computed by weighting monthly prices to a yearly average.

Corn and wheat prices, along with other major field crops, have been collected monthly since 1977 using a probability sample of approximately 2,600 mills, elevators and other firms which purchase grain directly from farmers. These buyers, who are located in all the major producing areas, account for about 90 percent of total sales. Questionnaires ask for the total quantity of each crop purchased during the previous month and total value of the grain. The value of grain used to derive the average price per bushel includes adjustments by the elevator for discounts and premiums but does not include a deduction for marketing expenses incurred by the seller, such as hauling, cleaning, storage, grading, drying, etc. The estimated prices are an average for all grades and qualities as sold at the point of first sale and reflect standard moisture content.

The chart below shows yearly corn and wheat prices from 1866 through 1987. The record low average price for corn was 31.6 cents per bushel in 1932 while the record high price was $3.21 per bushel in 1983. The lowest average price for wheat, 37.5 cents, was also recorded in 1932. The highest marketing year average price was $4.09 per bushel in 1974.

PRICES RECEIVED FOR WHEAT AND CORN

DOLLARS PER BUSHEL



LIVESTOCK INVENTORY VALUES
1867 - 1987

Estimates of the number and value per head of livestock on farms began in 1867. Old records show that these estimates have been issued in nearly every year since that date, although in some years the published figures apparently showed only the percentage change from the previous year. In the beginning, value estimates were made for all cattle, hogs, sheep, horses, and mules. Estimates for mules were dropped in 1950 and combined with horses. In 1960, the combined horses and mule series was discontinued.

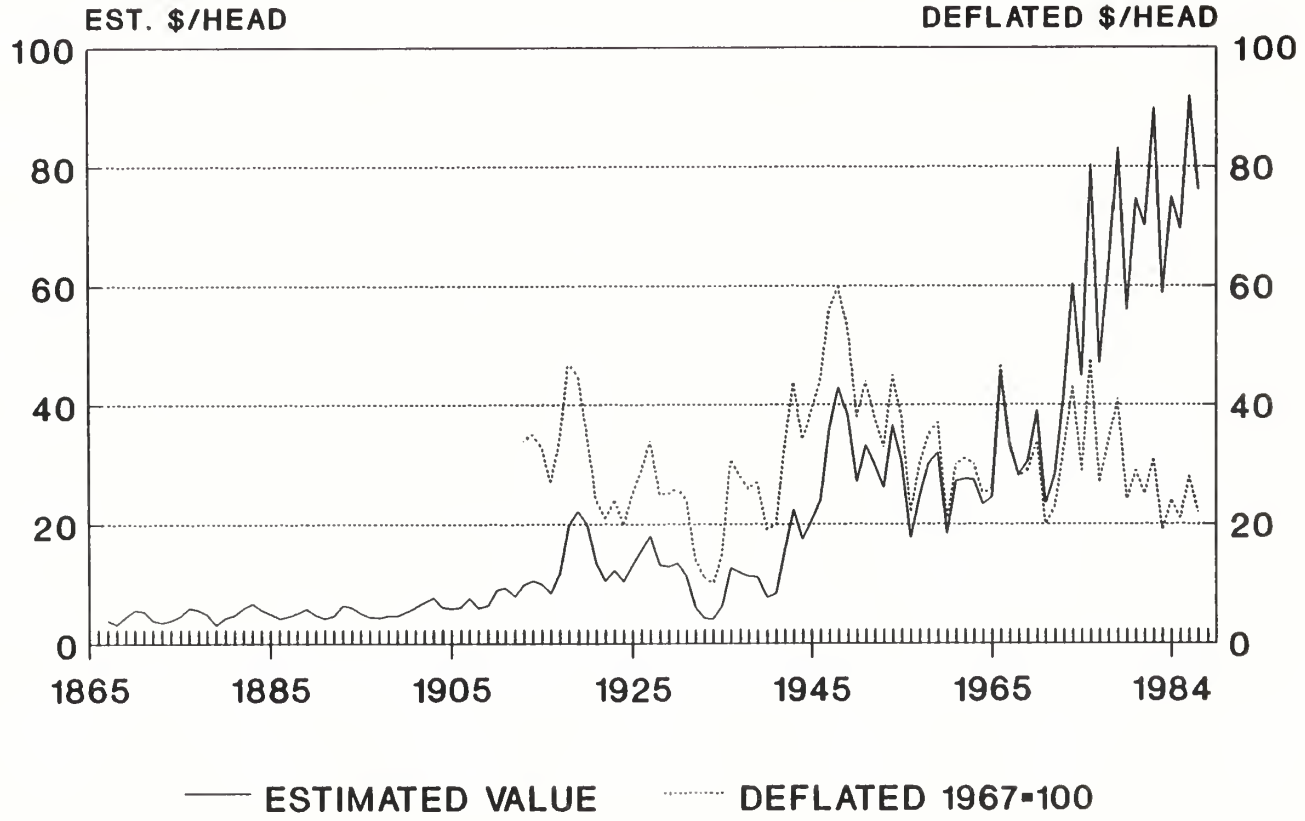
Initially the average value per head of the different species of livestock were averages of the reported values for the species as a whole. Beginning in 1940, values corresponded with age, sex, and use classes. Class values were then weighted by the inventory numbers to an average for the species.

Values represented reporters' estimates of average price per head for their locality on January 1. With the implementation of probability sampling, the reported values are now the respondents' estimate of the average value of inventory for their farm or ranch.

Over time, much of the year to year fluctuations in livestock values are obscured by changes in the value of the dollar. Deflating livestock prices with an appropriate price index one can see increased prices brought on by heavy demand during the World Wars followed by lower prices. In recent years, the fluctuation from year to year has been relatively large. The dotted line on the following charts expresses livestock values in 1967 dollars. Values were divided by the Consumer Price Index (1967=100) to adjust for inflation.

HOG INVENTORY VALUE, 1867-1987 1/

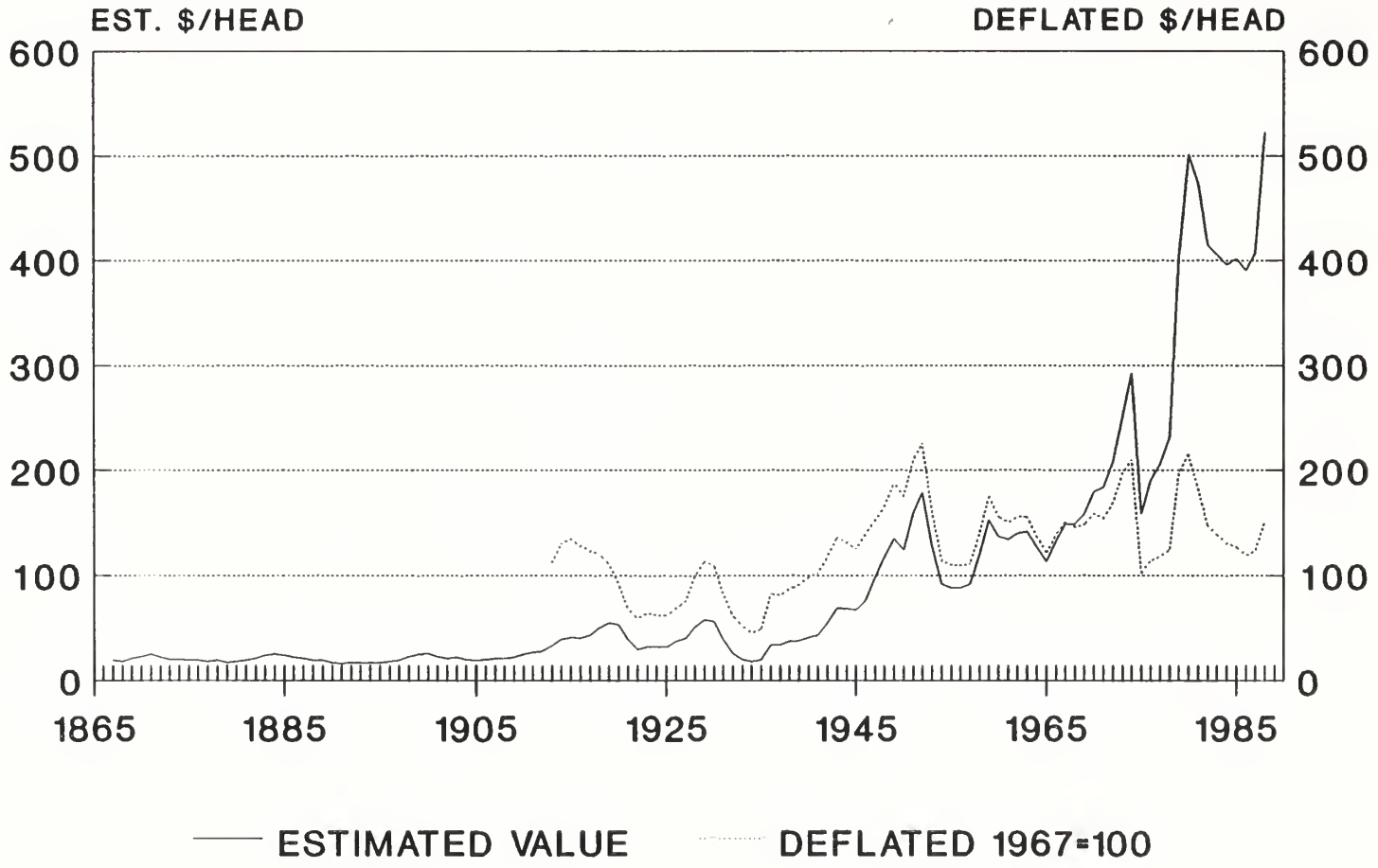
ESTIMATED & DEFLATED VALUE PER HEAD



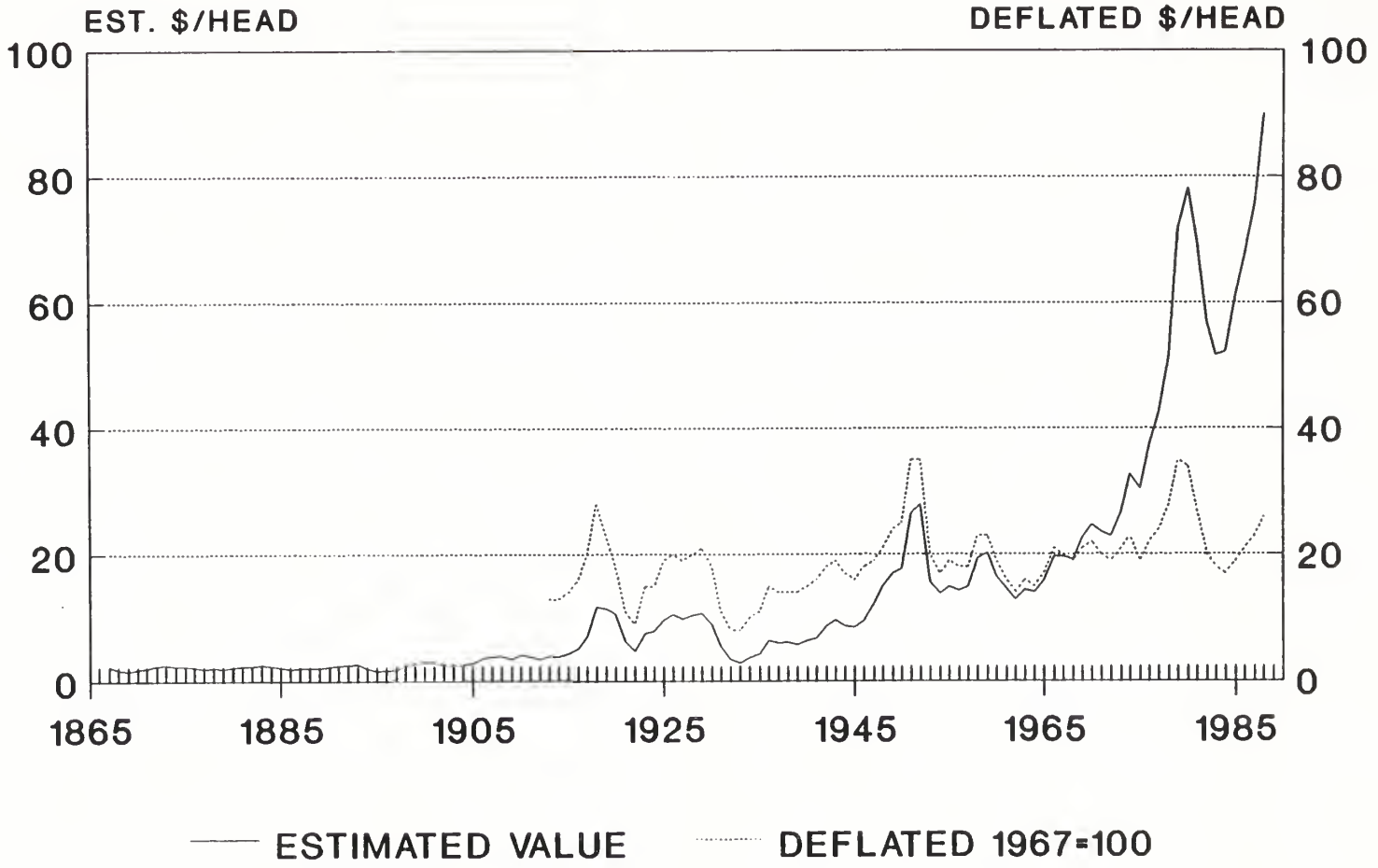
1/ Jan 1, 1867-1968; Dec 1, 1968-1987

CATTLE INVENTORY VALUE, 1867-1988

ESTIMATED & DEFLATED VALUE PER HEAD



SHEEP INVENTORY VALUE, 1867-1988
ESTIMATED & DEFLATED VALUE PER HEAD



PRICE INDEXES

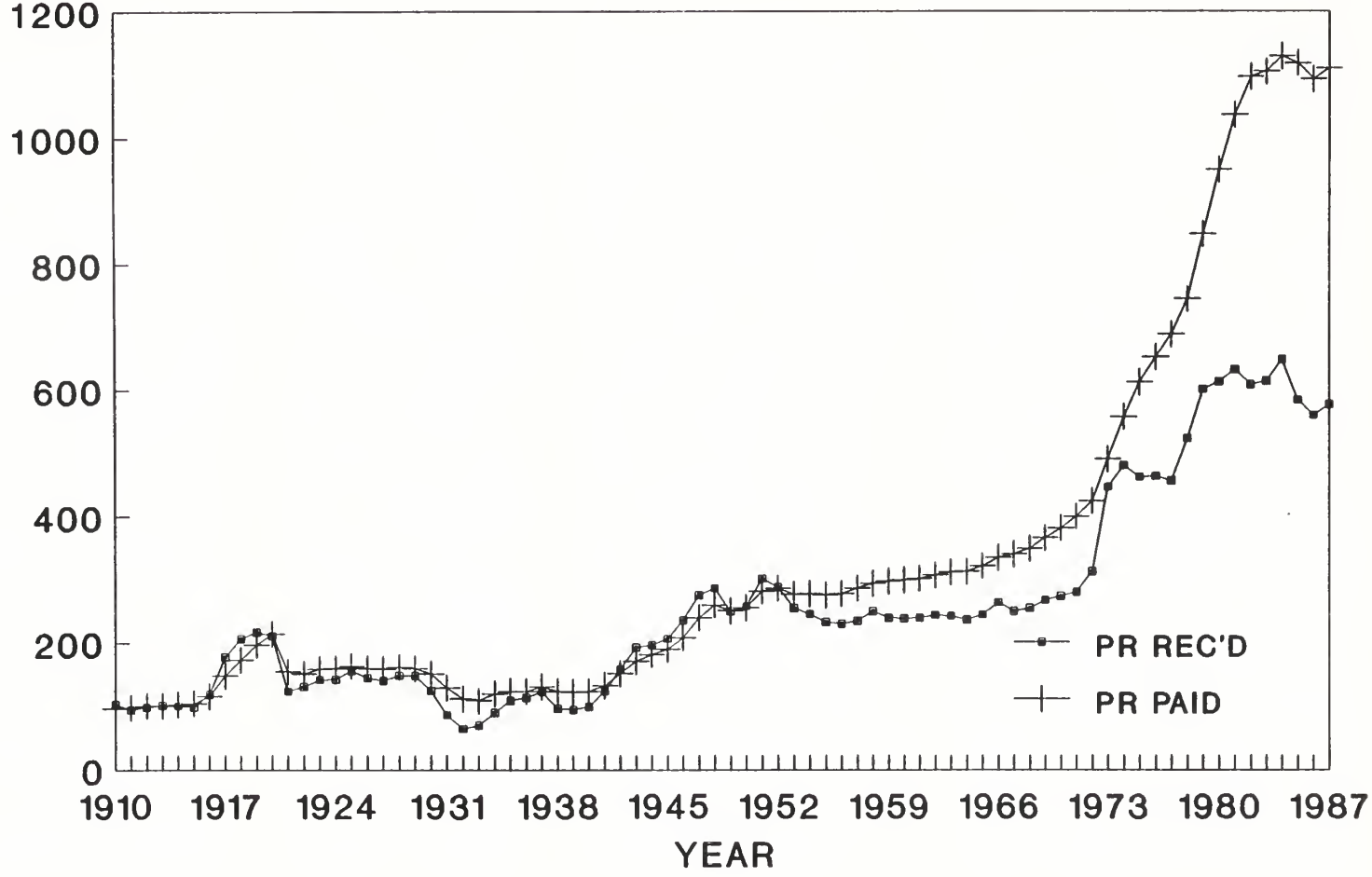
The Indexes of Prices Received and Prices Paid by Farmers are compiled from the series of Prices Received by farmers for commodities sold and the series of prices paid by farmers for commodities purchased. A comparison of the two Indexes provides a measure of the purchasing power of agricultural commodities.

Index numbers of Prices Received by Farmers for 10 crops were first published in 1909 using the December 1 farm prices for 1866-1908 for computing price relatives and the quantities produced in 1909 as weights. By 1918, the number of commodities in the Index was expanded and a Livestock Price Index was introduced. In 1924, USDA's Bureau of Agricultural Economics (BAE) published a new restructured series of price index number for farm products. At this time, the major components were grains, fruits and vegetables, cotton and cottonseed, meat animals, dairy and poultry products and unclassified commodities. The new series included prices for 30 commodities and used a base period of August 1910 - July 1914. The base period selected was a time when the people who lived on farms were perceived as receiving a fair share of the income and growth of the economy. Consequently, the price/cost relationships of that time were perceived as fair for the producers of farm commodities.

In 1928, BAE published the first index series which measured price changes in commodities purchased by farmers for use in agricultural production and family living. It was called the Index of Prices Paid by farmers or the Parity Index and was defined as the ratio of the current level of prices paid by farmers for items of production and family living to the general level of such comparable items during the period January 1910 - December 1914. The index was based on quantities purchased in 1919 and quickly became one of the most widely used indicators of changing economic conditions affecting U.S. agriculture. In 1934, USDA released a new Index of Prices Received by farmers and also updated the Parity Index. Quantity weights for both Indexes were based on the 1924- 1929 period, placing the base period weights on the same footing. The Agricultural Adjustment Act, amended by Public Law 320 in 1935, required that interest and taxes on farm real estate be included in the Parity Index. Farm wage rates were added to the Parity Index as a result of the Agricultural Acts of 1948 and 1949. The Indexes were revised again in 1950, 1959, and 1976. With each revision, the coverage provided by the Index became more complete. Both the Index of Prices Paid and the Index of Prices Received are fixed-weight price indexes modified from the Laspeyres formula and are currently computed on a 1971-73 base weight period. Indexes are converted to a 1910-14 = 100 and 1977

= 100 base for publication in the monthly Agricultural Prices release.

PRICE INDEXES
(1910-14 = 100)



THE CONCEPT OF PARITY

Parity is defined as the 1910-14 relationship between prices received by farmers for their products to the prices paid for the things they buy. The idea of Parity developed in the early 1920's in response to the problem of low per capita income of farmers, the result of serious overproduction. George F. Warren, an agricultural economist at Cornell University, noted that farm prices climbed relative to all commodity prices during the late 1800's and early 1900's, but following World War I, farm prices fell relative to all commodity prices. Warren used a five year period, August 1909 - July 1914, a period of relative stable prices, as the statistical base for comparing figures of the many kinds of businesses he studied. George N. Peek, who was among the first to note Warren's findings, coined the terms parity and "fair exchange value".

The Agricultural Adjustment Act of 1933 initiated the Parity concept by declaring that the policy of Congress was to establish prices to farmers at a level which would give agricultural commodities the same purchasing power they had in a more favorable period. Parity was written into price support legislation in the 1930's, first as a broad goal, and later in the form of specific price support tools such as loan rates and direct government purchases. Although equality for the farm sector was a goal of most agricultural legislation, the laws did not require that supports be set at 100 percent of Parity.

The Agricultural Adjustment Act of 1948 changed the legal definitions of the Parity Index, Parity Prices and Parity Income. The Adjusted Base Prices were redefined from the average 1910-14 prices for individual commodities to the most recent 10 year average prices received for the commodity deflated by the corresponding 10 year average of the Index of Prices Received for all commodities. Parity prices were now defined to be a product of the Adjusted Base Prices and the Parity Index.

The post World War II era brought a move away from the 100 percent of Parity as a policy standard. The shift began when Congress realized that the ultimate result of maintaining price supports at or near 100 percent of Parity was surplus production. The Food and Agriculture Act of 1977 virtually wrote Parity out of current farm policy and the Food Security Act of 1985 does not even mention the term. Existing legislation, however, requires the continued calculation and publication of parity prices. Today, Parity Prices are used largely for the administration of fruit and vegetable

marketing orders. NASS currently calculates Parity Prices for 142 commodities monthly.

The Parity Ratio is defined as the Index of Prices Received by Farmers for the products they sell divided by the Parity Index using a 1910-14 base. The ratio was first computed in the early 1920's when the concept of Parity was developed. The Ratio provides an indication of the per unit purchasing power of farm commodities in terms of the goods and services currently brought by farmers in relation to the purchasing power of farm products in the 1910-14 base period. A Parity Ratio is also computed using the 1977 = 100 period to provide a more recent base for comparison.

PARITY RATIO
(1910-14 = 100)