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UNITED STATES DEPARTMENT OF AGRICULTURE
MISCELLANEOUS PUBLICATION No. 171

WASHINGTON, D.C. ★ NOVEMBER 1933

THE CROP AND LIVESTOCK REPORTING SERVICE OF THE UNITED STATES

Prepared by the Statistical Staff
of the Division of Crop and Livestock Estimates
Bureau of Agricultural Economics

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INTRODUCTION

This description of the methods used by the Division of Crop and Livestock Estimates of the Bureau of Agricultural Economics in collecting and analyzing statistical data relating to crop and livestock production and related subjects, has been prepared by the Washington statistical staff of that division to meet a widespread demand for information concerning the operation of the United States crop-reporting service. A number of articles have appeared from time to time regarding individual phases of the crop-reporting work, but nothing in the nature of a complete description of this work has been published heretofore.

The main text was first prepared by Charles F. Sarle, formerly of this division, and was revised and amplified by W. F. Callander, Joseph A. Becker, Charles G. Carpenter, and others.

The sections covering special reports were prepared by: Joseph A. Becker, field-crop reports and farm-income reports; S. R. Newell, fruit reports; Paul L. Koenig and Reginald Royston, truck- and canning-crop reports; C. L. Harlan, livestock reports; J. B. Shepard, dairy reports; S. A. Jones, poultry reports; and S. R. Newell and Roger F. Hale, farm-price reports. and V. C. Childs, cotton reports.

The crop-reporting service of the United States is an impartial agency, operated in the United States Department of Agriculture in cooperation with 35 of the States and 300,000 voluntary crop reporters, for the collection, collation, and publication of statistical data relating to acreage, condition, and production of crops, number and production of livestock, prices of farm products, and related information.

It has been developed in response to a continuous and insistent demand for information which no other agency has been able to supply.

The primary purpose is to provide adequate, accurate, and timely information concerning crops and livestock for crop and livestock producers. This information is also of value to handlers and consumers of farm products, and to those who provide products

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and services needed by farmers; hence, it is of direct or indirect value to nearly everyone in the United States.

Crop reports represent the collective reports of thousands of individual farmers concerning their farm operations or concerning conditions with which they are intimately acquainted.

Information supplied by the crop reporters concerning crops and livestock in their communities or on their own farms is collated and analyzed by the Crop Reporting Board in Washington as a basis for the crop reports.

The monthly crop reports containing crop forecasts are prepared and published under very strict laws and Department regulations which prevent the contents of the reports becoming known, except to the Secretary of Agriculture, the Crop Reporting Board, and its employees, before the moment previously set for publication.

The crop reports are published in mimeographed form for immediate distribution and are printed in Crops and Markets, a monthly publication of the Department of Agriculture. As soon as they are released, summaries are distributed by mail, telegraph, telephone, and radio.

DEMAND FOR CROP AND LIVESTOCK REPORTS

Few services rendered by the United States Government affect as many persons directly or indirectly as does the crop and livestock reporting service. Farmers, farmers' cooperative organizations, dealers in agricultural products, sales departments of industrial concerns that sell farmers everything from soap to automobiles, bankers who finance the movement of the crops at harvest time, and railroads that move the crops and livestock, all use the crop reports in some way. Many of the agencies that buy farm products have always had their own private sources of information, but they use Government forecasts not only as a check on their own reports, but frequently as a base from which to start the next succeeding report.

Banking institutions study the Government estimates of crop acreages and crop prospects and of livestock numbers and production as a guide to the demand for funds that they may be called upon to advance for financing farmers through the producing and the marketing seasons. Railroads use the crop reports as a guide in allocating the supply of freight cars. Manufacturers, merchants, dealers, and business men use crop reports in planning their operations so that the machinery, farm equipment, and supplies will be available to farmers when and where needed. Costly and annoying delays are avoided and, to the extent that they thus avoid losses, business men can not only render more efficient service, but can afford to sell at lower prices.

Business men are using statistics more than ever before. Business interests and industries that use the agricultural products as raw materials as well as those that sell their finished product in rural communities have an immediate interest in Government crop reports. Economic forecasts and business analyses depend in appreciable measure upon crop statistics. The sales department of at least one of the well-known automobile manufacturers uses Government reports in locating areas of rural prosperity. One of the large lumber companies uses crop and livestock reports as a basis for making changes in its sales program. The statistical department of one of the largest soap manufacturers in the country makes extensive use of cotton and hog reports as the basis for its purchasing program.

Advertising agencies frequently use the data to plan advertising campaigns. One small circus often uses crop reports in planning its itinerary. Buying, production, sales quotas, and organization policies are based to a large extent upon what agricultural producers have done in the past, their present production possibilities, and the trend in types of farming in areas of interest to these industries. Prospective settlers frequently make use of the governmental agricultural statistics to enable them to locate to best advantage in areas best suited to the type of farming they wish to follow.

The great importance of basic statistical agricultural information to all agricultural and marketing agencies, and to all industrial, financial, and transportation agencies, contacting with agriculture, makes necessary a wide and accurate understanding of the problems and difficulties of crop and livestock estimating.

Definite information regarding agricultural production can be obtained by either of two methods: (1) By taking a complete census enumeration of every farm in the country or (2) by making the best possible estimate on the basis of obtainable information by an unbiased Government agency. Monthly reports are necessary if the production of different crops that ripen at different times of the year in various parts of the country is to be known before the marketing season is over. Florida potatoes are harvested and marketed in early spring, whereas Michigan and Maine potatoes are harvested in the fall and are sold throughout the winter. A complete agricultural census could not be taken and tabulated and the results made available in time to be of use during the marketing of a potato crop. Usually about 2 years are required, after the taking of a United States census, before the complete results can be published. The expense of taking such an agricultural census every year would be prohibitive. It is only through unbiased forecasts and estimates of agricultural production that the farmers, and the public generally, can have timely information concerning the supply of agricultural commodities during the marketing season.

IMPORTANCE OF ACCURACY

Estimates and forecasts of production must be as near accurate as possible in addition to being honestly and efficiently prepared. Accurate official estimates of crop production by States and for the United States are fundamental to the best development of American agriculture. No constructive, intelligent program for agriculture can be made or carried through without them. The supply of farm products is usually by far the most important factor in determining the prices farmers will receive. The part of the supply that is sold, multiplied by the price received, determines the gross cash income from agriculture, which in turn affects the purchasing power of an important part of the nation's consumers.

Official estimates that are higher than the actual quantity that is finally produced would work a direct

hardship on farmers and indirectly on those who sell goods to farmers by causing a lower price to growers and a smaller growers' income than would have been warranted if the size of the crops had been accurately known at the time of sale. Low prices might so increase the rate of consumption of a given product that a shortage would occur before the next crop would become available and the consumer might be forced to pay high prices late in the season. Farmers seldom benefit materially from the high prices paid late in the marketing season because the product has usually left their hands before that time.

Official estimates that would regularly understate the quantity actually produced are sometimes thought of as advantageous to farmers in that they would result in prices higher than the actual supply would justify. Such advantage could be only temporary, for buyers would soon learn to allow for any constant understatement of this kind in the official estimates of production, and lower prices would be paid for subsequent crops even when the estimates had become more accurate, and prices would continue to be lower until the biased reports of previous years had been forgotten.

Prices that are higher than warranted by the supply may result in decreased takings on the part of consumers. In the case of nonperishable farm products, like grain and cotton, curtailed takings mean larger carry-over into the next crop year. This increased carry-over increases next year's supply, and therefore tends to decrease the price for the new crop.

The accuracy of forecasts made early in the season must necessarily be judged by the crop prospects at that time rather than by the harvest 3 or 4 months later. Losses may result from a severe early freeze such as occurred in the Louisiana sugar belt on December 3 and 4, 1929, when half of the cane crop was frozen and one sixth of the acreage was eventually abandoned. Floods or hail sometimes destroy crops on sizable acreages within a few days or even a few hours. On the other hand absence of usually damaging factors, such as absence of frosts for several weeks after their usual time, may add several hundred thousand bushels to the corn crop or many bales to the cotton crop. Such influences on crop production obviously cannot be foreseen.

The nearest approach to accuracy attainable is the goal of the Crop Reporting Service.

THE DEVELOPMENT PERIOD

NINETY YEARS' GROWTH

The crop reporting service of the United States is the result of more than 90 years of gradual development. Some of the important events are:

1839—$1,000 appropriated by the Congress to the Patent Office for distribution of seeds and collection of agricultural statistics.
1855—James T. Earle, President of the Maryland Agricultural Society, tried to collect information concerning crops through State agricultural societies, and he advocated collection of such information by an "agricultural department of the general government."
1862—Orange Judd, editor, American Agriculturist, collected monthly crop reports from his subscribers and published the results.
1862—United States Department of Agriculture was established by act of May 15 (12 Stat. 387–8, An act to establish a Department of Agriculture), and the agricultural statistical work was taken over from the Patent Office.
1863—Monthly or bimonthly reports on condition of crops were published, based upon voluntary reports from crop correspondents in each county.
1866—Regular reports were begun on condition, acreage, yield per acre, and production of important crops, and on numbers of livestock.
1867—Regular annual reports were begun on prices of farm products.
1882—Part-time State statistical agents were appointed and required to maintain independent corps of crop reporters.
1896—A new, separate, and larger corps of crop reporters, known as township reporters, was established.
1900 to 1914—Crop specialists and regional field agents were appointed for personal field observation and inquiry.
1905—Crop Reporting Board was organized.
1906—Keep Commission[1] recommended that the United States Department of Agriculture make forecasts of crop production.
1908—Monthly collection of prices of farm products was begun.
1909—Laws were enacted safeguarding Government crop reports.
1911—Reports of crop acreages on crop reporters' own farms were established as indication of acreage changes.
1912—The Crop Reporting Board began to forecast production of important crops prior to harvest.
1914—Full-time State agricultural statisticians were appointed, their duties combining those of the former State statistical agents and regional field agents.
1914—Truck-crop reports were initiated.
1919—First objective field counts were made by the agricultural statistician in South Carolina.
1919—Data were collected concerning numbers of poultry.
1922—Pig survey through rural mail carriers was made for first time.
1923—Livestock-reporting work was organized.
1924—Rural mail carrier acreage survey was initiated.
1925—Highway frontage of crops as measured by a "crop meter" attached to an automobile was first used to indicate acreage changes.
1927—Dual inquiries from Washington and field offices were discontinued in a few States.
1929—Practical application of correlation methods to forecasts of crop production was made.
1932—Township reports were handled by branch offices and dual system of reports was discontinued, except for cotton.

THE BEGINNING

There is ample evidence in the letters of James T. Earle, president of the Maryland Agricultural Society, and elsewhere, to indicate that prior to 1839 farmers were somewhat resentful of profits made by dealers and speculators in farm products through the circulation of misleading reports concerning crops, and through producers' lack of knowledge of market values. There was evidently considerable agitation and discussion concerning the possibility of producers having adequate and accurate information regarding crop production before their crops had gone to market. Some pressure must have been exerted to induce Congress to make even the $1,000 initial appropriation for aiding agriculture by distributing seeds and by the collection of agricultural statistics in 1839. Sixteen years[2] later Mr. Earle, being dissatisfied with the results obtained in the collection of agricultural statistics by the Patent

[1] The reports of the Keep Commission on department methods relating to official crop statistics and the investigation of the Twelfth Census report on agriculture, in compliance with S. Res. No. 135. (Being transmitted to the Senate on May 29, 1906, by President Roosevelt and printed as Doc. 464, 59th Cong. 1st Sess.) Reference is to a report dated Jan. 6, 1906, signed by C. H. Keep (chairman), L. O. Murray, J. R. Garfield, Gifford Pinchot, committee on department methods.

[2] Earle's letter dated Centerville, Queen Anne County, Md., July 16, 1855.

Office, seems to have brought the matter to the fore, when, in a circular letter sent to the presidents of the other State societies, he said:

> DEAR SIR: For the promotion of the farming interest of the country, we are anxious to procure the earliest reliable information possible of the crops, that the same may be laid before the farmer to guide him in the selection of the best time to dispose of the fruits of his labors. The duty should properly be imposed upon an agricultural department of the general government; but in the absence of such provision, and in view of the artful practices of speculators and others, operating most disastrously through the base venality of the public press, upon this leading interest, the obligation is devolved upon us.
>
> The question arises, how shall we best discharge it? Shall we rest content, as heretofore, to do nothing; to sit with our hands before us without an effort to secure that information which by concert of action is entirely within our reach; to see our brother farmers robbed of 20 to 30 percent of the labors of their hands, by the superior information and cunning of the astute purchaser, merely from an indisposition on our part to make that exertion necessary to secure the important end we should earnestly labor to accomplish? The answer is but too plain, and pronounces such a course to be altogether unworthy of sensible men. Let this charge, then, of inefficiency, of want of energy to secure our own interest, no longer rest upon us; but if we have not already, let us at once so organize the societies of our respective States as to make them efficient in procuring this information so all-important to the farmers.
>
> Let us have gentlemen of intelligence and reliable judgment in each county of our respective States, connected not only by position as officers, but by interest, too, with our State societies, that we may have a right to call on for information touching the crops of their different localities. They can be directed to forward their reports to some selected officer, whose duty it should be to collate them and disseminate the information thus deduced through the public press, and by circulars transmitted to each of the State Agricultural societies of the Union.

At the same time Mr. Earle sent out a questionnaire to individuals and county societies in Maryland asking them to report by October 10 following the state of the crops, whether above or below an average, and the causes that had beneficially or prejudicially affected the crops. Apparently these efforts were not very successful so far as the immediate collection of statistics was concerned, but they must have had considerable effect in keeping the desirability of systematic crop reports before the agricultural public.

Seven years later Orange Judd, editor of the American Agriculturist, sent a circular to his subscribers containing five inquiries, one for each month from May to September. He published the results. So far as available records show, the efforts of these two men, Earle and Judd, were the first systematic efforts in the United States to obtain prompt and reliable crop reports.

The continued recommendations of the Commissioner of Patents that the agricultural work be separated from that of the Patent Office, together with the growing demand for information concerning crop production, and the demonstration by the American Agriculturist that systematic crop reports were feasible, apparently contributed to the establishment of the United States Department of Agriculture in 1862 with a provision that the Commissioner of Agriculture should—

> acquire and preserve all information concerning agriculture, which he can obtain by means of books, correspondence, and by practical scientific experiments (accurate records of which experiments shall be kept in his office), by the collection of statistics, and by any other appropriate means within his power.

The first appropriation for collecting agricultural statistics by the United States Department of Agriculture was provided for by the Appropriation Act of February 25, 1863. For the fiscal year ended June 30, 1865, the first distinct and separate provision was made for collecting agricultural statistics, the amount appropriated being $20,000.

In the summer of 1863 the Commissioner of Agriculture published monthly and bimonthly reports on condition of crops, these reports being based upon voluntary reports from crop correspondents in each county. Regular monthly reports on condition of crops and annual reports on acreage, yield per acre, and production of important crops and numbers of livestock on farms January 1 were begun in 1866. The next January (1867) annual reports on prices of farm products were initiated, these prices being for the crops of the previous year. The year 1866, therefore, marks the real beginning of a continuous series of agricultural statistics under the direction of the United Stares Department of Agriculture.

The work was gradually developed along the original lines until 1912, when the Crop Reporting Board, which had been organized in 1905, began to forecast production of important crops prior to harvest. Meanwhile very stringent laws had been enacted covering the preparation and publication of crop reports so as to prevent premature disclosure of their contents which might affect the market value of crops. With the organization of the Bureau of Statistics in 1903 and its reorganization in 1914 under the name of the Bureau of Crop Estimates, definite recognition was made of the value of the statistical work of the Department of Agriculture to the people of the United States, particularly to farmers and stockmen.

SOURCES OF INFORMATION

The principal base for crop statistics is the information collected by the Bureau of the Census; the work of the crop-reporting service is primarily that of estimating comparable data for intervening years. The Sixth Federal Census, made in 1840, contained items relating to agricultural production but it was not until the Tenth Federal Census in 1880 that both the acreage and the production of crops were enumerated.

Practically the only source of information for the Department of Agriculture's statistics of acreage, yield per acre, production, condition of important crops, numbers of livestock on farms January 1, and farm prices by States, from 1866 to 1881, was a voluntary staff of county reporters with their assistants in each county. In 1882 State agents were appointed in each State on a part-time basis. These agents soon built up a small list of crop correspondents.

The township list of crop correspondents who reported directly to Washington had its beginning in 1896. By 1926 this list was composed of nearly 40,000 reporters as the list of county correspondents was merged with the township list in 1925. During the period from 1900 to 1914, several crop specialists and regional field agents were appointed and the reliability of the estimates was improved by having trained men traveling about observing at first-hand the condition of the growing crops and checking up on the harvest. In the reorganization of the service in 1914 these special agents were allocated to individual States and the personnel was placed on a civil-service status. Full-time agricultural statisticians were appointed in practically every State.

Another list of reporters, designated as field aids, was established at that time. These field aids report to the State statisticians. This list had its beginning in the lists of correspondents built up by the part-time State statistical agents and other lists developed by

the regional specialists. By 1926 it, too, included more than 40,000 reporters.

With the development of the crop-reporting service the corps of voluntary reporters of various kinds increased from about 4,000 in the late seventies to some 300,000 in 1931, including individual-farm reporters, price reporters, dairy reporters, livestock reporters, truck-crop reporters, and so forth.

Prior to 1927 practically all schedules of inquiry were sent not only to Washington lists of correspondents but also to similar lists maintained by the field offices, the returns from the two lists being used as checks against each other. This plan of dual reports was developed when the field offices were small and inadequately manned.

With the gradual expansion of the service, the field offices have been placed under the supervision of well-trained, experienced, agricultural statisticians, adequate technical and clerical assistants have been obtained, and modern statistical equipment has been provided, so that the raw data secured from the schedules can be competently collated and analyzed in the field.

As a result of this development, beginning in 1927, the dual system of reports has been gradually eliminated until at present dual reports are confined largely to cotton in the more important cotton States. Practically all of the lists of township and price reporters have been transferred to the field offices and are used by them; in most instances each field office now has twice as many reporters as formerly. A large list of cotton-crop reporters is still maintained in Washington on account of the highly speculative nature of this crop. A limited list of dairy reporters is also maintained in Washington. In addition to the regular monthly inquiries, the field offices now handle all of the rural mail carrier surveys as well as many other special schedules of inquiry. The work in each field office is reviewed and checked periodically by a technical representative of the Washington office, in order to maintain uniformity in the editing, compilation, and handling of the various reports.

TYPES OF INFORMATION

The recording of the annual production and value of crops and numbers of livestock was the basic objective of the crop-reporting service when it was inaugurated in the sixties. Although monthly figures on the condition of the growing crops were of much current interest, such information was considered of secondary importance. In fact it was not until 1912 that the condition figures were interpreted in terms of probable production at harvest.

Many miscellaneous functions were undertaken from time to time, such as estimates of stocks of grain on farms March 1 and at the close of the crop year, estimates of the quantity of a given crop shipped out of the county where grown, estimates of the quality of the harvested crop, and estimates of rate of marketing.

Even in the early years of the organization, information concerning the production of crops and livestock in foreign countries was obtained and published regularly.

Various types of information of general economic importance were included from the beginning of the service. An inquiry concerning the rate of farm wages was first made in 1866, and was repeated every few years until 1909, when it was placed on an annual basis. The collection of monthly prices of farm products received by producers, of prices paid by farmers, of farm-land values, of data concerning the supply of and demand for farm labor, of monthly rate of marketings by farmers for staple crops, and of fertilizer sales in cotton States, was begun in the decade from 1908 to 1918. The collection of information concerning farmers' intentions to plant crops and to breed livestock, disposition of grain and potato crops, cattle, sheep, and lambs on feed, milk and egg production, production of meat animals, and farm income by States, are new projects which have been inaugurated during the last 10 years.

PRESENT SCOPE OF CROP AND LIVESTOCK REPORTS

The crop-reporting year really begins in December of the calendar year preceding harvest when estimates of the acreage planted to winter wheat and rye are made. At the same time reports as to the condition of the crop in percentage of normal are published. No further reports on growing crops with the exception of some of the early truck crops in the Southern States are published until April, when a report is made on the condition of winter wheat and rye, including a forecast of production. This report also covers the condition of fall-sown oats and barley in the Southern States, but no forecast of production of these crops is made as no estimate of the acreage is made until July.

The December estimate of planted acreage of winter wheat and rye is revised as of May 1 to allow for abandonment, the acreage then estimated being the "acreage remaining for harvest." Condition reports and forecasts of production are again made as of June 1 for winter wheat and rye and a report is also made as to the condition of oats and barley for the entire country. Estimates of the planted acreage of all crops, including a further revision of the acreage remaining for harvest of winter wheat and rye are made as of July 1, together with reports as to the condition and forecasts of production of nearly all crops. The condition reports on practically all of the crops are carried each month from July until harvest. The yield per acre is estimated shortly after the close of harvest. Just prior to harvest, crop correspondents are asked to report on the probable or expected yield per acre of the more important crops. This is used in connection with the condition reports and certain other factors in forecasting yield.

The first cotton report relates to acreage in cultivation on July 1. Monthly forecasts of probable ginnings follow at monthly intervals until December.

Reports on condition and probable production of 21 fruit and nut crops begin with the April report on peaches in the Southern States and continue throughout the growing season. For truck crops, the reporting season begins with reports made in September on intentions to plant winter truck crops in the Southern States and continue throughout the year until late cabbage is harvested in the Northern States. Reports are prepared for 21 truck crops for fresh consumption and 11 crops for canning.

In December a general summary of acreage, yield, and production of each crop is prepared as a résumé of the crop production of the year.

The first livestock report, relating to breeding intentions for spring farrow, is published late in December. An annual livestock inventory as of January 1 is published in February, and this is followed during the year

by estimates of the pig, lamb, and calf crops, by reports on their development and probable marketings, and by estimates of cattle and lambs on feed at specified dates.

Reports on farm-milk-production trends and upon poultry- and egg-production trends appear monthly throughout the year with supplementary information relating to feeding and pasture conditions.

During the first months of the year estimates of farm utilization and sale of all agricultural commodities are prepared as a basis of the report on farm value, gross income, and cash income from farm production. In evaluating production and sales, farm prices gathered monthly for the major commodities, and at the close of the marketing season for other commodities, are used.

A typical calendar of reports is shown in the copy of the announcement for 1932 which follows:

Program of Crop and Livestock Reports in 1932

The monthly crop reports prepared by the Crop Reporting Board are published, as required by law, at exact hours on specified dates. The dates shown below are the usual dates but it is sometimes necessary to change the dates from year to year to avoid Sundays and holidays.

A number of other reports issued by the Division of Crop and Livestock Estimates are also listed, the dates shown being subject to some variation.

These reports are given general distribution by wire to the press and by radio to the general public. Mimeographed copies are distributed directly and by mail to crop reporters, other farmers, and such other persons as have need for prompt information. The reports are also printed in the monthly statistical periodical Crops and Markets for permanent reference.

Regular Monthly Crop Report Dates For 1932

REPORTS ON COTTON

Published at 11 a.m., eastern standard time

May 20. Revision of the report on acreage, yield per acre, and production of cotton in the previous season, and reduction from full yield per acre due to boll weevil and other causes.

July 8. Report on the acreage of cotton in cultivation on July 1.

August 8. Reports as of August 1 on condition, probable total ginnings, and indicated probable yield per acre.

September 8. Reports as of September 1 on condition, probable total ginnings, and indicated probable yield per acre; and an estimate of the acreage of cotton abandoned since July 1.

October 8. Report as of October 1 on probable total ginnings and indicated yield per acre.

November 9. Report as of November 1 on probable total ginnings and indicated yield per acre.

December 8. Report as of December 1 on estimated probable total ginnings and indicated yield per acre; and estimated acreage of cotton abandoned since July 1.

REPORTS ON CROPS OTHER THAN COTTON

United States data published at 3 p.m., eastern standard time; State data at 5 p.m. or 9 a.m., the next day.

March 9. Reports covering stocks on farms on March 1, and shipments out of county, of corn, wheat, oats, barley, and rye; also the merchantable percentage of the previous corn crop.

April 8. Reports on condition as of April 1 of winter wheat, rye, and pasture; for certain States reports on condition of oats, peaches, and potatoes; also stocks of corn, wheat, and oats on farms on April 1.

May 10. Reports as of May 1 covering area remaining for harvest, condition of crop, and forecast production of winter wheat and rye; condition of tame hay and pasture, and stocks of hay on farms; and for certain States, reports on condition of oats, potatoes, peaches, pears, grapes, cherries, citrus fruits, and miscellaneous fruits and nuts.

June 9. Reports as of June 1 on condition and forecast production of winter wheat, rye, peaches, and pears; condition of spring wheat, oats, barley, hay, pasture, and apples; and for certain States, reports on condition of potatoes, grapes, cherries, citrus fruits, and miscellaneous fruits and nuts.

July 11. Reports as of July 1 on stocks of wheat on farms; acreage, condition, and forecast production of corn, spring wheat, winter wheat, rye, oats, barley, flaxseed, rice, hay, potatoes, sweetpotatoes, tobacco, sugar beets, sugarcane for sirup, sorgo for sirup, and hops; acreage and condition of dry edible beans, peanuts, soybeans, and cowpeas; condition and indicated production of apples, peaches, pears, and miscellaneous fruits and nuts; condition of pasture, and velvetbeans; and for certain States reports on condition of grapes, cherries, and citrus fruits.

August 10. Reports as of August 1 on stocks of oats and barley on farms; yield per acre and indicated production of winter wheat and rye; acreage, condition and forecast production of buckwheat, grain sorghums, and broomcorn; condition and forecast production of corn, spring wheat, oats, barley, flaxseed, rice, hay, dry edible beans, apples, peaches, pears, grapes, potatoes, sweetpotatoes, tobacco, sugar beets, sugarcane for sirup, sorgo for sirup, hops, and miscellaneous fruits and nuts; condition of pasture, peanuts, soybeans, cowpeas, and velvetbeans; and for certain States reports on production of cherries and condition of citrus fruits.

September 9. Reports as of September 1 on condition and forecast production of corn, spring wheat, oats, barley, buckwheat, flaxseed, rice, grain sorghums, broomcorn, tame hay, dry edible beans, peanuts, hops, apples, peaches, pears, grapes, potatoes, sweetpotatoes, tobacco, sugar beets, sugarcane for sirup, and sorgo for sirup; condition of alfalfa seed, clover for seed, timothy seed, pasture, soybeans, cowpeas, velvetbeans; and for certain States reports on condition of citrus fruits, condition and production of miscellaneous fruits and nuts, and acreage and production of cranberries.

October 10. Reports as of October 1 on yield per acre and indicated production of spring wheat, oats, barley, tame hay, dry edible beans, broomcorn, and hops; condition and forecast production of corn, buckwheat, flaxseed, rice, grain sorghums, peanuts, potatoes, sweetpotatoes, tobacco, sugar beets, sugarcane for sirup, sorgo for sirup, apples, pears, and grapes; production of peaches; condition of alfalfa seed, clover seed, timothy seed, pasture, soybeans, cowpeas, and velvetbeans; and for certain States reports on condition or production of citrus fruits, and miscellaneous fruits and nuts.

November 10. Reports as of November 1 on stocks of corn on farms; weight per measured bushel of grains; estimates of yield per acre and production of corn, buckwheat, flaxseed, rice, grain sorghums, broomcorn, dry edible beans, peanuts, potatoes, sweetpotatoes, tobacco, sugar beets, sugarcane sirup, and sorgo sirup; acreage, yield per acre, and production of alfalfa seed, clover seed, sweetclover seed, timothy seed, cowpeas, soybeans, and velvetbeans; production of apples, grapes, and pears; and for certain States reports on condition or production of citrus fruits, and miscellaneous fruits and nuts.

December 15. Reports on revised acreage, yield per acre, production, farm price, and farm value of all crops for which such estimates are made during the year.

December 20. Reports as of December 1 on acreage and condition of fall-sown winter wheat, and rye for harvest the following year.

Intentions-to-Plant Reports

Intentions-to-plant reports.—(Issued about March 26 and August 26.) These reports show farmers' intentions to plant spring-sown crops, except cotton, as of March 1 and fall-sown grain as of August 5, and are published in Crops and Markets. Mimeographed summaries are published in Washington on announced dates. State summaries containing data of interest in individual States are issued (after the data are published in Washington) by agricultural statisticians for each State.

Wheat Stocks in Country Mills, Elevators, and Warehouses

Wheat stocks in country mills, elevators, and warehouses on March 1, April 1, and July 1, are published about the 15th of the respective months. These reports are published in mimeographed form in Washington and are printed in Crops and Markets.

Fruit and Vegetable Production

Fruit and nut crop reports.—State statistics on fruit and nut crop production are included in the regular monthly crop reports issued about the 10th of each month. Three or four days later, a more comprehensive report on Fruit Crop Prospects is usually issued; in this the statistical reports are combined with State notes, with a summary on each crop, and with interesting foreign crop items. Rarely are estimates made of

the quantity of production utilized for canning, drying, or other manufacturing, but all such fruit-utilization information, when available for publication, is included in the fruit-prospect report. Except for strawberries there are no established series of estimates on small-fruit production, current information being limited to such notes as may appear in the fruit prospect report.

Potato and sweetpotato reports.—The detailed statistical reports on production of potatoes and sweetpotatoes, by States, are issued in the regular monthly crop reports, and usually 3 or 4 days later in a crop prospect report similar to that on the fruit crops. Several special reports on potatoes are also issued during the year, the following being the more important:

(1) Report on merchantable potato stocks on hand January 1 in 37 late and intermediate States, including an analysis of the utilization of the late potato crop and the reported acreage growers intend to plant the coming year. The report is generally available about February 1.

(2) Reports on commercial early potato production in 19 States, chiefly in the South but extending as far north as New Jersey, Maryland, Kentucky, Missouri, and Nebraska; includes reports regarding intended commercial acreage, issued from November to March; production reports from April to August, and later, summaries for the season.

Other vegetable and truck crop reports.—State statistics are compiled and issued covering the commercial production of various important vegetable and truck crops. The reports are divided into two distinct series as follows:

(1) Commercial truck crops for shipment, commonly called truck-crop reports, comprising estimates in strawberries, cantaloups, watermelons, and the principal vegetables that are grown for shipment by rail, truck, or boat to markets more or less distant from the point of production. Local or market-garden production is not at present included in these estimates except in instances in which the local sales occur as a minor phase of the shipping enterprise. In most of the reports the estimates are grouped by States according to marketing seasons.

(2) Truck crops for commercial manufacture, commonly called canning-crop reports, comprising estimates of the principal vegetable crops utilized by canning and packing establishments, including pimientos, cabbage for sauerkraut, and cucumbers for pickles.

The truck- and canning-crop reports are released principally in the form of commodity sheets, each containing current statistics and crop comments for one or more groups of States. At occasional intervals, a collection of timely crop news items are issued without statistical matter. The dates for release of reports are regulated according to the usual season of the commodity in each group of States.

1932 Commercial Truck-Crop Reports

Approximate dates for the release of reports containing State details on planting intentions, preliminary estimates of acreage planted, and the first forecasts of production are here shown in seasonal groupings of States and areas. In the last column, the months in which condition reports are usually available are indicated by numbers from 1 to 12; that is, 1–4 indicating January to April, 11–5 November to May, etc. Condition inquiries are made as of the first of the month and reports are released on or about the 9th.

The States included in the various seasonal groups listed for each truck crop (early, intermediate, etc.) may be found in the December 1931 issue of Crops and Markets, pages 523–532.

Table 1.—*Commercial truck crops, grown primarily for shipment*

Crop and group	Intended acreage	Planted acreage	First crop forecast	Condition (1st of month)
Artichokes: California		Sept. 5		
Asparagus:				
Early		Jan. 16	Mar. 9	2– 6
Late		do	May 9	4– 6
Beans, lima:				
Fall [1]	Sept. 9	Oct. 9	Nov. 9	10– 1
Early	Mar. 16	Apr. 23	May 23	4– 6
Intermediate (1)	do	May 23	June 9	5– 7
Intermediate (2)	Apr. 9	June 9	do	6– 8
Beans, snap:				
Fall [1]	Sept. 9	Oct. 9	Nov. 9	10–12
Early (1)	Nov. 9	Jan. 9	Jan. 9	1– 3
Early (2)	Feb. 9	Apr. 9	Apr. 9	3– 5
Second early	Mar. 16	do	May 9	4– 6
Intermediate (1)	do	May 9	May 23	5– 6

[1] The crop in the "fall" group furnishes the earliest supply in a new-crop season, starting to market in the fall and early winter months preceding the main season.

Table 1.—*Commercial truck crops, grown primarily for shipment*—Continued

Crop and group	Intended acreage	Planted acreage	First crop forecast	Condition (1st of month)
Beans, snap—Continued				
Intermediate (2)	Mar. 16	June 9	June 9	5– 7
Late (1)	May 9	Aug. 9	Aug. 9	7– 9
Late (2)	Aug. 9	Oct. 9	Oct. 9	9–11
Beets:				
Early	Oct. 9	Dec. 9	Jan. 9	10– 5
Second early	Feb. 9	Mar. 9	Apr. 9	3– 5
Intermediate	Apr. 9	June 9	June 9	5– 6
Late	July 9	Aug. 9	Sept. 9	7–10
Cabbage (including sauerkraut)				
Fall [1]	Sept. 9	Oct. 9	Dec. 9	10– 1
Early	Oct. 9	Dec. 9	Jan. 9	11– 4
Second early	Dec. 9	Feb. 9	Apr. 9	2– 6
Intermediate	Mar. 16	May 9	June 9	5– 7
Late (domestic)	May 9	July 9	Aug. 9	6–10
Late (Danish)	June 9	Aug. 9	Sept. 9	7–10
Cantaloups:				
Early	Feb. 9	Apr. 9	May 9	4– 7
Second early	Mar. 16	May 9	June 23	5– 8
Intermediate	do	June 9	July 23	6– 8
Late	May 9	June 23	Aug. 9	7– 9
Carrots				
Fall [1]	Sept. 9	Oct. 9	Nov. 9	9– 2
Early	Oct. 9	Dec. 9	Jan. 9	10– 4
Second early	Feb. 9	Mar. 9	Apr. 9	3– 6
Intermediate	Apr. 9	June 9	June 9	5– 7
Late	June 9	Aug. 9	Sept. 9	6–10
Cauliflower:				
Fall and winter [1]	Aug. 9	Nov. 9	Nov. 9	9– 1
Early	Dec. 9	Feb. 9	Mar. 9	1– 5
Late (1)	June 9	July 9	Aug. 9	7–10
Late (2)	Aug. 9	Sept. 9	Oct. 9	8–11
Celery:				
Fall and winter [1]	July 9	do	Nov. 9	8– 3
Early	Oct. 9	Dec. 9	Jan. 9	11– 5
Second early	Dec. 9	Feb. 9	Mar. 23	3– 8
Intermediate	Mar. 16	July 9	July 9	5– 8
Late (1)	June 9	Aug. 9	Sept. 9	6–10
Late (2)	Aug. 9	Sept. 9	Oct. 9	7–11
Cucumbers:				
Fall [1]	Sept. 9	Nov. 9	Nov. 9	9–12
Early (1)	Feb. 9	Apr. 9	Apr. 23	3– 6
Early (2)	Mar. 16	Apr. 23	May 23	4– 6
Second early	do	May 23	June 9	5– 7
Intermediate	Apr. 23	June 9	July 9	6– 8
Late	May 23	July 9	Aug. 9	7–10
Eggplant:				
Fall [1]	Sept. 9	Nov. 9	Nov. 9	9–12
Early	Feb. 9	Apr. 23	Apr. 23	1– 7
Second early	Mar. 9	July 9	July 9	6– 8
Late	May 9	Aug. 9	Aug. 9	7–10
Lettuce:				
Early	Sept. 9	Nov. 9	Dec. 9	10– 3
Second early	Feb. 9	Mar. 9	Mar. 23	3– 5
Intermediate	Mar. 23	Apr. 23	May 23	4– 6
Late (1)	Apr. 23	June 9	July 9	5–10
Late (2)	July 9	Sept. 9	Oct. 9	8–11
Onions:				
Early	Nov. 9	Jan. 9	Apr. 9	11– 5
Intermediate	Mar. 16	Apr. 23	June 23	5– 8
Late	do	June 23	Aug. 9	6–10
Peas, green:				
Early	Dec. 9	Feb. 9	Feb. 9	12– 4
Second early	Feb. 9	Apr. 9	Apr. 9	3– 6
Intermediate (1)	do	May 9	May 9	4– 6
Intermediate (2)	Mar. 16	do	May 23	4– 6
Late (1)	do	June 9	June 9	5– 8
Late (2)	Aug. 9	Sept. 9	Sept. 9	8–11
Late (3)	Oct. 9	Nov. 9	Nov. 9	10–12
Peppers, green:				
Fall [1]	Sept. 9	Oct. 9	Nov. 9	10–12
Early:				
Winter	Nov. 9	Jan. 9	Feb. 9	1– 4
Spring	Feb. 9	Mar. 9	May 9	5– 6
Second early	Apr. 23	June 9	June 23	5– 7
Intermediate (1)	May 9	do	July 9	6– 8
Intermediate (2)	do	do	Aug. 9	7–10
Late	Aug. 9	Oct. 9	Oct. 9	9–11
Potatoes, early:				
Early (1)	Jan. 9	Feb. 9	Apr. 9	12– 5
Early (2)	Feb. 9	Mar. 16	May 9	4– 7
Second early	Mar. 16	May 9	May 23	4– 7
Intermediate	do	May 23	June 9	5– 8
Spinach:				
Fall [1]	Aug. 9	Oct. 9	Nov. 9	9–12
Early	Sept. 9	Dec. 9	Jan. 9	11– 4
Second early	Feb. 9	Mar. 16	Apr. 9	2– 5
Intermediate	Apr. 9	July 9	July 9	5– 9
Late	July 9	Sept. 9	Oct. 9	8–11
Strawberries:				
Early (1)	Sept. 9	Dec. 9	Jan. 9	11– 5
Early (2)	do	Jan. 9	Mar. 9	1– 5
Second early	do	do	Apr. 9	3– 5
Intermediate	do	do	May 9	4– 6
Late	do	do	May 23	4– 6
Tomatoes:				
Fall [1]	Sept. 9	Nov. 9	Nov. 9	10–12
Early (1)	Nov. 9	Jan. 9	Feb. 9	1– 5
Early (2)	Feb. 9	Mar. 9	Apr. 23	3– 6
Second early	Mar. 16	Apr. 23	May 23	4– 7

[1] The crop in the "fall" group furnishes the earliest supply in a new-crop season starting to market in the fall and early winter months preceding the main season.

TABLE 1.—*Commercial truck crops, grown primarily for shipment*—Continued

Crop and group	Intended acreage	Planted acreage	First crop forecast	Condition (1st of month)
Tomatoes—Continued				
Intermediate	Mar. 16	May 23	June 23	5- 7
Late (1)	May 23	June 23	Aug. 9	6-10
Late (2)	June 23	Aug. 9	Sept. 9	7-11
Watermelons:				
Early	Feb. 9	Apr. 9	May 9	3- 7
Second early	Mar. 16	May 9	June 23	5- 8
Late	May 16	July 2	Aug. 9	6- 9

TABLE 2.—*Truck crops for commercial canning or manufacture*

Crop	Canners' preliminary plans	Intended acreage	Planted acreage	Production forecast	Condition, bimonthly reports
Asparagus:					
California			Jan. 12	Mar. 9	
Others			Aug. 8		
Beans, green lima		May 9	July 11	Sept. 23	June 9-Sept. 23.
Beans, snap	Feb. 18	Apr. 5	June 23	July 9	May 23-Sept. 9.
Beets		May 9	July 11	Sept. 23	June 9-Oct. 9.
Cabbage (for sauerkraut)		Apr. 14	do	Sept. 9	Do.
Corn, sweet	Feb. 18	Apr. 5	June 23	Aug. 9	May 23-Sept. 23
Cucumbers (for pickles)		Apr. 14	July 11	Sept. 9	June 23-Sept. 23.
Peas, green	Jan. 21	Mar. 17	May 19	June 23	May 9-July 23.
Pimientos: California and Georgia		May 19	July 21	Sept. 9	
Spinach:					
California		Jan. 5	Mar. 10	Mar. 10	
Others			May 9		
Tomatoes	Feb. 18	Apr. 14	July 11	Aug. 9	June 9-Oct. 9

MISCELLANEOUS CROP REPORTS

Louisiana sugarcane, sugar, sirup, and molasses.—These reports show Louisiana sugarcane acreage, production, and distribution, and production of cane sugar, sirup, and molasses. Preliminary data are published in December and revised data are published in the spring (usually in May) by the Washington and New Orleans offices. Summaries are published in Crops and Markets.

Sugar beets and beet sugar.—These reports show acreage, production, farm price, and sugar content of sugar beets, and extraction and production of beet sugar. Preliminary data are issued in December and revised data are issued in the spring (usually in May) by the Washington office. These reports are printed in Crops and Markets and data from them are published elsewhere, as circumstances demand or permit, by branch offices in interested States.

Bean production by varieties.—This report shows production of dry edible beans, by varieties, in each State; is published annually in Crops and Markets (usually December); is mimeographed for separate distribution.

Commercial fertilizer used on cotton, and sales of fertilizer in cotton States.—These are complementary annual reports usually published in August in Crops and Markets.

Reduction in yields from stated causes.—This report is based on an annual survey of farms of crop reporters and is published in Crops and Markets. Data for cotton are usually published in June and data for corn, wheat, oats, potatoes, and apples are usually published in the fall.

Corn: Utilization for grain, silage, hogging down, grazing, and forage.—This report is supplemental to the December preliminary estimate of corn production and is usually published in the December issue of Crops and Markets.

Tobacco by types (acreage, production, and value).—This is an annual report complementary to the tobacco data published in the December crop report. It is usually distributed with the mimeographed December crop report and is published in Crops and Markets for January. Forecasts of tobacco production by types are also published monthly from July to November with the monthly crop reports of the Crop Reporting Board.

LIVESTOCK REPORTS

(Published about the 15th of the month at noon, eastern standard time, except as noted)

January: Annual estimate of number and value of different species of livestock on farms January 1 issued at Washington about January 26. Estimate of cattle on feed January 1; middle of January, issued at Washington. Estimate of sheep and lambs on feed January 1, issued at Washington.

February: Estimate of wool shorn and pulled previous year, issued at Washington. Estimate of mohair production; middle of February, issued at Washington.

March: Report on size and condition of early lamb crop; second week in March, issued at Washington. Report on condition of Flint Hills and Osage pastures, issued at Denver.

April: Estimate of cattle on feed April 1, issued at Washington. Report on development of early lamb crop, issued at Washington.

May: Report on development of early lamb crop, issued at Washington.

June: Report of the June 1 pig survey, issued at Washington. Report on shipments of cattle into Flint Hills and Osage pastures, issued at Denver.

July: Estimate of the lamb crop, issued at Washington. Preliminary estimate of the wool shorn, issued at Washington.

August: Estimate of cattle on feed August 1 and report on demand for feeding cattle, issued at Washington. Report on fall marketings of western-cattle, issued at Denver. Report on fall marketings of western sheep, issued at Denver.

October: Report on the cattle feeding situation, issued at Washington. Report on the lamb feeding situation, issued at Washington.

November: Report on the cattle feeding situation, issued at Washington. Report on the lamb feeding situation, issued at Washington.

December: Report on the cattle feeding situation, issued at Washington. Report on the lamb feeding situation, issued at Washington. Report on the fall pig survey, issued at Washington.

For most of the above reports issued from Washington, State reports are issued in the most important livestock States, and regional reports are issued from the Denver and Sacramento regional livestock offices.

Monthly reports on range and livestock conditions in the western States are issued from Denver regional office and State reports are issued by most of the western States.

DAIRY REPORTS

Milk-production trends.—This is a monthly report on the milk-production situation, published about the 20th of each month. It includes statements on the general dairy situation, records of production per cow, percentage of milk cows being milked, grain being fed, pasture conditions, changes in numbers of milk cows, plans of farmers with regard to increasing or decreasing their herds, changes in freshening dates, prices being received for dairy products, feed-costs, feed-price ratios, and notes on other statistics, obtained by the Department of Agriculture, of interest to dairymen. This usually consists of 4 pages of text and 2 pages of charts prepared for correspondents of the Department in return for voluntary cooperation in furnishing reports and also available to a limited number of others on request.

Statistical supplement to milk-production trends.—This occasional or monthly publication gives in detail, by States, the statistics summarized in milk-production trends and shows the statistical method used in drawing the conclusions reached. It varies from 10 to 50 pages, mostly tables, mimeographed. Prepared for agricultural statisticians, research and extension workers in dairying, executives of manufacturing corporations and cooperatives, and dealers in dairy products. Available to a limited number of others on request.

POULTRY AND EGG PRODUCTION REPORT

Hens and pullets in farm flocks.—This report shows the number of hens and pullets of laying age, and the number of eggs laid per flock and per 100 birds, on the 1st day of the month; is published in a mimeographed statement issued by the Division of Crop and Livestock Estimates about the middle of each month and is printed monthly in Crops and Markets. The statement shows the number of young chickens on hand each month from May to July and in October. The number of pullets of laying age and the number not yet of laying age are shown in October, and the number of pullets being saved for layers is shown in December.

A monthly index of relative farm prices of chicken and eggs, and of feed for poultry, with the relations between the index of feed prices and those of poultry products, are also available in mimeographed form at about the same time as poultry and egg production, and the material is printed in Crops and Markets.

Farm Price and Wage Reports

(These reports are not available for general distribution)

Average prices of farm products received by producers.—This report is issued in mimeographed form from the Washington office on or about the 28th of each month. The report shows currently for the United States, average prices paid producers for 26 farm products as of the 15th of each month with comparisons; relative farm prices of crops, livestock, poultry, and livestock and poultry products; indices of farm prices, by groups, and for all groups; estimated prices of 34 farm products currently, by States; corn-hog ratios for the United States, the North Central States, and Iowa; indices of prices farmers pay for articles purchased, and Bureau of Labor Statistics indices of wholesale prices of nonagricultural, agricultural, and food products; farm-wage index numbers; and an index of the general wage level.

One page of each issue is devoted to a discussion of current changes in farm prices and a brief analysis of factors affecting prices paid producers for farm products. Price data from this report and excerpts from the discussion of farm prices are published the following month in Crops and Markets.

Distribution of the mimeographed report is limited to newspapers, economists, business statisticians, Federal and State extension workers, and others who have a definite need for these data immediately upon release.

Farm labor and wages.—This quarterly report is released in mimeographed form from the Washington office on or about the 11th of every January, April, July, and October, and is printed about 3 weeks later in Crops and Markets. It contains average wage rates per month and per day, with and without board, for farm labor; a statement of supply and demand for farm labor by States, geographical divisions, and for the United States, wage rates and supply-demand statistics by geographical divisions, with comparisons; an index of farm wages for the United States; and a brief discussion of current wage-rate changes.

Distribution of the mimeographed report is limited to statisticians, economists, State and Federal extension workers, and others who show they have a definite need for the information immediately upon release.

Wholesale prices of commodities.—This mimeographed statement of wholesale prices of 27 articles commonly bought by farmers, is issued at the Washington office on or about the 12th of each month. It includes production statistics on 16 articles of industrial importance. The data are selected from bulletins of the Bureau of Labor Statistics and the Department of Commerce. It is issued periodically for State statisticians of the Bureau of Agricultural Economics, only. Some of the data are republished in reports to crop reporters sent from the field office.

PRESENT SOURCES OF INFORMATION

In the main, the information for the regular reports, like those on acreage, condition, and yield of various crops, numbers of livestock, production of livestock products, and farm prices, is received from voluntary reporters upon schedules or questionnaires which they fill out about the 1st of the month and immediately forward to the branch offices in the States. About 9,000,000 schedules of more than 400 forms are used annually. Typical schedules used in obtaining current information from farmers are shown in figures 34 to 59, inclusive.

In January 1933 there were 41 branch offices in the States. In 35 States the branch office cooperated with materially strengthens the crop-reporting service.

the State department of agriculture or the college of agriculture in the preparation and publication of crop reports. Every State agency that published systematic crop reports cooperated with the United States Department of Agriculture (fig. 1). This cooperation eliminates duplication of crop reporting work and

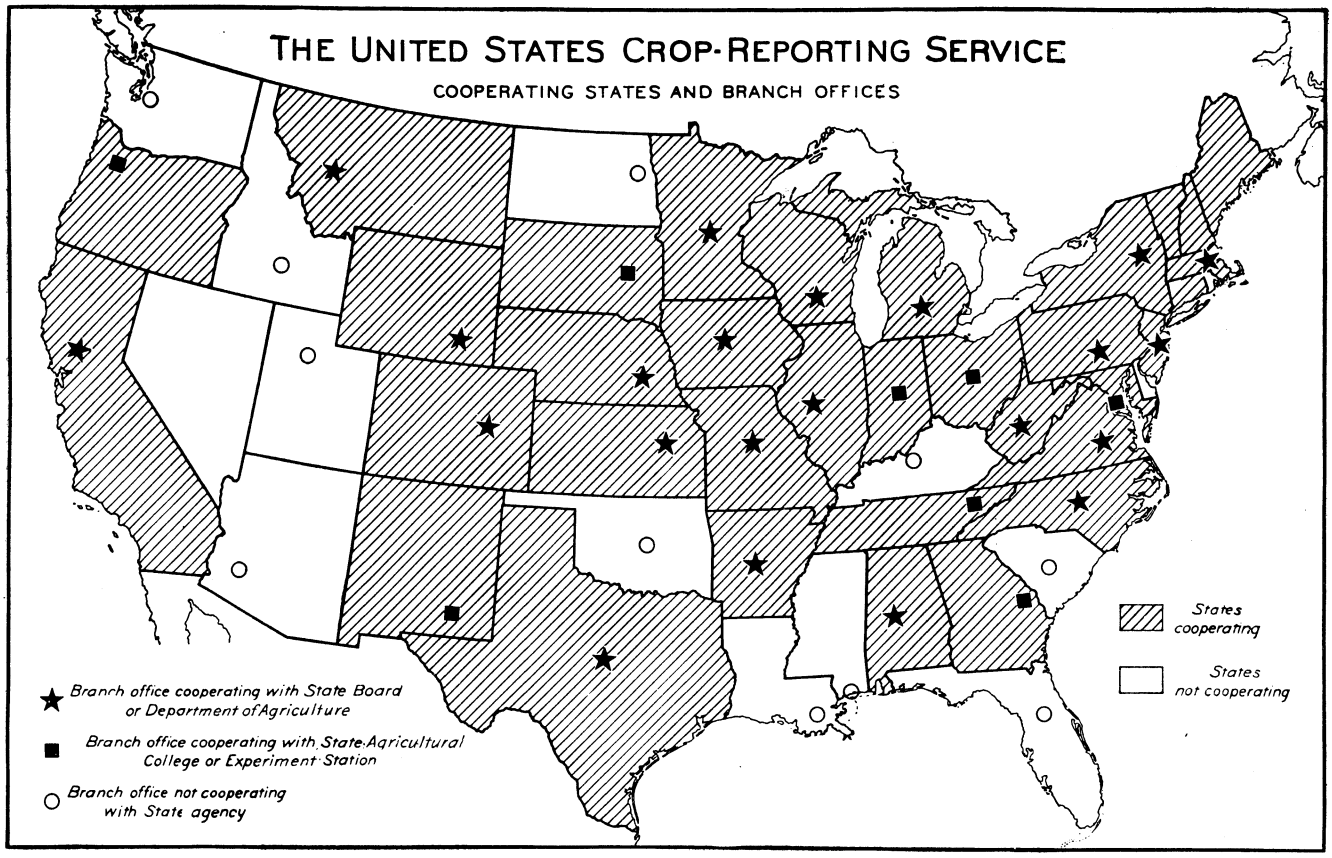

FIGURE 1.—The crop-reporting service was maintained by the United States Department of Agriculture and cooperating State agencies in 35 States, and by the United States Department of Agriculture alone in 13 States, in 1932. Some changes have occurred since then.

Data supplied by crop reporters on schedules are supplemented by check data in the form of enumarations and by other data based on personal travel and inspection of growing crops by the agricultural statistician in each State, by special field counts, by interviews with well-informed men throughout the State, and by information obtained by telephone and tele-

graph when necessary. The agricultural statisticians obtain information from State and local officials, county agricultural agents, and representatives of horticultural societies, of livestock associations, and of other organizations. The agricultural statisticians send with their regular reports to the Crop Reporting Board, comments on each crop in their States, explaining conditions as of the date of the report and stating what changes in weather, soil condition, plant diseases, and insect pests, and conditions of growing crops, have occurred since the previous report. Weather Bureau reports are used to supplement or confirm the information obtained by the Division of Crop and Livestock Estimates directly through its own field service.

Schedules returned by reporters to the agricultural statisticians in each State are sorted by districts, or by counties, are tabulated and averaged (both with and without weights), and are summarized separately for each class of reporter, for each crop, by districts, and the results are transmitted to Washington by mail or by telegraph. The schedules received by mail at the Washington office are sorted, tabulated, and averaged in the same way. For convenience in the tabulation and weighting of the reports from crop reporters each State is divided into about nine homogeneous crop-reporting districts (fig. 2).

THE CROP REPORTING BOARD

The Crop Reporting Board, which was established by the Secretary of Agriculture in 1905, is responsible for the preparation of the monthly crop reports of the Department. The technical staff of the Division of Crop and Livestock Estimates in Washington are permanent members and two or more agricultural statisticians from field offices of the Division are designated as temporary members for each report. For cotton reports under a special law the membership of the Board must consist of 2 members from Washington in addition to the chairman and at least 3 supervising field statisticians from field offices in cotton States. For other reports, the number of active members may be increased, but 2 or more must be from the branch offices. The members of the Board are assisted by such of the Washington staff of the Division of Crop and Livestock Estimates as may be necessary.

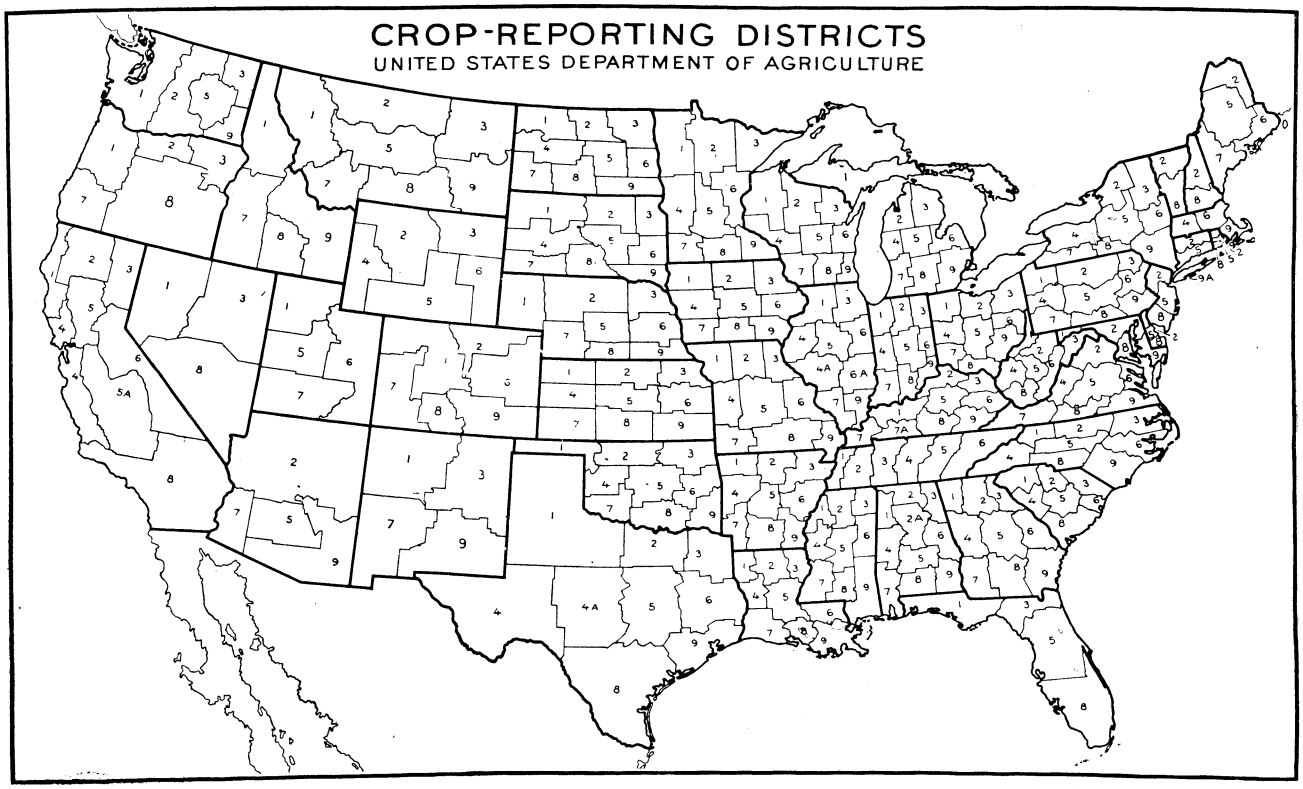

FIGURE 2.—Each State is divided into not more than 10 crop-reporting districts to facilitate tabulation and analysis of data received from the crop reporters. Each district is a substantially homogeneous area. A few changes have been made since this map was drawn in 1931.

PREPARATION OF THE MONTHLY CROP REPORT

In preparing the monthly crop reports a sufficient number of tabulation sheets are prepared to supply each member of the board with a copy for each speculative crop.[3] This sheet shows in parallel columns opposite each State: (1) The weighted average of the returns of the correspondents to the agricultural statisticians; (2) the individual estimate of the agricultural statistician, whether or not it differs from the weighted average reported by his correspondents; (3) the weighted average of the special reports, if any, for the crop under consideration; (4) the estimate of the Board for the previous month; (5) the estimate of the Board for the same crop for the same date the year before; and (6) the 10-year average of the estimates of the Board for the same crop and date. A blank column is provided in which each member can enter his individual estimate based on the data before him.

The Crop Reporting Board also has the written comments of the agricultural statisticians, explaining what has happened during the previous month in each State regarding weather, soil condition, progress of

[3] Cotton, corn, winter wheat, spring wheat, and oats in the leading States.

cultivation, relative quantity of fertilizers used, presence or absence of insect pests and plant diseases, effect of these and other factors, appearance and apparent condition of the crop, and prospective yield.

After examination of the data regarding each State, the members of the Board separately and independently, make a definite decision without consultation with any other member; and each enters a figure expressing his conclusion opposite the name of each State in the blank column provided for that purpose. When a forecast of yield per acre is to be made the Board utilizes scatter diagrams and charts which show the relationship of the reported condition or yield per acre of the crop to the final yield per acre at harvest time for a series of years. In arriving at a forecast of the yield per acre for a given crop in a particular State, allowance must also be made for trends in yields, the presence of plant diseases or insect infestation (as the cotton bollweevil), the earliness or lateness of the season and whether it has been a dry or wet season to date.

After the Board members have made their individual estimates, the chairman of the Board enters them in parallel columns on one sheet. When the individual estimates of all the members are in close agreement the median figure is usually adopted. If there is much difference between the individual estimates, all the evidence before the Board is carefully reviewed and discussed until an agreement is reached.

The data for the non-speculative crops are assembled by States and analyzed by one member of the Board, who sets down condition and yield figures as ascertained by him. This analysis is reviewed by another member of the Board, after which these basic State figures are assembled by the clerical staff and the necessary computations of probable total production are made by crops.

The estimates of acreage in July, and again in December, are made in the State branch offices, by the State statisticians in conference with a member of the Crop Reporting Board who visits the State at that time for the purpose of jointly reviewing all data then available. These estimates are later reviewed in Washington by other members of the Board and finally, on crop-report day, are combined with the indications of yield per acre to form the estimate of crop production.

When the basic State figures for a given crop have been determined by the Board, the necessary computations are made by expert statistical clerks to ascertain the probable total production for each State. State totals are then combined to ascertain totals and averages for the United States.

As soon as the computations are finished and checked the results are again reviewed by the Board.

The figures are then entered in tables which show State and United States comparative data; usually for the previous month or year and 5-year or 10-year averages. These tables, with comments concerning the various items, are immediately mimeographed or multigraphed. They constitute the report. Sample reports for the United States are shown in figures 60 to 65 (pp. 95 to 100).

A few minutes before the time set for the release of the report, the Secretary of Agriculture enters the Board room, reviews the work of the Board, and approves the report.

A sufficient number of copies are run off to supply representatives of the press and a limited mailing list.

PUBLICATION OF THE REPORT

After the crop report has been approved by the Secretary of Agriculture, and about 1 minute before the time set for its release, copies are carried by the chairman of the Crop Reporting Board, under guard, to an adjoining room and are laid face down beside about a dozen telegraph and telephone instruments. Representatives of the various press associations and others who wish a copy of the report are required to stand back of a line about 3 feet distant from the instruments. On the stroke of the clock, at a signal from the designated official, they rush to their instruments, seize their copies of the report, turn them over, and promptly flash the figures over the wires for publication all over the country that afternoon or the following morning. Each of the press representatives has been furnished in advance a skeleton or outline of the report with the columns blank so that he knows exactly where to look for the different figures. The release of the details by States takes place a few hours later.

While the press representatives are transmitting the report to their journals, the Crop Reporting Board telegraphs, in code, the State and United States figures to its branch offices in each State, where the data are entered on forms previously set up, and copies are furnished the same day, by the agricultural statistician, to all State and local papers that desire them.

The Crop Reporting Board meets also to prepare the intentions-to-plant reports, the reports on stocks of wheat in country mills and elevators, the annual inventories of livestock, and the two pig-survey reports made in December and June. All other reports are prepared by the technical member of the Washington staff directly responsible for the particular commodity with the assistance of other members of the technical staff. These reports are released after review by the chairman of the Crop Reporting Board.

The summaries of the crop report that are issued to the press on crop-reporting days show totals for the United States and the totals for each State for all the principal crops. The full details for all crops are published in Crops and Markets. Radio talks based upon the crop reports are made—those on cotton the day of the reports, and those on other crops on the day following the reports. The final and revised estimates for a long series of years are published annually in the statistical section of the Yearbook of the United States Department of Agriculture, for reference and as a permanent historical record.

Practically all crop reports and current statistics relating to agricultural production in the United States that now appear in newspapers and magazines originate with or are based upon the Government crop reports, although sometimes the source of information is not mentioned. Figure 3 shows the sources and distribution of United States crop reports.

DATES OF PUBLICATION

The dates and time for the publication of the crop reports are fixed at the beginning of each year by the Secretary of Agriculture, in accordance with laws and regulations governing the time of publication of the various reports.

It is provided by law that one cotton report shall be issued each month from July to December, inclusive, simultaneously with the ginning reports of the Bureau of the Census, Department of Commerce; and limitations are placed on their contents.

Announcements of dates and character of the forthcoming crop reports are published regularly in Crops and Markets. In order that the crop reports for all States may be on a uniform and comparable basis, the 1st of the month has been adopted as the date to which the reports on all crops shall relate, except for crops which are of a more perishable nature or for which condition frequently changes rapidly, as in many of the truck crops.

Most of the schedules returned by crop reporters reach the State offices by the 3d of the month and at least 2 days are required thereafter to open, sort, tabulate, and summarize the returns for transmission to the Washington office. The 8th, 9th, or 10th of the month is, therefore, the earliest practicable date on which the reports can be published. Depending upon the occurrence of Sundays and national or State holidays, the report date varies from the 8th to the 11th of the month.

SAFEGUARDING THE REPORTS

Many of the crop reports are forecasts of production and future supply and, if known in advance of publication, could be used unfairly for speculative purposes. It is therefore necessary to surround the preparation and publication of the crop reports with every possible safeguard to prevent advance information from being obtained or utilized by unauthorized persons.

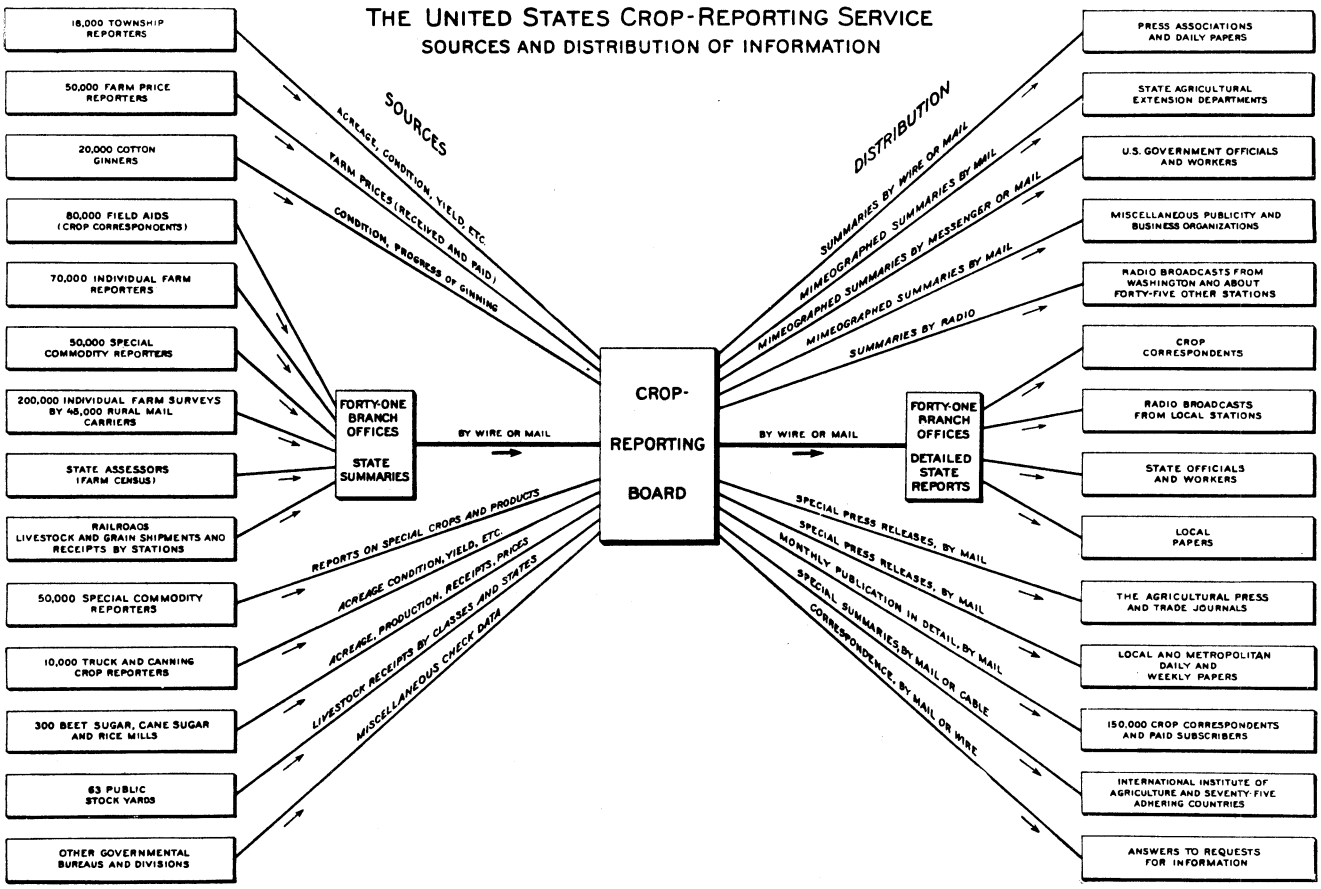

FIGURE 3.—Individual reports from crop correspondents are summarized in Washington and in 41 branch offices. The Government crop reports are prepared from these summaries by the Crop Reporting Board. More than 65,000 separate forecasts and estimates are made and published each year.

FEDERAL LAWS GOVERNING CROP REPORTS

The basic acts of Congress providing for crop reports are:

Act of May 15, 1862 (12 Stat. 387–388):

SEC. 1. There shall be at the seat of government a Department of Agriculture, the general design and duties of which shall be to acquire and to diffuse among the people of the United States useful information on subjects connected with agriculture in the most general and comprehensive sense of that word. * * *

SEC. 3. That it shall be the duty of the Commissioner of Agriculture to acquire and preserve in his Department all information concerning agriculture which he can obtain by means of books and correspondence, and by practical and scientific experiments (accurate records of which experiments shall be kept in his office) by the collection of statistics, and by any other appropriate means within his power; * * * He shall also make special reports on particular subjects whenever required to do so by the President or either House of Congress, or when he shall think the subject in his charge requires it. * * *

Act of March 4, 1909 (35 Stat. 1088, 1111):

SEC. 123. Whoever, being an officer or employee of the United States, or a person acting for or on behalf of the United States, in any capacity under or by virtue of the authority of any department or office thereof, and while holding such office, employment, or position shall, by virtue of the office, employment, or position held by him, become possessed of any information which might exert an influence upon or affect the market value of any product of the soil grown within the United States, which information is by law or by the rules of the department or office required to be withheld from publication until a fixed time, and shall willfully impart, directly or indirectly, such

information, or any part thereof, to any person not entitled under the law or the rules of the department or office to receive the same; or shall, before such information is made public through regular official channels directly or indirectly speculate in any such product respecting which he has thus become possessed of such information, by buying or selling the same in any quantity, shall be fined not more than $10,000 or imprisoned not more than 10 years, or both: *Provided*, That no person shall be deemed guilty of a violation of any such rule unless prior to such alleged violation he shall have had actual knowledge thereof.

SEC. 124. Whoever, being an officer or employee of the United States and whose duties require the compilation or report of statistics or information relative to the soil, shall knowingly compile for issuance, or issue, any false statistics or information as a report of the United States shall be fined not more than $5,000 or imprisoned not more than five years, or both.

Act March 4, 1909, chapter 301 (35 Stat. 1039, 1053):

* * * That hereafter the monthly crop reports, which shall be gathered as far as practicable from practical farmers, and which shall be issued on or before the 10th of each month, shall embrace statements of the conditions of crops by States in the United States with such explanations, comparisons, and information as may be useful for illustrating the above matter, and that it shall be submitted to and officially approved by the Secretary of Agriculture before being issued or published: * * *

Act May 27, 1912 (37 Stat. 118):

That the Secretary of Agriculture be directed to cause the Bureau of Statistics of the Department of Agriculture to issue a report, on or about the first Monday in July of each year, showing by States and in total the number of acres of cotton then in cultivation in the United States.

Act May 3, 1924 (43 Stat. L. 115):

* * * That hereafter the Secretary of Agriculture shall discontinue acreage reports based upon farmers' intention to plant cotton and shall cause to be issued between July 1 and December 1 semimonthly reports as to the condition, progress, and probable production of cotton. No such report shall be approved and released by the Secretary of Agriculture until it shall have been passed upon by a cotton crop reporting committee or board consisting of five members or more to be designated by him, not less than three of which shall be supervisory field statisticians of the Department of Agriculture located in different sections of the cotton-growing States, experienced in estimating cotton production and who have first-hand knowledge of the condition of the cotton crop based on recent field observations, and a majority of which committee or board shall be familiar with the methods and practices of producing cotton: *Provided*, That the foregoing reports as of the following dates, August 1, August 16, September 1, September 16, October 1, October 18, November 1, November 14, and December 1, shall be released simultaneously with the cotton-ginning reports of the Bureau of the Census relating to the same date, the two reports to be issued from the same place at 11 o'clock antemeridian of the eighth day following that to which the respective reports relate. When such date of release falls on Sunday or a legal holiday the report shall be issued at 11 o'clock antemeridian of the next succeeding workday.

SEC. 2. All laws and parts of laws inconsistent with the provisions of this act are hereby repealed to the extent of such inconsistency.

Act April 2, 1924 (43 Stat. 31):

The Director of the Census shall furnish to the Department of Agriculture immediately prior to the publication of each report of that Bureau regarding the cotton crop the latest available statistics hereinbefore mentioned, and the said Department of Agriculture shall publish the same in connection with each of its reports concerning cotton. (Sec. 2.)

That in addition to the information regarding cotton in the United States hereinbefore provided for, the Director of the Census shall compile, by correspondence or the use of published reports and documents, any available information concerning the production, consumption, and stocks of cotton in foreign countries, and the number of cotton-consuming spindles in such countries. Each report published by the Bureau of Census regarding cotton shall contain an abstract of the latest available information obtained under the provisions of this section, and the Director of the Census shall furnish the same to the Department of Agriculture for publication in connection with the reports of that department concerning cotton in the same manner as in the case of statistics relating to the United States. (Sec. 5.)

That the reports of cotton ginned to the dates as of which the Department of Agriculture is also required to issue cotton reports shall be issued simultaneously with the cotton-crop reports of that Department, the two reports to be issued from the same place at 11 o'clock antemeridian upon the eighth day following that to which the respective reports relate. When such date of release falls on Sunday or a legal holiday the reports shall be issued at 11 o'clock antemeridian on the next succeeding workday. (Sec. 6.)

January 1927 (appropriation act for fiscal year beginning July 1, 1927):

* * * For collecting, compiling, abstracting, analyzing, summarizing, interpreting, and publishing data relating to agriculture, including crop and livestock estimates, acreage, yield, grades, staples of cotton, stock, and value of farm crops, and numbers, grades, and value of livestock and livestock products on farms, in cooperation with the extension service, and other Federal, State, and local agencies: * * * *Provided further*, That no part of the funds herein appropriated shall be available for any expense incident to ascertaining, collating, or publishing a report stating the intentions of farmers as to the acreage to be planted in cotton: *Provided further*, That no part of the funds herein appropriated shall be available for the preparation of midmonthly reports of cotton estimates for the months of July, August, and November * * *.

Act March 3, 1927 (44 Stat. 1372):

That of the reports issued by the Secretary of Agriculture, pursuant to the act entitled "An act authorizing the Department of Agriculture to issue semimonthly cotton crop reports and providing for their publication simultaneously with the ginning reports of the Department of Commerce", approved May 3, 1924, only five shall be issued hereafter, one as of August 1, one as of September 1, one as of October 1, one as of November 1, and one as of December 1, each of which shall state the condition and progress of the crop and the probable number of bales which will be ginned, these reports to be issued simultaneously with the cotton-ginning reports of the Bureau of the Census relating to the same dates, the two reports to be issued from the same place at eleven antemeridian of the eighth day following that to which the respective reports relate. When such date of release falls on Sunday or a legal holiday the report shall be issued at eleven antemeridian of the next succeeding workday." (Sec. 5.)

The Secretary of Agriculture shall cause to be issued a report on or before the 10th day of July of each year showing by States and in toto the number of acres of cotton in cultivation on July 1, to be followed on September 1 and December 1 with an estimate of the acreage of cotton abandoned since July 1. (Sec. 6.)

These acts of Congress provide for the collection and publication of agricultural statistics and prohibit any employee concerned in the preparation of the Government crop reports from (1) Speculating in any product of the soil and thereby becoming financially interested in the effects of the crop reports on market prices, (2) knowingly compiling or issuing any false statistics, and (3) furnishing any information, directly or indirectly, concerning a forthcoming crop report in advance of the time specified by the Secretary of Agriculture for the publication of the report. The penalty for a violation of this statute is a fine not to exceed $10,000 or imprisonment not to exceed 10 years, or both.

The work of the Division of Crop and Livestock Estimates itself is so systematized and arranged that no individual—no clerk who handles the returns and no member of the Crop Reporting Board, not even the Secretary of Agriculture—has any means of knowing what the United States total or average for any crop will be until the final computations are made and approved behind locked and guarded doors a short time before the report is released to the public.

The reports from the agricultural statisticians in the branch State offices in the several States are separated from the Department's regular mail in the Washington

City Post Office, and are delivered by special messenger to the Secretary of Agriculture or his assistant personally, by whom they are placed unopened in a steel mail box fastened with two separate locks. The key for one lock is kept by an official in the office of the Secretary of Agriculture and the key for the other lock is kept by the chairman of the Crop Reporting Board. The schedules returned by the voluntary cotton-crop reporters to the central office in Washington come directly to the Division of Crop and Livestock Estimates and are separated by classes, by States, and by districts within States. Each class of report is listed separately and district totals are obtained and verified. These district totals are then transferred to State subtotal summary sheets, two for each State. One subtotal sheet has arranged upon it columns and lines for computing and weighting the State subtotal for about half the districts, the other for the remaining districts. The two sheets for each State are computed by separate clerks, and verified by two additional clerks. No State averages or totals are made. Each sheet is sent in a separate sealed envelope to the office of the Secretary of Agriculture, and placed in the locked receptacle which also contains the reports from the agricultural statisticians.

On the morning of the day of the report, the chairman and one other member of the Board proceed with a guard to the office of the Secretary of Agriculture where the reports are delivered to them by the Secretary's representative. The chairman and the Board member then return, under guard, to the rooms of the Crop Reporting Board and the doors are immediately locked.

Under this arrangement no one has access to sufficient data to even approximate the final figures until the Board assembles and the doors are locked.

While the Board is in session all telephones and bells or buzzers in the crop-reporting rooms are disconnected, the Crop Reporting Board and its computers are locked in, and a guard is stationed at the outer door, so there can be no communication with the outside world. The Secretary of Agriculture is admitted to the Board rooms shortly before the time set for the release in order that he may review and approve the report.

Telegrams relating to crop reports between branch State offices and headquarters at Washington are in a secret code which is frequently changed.

DEVELOPMENT OF CHECK INFORMATION

The Crop Reporting Board is making every effort to develop and use data collected by other agencies to check or verify the accuracy of the official forecasts and estimates of crop production and to supplement the usual sources of information. These "check data", as they are called, are derived from various sources. Since 1840 the Federal Bureau of the Census has made an enumeration of agricultural production at 10-year intervals and also in 1925. In about one third of the States, the agricultural agencies, with the help of their local assessors, make an annual or biennial enumeration, either at the beginning of or during the growing season, of the acreage to be planted or harvested, or after the close of the season of the acreage harvested. Some of these enumerations were begun as early as 1850. For most States, the number of the different species of livestock returned for taxation has been available for many years, in some instances antedating the middle of the last century.

The actual count of the bales of cotton ginned, made by the Bureau of the Census through one or more paid agents located in each cotton county, is undoubtedly the most satisfactory type of check data available. Tobacco warehouse sales reports of the producer's first-hand sales of tobacco (resales excluded) are available for recent years in most of the important tobacco States. The car-lot shipments of fruits and vegetables as reported by the railroads to the Bureau of Agricultural Economics since 1919 serve as a useful check on the estimates of the commercial production, and, when combined with information on the utilization of the crop, are dependable indications of the total farm production of many fruit and vegetable crops. Changes from year to year in the production of Maine potatoes, for example, are definitely reflected in the number of car-lot shipments of potatoes originating in that State.

Increasing use of the motor truck for hauling farm products to market in late years has tended to lessen the effectiveness of the car-lot shipment check upon the estimated commercial production of many commodities, but rail shipments still constitute one of the most important types of check data. In scattered instances records are available on market receipts by motor truck to supplement the records on car-lot unloads. In a few areas, records are procured through State highway or inspection services of truck passings of produce over certain roads, bridges, etc. Although incomplete, these help to round out the picture of supplies moving to market.

Railroad shipments and mill-door receipts of wheat, rye, and flaxseed have been used to verify or correct estimates of the production of these crops in Montana, North Dakota, South Dakota, and Minnesota since 1915, and more recently in other States. In the case of the important feed crops, however, so small a proportion leaves the farm, that data on commercial movement obtained from the railroads have a very limited use for this purpose. In the case of the canning crops the quantity packed, as reported by the canning companies, serves as a check on the estimated quantities of raw products utilized in commercial canning or manufacture. Reports from the factories of the actual quantities of sugar beets manufactured into sugar are used as the basis for the final estimates of the production of sugar beets. Similar data are secured on Louisiana cane sugar, and reports from rice mills as to the quantity of rice cleaned are used to check the estimates of rice production.

Reports from sale agencies and associations handling major portions of certain crops are also utilized as check data, as are reports from irrigation projects. In some instances, for highly specialized products, handled by a limited number of processors, enumerations are made by the branch offices of the Division. In like manner, the results of dependable surveys made by any other agencies are used whenever they furnish some measure of the production of a commodity or even when they may indicate only the forthcoming potentialities for production as in the case of fruit-tree surveys made by State and Federal quarantine officials.

Check data are used not only to verify the accuracy of the estimates of crop and livestock production and thus provide a basis for the final revised estimates of

production which form the historical record, but they are used also for making estimates of production late in the season. Records of cotton ginnings and car-lot shipments of fruits and vegetables, are reported as soon as harvest is well under way, and are used as one of the most important advance indications of the probable size of the crop that is being harvested.

Although the number of livestock assessed is below the actual number on farms, the ratios of change in these assessment figures give rather dependable indications as to change in the actual numbers. These assessment data are not available for making current estimates of numbers but are used for checking and revising the estimates of the previous year.

Data collected from stockyards and packing plants (outside of stockyards) setting forth the State of origin of livestock receipts and the State of destination of shipments of stock intended for feeding or grazing are fundamental to the estimation of livestock production by States. Railroad-company data showing the loadings and unloadings of livestock by stations, records of brand inspections or sanitary board inspections of livestock shipped out and (or) shipped in, and local records of livestock slaughter further help to complete the picture of livestock production. The data collected quarterly by the Division of Dairy and Poultry Products on the manufacture of dairy products serve as a valuable check upon the production of milk.

Not many of these series of check data are country-wide in their scope, but the number of individual series, fragmentary though some are, constitute a list of considerable length.

Production check data are not in all cases accepted as conclusive and substituted for production indicated by the sampling method. Because of the varying degrees of completeness or duplication in certain of these data, time series are constructed to indicate relative changes from year to year and are utilized as supplementary evidence.

Data of this nature must also be evaluated as to comparability with the estimates on the basis of time or period covered and the unit or terms employed to express the data. For example, an assessors' enumeration of acreage planted (or intended) made in April cannot be evaluated in terms of harvested acreage without adjustments for degree of completeness, the extent to which intentions are carried out, and the proportion of the planted acreage that is harvested. Nor, for example, can shipments of beans be taken to represent production, since shipments are largely on a cleaned basis, whereas production is "field run." These or similar characteristics of various check data are usually known or are readily uncovered through analysis. Regardless of such limitations of check data in their original form, they frequently reflect major changes in acreage and production that may not be fully indicated by the established sampling methods. Thus they may serve as a warning that for some one commodity the sampling process needs to be extended and given more detailed analysis or supplemented by additional inquiry to cover special phases.

ESTIMATES OF ACREAGE

A DIFFICULT PROBLEM

The determination of the harvested acreage of crops, which has always been one of the primary objectives of the crop-reporting service, is still one of its most difficult problems. The statistical bent of the present generation has demanded considerable enlargement of the original crop-acreage work and the problems encountered have increased manyfold. The demand for more and better acreage data has been expressed in two ways: (1) For information concerning more and more crops, and (2) for earlier and yet earlier forecasts of acreage intended, planted, or harvested. It is not uncommon to receive inquiries covering next year's sowings before this year's crop is fully harvested.

The present program covers in a general way:

(1) Indicated acreage of important crops (except cotton) to be planted, made before planting time on the basis of reported intended plantings.

(2) Estimates of acreage occupied by a few major crops at or about planting time (such as acres of winter wheat sown and acres of cotton in cultivation July 1).

(3) Early season estimates of acreage of crops available for harvest or to be harvested.

(4) Estimates (after harvest) of acreage of crops harvested.

Since a complete and accurate enumeration is entirely impracticable for these purposes, it is necessary to derive approximate acreage variations from sample data that provide indications of changes taking place from year to year or month to month, and to apply these figures to the best base data available to obtain indications of current acreages. Thus the percentage change in acreage of oats for grain from last year is applied to last year's acreage to indicate the acreage this year. As the season progresses, abandonment or diversion of acreage from its original purpose must be taken into account. Estimates of acreage, therefore, require both satisfactory indications of current changes and adequate base data. Such base data may usually be found in the enumerations of the Federal or State censuses or in year-to-year projections from such census data.

CENSUS ACREAGE AS A BASE

A complete and statistically accurate census is not so simple an undertaking as it may seem. The census enumerators are instructed to make a report for every farm in their enumeration districts, but in discussing the degree of accuracy of the statistics in the Thirteenth Census (1910) the Bureau of the Census said (vol. V, p. 20):

> It is believed that most of the agricultural statistics * * * are accurate enough for all general purposes. * * * There is, however, room for error even in these statistics. Some of the great number of enumerators, naturally, proved more or less incompetent. A few of the inquiries on the census schedules were not fully understood in some districts either by the enumerators or by the farmers. In the case of certain inquiries some farmers were unwilling to give the facts required. This was particularly common with respect to the inquiries pertaining to mortgage indebtedness. Again, some enumerators failed from time to time to ask all of the questions on the schedules. In such cases it was usually necessary to resort to correspondence with the farmers, and even then it was not always found possible to secure the information.
>
> Some small mistakes have doubtless crept into the statistics because of duplication between the reports given by owners of land and by tenants of the same land. A considerable number of cases were discovered in which farm operators who owned some land which they did not operate but leased to others reported as to all the land which they owned rather than as to that which they operated, while the tenants in turn reported,

usually to other enumerators, as to the land occupied by them. Under such conditions there was duplication of farm acreage, of values of farm property, and sometimes of farm products. * * * Altogether the statistics * * * may be said to be as nearly accurate as can be expected under the present system of using large complicated schedules and employing temporary enumerators.

Some checks on census enumerations of production, and hence indirectly on acreage, are available in cotton ginnings, mill receipts of certain grains, car-lot shipments of fruits and vegetables, assessors' returns, etc., and in a few cases the crop-reporting service of the Department of Agriculture has departed somewhat from the census enumerations. It is, however, the general policy to accept the agricultural census as the basis of the acreage series.

THE INTENTIONS-TO-PLANT REPORTS

If price or other economic factors influence growers to underplant or overplant a crop, information which will tend to prevent such action should be of value to growers. Such information must be available before planting actually takes place. Beginning in 1923, the Department began the issuance of "intentions" reports. These are based upon an intentions-to-plant schedule (fig. 34). At first the report gave only the percentage derived from the computation of sample acreage grown in the preceding year and intentions for current plantings, adjusted for the general overstatement of feed crops uniformly found in the 2-year type of schedules. When a background of reported intentions had been secured, however, the policy with respect to publication was altered and now these are correlated with acreage actually harvested and an acreage indicated for the current year is published. This indicated acreage may be said to be the acreage that will be planted if growers make the usual adjustment to weather conditions and other factors affecting their final action and if the growers fail, to the extent they usually do, to plant as large an acreage as they planned or hoped.

THE JULY ACREAGE ESTIMATES

For nearly all crops for which estimates of acreage and production are made, forecasts of production are now made during the growing season. This program requires an acreage base. To serve as such a base the Crop Reporting Board estimates, on July 1, the acreage of each crop for harvest. These estimates are based upon the June acreage schedules (fig. 35). These reports are not intended to represent the total acreage planted, since some early planted acreage may be abandoned before July 1. Moreover, some small portion of the acreage on July 1 is every year abandoned, or is diverted to other use, such as pasture, between July 1 and harvest. Such incidental loss of acreage after July 1 is allowed for in the process of estimating in order that the forecasts of production may be more nearly comparable with the estimates of production made in December. Where abandonment is material after July 1, the low forecast production is partly reflected in the low condition reported. Intermediate estimates of acreages for harvest, as unusual abandonment becomes apparent, are therefore not made, although in years of extreme abandonment special surveys are often made to determine its approximate extent. In such cases, the decrease in production is expressed as decreased forecast yield on the acreage as estimated for harvest on July 1.

THE DECEMBER ACREAGE ESTIMATES

In December of each year, acreage actually harvested is separately and independently estimated, taking into account the various changes in utilization of many crops. Small grains are cut for hay (or sometimes pastured), hay crops are often pastured, certain crops like legumes are harvested partly for grain and partly for hay, some acreage is plowed under for green manure or plowed under because the return will not warrant harvesting. Revised estimates of acreage planted are not ordinarily prepared except for cotton and fall-sown grains, although in years of unusual abandonment estimates (for office use) of acreage planted to spring-sown crops are prepared.

Extensive and detailed data are collected for the December estimates, since these are the measures of production that stand on the record to represent trend of agricultural production.

MEASURING ACREAGE CHANGES

No single universally accurate measure of annual changes of crop acreages has yet been found but several good indications of such changes are available. Taken altogether they give reasonably accurate results although any one of them may be unsatisfactory under certain conditions. In the early days of the crop-reporting service "judgment" inquiries concerning acreage changes were the principal indications used concerning acreage changes. In these inquiries a crop correspondent was asked to express his judgment of changes in acreages of crops in his locality by reporting the current acreages as percentages of the corresponding acreages of the previous year. Analysis of the results from this type of schedule indicates that it is difficult for a farmer or anyone else to report with sufficient precision as to the acreage changes that have occurred within the locality for which he is reporting; and such indications from this type of inquiry concerning acreages of crops were generally inadequate.

In 1888 the use of supplemental questions concerning acreages of crops on sample (individual) farms was tried, but there is no record of the results. In 1911, in an effort to tie back to the 1909 census, an inquiry was made asking for acreages on sample farms for the 3 years 1909, 1910, and 1911. In 1912 a similar inquiry was made relating to the major crops grown in 1911 and in 1912, and this type of inquiry was repeated in 1913. In 1916 this type of inquiry was again made and continued annually without interruption until 1924. In 1912 a sample farm-acreage inquiry concerning acreage of cotton was made as of June 25 and this practice has continued unbroken to date although the time to which the inquiry refers was later changed to July 1. The computed change in acreage as a percentage of the preceding year from this type of inquiry is called the "direct" indication.

Analysis of the results obtained from the record of actual acreages of crops on sample farms from year to year indicates that this method is much superior to the use of judgment inquiries. Consequently the inquiries requiring the judgment of the correspondents concerning acreage have been practically discontinued. They are replaced by sample-farm acreage data—records of actual acreages of crops on farms of crop reporters. The change to this basis was a definite forward step toward increasing the accuracy of the reports, but such data are subject to cash-crop bias as well as to bias due to selectivity of the sample.

Farmers who are willing to report on a complicated acreage questionnaire are unquestionably better-than-average farmers and consequently data for their farms are not exactly representative of all farms. The samples of cotton acreage on farms this year and last year uniformly understate the current year's acreage in relation to last year's acreage. This is more or less true with regard to samples of acreage of all cash crops grown on a commercial scale. The amount of this bias is influenced by propaganda for reduction of acreage. In 1921 for example, there was considerable agitation in the South to decrease cotton acreage because of the low price received for the 1920 crop, and the sample of acreage change received by the Department of Agriculture understated the 1921 acreage in relation to 1920 by considerably more than the usual amount. This was probably due in part to the fact that the men who are sufficiently public spirited to report voluntarily to the Government concerning their crops are men who would be the most likely to be influenced by public sentiment to reduce their acreage, whereas those who were trying to take advantage of the situation by maintaining or increasing their acreage would not be likely to report to the Department.

In an effort to detect, and if possible to make allowance for, some of the bias in the sample-farm-acreage reports, a relative indication of acreage was developed about 1922 from a comparison of the ratio of the acreage of a given crop, such as cotton, to the acreage of all land in farms or to the acreage of all land in crops in 1 year, with the corresponding ratio for the previous year. This comparison of the ratios of crop acreage to total farm area for the farms reporting for the 2 years, when expressed as a percentage, is known as a "ratio-relative" indication of acreage change. To the extent that bias or understatement of the sample is constant from one year to the next bias is offset when two such inquiries are used in a relative sense. The use of the ratio-relative was an important improvement in compensating for the downward bias in the correspondents' reports concerning acreage on their own farms, *and makes possible a direct comparison between the sample for any year and the base or census year, thereby reducing cumulative error* over a period of years. Its most serious limitation is the extreme dispersion found in the acreage ratios which necessitates the use of a very large sample, although this may be partly overcome by tabulating and weighing the sample size-of-farm groupings.

In an effort to obtain a less selective, and at the same time much larger, sample of individual-farm acreages of crops the cooperation of the Post Office Department was obtained in 1924 for a survey to be made by the rural mail carriers covering a definite number of farms on each rural mail route. Although this survey does obtain a very large sample it also has been found to have some selective bias at times. Apparently it represents farms operated by the better class of farmers who are willing to fill out the questionnaries. As the rural-carrier schedule contains crop acreages for the current year only the data may be used for ratio-relative comparisons for any preceding year's sample including the census base year. The form of this rural carrier card schedule is shown in figure 36.

In 1928 a direct comparison was made between the actual acreages of the various crops for the years 1927 and 1928 on identical farms reporting on the rural-carrier schedules. This method eliminates the "memory bias" inherent in the replies to inquiries which ask for the acreage for both the current year and the previous year. It also serves to reduce the influence of the great dispersion that must be overcome in connection with the use of the ratio-relative method. The difficulty of a lack of comparable representativeness of the sample data used in a relative sense for the 2 years is also overcome. The greatest drawbacks in connection with the use of these matched and compared reports from identical farms, on acreage, are the time consumed, the follow-up correspondence necessary to obtain and segregate the reports for the 2 years for the same farm, and the tendency for the sample to be selective of the more progressive farmers. Furthermore, where there is a sharp upward trend in acreage coming into cultivation or going out of cultivation the matched reports are not secured from new farms nor from abandoned farms.

Another improvement in procedure was effected in 1925 by making the estimates of acreage for all crops (except winter wheat and rye) as of one date, July 1. When the estimates of acreage were based on replies to a judgment inquiry from the crop reporters, it was the practice of the Department to estimate the acreage of hay in connection with the May 1 report, of spring-sown grains on June 1, and of corn and potatoes on July 1. This piece-meal procedure was not satisfactory as it was impossible to give consideration to the all-important matter of total acreage in all crops, in connection with the estimates of acreage made in June and May. Shifting the date for the earlier estimates to July 1 permitted the use of an acreage "balance sheet". This is a valuable check on the estimates of acreage for individual crops.

Most of the statisticians who have utilized sample data from crop reporters as a basis for estimates of changes in the acreages of various crops from year to year have appreciated the need for a more objective method of obtaining data. A number of years ago, the agricultural statistician for South Carolina when traveling about his State made counts of the fields of the various crops. The method was crude but showed indications of promise and field counts from trains were used in a number of States for several years. This developed naturally into attempts to count field frontage by recording the number of telephone or telegraph poles opposite the fields planted to each crop. This method was known as the "pole count."

About 7 years ago a somewhat more refined objective method of measuring the changes in acreage was developed by the agricultural statistician for Mississippi and has since been widely used as one of the most dependable indications of changes not only in acreages of various crops but in the total crop acreage. This objective method is based on the measurement of the frontage of cotton, corn, and other crops in linear feet along a highway by a "crop meter" attached to an automobile speedometer (fig. 4). It has been of inestimable value in indicating the relative change in acreage from one year to the next for cotton and some other crops. From a few hundred to as much as 7,500 miles on representative routes are measured in each of the States using this method. The same routes are covered each year, making possible a direct comparison of the number of feet in cotton, corn, and other crops along identical routes for the current year and the previous year. The crop meter is being used with success in other than cotton States.

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Because of the inherent bias in many of these acreage indications and the necessity of making proper allowance for them, insofar as practicable, it is customary to study the relations between the reported data and final estimates of acreage by means of charts. These show the "accepted" percentage changes in acreage

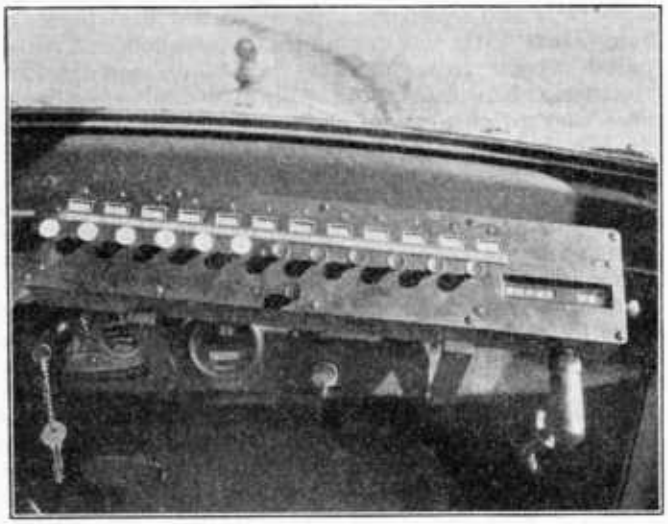

FIGURE 4.—The crop meter, used to measure crop frontages along highways, is essentially a multiple distance-measuring instrument which may be attached to an automobile and be driven by the regular speedometer drive. It was invented by the senior agricultural statistician for Mississippi and used by him in 1926 to secure a cotton-acreage check free from personal bias. The instrument was later developed to register 12 items on each side of the road. The crop meter provides one of the most accurate indications of acreage changes, where local conditions permit its use

from year to year on the vertical scale and the reported or indicated changes on the horizontal scale. These charts are constructed on the same plan as those used for forecasting and estimating yields. (See p. 25.) This is really a graphic method of correlating the two series of data and has a distinct advantage in that any

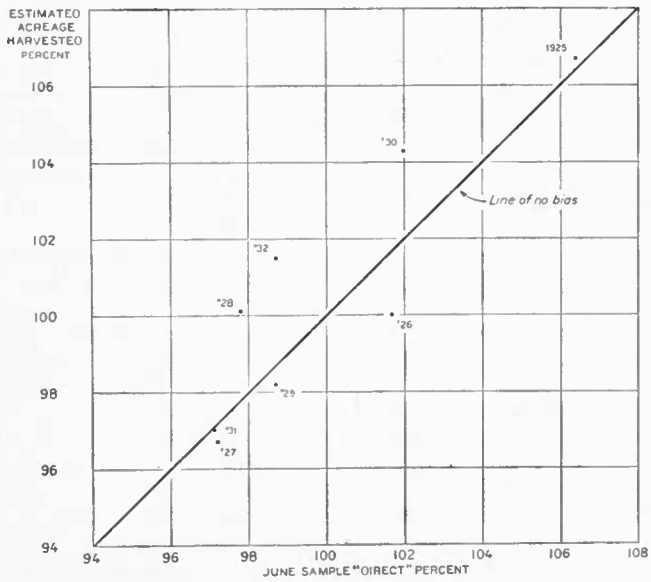

FIGURE 5.—Relation of change in Iowa oat acreage shown by individual farm acreage reports, and final estimated change in acreage for Iowa. This chart shows some tendency toward an underindication of acreage.

unusual relationship for a particular year is at once apparent. The accepted percentages must, of course, be based upon other data such as annual assessors' enumerations or upon annual samples "tied in" at each end against the base (census) year.

The results of the individual farm acreage reports are illustrated by figures 5 and 10. Figure 5 sets forth data for the oat crop of Iowa. In this figure each dot represents on the horizontal scale the acreage as a percentage of the preceding year shown by the sample and on the vertical scale the Board's final estimate of acreage as a percentage of the preceding year. This "direct" weighted percentage is computed from the summation by crop-reporting districts of actual acres reported (1) of "acreage harvested last year" and (2) of "acreage for harvest this year", weighted according to estimated acreage in each crop-reporting district "last year". The Board's final acreage in Iowa is based upon the annual enumeration made by assessors beginning on January 1 of the succeeding year. It will be noted that while the reports for 4 of the years were very close to the final estimates for those years, in 3 other years the

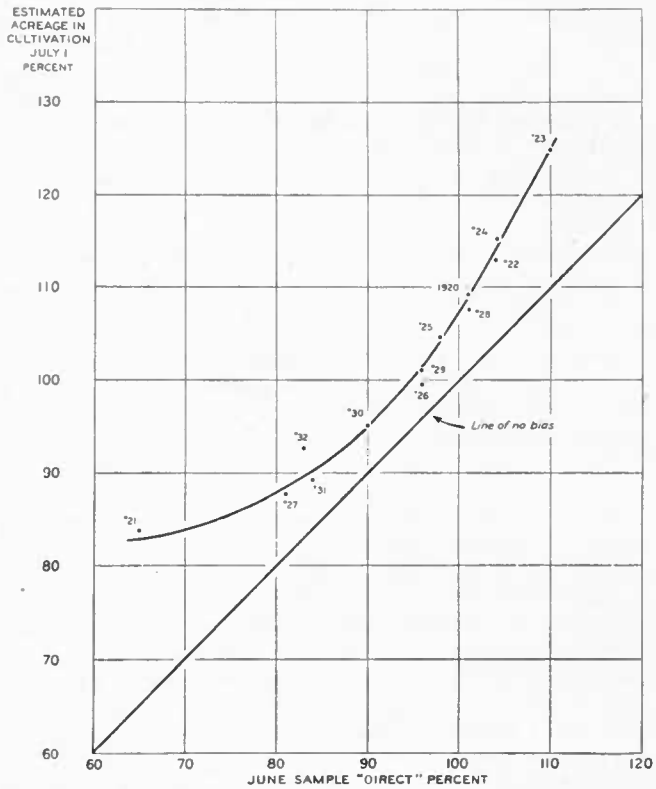

FIGURE 6.—Relation of change in Texas cotton acreage shown by individual farm reports, and actual change as finally determined. This chart depicts graphically the tendency for direct acreage reports to indicate less than the actual acreage, with the greatest departure in the lower and upper ranges.

reports underindicated the final acreage and in 1 other year overindicated the final acreage by about 2 percent.

The typical relation of the "direct" indication of acreage change for cotton is illustrated in figure 6. In every year since 1920 this type of indication has understated the actual acreage (based upon ginnings as enumerated by the Bureau of the Census). Typical also is the shape of the curve, depicting as it does the tendency for a greater understatement in both the lower and higher ranges of acreage change. The observation for 1921, the year discussed on page 17 falls above even the curved line of relationship.

A similar cash-crop bias is illustrated by the direct indication of the June returns for spring wheat in North Dakota as shown in figure 7. The existence of this bias is somewhat obscured by occasional heavy abandonment in that State. In 1926 and 1931, the dots for which fall below the line of exact relationship,

abandonment of acreage occurred after June and the final estimated harvested acreage was lower than the direct indication in June. This occurrence has a further influence on the indication for the succeeding year, as illustrated by the dots for 1927 and 1932, which are much above the line of exact relationship. This phenomenon reveals that in June following a year of heavy abandonment, the reporters (at least some of them) report acreage planted instead of harvested in the preceding year. This error in reporting deflates the direct indication and allowance must be made for this deflation or other indications must be used in estimating acreage for harvest for use in the July report.

For the group of States in which abandonment of some magnitude occurs more or less frequently, it is necessary to estimate for office use the acreage of crops planted or in cultivation in June for the years covered by the data. Utilizing these estimates and ratio relative indications, it is possible to ascertain currently the approximate acreage in cultivation at the time of the survey. An estimated acreage for harvest for use

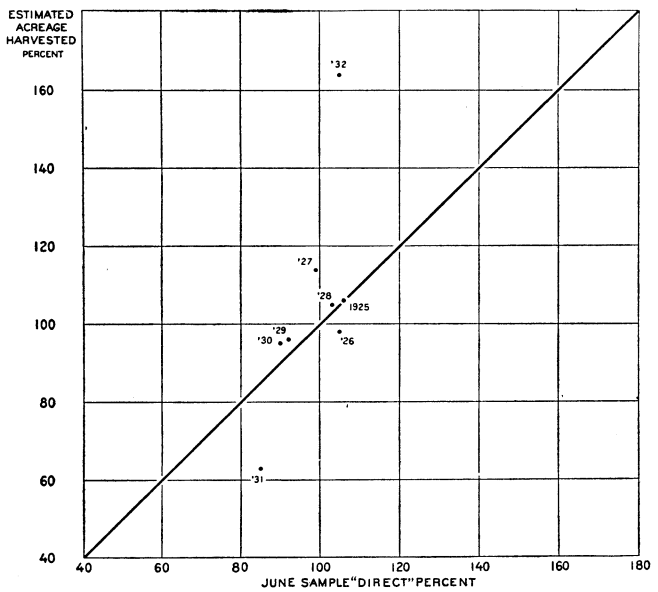

FIGURE 7.—Relation of change in North Dakota spring-wheat acreage shown by June sample farm reports and final estimated change in acreage harvested. The June direct indication is often misleading in States where abandonment of acreage is frequently large.

in preparing forecasts of production is then calculated by allowing for average abandonment between June and harvest.

The "ratio relative" to all land in farms derived from the acreage reported on sample farms through the rural carriers has proven exceptionally helpful in ascertaining the acreages of crops harvested. A comparison of the results of these ratio relatives to the Board's final estimates is shown in figure 8. In States in which the total acreage in farms is relatively stable, a similar degree of precision is ordinarily found. Where the total acreage in farms in a State has a distinct trend (either upward or downward) this indication does not measure fully the change in acreage. Thus in figure 9 for North Dakota, the observations tend to fall above the line of exact relationship. In this State there was an expansion of total farm acreage as shown by the 1925 and 1930 census data. This figure also illustrates the comparative precision of the method even when fluctuations in acreage are very great, as for example in 1931 and 1932.

Where the indication from the ratio relative to all land in farms fails to reflect changes in acreage fairly closely it is often possible to explain this failure by the use of a second factor.

In figure 10, the ratios (not ratio relatives) during the period 1924 to 1932 show a lack of precision which

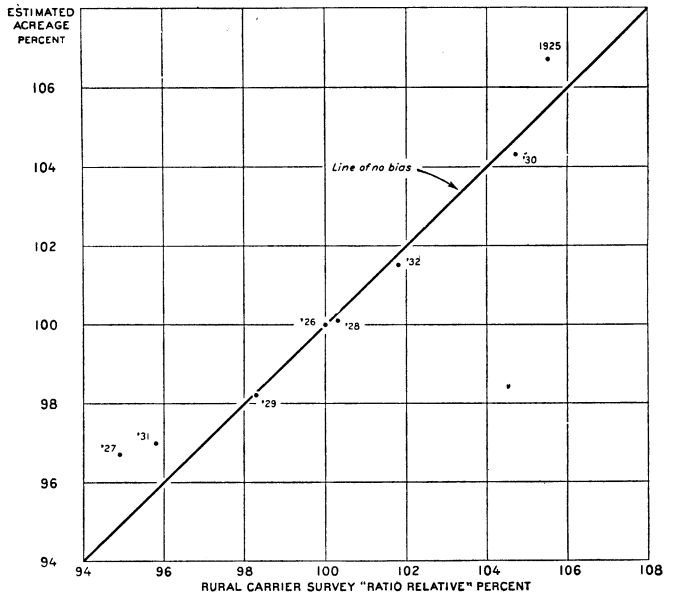

FIGURE 8.—Relation of change in Iowa oat acreage shown by sample farm-acreage reports and final estimated change in acreage. The ratio relative indication from the rural carrier survey indicates very closely the final acreage as determined largely from assessors' enumerations.

was found to be largely the result of a downward trend in acreage of all land in farms during that period. The deviations from curve A (taken about midway of the range of the observations), can largely be

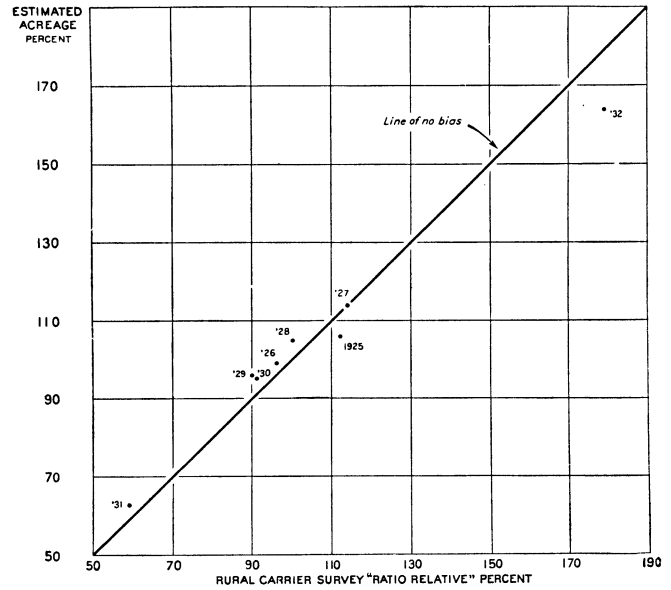

FIGURE 9.—Relation of change in North Dakota spring-wheat acreage shown by sample farm-acreage reports and final estimated change in acreage expressed as percentage of preceding year. The ratio relative indication from the rural carrier survey measures acreage change comparatively accurately even when fluctuations from year to year are very great.

explained by plotting against time to determine the trend or against a factor such as acreage in principal crops which reflects trend in total farm acreage. In the lower section of figure 10, the residuals from curve

A (in the upper section) have been plotted against the acreage in 10 principal crops. The two curves combined account for most of the variation in corn acreage during this period. The acreage in all crops or in principal crops is frequently used by the Crop Reporting Board as a second factor.

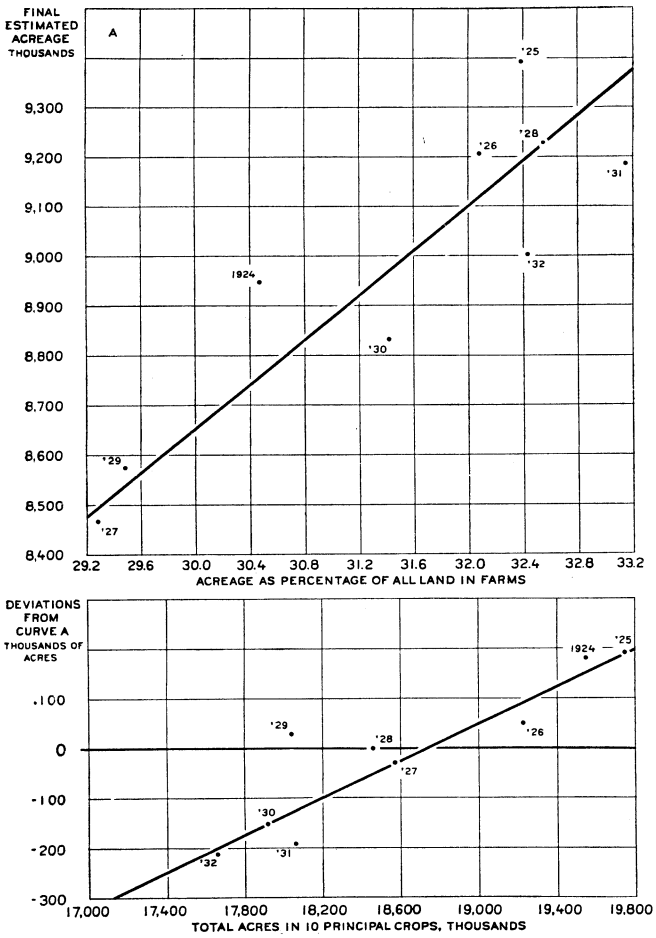

FIGURE 10.—Relation of Illinois corn acreage in percent of all land in farms as shown by rural carrier survey to final estimated acreage in thousands. A second factor which allows for trend of acreage in all crops is often utilized to secure a more precise estimate of acreage.

In certain sections of the United States, the ratios and ratio relatives to all land in farms are subject to material fluctuations in sampling due to one or both of two reasons. The first reason is the varying number of reporters who report for "all land in farm", the total acres "farmed", that is, the total acres of land cultivated. The second, typical of the ranch area of the Western States, is the varying proportion of total land in ranch which is in crops. In these areas, ratios and ratio relatives to all land in crops (including fallow land in the West) are computed to secure figures less affected by sampling fluctuations. These ratios assume no change in the total crop-land base. In the analysis and interpretation of these ratios and ratio relatives, indications of change in total crop acreage must be secured from sources outside the sample.

SAMPLE CENSUS OF REPRESENTATIVE AREAS

The annual enumerations of acreage made by the assessors have served in some States, such as Iowa, Minnesota, Wisconsin, Kansas, Missouri, Nebraska, Indiana, and Colorado, as a basis for dependable estimates of crop acreage. Where the enumeration is taken historically as in Iowa it serves as a basis for historical revisions and as a check on the methods used in determining acreage.

In States where the assessor's annual enumeration is taken in the spring and relates to the plantings (or intended plantings) of the current crops, returns from part of the farms or part of the enumeration districts are usually available before July 1. These partial returns are frequently used in preparing the July estimates of acreage for harvest. In figure 11 is shown graphically the relation of these early returns from 20 to 40 percent of the townships in Wisconsin which were currently compared with the returns from identical townships in the preceding year. Data of this kind are exceptionally useful in ascertaining the acreage for a State.

In a number of States the assessors' enumeration of acreage is taken early in the spring and represents partly plantings and partly intentions to plant. To convert these data to indications of acreage harvested, inquiries are addressed annually after harvest to individual farmers selected at random from the enumeration rolls. These inquiries record from the rolls the acreages planted (or intended) as reported to the assessors and request reports on (1) acres actually planted and (2) acres actually harvested. From these data it is possible to compute indications of (1) actual plantings as a percentage of acres reported planted or intended, (2) abandonment between planting and harvest, and (3) harvested acreage as a percentage of planted or intended as reported to the assessors. When these percentages are converted into indicated State totals, these may then be compared on a planted-to-planted or harvested-to-harvested base for successive years.

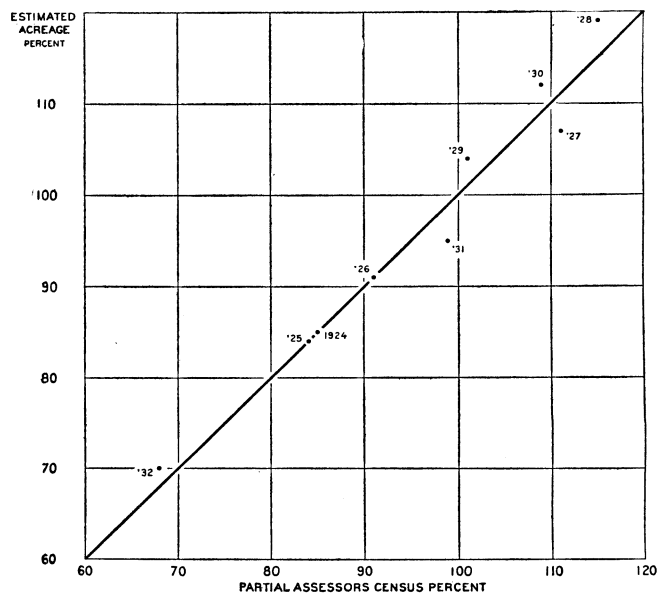

FIGURE 11.—Relation of change in Wisconsin tobacco acreage shown by partial returns of the assessors' census to final change in acreage. Preliminary returns from assessors' enumerations are a reliable guide in the preparation of estimates of acreage.

It has been suggested by economists, statisticians, and others, that the Federal census be taken each year as a basis for accurate figures on acreage and production. There are two serious obstacles to this procedure—the expense involved and the delay in obtaining the

results. It usually takes about 2 years to complete the tabulations of the census enumeration but estimates of harvested acreage and production must be made not later than December of the current year, if crop reports are to help farmers in marketing their products.

In Alabama, State funds have been made available for making cross-section enumerations twice each year. One enumeration is made in June to ascertain the planted acreage of cotton and of other crops, in the fall another enumeration is made to ascertain the harvested acreage of cotton and other crops as well as numbers of livestock on farms, yield per acre, and other information. Reports from farms operated by white and colored farmers are obtained in somewhere near the same proportion as they occur in each county, and the same is true for owner-operated and tenant farms. This partial census, which comprises about 10 percent of all the agricultural area of the State, makes it possible to secure a larger and a much more representative sample than would ever be possible on the basis of voluntary reporters. It also makes possible estimates by counties, which are not practicable on the basis of voluntary replies to a questionnaire.

To place the acreage-sampling work of the Department on a fully adequate and satisfactory basis, it will be necessary to have a partial census in all States in which there is not, at present, a satisfactory annual assessor's enumeration. Such a partial census for the entire country would cost only a small fraction of the expense of a complete enumeration. It would not only supply the United States Department of Agriculture with adequate representative sample data as a basis for its acreage, yield per acre, and livestock estimates, but would be useful in a wide range of agricultural economic research.

ESTIMATES OF YIELD PER ACRE

Estimates of crop yields per acre made at or after harvest are based on analyses of reported community or individual-farm yields in relation to census or other known yields. It is customary to study these relationships of reported to actual yields by means of charts on rectangular cross-section paper showing actual yields on the vertical scale and reported yields on the horizontal scale. A combination of a dot and number shows the relation for each year of the series under consideration. This general method and some refinements that have recently been applied are discussed more fully on pages 22 to 32 in connection with forecasting methods.

Because of the more-or-less selective sample represented by crop reporters, their reported yields per acre usually need some adjustment to conform to the average for all farms and all communities. Memory and cash-crop bias also have to be considered in converting reported yields to actual yields. It is believed, however, that estimates of yield per acre have generally been more reliable than acreage estimates.

The judgment inquiry is much better adapted to obtaining information concerning the condition of a growing crop or the yield per acre after harvest than it is to ascertaining changes in acreage or number of livestock on farms. The fact that the crop reporters are better-than-average farmers is an advantage as they are undoubtedly in better position to make an estimate for their locality than the average farmer, who might be less well informed. The yield per acre of various crops is a matter of more-or-less common knowledge at harvest time. Farmers exchange help in threshing and harvesting, and crop yields are a topic of general interest and conversation. The crop reporter therefore, has, some actual facts as a basis for his judgment concerning yields.

The estimates of crop yields per acre for the 12 North Central or Corn Belt States are not only more reliable than those for any other section of the country, but are about as accurate as such estimates are likely to be on the basis of reports secured from voluntary crop correspondents. The estimates are least reliable in the Rocky Mountain and Pacific coast States, and in some of the smaller Eastern and Southern States.

The more uniformly the acreage of a given crop is distributed over a State, the more reliable are the estimates likely to be. Consequently the estimates of such generally grown crops as corn, oats, wheat, and hay are usually more reliable than those of crops of highly localized production, such as commercial potatoes, beans, peanuts, and tobacco. The estimates of crops of relatively little importance in a State are much less reliable than those of the major crops.

Reports on important and somewhat specialized cash crops, such as cotton, tobacco, commercial potatoes, peanuts, and beans, are likely to be biased and less reliable than the reports on crops that are largely consumed on the farm or in the locality where produced. Fortunately this situation is not so serious as might at first appear, as it is principally for crops which are sold that check data of the commercial movement are obtainable. These check data make it possible to correct the estimates and largely overcome the bias existing in the original reported data.

One of the greatest difficulties in obtaining satisfactory sample data concerning yields per acre of crops is the tendency of the reporter to be overconservative in estimating for his locality the yield of important cash crops, like cotton, potatoes, and tobacco, especially in areas of commercial production, when 1 or 2 crops form the principal source of farm income. This conservatism is also manifested when the reporter gives his acreage of certain cash crops for both last year and this year on the same schedule. With cotton, for example, this cash-crop bias results in low reports of yield during the early part of the harvesting season; the reported yields become progressively higher as the season advances until, in the following March, when the crop has largely left the farmers' hands, the highest yields of all are reported by the correspondents.

In the far Western States it is extremely difficult to obtain reports of yields that are fully representative because of the great variety of conditions existing in most of these States, in which crops are grown on both irrigated and nonirrigated land and in which one valley varies greatly from another. There is so much variation in yields per acre in these States that it is difficult to obtain samples that have sufficient size to render the average stable. There is also some difficulty in obtaining samples of adequate size in some of the smaller Eastern and Southern States.

The inquiries on yield per acre are made as soon after harvest as the limitations of monthly schedules

permit. To facilitate such a timing of inquiries separate schedules are printed for the Northern and Southern States, and yield inquiries are spread over the season from July to December. The inquiry for winter wheat, for example, is made for the Northern States in July, for the Southern States in June.

During recent years the individual-farm sample has been used to obtain a "derived yield" from the acreage and production of the various crops on the individual reporter's farm. (See fig. 37.) These yield figures, coming largely from the better farmers, are generally higher than the average for all farmers and this spread may be greater in years of low average yields than in years of uniformly good yields. These yield figures can be used, however, as a relative indication from year to year, and when fairly satisfactory yield indications can be obtained in a census year as a basis for comparison, this type of information is helpful in supplementing answers to the regular judgment inquiries concerning yields per acre.

Yields per acre derived from individual-farm reports on acreage and production have been found extremely useful in years when the problem of ascertaining the acreage harvested is complicated by unusual abandonment, by diversion of small-grain acreage to hay, hay acreage to pastures, grain-corn acreage to hogging down, etc. Such a derived-yield series can be more accurately related to the acreage base than can the reported judgment yield, for which the acreage base is indefinite.

A sample census of representative areas would be extremely valuable in affording a check on the yield-per-acre sample obtained from crop reporters and could be used as a basis for the final estimates of yield per acre.

When official estimates of yield per acre are compared with the yield per acre derived by dividing production reported by the census by the acreage reported by the census, it is found that the two are in reasonably close agreement. The agreement is close in the case of the yield per acre of corn, oats, and wheat in the North Central States. Flax yields check very closely.

In the North Atlantic States estimates of corn yield per acre are usually lower than the yields derived from the census data, undoubtedly because of the inclusion of bushel baskets (instead of bushels of 56 pounds of shelled corn) in some of the census figures on production. With corn, and small grains generally, there is a tendency for the estimates of yield per acre to exceed the yields derived from the census figures. This may be caused by the fact that the production reported to the census enumerator is frequently from a smaller acreage than that reported to him as the acreage in a given crop. That is, the fields are relatively small and a larger proportion of the planted acreage is utilized for purposes other than those included under the term production, such as for pasture and for soiling purposes, than is so utilized on the farms of crop reporters.

FORECASTS OF CROP PRODUCTION

THE PROBLEM OF FORECASTING

Although the recording of crop production is the basic and original objective of the crop-reporting service, the forecasting, prior to harvest, of the probable outturn of the crops is a phase of the current work in which producers and traders are keenly interested.

Estimates of the probable production of a crop made prior to harvest are called "forecasts" of crop production as distinguished from "estimates" made at harvest time or later. The problem of forecasting the probable production of the given crop during the growing season may be divided into two phases—estimating the acreage of crop to be harvested and forecasting the probable yield. The second phase is discussed here.

The grain and cotton trades have long used the official estimates of the condition of crops as a basis for making a forecast of yield per acre which, when used with acreage, results in a forecast of production. Few producers were in a position to do this. In 1906 the Keep Commission, which made a careful study of the Department's crop-reporting service especially as related to cotton, recommended that the Department make such forecasts; but it was not until about 1912 that the Government began to interpret the condition reports in terms of probable yield per acre, and not until 1915 that forecasts of cotton production were made prior to harvest.

Buyers and sellers of farm products demand, early in the season, forecasts of crop production. Private agencies can and do supply such forecasts. As a neutral crop-reporting agency the United States Department of Agriculture cannot avoid its responsibility by omitting these forecasts. The fundamental problem and duty of the Crop Reporting Board is to make as accurate a forecast of what the final yield per acre is most likely to be as is humanly possible at that time of the season.

The extent to which crop yields per acre can be predicted are definitely limited, but the reported condition of a crop serves as a fairly adequate basis for such a forecast. Naturally the late-season forecasts are usually more accurate than are early-season forecasts, and the condition figure is a much more satisfactory measure of the probable yield per acre for some crops than it is for other crops. During the last few years, studies of the relation of weather to yields, counts of damaged and undamaged cotton bolls, and other objective methods have served to supplement the condition reports as a basis for making forecasts of yields per acre. These studies have increased the accuracy of the forecasts materially.

The making of a forecast of final yield per acre on the basis of the data available on the 1st of a given month during the growing season is a statistical problem in relationship between series of data currently available and a yield-per-acre series over a period of years. In actual practice these series are graphically related and the average relationship is shown by a "line of best fit", fitted either by a mathematical formula or by a freehand curve. This line can be used as a basis of forecasts on the assumption that, on the average, past relationships are likely to hold for the coming year.

CONDITION IN PERCENTAGE OF NORMAL

The crop reporters are asked to report on the condition of the growing crop in percentage of a normal or full crop. (See figs. 38–40, pp. 70 to 74.) The Department is frequently asked, "Just what is a 'normal' crop? Is it not too vague and abstract a term for this use?" In early years the Department considered "average crop", and "normal crop" as practically synonymous terms. Undoubtedly the early statisticians

hoped to be able, after a few years of experience, to calculate an average crop which could be used as a basis for interpreting the condition figures they were collecting the 1st of each month during the growing season. They were really asking for the appearance of the crop, with 10 as a measure of an average crop; later they shifted to 100 percent as the basis for comparison.

In a report dated September 10, 1884,[4] the following statements of the meaning of normal are found:

There is occasional inquiry as to the meaning of figures used in crop reporting. The standard of comparison, 100, in reports of condition of growing crops means that the plants occupy the ground fully, exhibiting a complete "stand"; that they appear in full healthfulness, uninjured by disease or insects; and that they have a medium growth for the date at which the report is made. It means a condition of full development that can only be exceeded by some luxuriance of growth. * * *

It will readily be seen that "condition" cannot be expressed in bushels or pounds. There are no bushels of corn in a field just sprouting, and it is a misnomer to call first growth a final product. It is the result of characteristic American haste thus to discount the experiences and accidents of the whole season, and say that three inches of potato vine above the surface means 90 bushels of potatoes per acre. Absurd blunders in crop report reading have often been made that way. * * *

It is true that the public want to know what these reports of early growth indicate. It may be proper to gratify this public anxiety, if it is understood that the expected result is subject to the limitations and contingencies of the future.

Any intelligent reader will perceive from the above that, so far as growth may indicate a harvest, 100 must point to different results in different districts. It may promise 35 bushels per acre in the Ohio Valley or 15 on the Gulf coast. Each State must be considered separately, and all returns consolidated for an average of the whole field. This average, which has in some years been reported at 28 bushels for corn, would be less with a larger proportionate area in low-yielding districts, and larger with an increased proportion in the great corn-growing States. So it will be seen at once that a definite figure to represent 100 for corn, wheat, or any other crop, as a whole, cannot be made exact and unchangeable, on account of the changes in the territory represented and other circumstances producing variations in average yield. * * *

Another fact is obvious from the above, that 100 indicates more than "average" crop. * * *

An average crop is the actual mean rate of yield in a series of years, which include some marked by 100 or more, and others by a much lower figure. Then 100 means a *full* crop, not an *average* one.

In instructions to reporters and in articles appearing in Crops and Markets, and in other material issued from time to time the following description of a normal condition has been given:

To begin with, a normal condition is not an average condition, but a condition above the average, giving promise of more than an average crop. Furthermore, a normal condition does not indicate a perfect crop, or a crop that is or promises to be the very largest in quantity and the very best in quality that the region reported upon may be considered capable of producing. The normal indicates something less than this, and thus comes between the average and the possible maximum, being greater than the former and less than the latter. The normal may be described as a condition of perfect healthfulness, unimpaired by drought, hail, insects, or other injurious agency, and with such growth and development, as may be reasonably looked for under these favorable conditions.

A normal condition is rarely reported for the entire corn, wheat, cotton, or other crop area, at the same time or in the same year, but its local occurrence is rather common. The tendency of reporters, when a crop is normal or above, is to understate the condition, as there seems to be an instinctive objection on their part to reporting more than 100 at any time. This factor must be taken into consideration in interpreting condition reports.

[4] DODGE, J. R., REPORT ON CONDITION OF CROPS, ON WHEAT IN INDIA, AND ON FREIGHT RATES OF TRANSPORTATION COMPANIES. U.S. Dept. Agr., Bur. Statis. (n.s.) Rpt. 11: 45-46. 1884.

The normal as used by the United States Department of Agriculture has been criticized by several eminent statisticians on the ground that it has no definite statistical basis, and, therefore, by itself cannot convey any meaning. But it has been found that the crop reporter does have a well-defined judgment of what constitutes a normal for his locality. Representing the mass judgment of a multitude of observers, it adjusts itself slowly and naturally to any actual trends in yields per acre, such as might arise from the development of improved strains of higher yielding seed or the introduction of plant pests like the bollweevil.

The stability of the general conception of "normal" is evidenced by agreement in the returns received by the Department from separate and independent lists of reporters. The condition of a crop, as reported by one list of crop reporters, such as the township list in a given State, has seldom differed by more than 2 or 3 points from the figure reported by the field-aids list in the same State.

It has been suggested that condition be reported in terms of percentage of an average crop. Several foreign countries are now using this system. It is difficult for a farmer to have a clear concept of an average over a period of years, as his mental picture of appearance and yield of the crop would undoubtedly be dominated by the few years in the immediate past. This is probably also true of his concept of the normal but not to the same degree. The experience of the official statisticians of countries or States where the average is used as a basis for comparison, indicates that the farmer really makes his comparison with the "full crop" or "normal" rather than with the average. The farmer tends to remember the best crops, and the usual crops, and does not always take into consideration the years when the crop failed. As a matter of fact, however, if the proper statistical procedure is followed, it really makes little difference for yield-forecasting purposes whether the average crop or the normal crop is used as a standard by which to measure current crop conditions provided there is available a long series of reports in which the same measuring stick has been used.

THE PAR METHOD OF FORECASTING

For several years prior to 1912 (at which time the Crop Reporting Board began to make forecasts of crop production during the growing season) some private statisticians had been using a mathematical method of interpreting the crop-condition figures into terms of probable yield per acre. These forecasts of yield could be applied in turn to the official estimates of planted acreage made early in the season, to obtain a forecast of production prior to harvest.

In the report of the Keep Commission (1906) there appears the following recommendation concerning the interpreting of the condition figures into forecasts of yield per acre.

We can see no reason why, instead of leaving this calculation to individuals, it should not be performed by the Bureau. The formula to be used, which is well known, may be stated in the form of a proportion as follows:

The average condition for a given month for 10 years is to the monthly condition announced for that month for the current year as the 10-year average yield per acre in pounds of lint cotton is to X. X is the indicated yield per acre of lint cotton for the current year. The first three terms of the proportion being known, X is readily found, and the acreage having been determined, either by estimate or enumeration, the indicated yield

(production) can be easily obtained. The announcement of the Bureau of Statistics might be in the following form: "The condition of cotton on — was — percent, indicating a crop of — bales."

This plan, known as the "par method," was adopted by the United States Department of Agriculture in 1912 as a basis for official forecasts. It was in general use, in a somewhat modified form, until the end of the 1929 season. Beginning with 1930 another statistical method was adopted for practically all crops for which forecasts are made during the growing season.

If this proportional formula is expressed in symbols, the origin of the par may readily be seen.

When C_m = 10-year average condition,
Y_m = 10-year average yield per acre,
C = current condition for a given month,
Y = forecast of yield per acre,

The proportion becomes $\frac{C_m}{C}=\frac{Y_m}{Y}$ or $\frac{Y}{Y_m}=\frac{C}{C_m}$

and $Y=\frac{C\times Y_m}{C_m}$ or $Y=C\times\left(\frac{Y_m}{C_m}\right)$

Then (Y_m/C_m) = the 100 percent equivalent yield per acre.

The 10-year average yield per acre could be divided by the 10-year average of conditions at the beginning of the crop season and the result (Y_m/C_m) used as a constant, which could be multiplied by the condition figure when it became available. This procedure assumes a 1-to-1 relationship between condition in percentage of normal and yield per acre in percentage of normal regardless of whether such relationship exists or not.

In actual practice the 100 percent equivalent yield was computed for each month of each year, and 5-year and 10-year moving averages of these figures were computed for each month. The 10-year average of 100 percent equivalent yield for a given month (and State) became known as the "computed par". If a study of the 100 percent equivalent yields and these moving averages revealed variations caused by unusual seasons or trends, an allowance was made in the "adopted par". This "adopted par" was multiplied by the condition figure to obtain a yield forecast.

Since the reported condition figure, on the average, tends to become smaller as the season advances, the par must become progressively larger in order to compensate for the average decline in the condition figure as reported. It frequently happens that the condition figure will decrease several points from a given month to the next, but unless it shows more than an average decline the forecast will be higher than for the previous month. It is difficult for many users of crop statistics to understand this apparent paradox. It is this tendency for the condition, on the average, to decrease from month to month through the growing season that makes a fixed par for all months impossible. With the same par for all months and condition figures tending to decrease as the season advances, the early forecasts would always be higher than the late forecasts and the final estimates.

The apparent mathematical precision of the "fixed par" method tends to create a confidence in this method of interpretation that is unwarranted from a statistical standpoint. That one can calculate the 100 percent equivalent, or par, to several decimal places does not necessarily imply that the par method is the best statistical way of interpreting the relationship between condition and final yield per acre.

The fixed par method of forecasting yield per acre from condition was unsatisfactory in seasons when crop development varied very materially from average because of factors which were present when the crop correspondents made their condition reports but which had not yet affected the crop and were not allowed for in the reported condition. For instance, a moderately dry season frequently results in disproportionately heavy tobacco crops and an incipient heavy infestation of cotton bollweevil is often unnoticed. Such a situation was formerly met by raising or lowering the condition figure but this procedure resulted in distortion of the 100 percent equivalents and pars.

By 1926, experiments and experience had demonstrated that better results could be obtained by adjusting the pars to meet unusual current situations as well as for trends and unusual past seasons. This system known as the "flexible par method" assumed a simple linear relationship between reported condition and yield per acre which was anchored to a 0 yield associated with 0 condition (that is, $Y/Y_m=b(C/C_m)$ or $Y=bC\ (Y_m/C_m)$, b being the adjustment factor). The opportunity it afforded of adjustment to meet unusual current situations, independently of the reported condition and before the condition figure was known was a distinct advantage but its mathematical limitations caused its abandonment after 4 years for the present method of graphic analysis of condition-yield relations.

GRAPHIC INTERPRETATION OF YIELD FROM CONDITION

It had been realized for some years that mathematical correlation methods were adaptable to forecasting yield from condition and other factors, but the relatively great amount of time required for the computations made these methods impracticable for use by the Crop Reporting Board in the preparation of its monthly crop forecasts. The development, about 1927, of simple graphic solutions for correlation problems provided the first practical means of forecasting yield from condition or other currently available data on a really satisfactory basis.

Forecasting yield per acre from reported condition is essentially a simple correlation problem with yield per acre for the State over a period of years as the dependent variable, and the appearance of the crop as of a given date, such as August 1, measured by the crop reporters' estimate of "condition of the crop in percent of normal", as the independent variable (that is, $Y=a+bC$). A simple scatter diagram of these two variables will show whether there is any apparent relationship and if there is a relationship, whether it is positive or negative. If the dot representing the pair of observations for any given year is labeled with its year number any general change in this relationship over the period will become apparent, and allowance can be made for changes in relationship associated with the passage of time. If such a change in relationship between the two variables appears, "time" should be taken as the third variable or factor. To allow for a change in the relationship associated with the passage of time, constitutes a problem in multiple correlation; yield is the dependent variable, and condi-

tion and time are the independent variables. Solution by successive elimination is a satisfactory method of handling this problem. That is, the residuals from relationship of yield and condition may be related to time as a variable and the two regression lines may be used as a basis for a forecast.

This graphic method of forecasting, which was definitely adopted in 1930, has several distinct advantages:

(1) Lines of best fit (to be used as a basis for forecasting) may be established freehand or mathematically before the current data are available.

(2) The method is not limited to linear relationships.

(3) Years that fall "off the line" stand out and can be studied separately or in connection with other similar years.

(4) Frequently one or more distinct "levels" of relationship are observed. Research into similarities in years on the several levels make it possible to improve the forecasts.

October being +0.963. Condition and yield data for corn in Minnesota have been selected not to show either the best or the worst examples of the data from which forecasts of yield must be made, but rather as a fair sample of a moderately good relationship between condition and yield. It will be noted from these charts that the correlation coefficient for reported October 1 condition and final yield for the entire 32 years for which data are presented is only +0.770, whereas it is +0.963 for the last 11 years. This is primarily because of a trend toward higher yields in the later years. The crop reporters tend to remember only the most recent years and to associate their normal with the best of these years. If it were otherwise, the reporters' ideas of normal yield would probably have been somewhat lower and the correlation coefficient for the entire period would have been somewhat higher.

There is an increase in the correlation coefficient as the season progresses. This is graphically indicated by the position of the dots on the chart with respect to

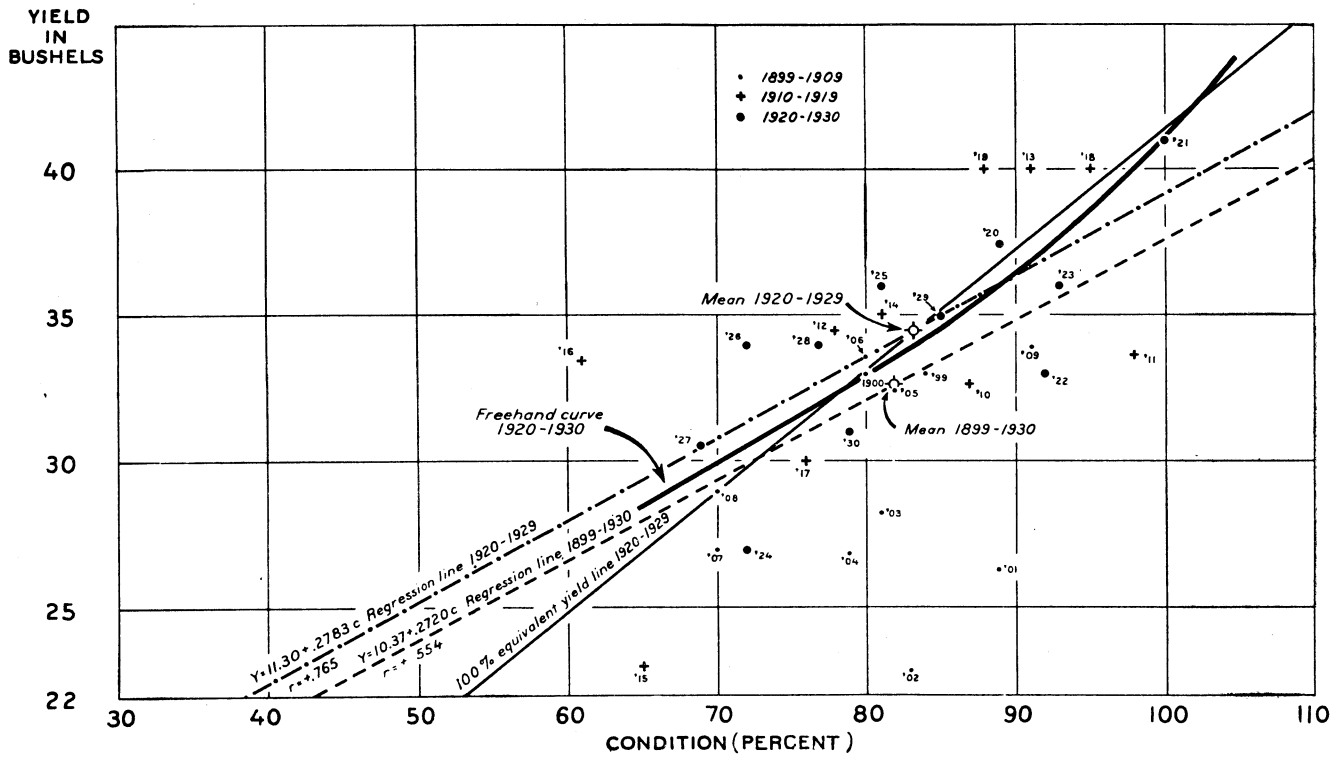

FIGURE 12.—Relation of Minnesota corn yields to July 1 condition. This chart and those shown in figures 13 to 15 graphically present the relation of Minnesota corn yields per acre to the condition (as percent of normal) of the crop on the 1st of July, August, September, and October. Note the relatively wide range of July 1 condition with respect to yield.

(5) The method is not limited to condition-yield relationships but can be used with any measurable data.

(6) Several factors may be related to yield by graphical multiple correlation methods.

In Kansas, for example, the coefficient of correlation between condition of corn on September 1 as reported by correspondents, and the final yield for a period of 25 years, is +0.984, whereas in Maine the coefficient of correlation between reported August condition and final yield of potatoes is quite low and negative. In figures 12 to 15 inclusive that show the yield-forecasting charts for corn in Minnesota for the months of July, August, September, and October, there are reasonably good positive correlations for the later months for the more recent years, the coefficient for

the regression line. The par, or 100 percent equivalent yield line for the 10 years ended in 1929, is also shown on each chart. It is obvious from figure 16 which shows relationship between various indicators of yield as they approach zero condition, that the par line is not satisfactory for forecasting yields in this particular case on the basis of condition figures much below 50 percent of normal. It is, however, evident that when the condition is within a few points of average it makes little difference whether forecasts of yield are based upon a 10-year 100 percent equivalent yield (or par) or upon the regression line. As a matter of actual procedure, regressions are seldom computed, but the par or 100 percent equivalent yield lines are sometimes shown on the charts with which

the Crop Reporting Board works to aid in properly orienting the data with respect to the intersection of the lines of zero condition and zero yield.

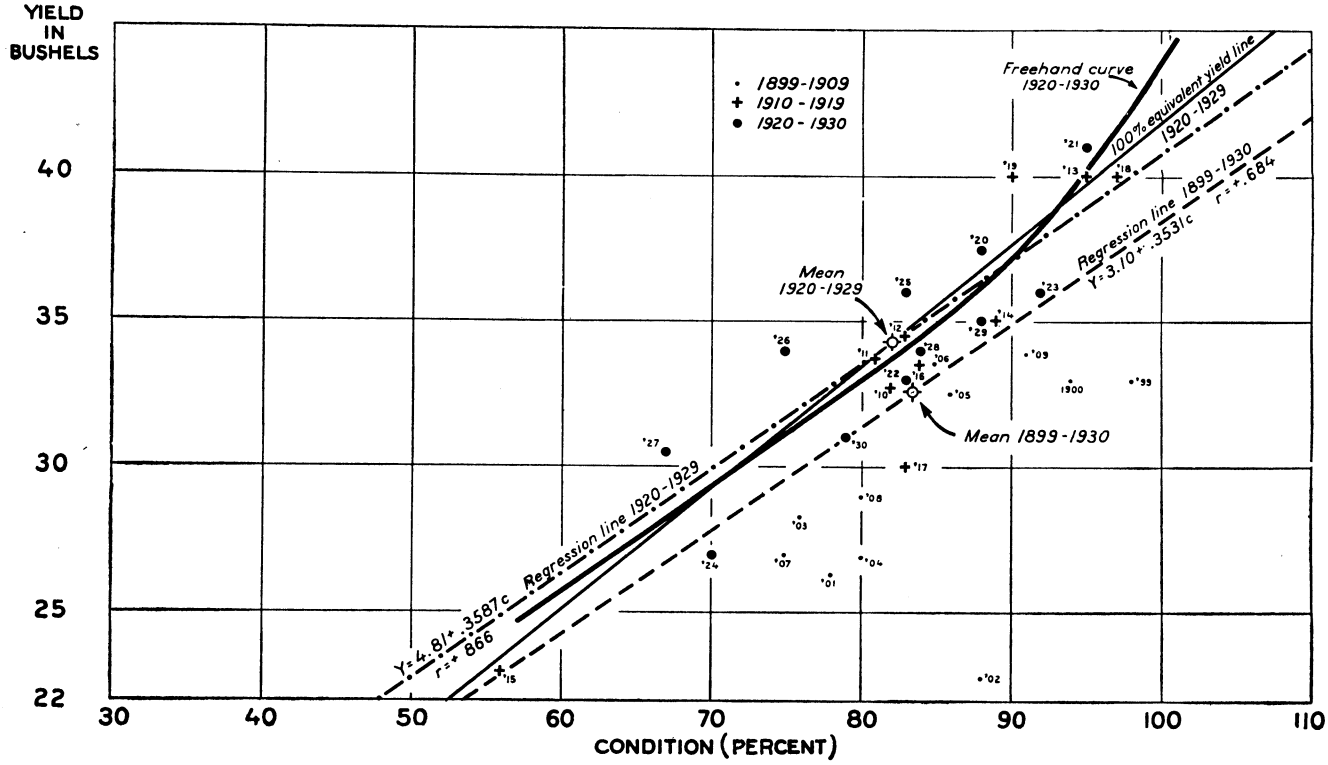

FIGURE 13.—Relation of Minnesota corn yield to August 1 condition. The range of condition on August 1, with respect to yield, is much narrower than on July 1 (fig. 12) and the upward trend of yield with respect to condition is shown by the lower position of the dots for earlier years.

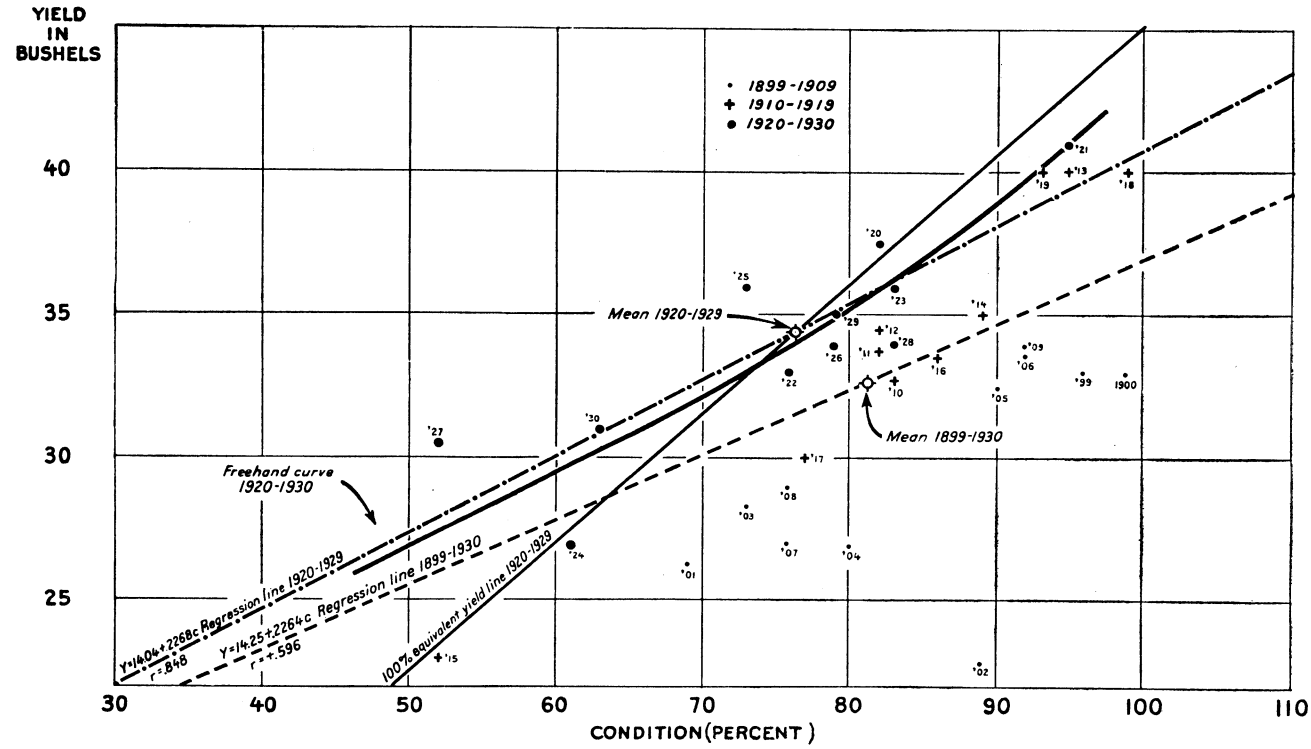

FIGURE 14.—Relation of Minnesota corn yield to September 1 condition. In Minnesota, the September 1 condition of corn is no better indicator of yield than the August 1 condition (fig. 13). In 1927 some corn was frosted in August and on September 1 it seemed probable that there would be more serious frost damage than eventually occurred.

For the actual reading of the yields indicated by any given condition each Board member draws for himself a freehand curve, which in his judgment best fits the data, and from this he judges what will be the most likely final yield. In the case of corn in Minnesota, shown on these charts, the actual relationship of condition to yield is not a straight line and cannot therefore be accurately represented by either the par or the linear regression line.

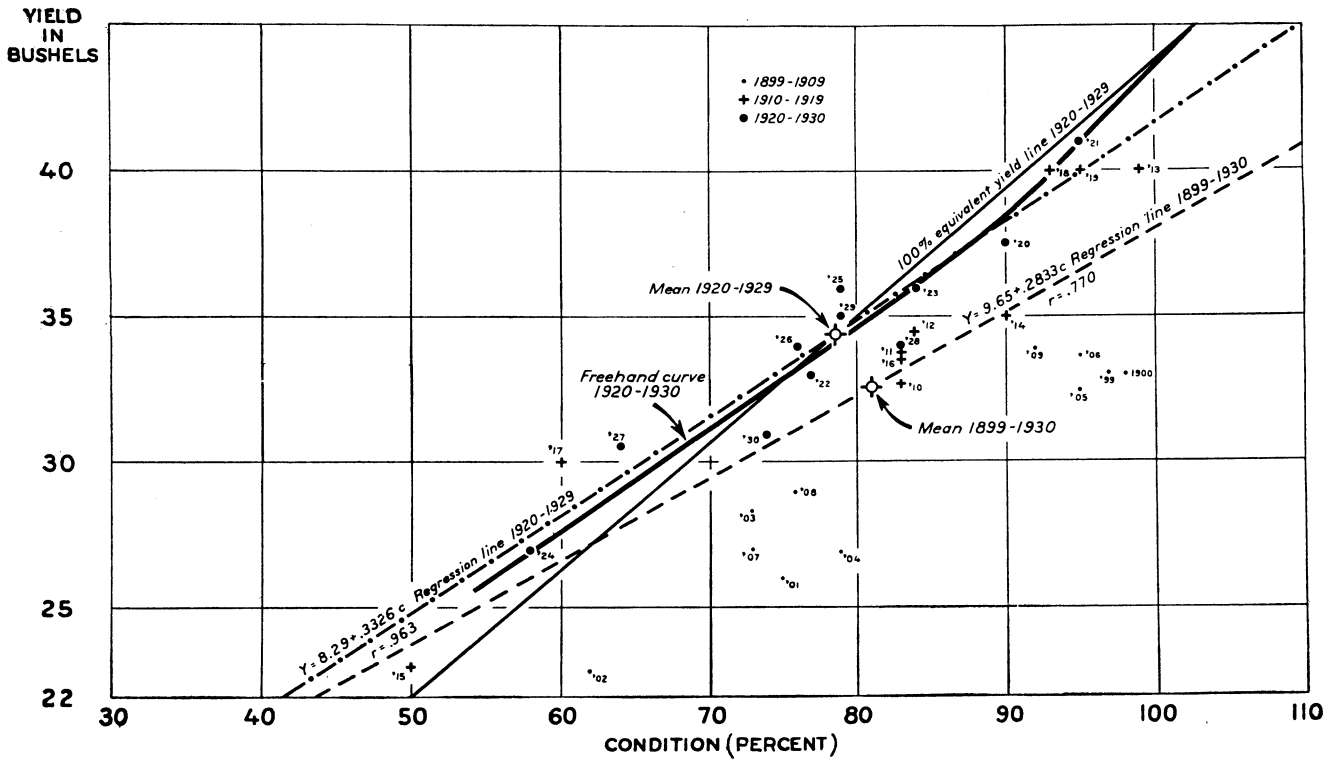

FIGURE 15.—Relation of Minnesota corn yield to October 1 condition. The curvilinear relation between Minnesota corn yield and condition is shown here and in figure 14. Note the rather close grouping of the dots for 1920 to 1930 around the freehand curve.

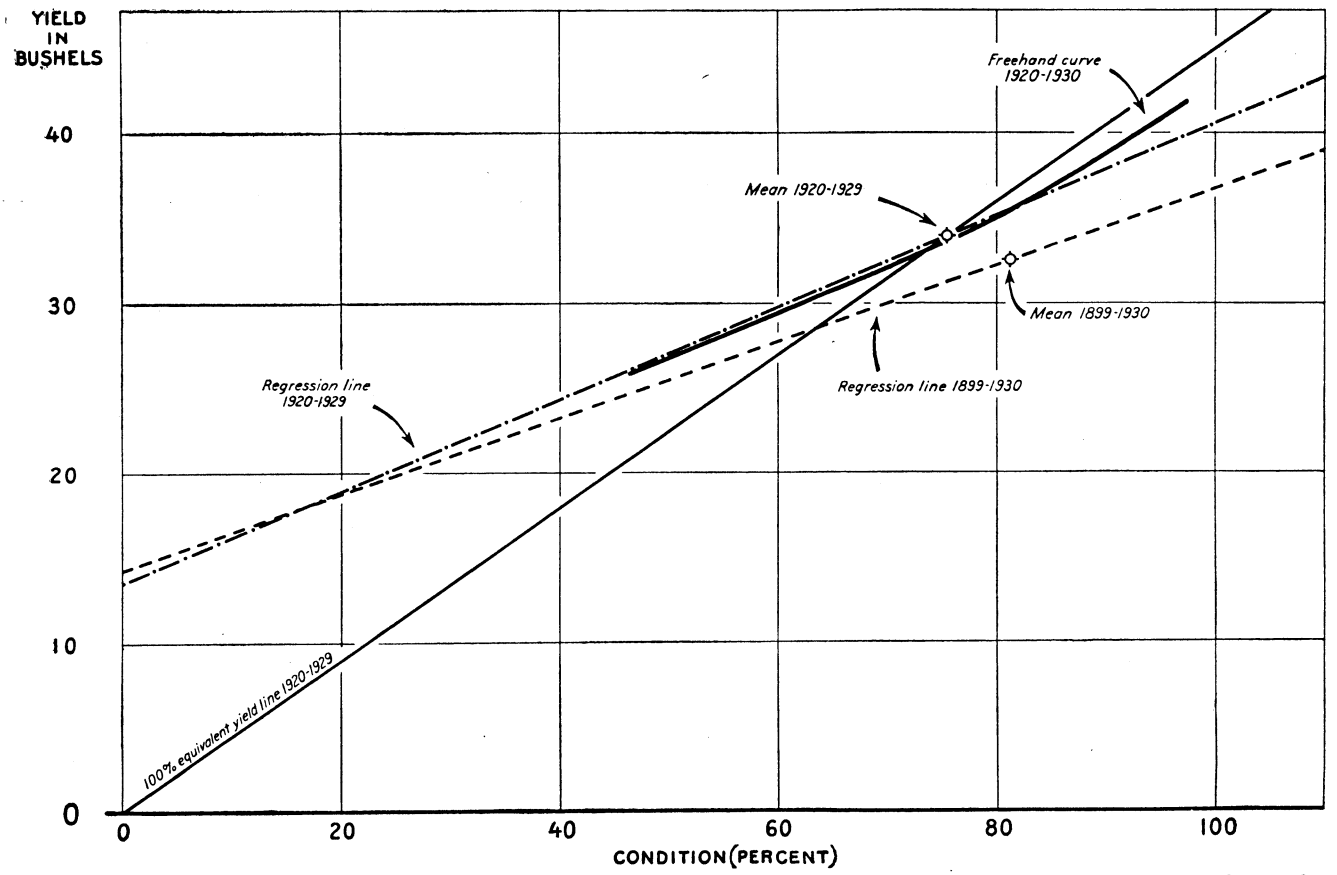

FIGURE 16.—Relation of Minnesota corn yields to September condition. This chart shows the relation as condition approaches zero. It is based on the same data as are shown in more detail in figure 14.

Figures 17–20, showing the relationship of condition and yield per acre of winter wheat in Ohio, only a par line and a freehand curve are shown; these charts are therefore similar to those used by the Crop Reporting Board. It is perhaps worth pointing out that in the case of wheat in Ohio the yield per acre associated with a relatively high reported condition was very much lower than usual in 1921 and 1922. Unusual weather was the cause—the 1921 season was unusually hot and the spring of 1922 was unusually wet.

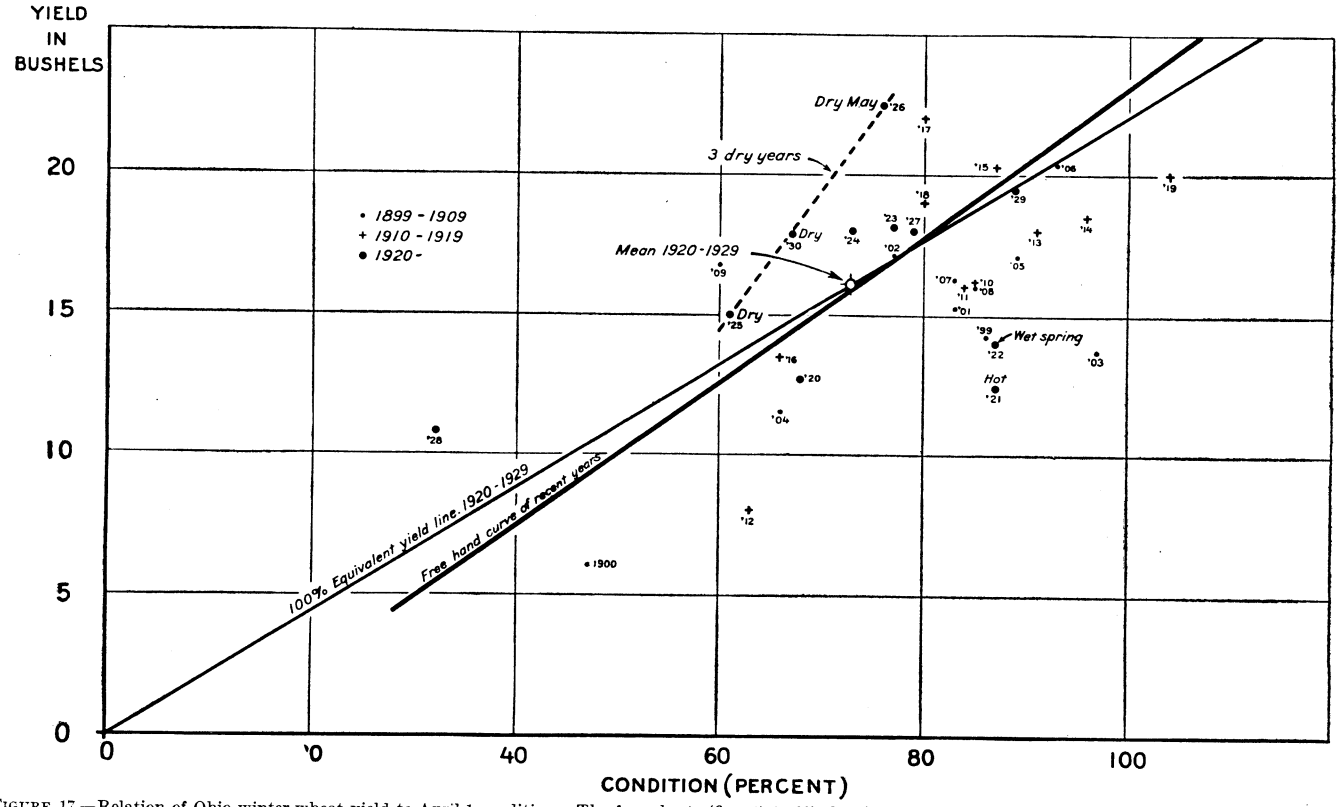

FIGURE 17.—Relation of Ohio winter-wheat yield to April 1 condition. The four charts (figs. 17 to 20) showing the relation of Ohio winter-wheat yield and condition on the first of April, May, June, and July are similar to those actually used by the Crop Reporting Board in making forecasts of yield per acre.

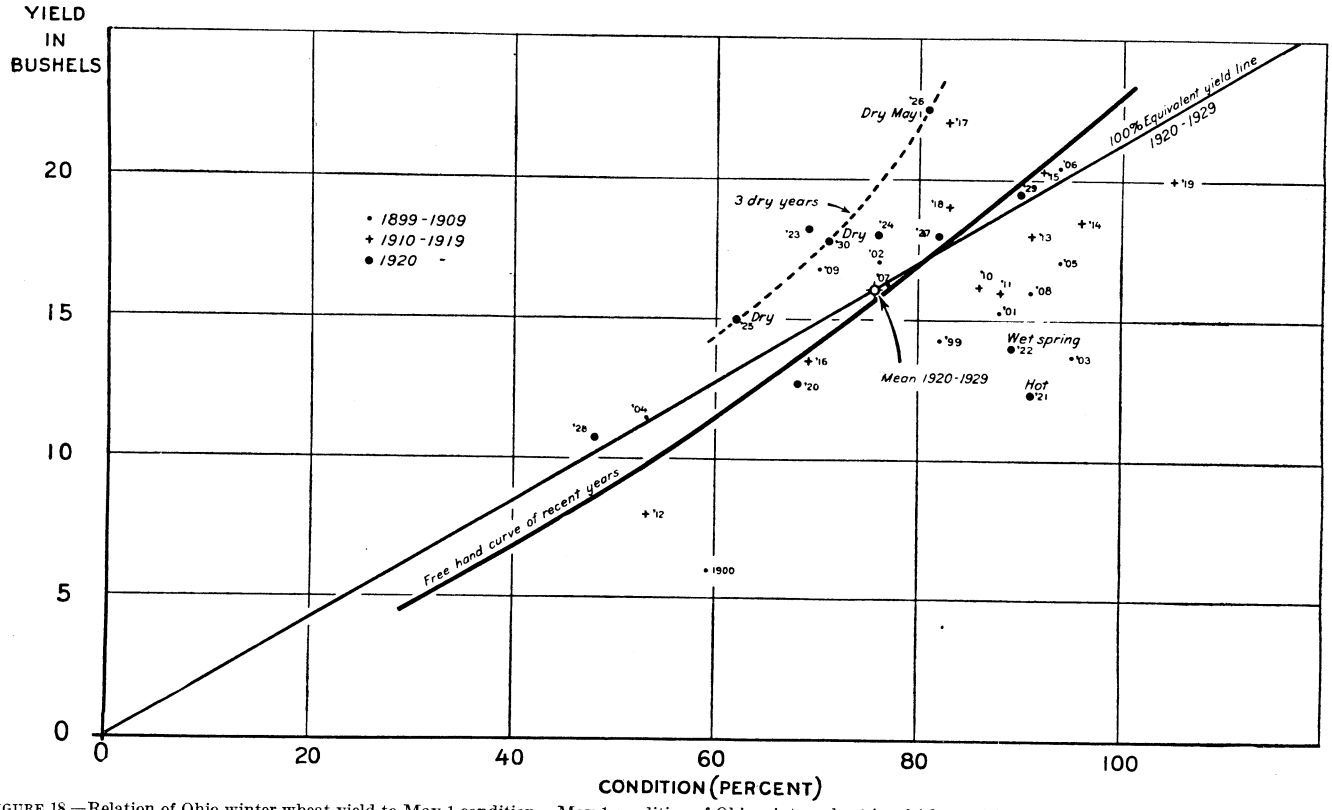

FIGURE 18.—Relation of Ohio winter-wheat yield to May 1 condition. May 1 condition of Ohio winter wheat is a fairly good indicator of yield per acre if the character of the season is not unusual.

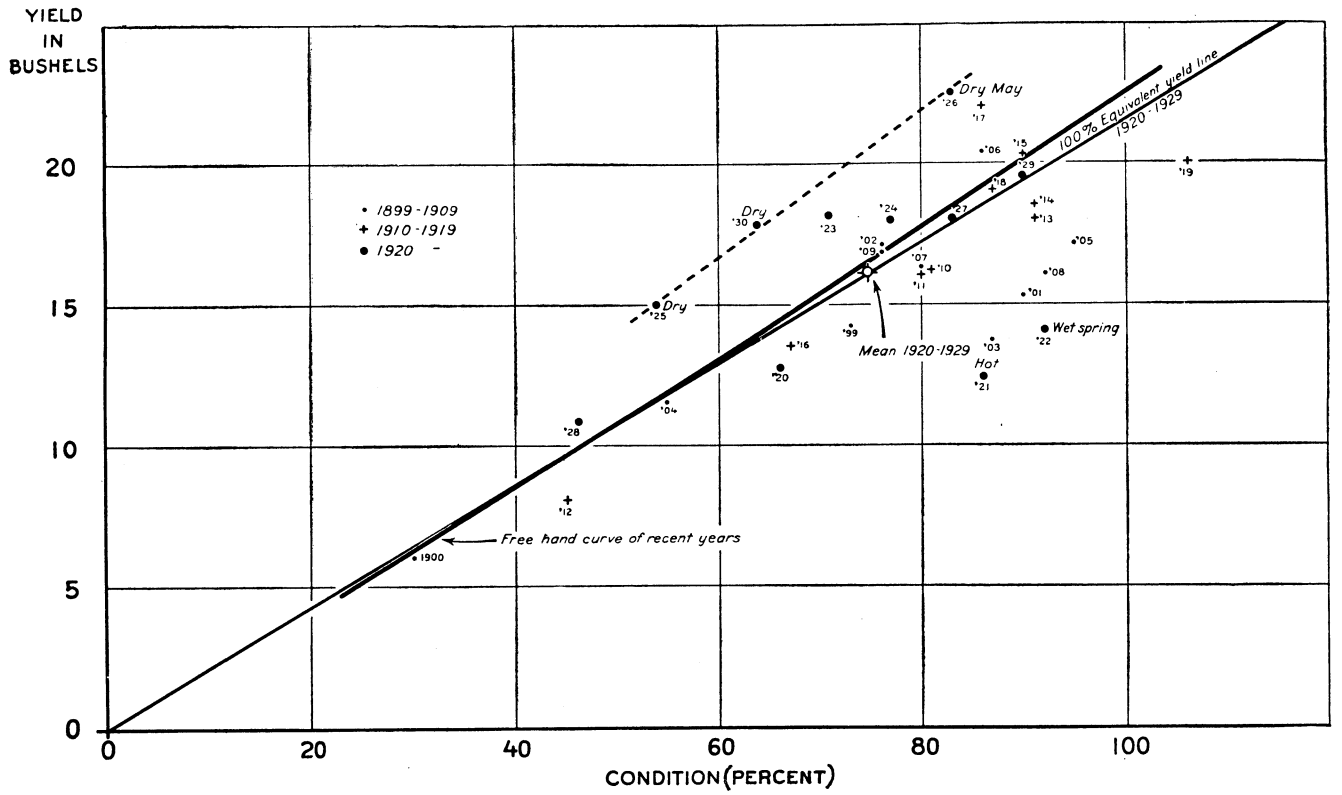

FIGURE 19.—Relation of Ohio winter-wheat yield to June 1 condition. This chart shows clearly the inability of the crop reporters to properly evaluate weather effects upon yield, prior to harvest. In the three dry years, 1925, 1926, and 1930, yields were larger than the appearance of the crop indicated and the reverse was true in 1922.

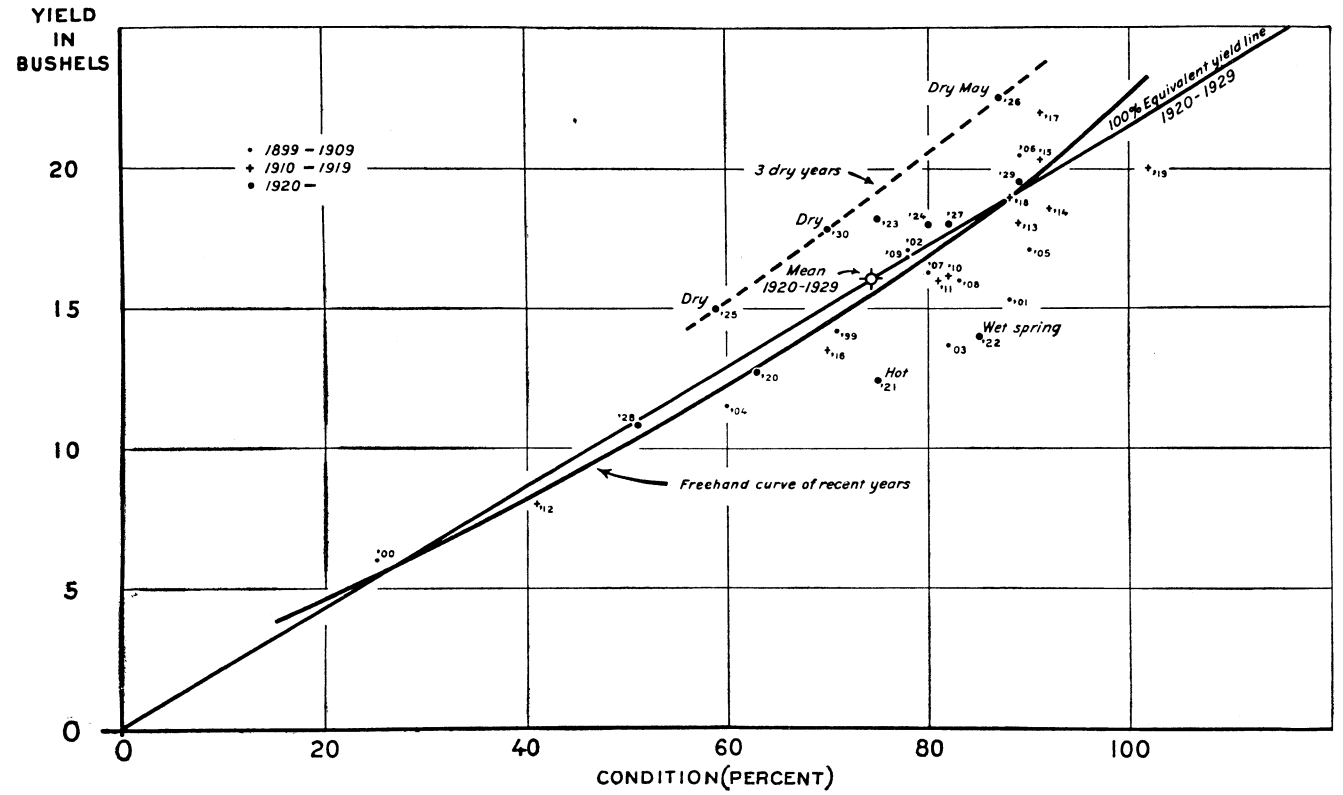

FIGURE 20.—Relation of Ohio winter-wheat yield to July 1 condition. The relation of Ohio winter-wheat yield to July 1 condition appears to be slightly curvilinear. Except in unusual years, either the 100 percent equivalent yield line or the freehand curve is fairly satisfactory for purposes of forecasting yield.

Such unusual relationships are not so frequent as might at first be supposed but it is because of such occurrences that it is necessary for the members of the Board to arrive at a judgment figure based upon experience and research.

The set of charts showing the relationship between the condition and yield per acre of potatoes in Maine (figs. 21–24) illustrates very well the difficulties that are encountered when a negative correlation exists between reported condition and yield per acre. Not only is there a very low correlation but the years of high reported condition have frequently been years of low yields per acre, and years of low condition on August 1 have been years when the yield per acre has

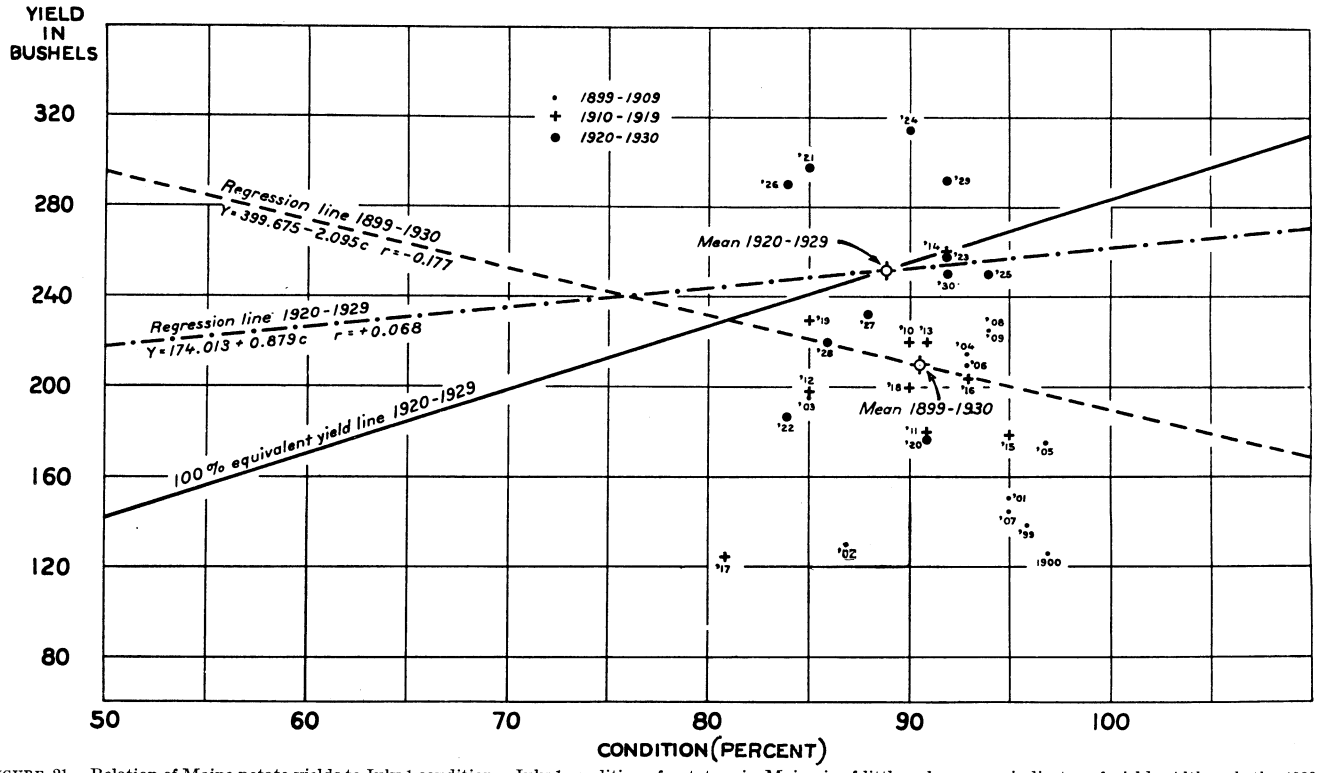

FIGURE 21.—Relation of Maine potato yields to July 1 condition. July 1 condition of potatoes in Maine is of little value as an indicator of yield. Although the 1920–29 correlation is positive, the range of yield with respect to condition is very wide.

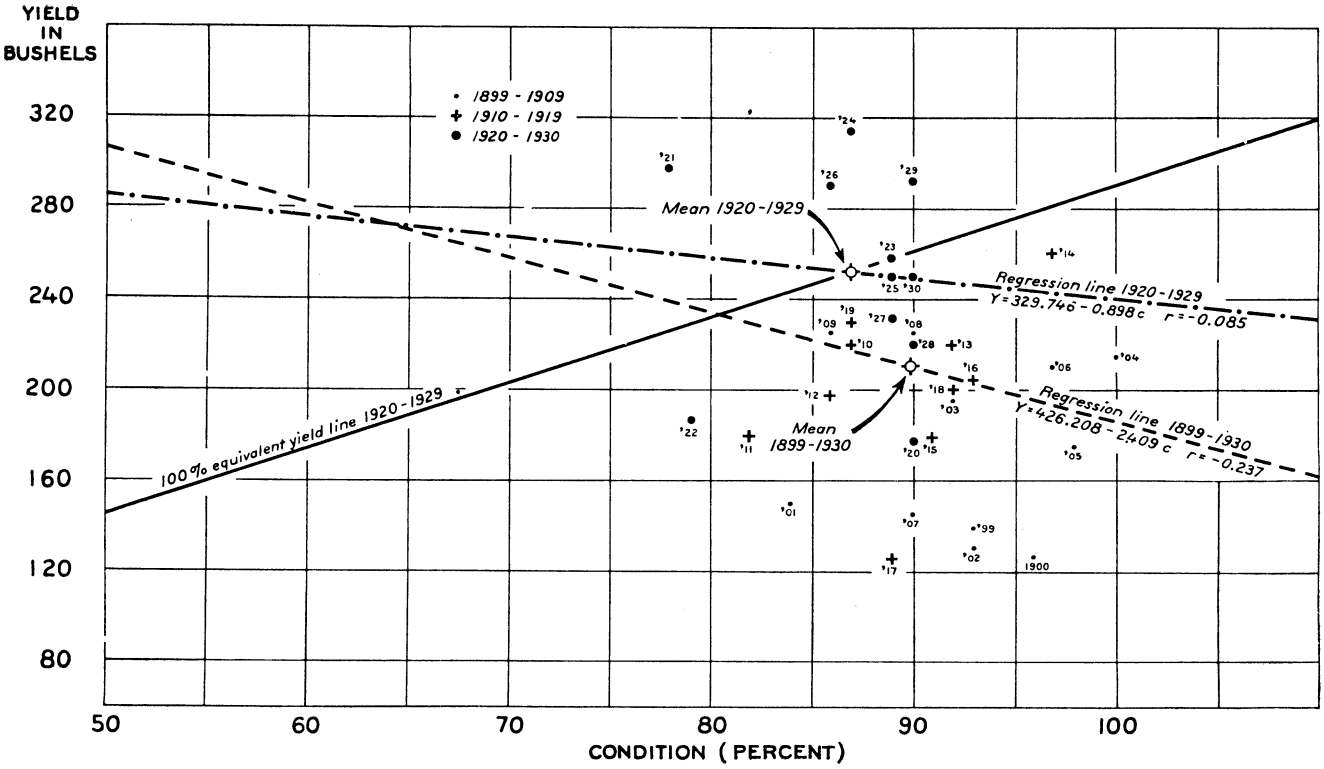

FIGURE 22.—Relation of Maine potato yields to August 1 condition The low and negative correlation of August 1 condition and yield of potatoes in Maine makes August 1 condition useless as an indicator of yield. This is unusual for a major crop in an important State.

turned out to be high. With corn in Minnesota, the par line can be used as a basis for making a forecast with the assurance that it will be a good indicator of final yield per acre except when condition is very low, but with potatoes in Maine the par line does not appear to represent at all the apparent relationship between condition and yield early in the season. The data for potatoes in Maine represent an extreme case. For other crops and other States, the relationship between condition and yield varies from a negative relationship to the high positive relationship shown for corn in Minnesota, in October.

With some crops there is apparently little relationship between the vegetative appearance and the

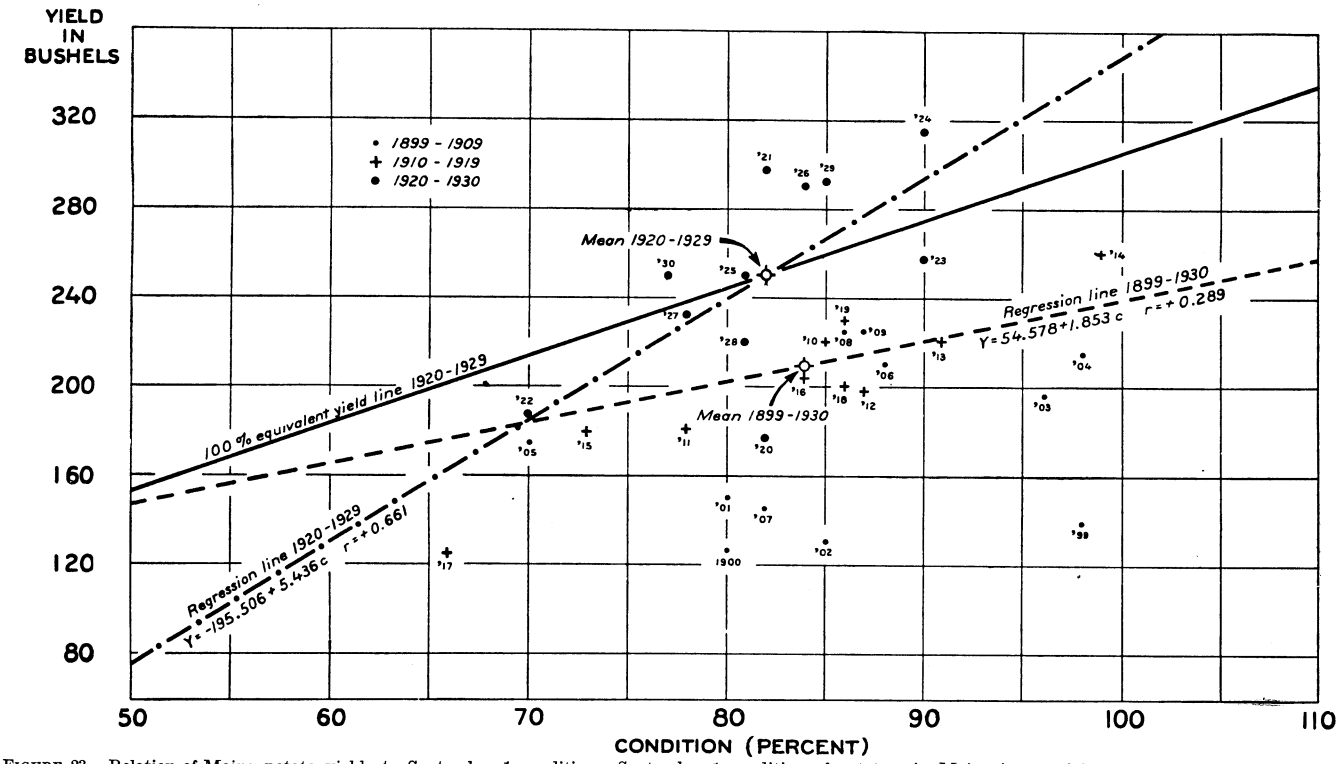

FIGURE 23.—Relation of Maine potato yields to September 1 condition. September 1 condition of potatoes in Maine is unsatisfactory for purposes of forecasting yield. The slope of the regression line is logical but the relationship is not close.

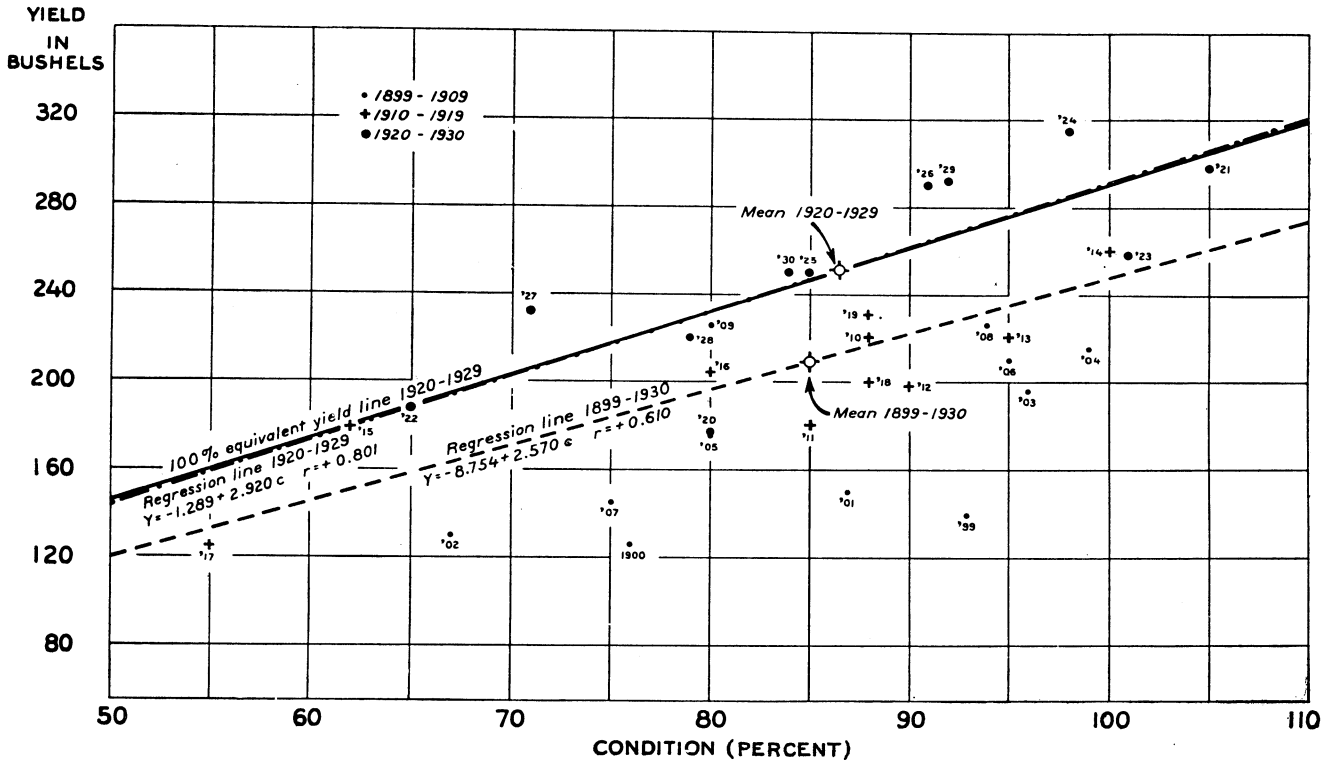

FIGURE 24.—Relation of Maine potato yields to October 1 condition. Even as late in the season as October 1, the condition of Maine potatoes is not a very good indicator of yield per acre. A condition of 100 would, for example, indicate a yield somewhere between 260 and 310 bushels per acre.

ability to produce, in a given year. In the case of those crops the production of which depends on vegetative growth, as the hay crops, it is rational to assume that there is a direct or nearly direct 1 to 1 relationship between the appearance of the crop as measured by condition and its final outturn per acre, each expressed in percentage of normal. With other crops, the par method of interpreting condition is logical only to the extent that a fundamental relationship exists in the way assumed by the par.

PREHARVEST REPORTS OF PROBABLE YIELD

Since 1926, the regular monthly questionnaires have included questions on "probable yield per acre this year" of the major crops. This question accompanies the final inquiry on condition. For example, in July this inquiry is made for winter wheat and rye, in September for spring grains, and in October for corn, potatoes, and tobacco. In preparing the forecast of yield for these crops in these months separate determinations are made by each member from condition charts and from the "probable" yield charts, and his final estimate is based on these two indications supplemented by any special studies available. In general it may be said that these reports show a high degree of correlation with final yields, though affected by the relative progress of the crop. In most instances the "probable yield" reported is slightly lower than the "average yield per acre this year" as reported in the succeeding month.

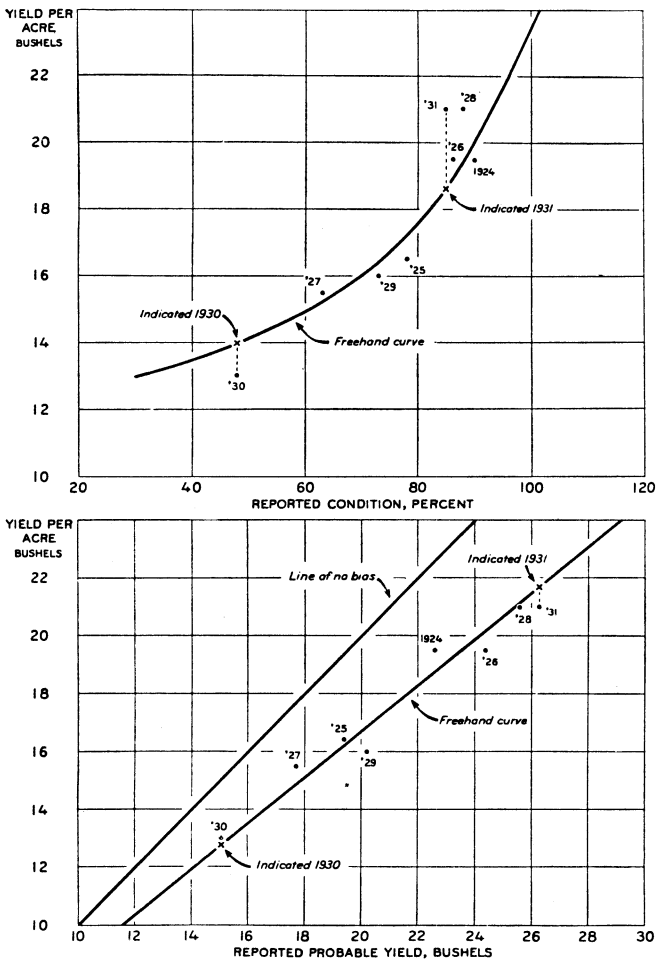

FIGURE 25.—Relation of reported condition and reported probable yield of oats in Kentucky to final yield. In unusual years, the preharvest reports of probable yield are of great value in preparing forecasts of yield per acre. In most instances, the reported probable yield confirms the indication from reported condition.

Reports on probable yield per acre have proven especially valuable in preparing forecasts of yield per acre in years in which the reports on condition fall outside the range of previous reports, or in years when the reporters' concept of a normal yield is undergoing a change. Thus figure 25 shows how these reports on oats in Kentucky provided the basis for more dependable forecasts in 1930 and 1931. The data on condition in 1930 available when the forecast was being prepared indicated a forecast yield of about 14 bushels per acre, while the reported probable yield indicated more nearly the final yield of 13 bushels. In 1931, these reports again improved the forecast, since condition indicated a forecast yield of about 19 bushels, while the reported probable yield indicated more nearly the final yield of 21 bushels.

The chart for Kentucky was valuable in these years of unusual relationship of condition and final yield. It should be stated, however, that in the vast majority of instances, the indications from the two sources are in close agreement.

OBJECTIVE FORECASTING METHODS

Studies of the relation between weather and crop yields during past years, counts of boll damage, and other objective methods, have served either to supplement or to replace the condition figure as a basis for making forecasts of yields and have increased the accuracy of forecasts of crop production materially.

The relationship of weather to crop yields has been discussed by a few interested persons, but it is difficult to find records of extensive fundamental research in this field. Much research needs to be done by the Department of Agriculture to determine (1), how early in the growing season it is feasible to make forecasts of yield per acre of a given crop; (2) to ascertain the fundamental relations between environmental factors and plant growth under various soil and climatic conditions; and (3) to discover the significant relations between weather, economic factors, etc., and crop yields per acre. This whole problem of increasing the accuracy of the Government's forecasts of production is being given careful consideration and the results already obtained suggest the possibilities of further improvement when facilities permit this phase of work to be fully developed. Present research is closely limited by the pressure for current reports

FARM VALUE, GROSS INCOME, AND CASH INCOME FROM FARM PRODUCTION

Several years ago the Division of Crop and Livestock Estimates undertook the compilation, by States, of estimates of farm value, gross income, and cash income from farm production. Estimates of gross farm value from farm production were prepared for many years in the Division on the basis of December 1 prices and only for the United States as a whole. The use of the December 1 farm price was considered faulty when prices were changing rapidly at about that time of year. Certain inherent defects in the definition of farm value as utilized in that report were also acknowledged. Then, too, it was felt that, because of the large amount of the crop production which was utilized in the further production of farm products in the form of

animal products, this series contained much duplication that might in some years obscure the actual returns to farmers from farm production. Accordingly, it was decided to prepare estimates of cash income from sales and estimates of gross income, including income from both sales and use by the farm family. As there was also a great interest in and demand for information concerning income by States, it was deemed advisable, when revising the series, to prepare the report on a State basis.

As a foundation for proper estimates of income, it was necessary to initiate a series of estimates of livestock production on a more adequate basis than had been previously attempted. For this reason the Division undertook the project of preparing estimates of production of meat animals and chickens, milk, eggs, etc. Adequate data for the preparation of such estimates were available back to 1924. For meat animals such estimates involved the preparation of balance sheets of livestock to determine the net poundage of meat animals on the hoof which were produced in a given year. It was also necessary to prepare estimates on the size of herds and flocks and the production of milk per herd and per animal and of eggs per hen and per flock. Such a series of estimates covering the years 1924 to 1928 was completed during the year 1929. (For more detailed descriptions of these estimates see pages 58 and 59, inclusive.)

Estimates of the proportion of agricultural production that was sold or used in the farm household in each State were prepared in various ways. In the case of meat animals, data were available covering receipts of livestock at principal markets by State of origin and some supplementary information with respect to car loadings by States was at hand. A great deal of material was available concerning car-lot shipments of fruits and vegetables and of some of the important staple crops, like grain and hay. Numerous check data were available from cooperative associations that handled large percentages of the total production of certain minor crops. To supplement all these data, questionnaires were sent to individual farmers, beginning in 1925, upon the utilization of staple commodities for seed, for feeding to livestock, for consumption by farm families, etc. An analysis and interpretation of all these data was necessary to the formation of estimates of utilization.

The questionnaires sent to farmers generally asked for quantities produced, brought in, and purchased as component parts of the supply; and for quantities sold, used for seed, fed to livestock, used in the home, and carried over, as component parts of the disposition. The resultant totals were tabulated in various ways to obtain disposition items as percentages of production, as disposition per farm, per acre planted, etc. As a result of much research devoted to these data and covering a period of years, the various items are now estimated on the most closely related base factor. For example, home consumption is determined as consumption per farm growing the commodity; seed, as quantity per acre planted; feed, as percentage of production, etc. A detailed itemization of the various determinations is contained in a preliminary report on farm income issued in 1930.[5]

To obtain properly weighted average prices, it was necessary to ascertain the rate of marketings of the many commodities. A series of reports on monthly marketings by farmers was available for the staple crops. Market receipts in the nearby markets were used for some commodities; for others, car-lot shipments by months were used, or railroad loadings by months, or market receipts by months, or by State of origin.

The weighted average price received by producers for farm commodities was used in evaluating not only that proportion of the commodity sold but also that portion consumed by the farm family. The estimates of quantity utilization, of farm price, of value of gross income, and of cash income from farm production, were published for the first time in September 1929 for the years 1924 to 1928, inclusive. These data have been assembled in various convenient forms for the use of the public and have met with great public approval.

REPORTS ON FIELD CROPS

REVISIONS TO CENSUS BASE

The important field crops—corn, wheat, oats, barley, rye, buckwheat, potatoes, hay, and tobacco—were regularly reported upon from the initiation of official reports on crops in 1863. For many years, condition on the 1st of each month during the growing season was published as well as an annual estimate of production. These annual estimates were not revised on the basis of subsequent information, even when census data became available at the end of a 10-year period. In the next succeeding report following the publication of census figures a shift to a new base was made. As a result, the early records for these crops appear in 9-year, 10-year, or 11-year segments, beginning in the year ending in 1 or 2. In 1910, annual revisions of the previous year's current estimates were begun as a means of truing up the estimates. In 1915 a revision tying the estimates for the two decades 1889 to 1909 to the three census reports of 1889, 1899, and 1909 was made and published for the United States only. During the last 8 years, a comprehensive survey of all data from 1866 to 1919 has been made, and a revised series by States is now being prepared for publication.

ADDITIONAL CROPS COVERED

Not all of the field crops were covered in the earlier crop reports. This was mostly because there was no adequate base in the census figures for acreage and production. The first reports on flaxseed were made in 1902 and estimates of the rice crop were begun in 1904. In 1890 the Bureau of the Census first secured separate figures for spring wheat but it was not until 1929 that the census segregated durum from other spring wheat. However, spring-wheat estimates were divided, on the basis of sample data, between durum and other spring wheat as early as 1916. The first attempts to estimate grain sorghums and other minor field crops were begun about that time. With the increased use of and demand for statistical information on agricultural commodities, additional crops have been taken up from time to time in recent years.

So that the supply of grain corn can be estimated, for the last few years estimates of corn production have

[5] UNITED STATES DEPARTMENT OF AGRICULTURE, BUREAU OF AGRICULTURAL ECONOMICS. FARM VALUE, GROSS INCOME, AND CASH INCOME FROM FARM PRODUCTION, PART I, ESTIMATES BY COMMODITIES AND BY STATES, TOGETHER WITH PRODUCTION, DISPOSITION, AND PRICE DATA USED 1924–28. Secs. 1–2, 190 pp. 1930. [Mimeographed.]

been divided into (1) corn for grain, (2) corn for silage, and (3) corn for "hogging."

Grain sorghum for grain, as distinguished from that for "all purposes" is now estimated separately. The production of oats and other small grains includes that harvested ripe or nearly ripe for feeding without threshing, but excludes small grains cut green for hay. That part of these crops appears in the grain-hay figures.

DATA FOR TYPES OR VARIETIES

The methods employed in estimating and forecasting the staple crops are those described in pages 22 to 32. There are, however, certain variations such as found in the use of check data for certain crops. For instance sales of tobacco are used as an indication of production which may, through yields per acre, be tied back to acreage. In the case of this crop it has been found necessary to make estimates on the basis of the principal classifications and types rather than upon the basis of the entire crop in any given State.

Reports from growers concerning tobacco are segregated by counties or areas according to the predominating type and the types are handled as separate crops. The totals for all types in each State are added to obtain State figures for acreage and production, and weighted average yields and condition are derived from the State totals. This is a very distinct advantage when checking production estimates against sales.

In the case of rice in Louisiana, acreage and yields are reported both for the crop as a whole and by varieties. It has been found that when drought or storms injure late rice it is necessary to give due allowance to the effect of these factors upon the yield of the different varieties.

FARM STOCKS OF GRAIN

For some of the field crops, stocks on farms are important economic factors. Consequently, March 1 estimates have been made of the stocks of corn and wheat on farms since 1883, of March 1 farm stocks of oats since 1897, and March 1 farm stocks of barley since 1910. For more than 20 years estimates of farm stocks of corn, wheat, oats, barley, and hay have been made at the end of the season; that is, at or just before harvest of the next crop. For several years information has also been obtained four times a year concerning the stocks of grain on individual farms as a basis for estimating quarterly stocks of grain on farms. This information is for the same date as that to which the commercial wheat stocks reports of other agencies refer so that the total stocks of wheat in all positions may be determined four times a year.

Stocks of corn on farms were formerly estimated as a percentage of the total corn crop, but since estimates of corn for grain are now available, the corn stocks on farms are now based upon the corn harvested for grain and not as formerly upon the entire crop.

COTTON REPORTS

The preparation of cotton-production forecasts is one of the most important functions of the Crop Reporting Board. The crop is handled as a separate project. Separate lists of cotton correspondents are maintained, special cotton schedules (see figs. 41 to 46, inclusive, pp. 75 to 80) are used, the estimates are prepared by a special board convened to consider cotton only, and the finished reports are published separately and independently as provided by law. Because of the special nature of the project and the general interest in the crop, this discussion of methods used in the preparation of cotton forecasts is presented in addition to the discussion of crop-reporting methods in general.

At present the cotton-crop reports issued by the Crop Reporting Board consist of an estimate of acreage in cultivation on July 1, estimated acreage remaining for harvest September 1, forecasts of probable yield per acre and production (ginnings) as of the first of each month from August to November; and estimates of probable final ginnings, harvested acreage, and yield per acre as of December 1. The December estimates are revised in May of the following year to conform with the final census report of ginnings.

The preparation of this series of reports includes the solution of the two major problems of determining the acreage in cotton and of forecasting the probable yield per acre. The method of estimating acreage is essentially the same as that presented in the general discussion (pp. 15 to 21). In estimating cotton acreage, however, there is an advantage in having the annual enumeration of the number of bales ginned, made by the Bureau of the Census, as an indirect check upon the cotton acreage each year.

FORECASTING YIELD FROM CONDITION ONLY

The crop correspondents are asked on the first of each month from August to November to report their judgment of the condition of cotton in percent of a normal condition for that date. In the interpretation and use of these "condition figures" the policy and practice of the Board has undergone considerable development since such statements were first made. Prior to 1915 no forecasts or statements of indicated production of any kind were published by the Department. The condition of crops was published substantially as reported, with such helpful items for comparisons as the 10-year average condition and the condition in each of a number of prior years.

In 1915 the Board began to interpret condition in terms of indicated yield per acre and indicated production. In this interpretation at first only condition in preceding years and final yield per acre in the same years were considered. No attempt was made to evaluate the bearing of supplementary or modifying factors upon the relationship. The indicated yield per acre as published had as its basis the assumption that all known factors were considered in condition figures, and that their subsequent influences upon the crop would be average.

Soon after the inauguration of these statements of yield and production as indicated by condition, the bollweevil spread rapidly over the remainder of the previously uninfested portion of the Cotton Belt proper and at once became an important factor in the relationship of condition and final yield per acre. With the methods used at that time, a given condition on August 1 in each of 2 years would indicate substantially the same probable yield, but if weevil damage were heavy in 1 year the final yield would be materially below the indicated yield. On the other hand, if weevil damage were light in the other year, the final yield would be considerably above the indicated yield.

Apparently the early-condition figures reported by farmers reflect primarily the appearance of the crop, the stand, foliage, fruiting, etc., but do not include

sufficient allowance for early weevil infestation or for variations in infestation from month to month and from year to year. Furthermore, the Board, using the par method of interpretation, was faced with the task of interpreting condition in terms of probable yield per acre in years of heavy weevil damage on the basis of averages and relationships established during years of negligible weevil damage, and interpreting condition into yield per acre in years of light damage on the basis of averages established over a series of years in which there were years of heavy damage. Such a situation led to statements of indicated production early in the crop season which were likely to be misleading. Because of this situation, the Board has found it necessary to devise methods of anticipating and discounting weevil damage as a modifying factor upon the relationship between condition and yield.

YIELD INDICATED BY CONDITION AND BOLLWEEVIL INDEX

Although other factors influence the relationship between condition on a given date and final yield, studies indicate that the major portion of variation of final yields from yields indicated by condition as of a given date is due to variation in bollweevil damage and the Board's greatest departures during the past 5 years from the basic assumption of average influence of all factors upon the crop after the dates to which the reports relate were based upon studies of probable weevil damage. This, of course, involves the determination of approximate probable weevil damage to the cotton crop each year.

The Department has made inquiry of its crop correspondents in February each year since 1909 of their judgment of the yield per acre in percentage of normal and the reduction from a normal or full yield due to stated causes, including bollweevil. The variation in amount of weevil damage from year to year has exceeded that of any other single factor. This series of reported percentages of "reduction from full yield due to bollweevil" is used as a general index of weevil damage in connection with studies of the relationship between reported condition figures and final yields per acre. This series may or may not be an absolute measure of the extent of bollweevil damage in any year. No amount of research would prove or disprove such an elusive quantity as the loss of potential cotton from this cause. The fact that the index figures explain a large part of the failure of reported condition to reflect probable yields in unusual years, indicates, however, that the index is a satisfactory measure of the relative year-to-year loss from bollweevil.

The reported percentage reductions from full yield per acre due to bollweevil damage for the United States are shown in table 3.

TABLE 3.—*Reported percentage reductions from full yield of cotton per acre due to bollweevil damage in the United States*

Year	Percent	Year	Percent	Year	Percent
1915	10.2	1921	31.2	1927	18.5
1916	14.2	1922	23.3	1928	14.1
1917	8.6	1923	19.2	1929	13.3
1918	15.4	1924	8.1	1930	5.0
1919	13.0	1925	4.1	1931	8.3
1920	19.7	1926	7.1	1932	15.2

For several years special inquiries have been made of crop correspondents during the growing season concerning the relative number of weevils present, percentage of full infestation, and the percentage of squares punctured. Studies have also been made of the relationship of weather to weevil damage. This material and other evidence of this nature have been used by the Board in estimating, in August and September, the probability of relatively light or heavy damage from bollweevils during the current season.

Flexible pars were first resorted to in an effort to allow for weevil damage. However, an understanding of the Board's present policy and practice in the interpretation of reported condition and estimated damage by weevils in terms of probable yield per acre does not involve an understanding of the par system, as cotton pars have not been used by the Crop Reporting Board for forecasting probable yield of cotton since 1929.

The problem is one of multiple correlation in which condition on a specific date and estimated percentage

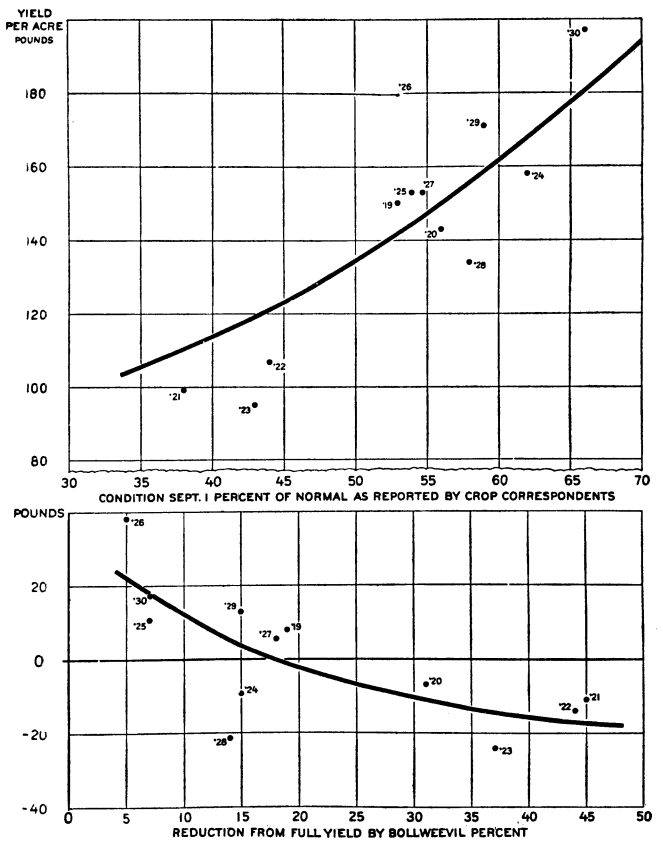

FIGURE 26.—Georgia cotton yield per acre related to reported condition and weevil damage. Deviations (residuals) of actual yields from yields indicated by reported condition are related to percentage weevil damage to obtain a measure of the additional allowance to be made in yield for such damage not included in condition.

reduction in yield by bollweevils are the known factors used as a basis for forecasting probable yield per acre in the current year on the basis of the relationship between the three factors in previous years. The graphic curvilinear method of solution is used by the statisticians of the Board. The condition figures are plotted against final yields in the form of a dot chart with a curve drawn through the observations. When probable bollweevil damage is being considered as a third factor this first curve is placed so as to express the approximate relationship between condition and final yields with the third factor held constant. The deviations of the individual years from the first curve are then plotted against weevil damage to obtain a measure of the allowance to be made for weevil damage. A typical study of this relationship is shown in figure 26.

OTHER INDICATIONS OF PRODUCTION

Beginning with October 1, the Board secures estimates of the probable yield per acre from its correspondents. It now has a record of these reports covering a number of years, together with estimates made in subsequent months for the same years. These early estimates of average yield per acre are usually much below the yields reported later, but after an allowance is made for bias they form another important basis for estimating the crop on October 1, November 1, and December 1. The extent to which the reporters' early yield-per-acre estimates are biased is largely dependent upon the relative advancement of picking and ginning at the time the reports are submitted. The tendency is for the crop correspondents to be more conservative in estimating yield per acre when only a small percentage of the crop has been ginned than when a large proportion of it has been ginned.

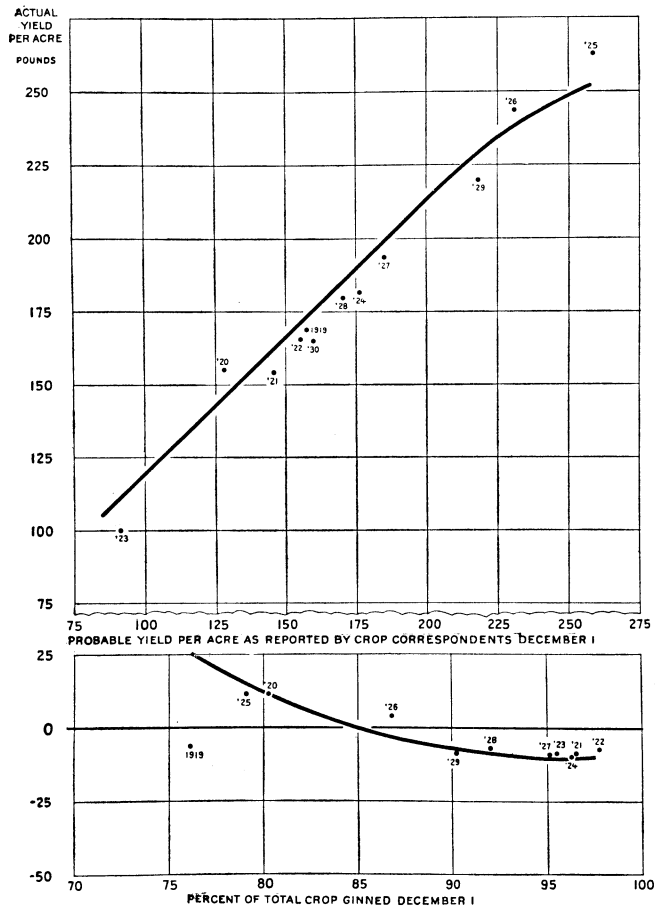

FIGURE 27.—Mississippi cotton yield per acre related to probable yield reported December 1 and percent ginned to December 1. The influence of the percentage of the crop already ginned upon reports of probable yield is measured by relating percent ginned to deviations (residuals) of actual yield from yield indicated by reported probable yield.

This tendency has been so marked in the past that the statisticians of the Crop Reporting Board have been using the percentage of the crop ginned to the date of the report as a measure of the extent to which they should depart from the usual allowance for bias in the reporters' estimates. The method of using the reported probable yield figures and percentage ginned as an indication of final yield is illustrated in figure 27.

One of the most important single indications of production after October 1 is based upon estimates of the percentage of the crop ginned to certain dates. For a number of years the regular crop correspondents and ginners have been asked to report their judgment on the percentage of the crop ginned to certain dates.

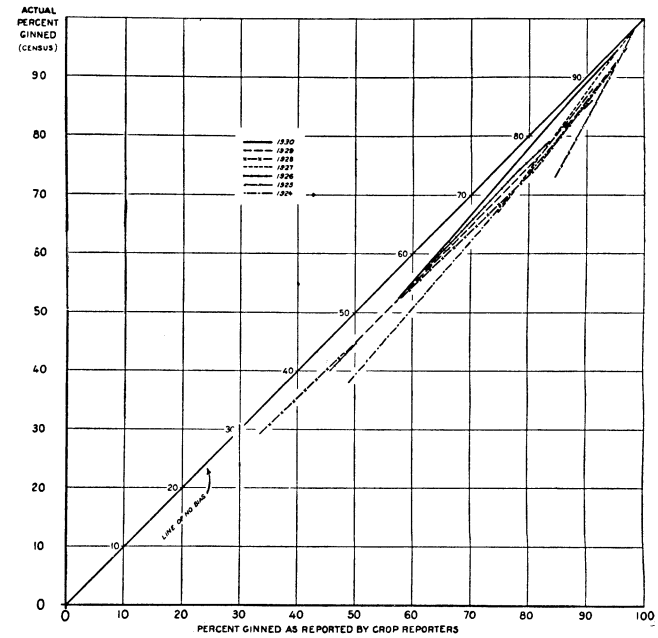

FIGURE 28.—Georgia cotton percentage actually ginned related to percentage reported ginned. This chart provides a measure of bias in reported percentage of the crop ginned and thereby permits the Crop Reporting Board to estimate very closely the percentage actually ginned.

These reported percentages, when correlated with the actual percentages ginned as shown by the census reports, make it possible for the Board to estimate very closely the percentage ginned to a given date. The relation of reported to actual percentage ginned in Georgia is shown in figure 28. These estimates by the

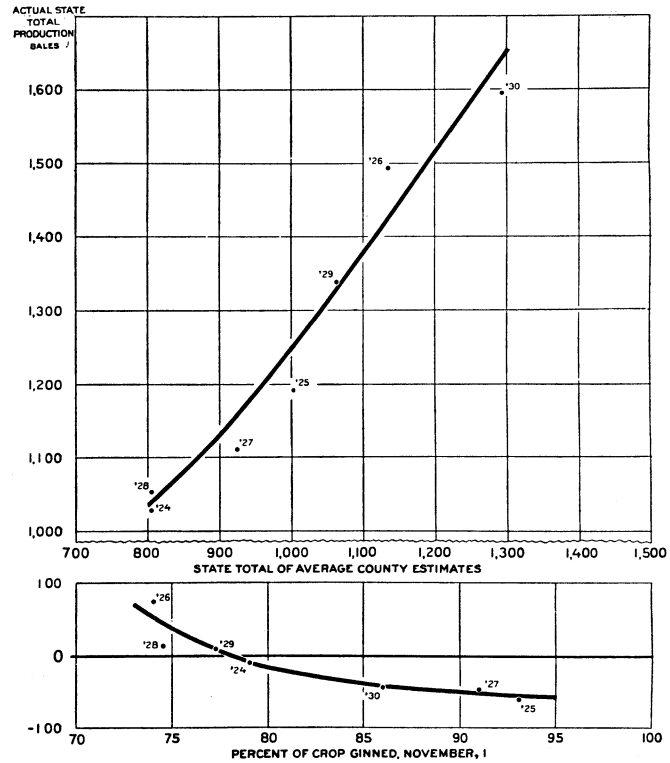

FIGURE 29.—Georgia cotton production related to reporters' estimates of county ginnings and percentage ginned to November 1. Reporters' estimates of county ginnings are a valuable indication of total ginnings if proper allowance is made for bias associated with the percentage of the crop already ginned.

Board of the percentage of the crop ginned are applied to ginnings to date for an indication of final ginnings for the season. For a number of years this has been a dependable indication of the size of the crop. It has the added advantage of being an entirely independent indication from those involving the use of acreage, condition, and yield per acre.

Estimates are also obtained from key reporters in practically all counties as to the number of bales they estimate their county will make. In a number of States these bale estimates have been surprisingly accurate after allowance is made for bias (fig. 29).

The Crop Reporting Board has been developing certain phenological data in recent years which are already indicating that they have considerable value. For several years objective counts and observations have been made on certain dates of the number of safe bolls per unit of row. These data, when considered in connection with the number of immature bolls, the size of bolls, rate of squaring and blooming, relative abundance of weevils, relative advancement of the crop, etc., give promise of developing into valuable indications of per-acre yields.

From the foregoing discussion it will be seen that for the later months in the season the Board prepares an independent forecast of production for each State, based on each of the following indications:

(1) Condition and reported yield per acre are interpreted into yield and multiplied by acres for harvest.

(2) Percentage ginned, as interpreted from reports on percentage picked and ginned is divided into current ginnings, and adjusted for estimated weight of running bales.

(3) County estimates of probable ginnings are interpreted, and adjusted for probable bale weights.

(4) In some States supplemental indications of production are derived from special studies of production on the reporters' individual farms, and the rate and progress of ginning.

In addition to these various forecasts of production, the Board gives consideration to the recommendations of the statisticians in the respective States, as well as to the observations of the various members of the Board taken while making personal examinations of the cotton in the fields, and to any other pertinent information that may be available.

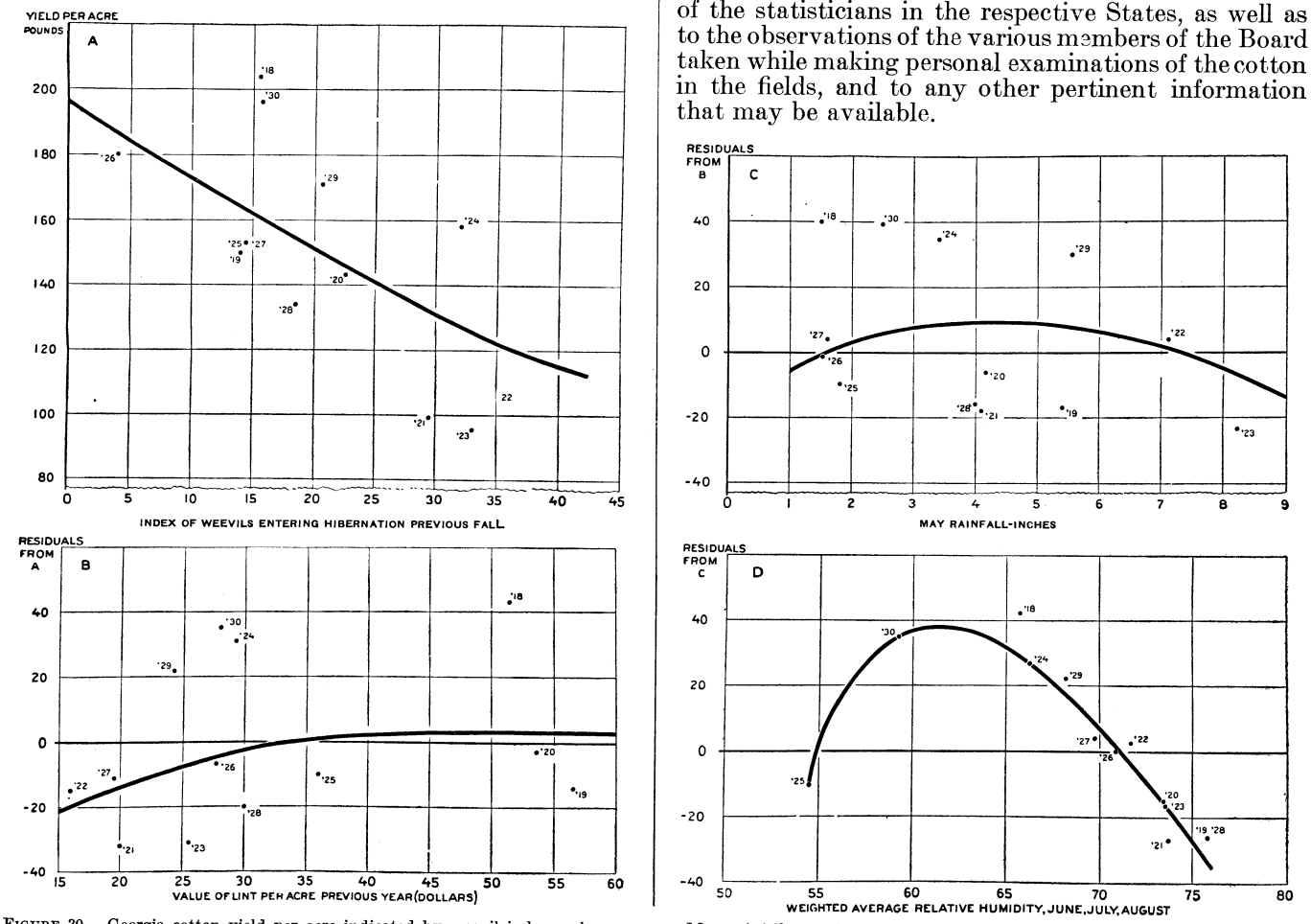

FIGURE 30.—Georgia cotton yield per acre indicated by weevil index, value per acre, May rainfall, and June-July-August average relative humidity. The graphic method is used for solution of this problem in multiple correlation. Considerable care must be taken to fit logical curves to the data shown by the dots. A, yield related to weevil index; B, residuals from A related to value per acre; C, residuals from B related to May rainfall; D, residuals from C related to relative humidity.

The estimates from the sources indicated above are placed side by side for study and analysis by the Crop Reporting Board. The relative accuracy of the different indications in previous years is studied and, after considerable deliberation, a production estimate in bales is adopted for each State.

During the winter of 1930–31 considerable progress was made in determining and measuring relationships of various weather factors to the yield per acre of cotton. Although the results are promising, indications from this source will not be used by the Board until they have been thoroughly tested for dependability in actual forecasting.

In the South Atlantic and Gulf States the studies indicate that the major variations in yield per acre from year to year may possibly be accounted for by some combination of the following factors:

(1) The relative number of weevils entering hibernation as indicated by the estimated reduction in yield per acre by bollweevil the previous year, modified upward or downward according to moisture conditions in the fall of that year.

(2) The value of lint per acre of the previous year's crop is useful as an index of the quantity of fertilizer used per acre in a number of States.

(3) April and (or) May average temperature at selected stations.

(4) April and (or) May rainfall at selected stations give an index of weather influences during those months

(5) Average relative humidity during the summer months provides an index of the combined effect of rainfall and temperature.

(6) In Texas and Oklahoma total rainfall in the fall and winter months preceding the cotton season has been found to be an important factor.

The use of these factors in explaining variations in yield per acre is a problem in multiple correlation. Figure 30 illustrates the use of several of the factors in a study of Georgia yields by the method of "successive elimination".[6] The four factors were used in the order of their chronological occurrence. In using this method it is necessary to draw the curves so that they represent logical relations. The curve or line of fit for each factor indicates the approximate influence of that factor upon yield. The studies are experimental and considerable work remains to be done in this direction.

ACCURACY OF FORECASTS

The improved methods of interpreting the reported condition in terms of prospective yield, the increased accuracy of ascertaining acreage, and the greater use of ginnings to date (reported by the Bureau of the Census) as a separate indication of prospective production, all have contributed materially to the increased accuracy of the cotton forecasts and estimates during the last few years (fig. 31). This is particularly true since 1927, in which year the Board first began to make separate allowance for prospective weevil damage.

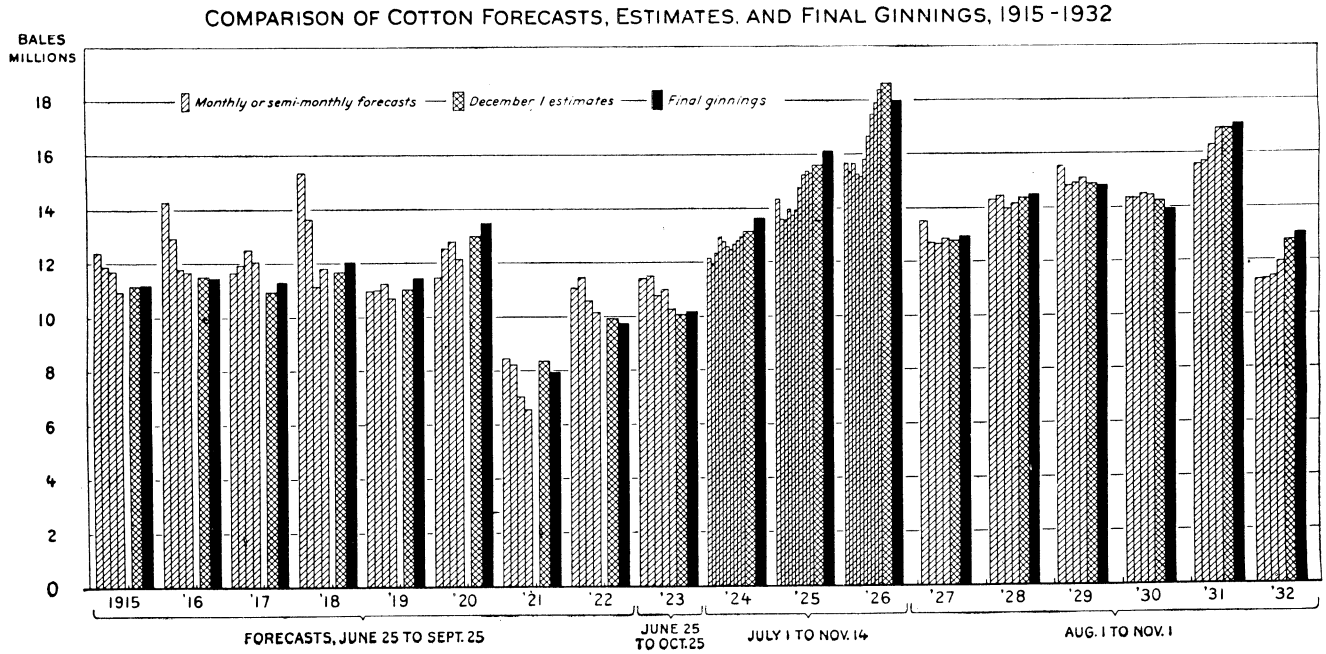

FIGURE 31.—Comparison of cotton forecasts, estimates, and final ginnings, 1915–32. The cotton forecasts and estimates of the Crop Reporting Board are based on reports from thousands of cotton growers, ginners, and others as well as personal investigation by experienced agricultural statisticians throughout the Cotton Belt.

FRUIT REPORTS

DEVELOPMENT OF FRUIT REPORTS

Quantitative estimates and forecasts of fruit production are comparatively recent innovations. Condition and percentage-production reports for the four principal fruits—apples, peaches, pears, and grapes—were first obtained from crop reporters for all States in 1866, for the months from June to November and the series is continuous since then for some of the more important fruit crops. It was not until 48 years later, in 1914, that these condition and percentage-production figures were interpreted into quantitative-production estimates. At that time, the general policy of interpreting crop condition in terms of production was a comparatively new venture in the field of crop estimates and it was essential that several census enumerations be included in the period covered by the condition data before the more or less abstract percentage figures for the fruit crops could be properly interpreted. By 1914, also, the possibilities opened up by refrigerator-express movement had become more pronounced and the keen competition developed between the various fruit areas created a greater demand from growers and trade organizations for more information as to probable supplies. The European war created a further urgent demand for information concerning food supplies.

With a 48-year background of condition reports and percentage-production figures, the first forecast of apple production was made in August 1914 and the

[6] Bean, L. H. Application of simplified methods of correlation to problems in acreage and yield variations. Jour. Amer. Statis. Association, v. 25: pp. 428–439, illus. 1930.

first estimate of production was made in December of that year. In 1915, production of peaches and pears was estimated and since that time similar estimates have been undertaken for other fruits, as their importance has increased and as the crop-reporting service could be expanded to do the work. By 1916, a fruit specialist was employed whose full time was devoted to working up the historic data and establishing a basis for the forecasts.

SOME INHERENT DIFFICULTIES

Estimating the production of tree fruits presents a somewhat different problem than in the case of field crops. With field crops probably the most difficult figure to obtain is the change in acreage from one year to another. After the acreage of field crops is once ascertained, the yield per acre can be estimated within relatively narrow limits owing to the fact that in a homogeneous area the yields of a given crop tend to run fairly uniform or at least they present somewhere near a normal distribution. Changes in bearing acreage of tree fruits are usually more gradual than in field crops. It takes 3 or 4 years to bring a peach or sour-cherry tree into bearing; consequently with an agricultural census every 5 years the changes in bearing surface can be approximated fairly closely by making 1 or 2 sample surveys during the intervening years.

Although this would seem to simplify the problem, the very fact that trees are long-lived and gradually increase their bearing capacity to an optimum point and then gradually decrease it, complicates tremendously the problem of obtaining a yield figure. To illustrate, assume a single commercial orchard of 10,000 peach trees. Usually in such a planting are trees varying in age from 1 year to old trees past the peak of production that are being left for a year or two before being pulled out. Complicating the problem further are some solid blocks of trees and some where, owing to winter injury or other causes, a large number have died and been removed. If the operator of this orchard were asked to report the average yield per acre or per tree for the entire orchard, it would be difficult for him to give a significant figure without considerable calculation, and voluntary reporters are reluctant to take the time to go through lengthy calculations when filling in a questionnaire. Furthermore, when such figures are received they are difficult to interpret, since one reporter might give an average based on total production divided by total trees; another might divide only by bearing trees (and here would arise a question as to when a tree is considered in bearing) another might give a yield per acre in the equivalent of solid acres; while another might give the yield in the actual acres in trees.

To carry the illustration further, however, assume that the operator could give a fairly accurate estimate of the yield per tree and, further, assume that a sample of the average yield per tree or per acre were taken of an area, homogeneous as to soil and climatic factors. In such an area would probably be found some highly commercialized orchards, some general farms with fruit as a supplementary project, and some with a few trees primarily for home use. In such a situation, in addition to the variation caused by the wide range in ages of trees and the number per acre, a variation due to care and attention given the fruit in the commercial orchard at one extreme and the farm-home orchard at the other, would enter into the problem. A frequency distribution of fruit yields from such an area seldom gives anything like a normal distribution, and it is consequently impossible to arrive at an average yield per acre which means anything at all for an area as a whole.

This question has been here discussed in some detail because it is frequently asked why the estimates of fruit production are not based on reported yield per acre or per tree. Although considerable experimental work has been, and is being, done with this type of inquiry, it has thus far been found less satisfactory, than the method now used, both from the standpoint of obtaining reports from growers and from the standpoint of utilizing the reports after they are received. It is, of course, possible that in a section such as the Wenatchee Valley in Washington, where apple trees are practically all located in commercial orchards, the returns on a questionnaire asking yield per acre would give fairly reliable results, provided the individual growers could properly weight the replies according to the ages of trees, etc.

Owing then to the great differences in the production of trees of different ages, it is difficult to obtain a figure which would approach the true average yield per tree even within an area of otherwise homogeneous conditions. For this reason production per tree multiplied by the number of trees cannot be considered to give the total production. This reason, combined with the variation in the number of living or producing trees per acre, eliminates the use of production per acre as a basis for estimating. It has therefore been necessary to develop different methods for estimating production of most of the fruit crops.

THE MEASURE OF PRODUCTION

To avoid the difficulty encountered in obtaining yield estimates, the farmers are asked to make their reports in percentages of a full or normal production. Early in the season the fruit grower is asked to report "condition in percent of a full crop" as of the 1st of the month, and at the end of the season he is asked for "production in percent of normal". Schedules carrying these questions for the months of August and October are shown in figures 38 to 40 inclusive. This normal is not a fixed quantity nor is it the same for every reporter but, as will be shown later, it makes little difference, so far as estimating the crop goes, what the individual concept of normal may be. It has been found that where the bearing acreage is not changing materially these reports of the production in percent of normal tend to show rather accurately the changes in production from year to year.

Perhaps the greater strength of this practice of asking production in percent of normal lies in the fact that it is the easiest way for the farmer to estimate. For example, if each of a number of people are asked to estimate the number of beans in a partly filled glass jar some will guess much too high and others much too low, with probably a wide scatter in between. On the other hand, if they are asked to estimate what percentage of the jar is filled, the distribution of the guesses will probably come within a much narrower range. In the same way, when a group of crop correspondents is asked what percentage of a normal crop was produced or is expected, their replies tend to fall close together and the average of a large number may be considered more reliable. The percentage figure automatically allows for most of the variation occurring

in other factors than the yield per tree—such as age of trees, condition of trees, whether well cared for or not, and other differences between orchards.

The fruit questions are included in the regular questionnaire going to all crop correspondents. These naturally include predominantly general farmers with a sprinkling of commercial growers. In addition to the general reporters, practically all branch offices in States having commercial fruit interests maintain lists of specialized fruit growers, to whom are sent special fruit questionnaires carrying the usual questions and supplementary questions by varieties and other details. A sample of one such special questionnaire is shown in figure 47. In connection with the final check on production, special production and utilization questionnaires are sent out to all lists, both general and commercial (fig. 48).

As the correspondents report the percentage of a full crop produced, the problem is to interpret these percentage figures into a quantitative production estimate. The originators of the par or 100 percent equivalent-crop method apparently had in mind a figure which would represent the full producing capacity of a given fruit in a State. In practice, however, this par was obtained by dividing the census production by the percentage of a full crop reported and multiplying by 100. The figure so obtained was called the basic par. To meet the requirements of the theoretical basis set up for the par, it would be necessary to assume that each grower was able to measure accurately the true bearing capacity of the orchard or orchards for which he reported and that he reported accurately the percentage of the full capacity that was obtained in the census year. Such exactness was, of course, impossible, consequently, the basic par has come to mean *that production of a fruit which would be realized if the average of reports from all growers was 100 percent.*

An example will serve to make the method clear. Assume that the percentage production reported in November for apples and the census production in a given State, for a series of years, are as shown in table 4.

TABLE 4.—*Determination of the par or 100 percent equivalent of fruit-crop production*

Year	Percent production	Production	100 percent or full crop
	Percent	*Bushels*	*Bushels*
1899	53	2,672,000	5,041,000
1909	76	3,456,000	4,540,000
1919	88	4,265,000	4,850,000
1929	42	1,940,000	4,620,000
1930	60	2,744,000	4,574,000

Taking the census years for the base, it is obvious that, if in 1899 the average of a large number of reports showed that growers considered the production as 53 percent of a normal crop, the 100 percent crop would be 2,672,000 bushels $\div \frac{53}{100}$, or in this case, 5,041,000 bushels. In like manner, the 100 percent crop can be determined for the other census years. These 100 percent equivalents for the census years are termed basic pars. The basic assumption behind this method is, of course, that the growers who report the percentage production represent the universe sampled (a State in this case), and it assumes a straight-line relationship in which a reduction in the percentage of a full crop reported will represent a proportionate decrease in the production. To the extent that the samples for successive years are comparable (that is, regardless of how biased the report may be so long as it is consistent) this method of computation automatically eliminates such bias. For example, if the correspondents consistently report too low, the 100 percent equivalent will be correspondingly higher. If the reported percentage in 1899 had been 45 percent, the basic par would have become 5,940,000 instead of 5,041,000.

Having established basic pars for the 4 census years 1899, 1909, 1919, and 1929, it now becomes necessary to estimate the crop in 1930, a year in which there is no census. By inspection, or when plotted, there is apparent a downward trend in the basic pars. This trend of the 100 percent equivalents is perhaps one of the best ways of handling trend in the series. Actually it is the production related to the percentage production reported. To the extent that the reported percentage production reflects the character of the season this method eliminates the variation caused by weather, etc., and the series represents more nearly the time trend in production possibilities. Projecting the trend of this series immediately gives one indication of a basic par figure for the next year. In addition to this indication, however, it is necessary to take into account the changing acreage or bearing surface of fruit. An indication of the trend is afforded by the census enumeration of the trees of bearing and nonbearing age. The bearing trees are, naturally, those which produced the current crop, while the nonbearing give an indication of the potential increase or decrease in bearing surface. In the present problem,suppose it were determined that the bearing surface was decreasing at the rate of 1 percent a year; the basic par for 1930 would be established by reducing the 1929 basic par by that amount, and it would become 4,574,000. Assuming that the percentage production reported in November 1930 was 60 percent, the production indicated would be 2,744,000 bushels. This figure for 1930 would be regarded as the preliminary production estimate.

The method of establishing the basic par has been outlined briefly. Actually, at present, there is considerably more evidence as to trend than the 100 percent equivalents and the census enumeration of production and number of trees. These have been used here primarily because when the first estimates of production were made about all the information available was a series of reported percentage-production figures and the census production and tree numbers. For recent years there are available a considerable quantity of supplementary information from special surveys on numbers of trees by age groups and data from State censuses and the like which give current indications of changes in bearing surface and production. All such information is compiled and used in arriving at the par production of the various States.

The basic par as established for any one State is an effort to appraise the basic bearing capacity of that State, establishing what is believed to be the production which would most probably result if a full or 100 percent crop were reported by correspondents. It is obvious from the preceding discussion that the par production may not be the actual producing capacity of the State because in many States there is a definite bias in the reports. Correspondents show a definite conservative tendency in reporting. It appears that in years of very large crops the percentage reported is not sufficiently high and in years of unusually small

crops it is not low enough. Since the par is based upon the past relation between the reported percentage production and the actual, it may be higher or lower than the actual producing capacity of the State.

Each year after the final estimates have been established, the basic pars are checked. One method used is to compare the basic par with the 100 percent equivalent computed for the year. For example, the situation that developed in two States is shown in table 5.

TABLE 5.—*Comparison of apple pars in New York and Idaho, 1928–30*

Year	New York				Idaho			
	Final percentage production	Final estimate of production	100 percent equivalent	Pars as used	Final percentage production	Final estimate of production	100 percent equivalent	Pars as used
	Percent	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*Percent*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*
1928	49	21,900	44,694	44,650	79	5,500	6,960	6,000
1929	*37	16,250	43,919	44,650	80	5,500	6,880	6,000
1930	62	27,683	44,650	44,650	73	5,000	6,840	6,250

A divergence shown by this comparison in a single year may not be sufficient evidence to raise or lower the basic par, since some special condition arising in the State may have caused the variation. Where, however, the par multiplied by the reported percentage consistently runs too high or too low, it is fairly conclusive evidence that the par changes have not kept up with the developments. In the case of New York, the 1928 final production was 21,900,000 bushels, the percent production reported was 49, the 100 percent equivalent was computed and is shown at 44,700,000 bushels, as compared with 44,650,000 bushels, the basic par for 1928. This shows a variation of about 0.1 percent. The par on this basis seemed rather accurate and, as other evidence showed no trend and tended to support the figure, this par was carried forward to 1929. The 100 percent equivalent for 1929 turned out 44,650,000 bushels under the par as shown. This evidence was discounted, however, by other indications and the par was again held at 44,650,000 bushels for 1930.

The outturn of the 1930 crop justified the par taken, the 100 percent equivalent being the same as the par. The New York acreage of apples shows practically no change for these years. For Idaho, however, it would appear that the increase in par had not kept up with the increasing producing capacity of the State. In 1928 the percentage reported and the final yield gave an equivalent of a 100 percent crop at 6,960,000 bushels. The par for 1929 was 6,000,000. Supplementary information was apparently insufficient to justify the increase indicated and the par was carried forward, which proved to be an error. In 1930 the par was raised 250,000 bushels, which still proved insufficient, the 100 percent figure turning out at 6,840,000 bushels with the par 6,250,000. The 1931 par in this case has been raised 500,000 bushels.

New York may be considered a fair average example, while Idaho represents an extreme case. There are a number of States for which the 100 percent equivalents check out exactly with the pars. The situation shown in Idaho is most likely to occur in areas in which the bearing surface is changing rapidly. It brought out strikingly the necessity for more current checks on acreage and number of trees—probably one of the greatest needs at present.

Although the report issued at the end of the season is termed a preliminary estimate and is usually rather close to the production as finally estimated, it actually partakes of the nature of a forecast. It is determined on the basis of a reported percentage of a full crop produced and the relationship which has existed in other years between this percentage and the production as finally estimated after analysis of check data, additional production indications, and, in years of census enumerations, on the production so found. Check data and check indications are, therefore, extremely important and are necessary to the establishment of the final production figure.

CHECK DATA CONCERNING PRODUCTION

Through a cooperative arrangement with common carriers—railroads and boat lines—the shipments of fruits and vegetables are reported to the Division of Fruits and Vegetables of the Bureau of Agricultural Economics. That Division likewise obtains records of the unloads of fruits and vegetables at 66 of the more important cities. Records of truck shipments are also obtained in some States.

These car-lot and truck shipment data constitute one of the most important sources of check data for the estimates of production. In order to make the best use of this material, it is necessary to await final returns for the crop season after sales and shipments have been completed. For a crop like apples, shipped from June of the year of production through to the June of the following year, production cannot be finally established until after data for the entire shipping season are available. At present the revised estimate of production is published with the first report of the year following the year of production. For example, the revised estimate of apple production in 1932 was published in the July 1 report of 1933 and the revised 1932 peach estimate was published in the report of June 1, 1933.

In addition to the shipment and unload records certain additional material is gathered which may be classified as check indications, since it is actually sample material collected from growers' organizations, packers, and others.

The most useful of this information is that obtained through the utilization questionnaire (fig. 48). From this questionnaire the average home consumption per farm can be approximated and this, multiplied by the number of farms in the State, gives an indication of the quantity of fruit thus consumed. Waste and percentage sold can likewise be determined. Change from the previous year in production affords a further indication of production. Comparing returns from identical reporters for 2 years gives probably a more accurate measure of change and, in addition, a measure of any bias in the reports. Further information as to utilization is obtained from canners, driers, and other processing plants.

Coming then to the end of the season all sources of information have been tapped and all of the various indications summarized. For many States and important areas there is a remarkable agreement between the various indications. It is frequently found that after all information as to shipments, utilization, canning, and so forth, is in, the preliminary estimate (derived by multiplying the par by the percentage of a full crop reported by the crop correspondents) needs no adjustment.

FORECASTS BEFORE HARVEST

Although correspondents tend to be conservative in making the reported percentages, and although growers sometimes fail to appraise the condition accurately, it is not to be inferred that they intend to misstate conditions. It is natural that early season reports should be less accurate appraisals of the final outcome than those made later.

Up to 1930 the method of interpreting the monthly condition figures into quantitative production forecasts had been accomplished by a system of monthly pars. The method of establishing these pars was essentially the same as used for other crops, except that the October or November basic par was first established and then the monthly pars were determined on the basis of the past relationship between the monthly condition reports and the final. The figure for the given month being established, it was assumed that the size of the crop would be in proportion to the condition reported and the par was multiplied by this percentage condition to derive the forecast of production.

These pars, both for the individual months and for the year, were considered as flexible. The condition was taken about as reported and if this figure did not reflect the conditions at a given time, the par was shifted to meet the situation. In practice, this method worked out satisfactorily in States in which large samples were obtained and the indication was fairly close to average. The method was most likely to be in error in a year of a very large or a very small crop. Fundamentally this practice of changing pars amounted to saying that the variation during any one season occurred in the producing surface and not in the weather or other seasonal or temporary factors; this is an error, if the fundamental concept of the par, as previously stated, is to hold.

During 1928 and 1929 studies were made of the relationships between condition for the various months and the final percentage production, which is comparable to the yield figure reported for field crops. These studies disclosed a high degree of relationship between the two series in most cases, but at the same time it disclosed a different type of relationship than was previously supposed to exist. Figure 32 relating to Pennsylvania apple production, brings out the situation existing in that State and is a fair example of what was found in most of the others.

The departure of the observations from the 1-to-1 line is quite appreciable in the upper and lower ranges of figure 32, while for the condition reports falling within 10 to 15 points of the mean, that line is a fairly satisfactory indication, particularly if trend is taken into consideration. The August par line, for 1929, the last year in which monthly pars were used, would have fallen close to the 1-to-1 line. The heavy black curved line was put in freehand, and fits the data more closely than does either of the other two lines. To correct the error in the old method of forecasting a change was made in 1930 whereby the actual relationship between the reported condition and the reported percentage production, expressed graphically, was used.

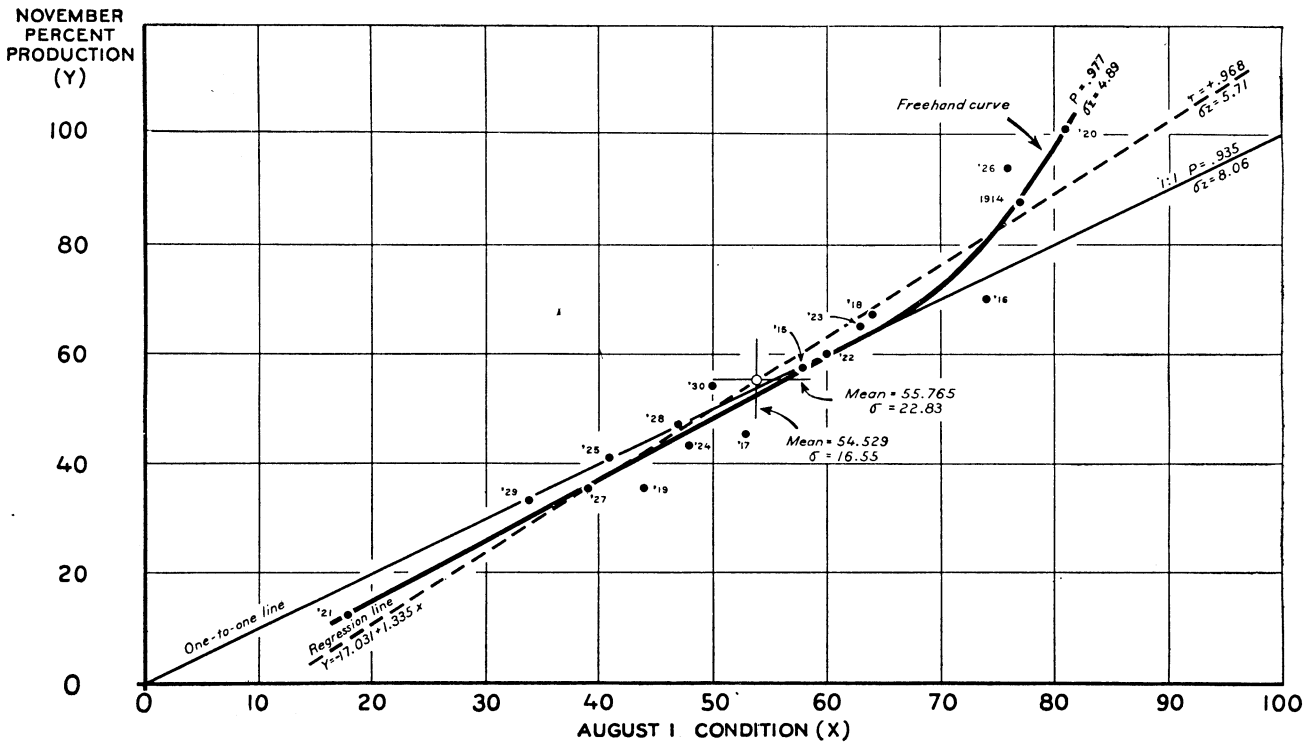

FIGURE 32.—Pennsylvania apple production related to August 1 condition. Production, as represented by November 1 reported percentage of a full crop, is related to reported August 1 condition. This relation is not rectilinear throughout the range but curves sharply above 60 percent of a full crop

In forecasting the probable production of a fruit crop by the method now employed the fundamental nature of the basic par should not be lost sight of. This basic figure represents, as nearly as may be, that production which would most probably result if the average of all reports for a given State were to equal 100 percent. To that extent, it reflects the producing capacity of the fruit trees within a State. Assuming that this figure has been established with reasonable accuracy, the only thing that should be allowed to

alter it is an actual permanent change in the producing surface. From year to year such changes may be brought about by changes in number of trees, advancing ages of trees, etc. During any one season, however, it is seldom that the par may be raised or lowered and still remain true to the basic par theory.

The condition reported during or at the end of the season is supposed to reflect the character of the particular season being dealt with. The variation in the type of season is the factor that causes the short time fluctuation in the size of the crop; therefore, if the fundamental concept of this method of forecasting is to be followed, the condition should be allowed to measure these variations and not the par, as was formerly the case. If the condition reported were absolutely free from bias in all ranges, the forecast could be made simply by multiplying the condition reported by the basic par. This situation does not exist, however, as shown in the chart for Pennsylvania (fig. 32). It will be noted that in the middle ranges the 1-to-1 line is a fairly good approximation of what the final production will probably be. When, however, the condition reported lies in the upper or lower ranges, a plus correction must be made. Furthermore, these corrections are not always confined to the upper and lower ranges. In the case of a crop like apples, with a tendency toward alternate bearing, it is often found that in some States a correction must be made for the character of the crop season, whether the crop in question is preceded by a small or a large crop. Other corrections in the interpretaion of the condition figure are necessary for wet and dry seasons, for frost years, and for other factors that enter into the series with sufficient frequency to afford a measure of their effect. These corrections vary between States.

The method of forecasting introduced in 1930 was predicated upon the foregoing reasoning. The par is considered a fixed base for any given season and the variation during the season is measured by the variation in the reported condition and the interpretation of that condition in terms of a full, or 100 percent, crop.

The mechanics of making the forecast have been indicated and are practically the same as those employed in forecasting the yield of a field crop, except that the percentage production reported at the end of the season is substituted for the final yield figure.

A single example will suffice to show the method. In 1931 the condition of the apple crop on August 1 for Pennsylvania was reported at 68 percent. In this range (fig. 32), this reported condition needs a plus correction of 6 or 7 points and the indicated percentage production was interpreted at 75 percent. The par is then multiplied by the interpreted percentage production to obtain the forecast for August. This is not the place to go into the accuracy of this method of forecasting, but it may be noted that the percentage production reported in Pennsylvania on November 1 by the same list of growers used in the August 1 report was 75 percent (the same as interpreted on August 1). Although this degree of accuracy is not typical of all States, it is not unusual and in most cases the variation has not been large. It is only reasonable to expect some variation during a season. Often the fact that a forecast figure during the season is the same as the final figure reported is the result of a fairly uniform season although even under such conditions it must be admitted that the method cannot be far from accurate.

The following comparison will give an idea of how the method has worked out on the average for the United States during the 2 years it has been in use. In 1930 the August 1 forecast was 47.1 percent of a full crop and the November 1 report was 53.1. That was the first year the method was used and it was a year of extreme drought. In 1931, on August 1 the forecast was for 72.1 percent of a full crop and on November 1 the report was 72.1 percent, or exactly the same as the interpretation on August 1.

For example, early in the season it is particularly difficult for anyone to give an estimate of the production to be expected. In the first place, small green fruits are not readily seen. Furthermore, a grower may fairly estimate the July 1 condition of apples at 50 percent and by August 1 the condition may have actually changed, necessitating a different condition figure on that date. The fact that future weather conditions cannot be forecast makes the early-season condition reports for many crops a poor basis for forecasting production. As the June 1 condition of apples shows little relationship in many States with the November percentage of a full crop, no June forecast of apple production is made. For these reasons, the condition reports become increasingly better as a forecasting basis as the season progresses. The nearer the crop comes to harvest the better the correspondents can appraise the prospects.

SPECIAL SERVICES FOR FRUIT GROWERS

The crop-reporting service covered a total of 21 fruit and nut crops in 1932. The list as it then stood and the type of report published each month is shown on page 6. Monthly fruit reports are published as a part of the regular monthly crop reports.

In addition to these monthly reports, some special reports are issued through the Washington office when exceptional conditions demand. Such a report was issued in August 1930 when a heat wave caused serious damage to the California grape crop. A special survey was made by the California branch office and a mid-month report was issued. Frost or storm damage in an important area may require a special report.

The fruit estimates and forecasts are prepared in the State offices as is the case with other crops. The State figures are forwarded to the Washington office where the Crop Reporting Board reviews them and establishes the final figure. In the Washington office a fruit statistician is a permanent member of the Board; it is his duty to exercise final review of the fruit figures and to make recommendations to the Crop Reporting Board for its action in matters pertaining to the fruit estimates. This fruit statistician is responsible for maintaining comparability of method and practice between States. Acting in conjunction with the statistician in charge of research, the fruit statistician advises in all matters pertaining to fruit research carried on in the field and he himself conducts research with a view toward improvement in methods.

Special studies are also conducted through the Washington office. A few examples are given.

In 1929, a survey was made to ascertain the number of peach trees in commercial orchards, by age and variety, in five Southern States. Mailed questionnaires were used and were supplemented by reports secured by special enumerators who visited the various orchards.

This project was directed from the Washington office and carried out in the State offices in cooperation with the various State experiment stations and extension services, and State departments of agriculture. The results were analyzed in cooperation with the Division of Farm Management and Costs and the Division of Fruits and Vegetables and were published as a mimeographed report.[7]

A similar survey was made for apples in 1927 in all States, and included both farm and commercial orchards. The results of this survey also appear in mimeographed reports.[8]

Another type of study of a more unusual nature was made by the fruit statistician of the Washington office. This special study of weather factors influencing the sizes of apples had for its primary object the forecasting, early in the season, of the size of fruit. The results are applicable only to the Hood River district and were remarkably satisfactory. If similarly detailed records were available for other important fruit districts, probably equally satisfactory forecasting formulas could be developed through the same general approach.

TRUCK- AND CANNING-CROP REPORTS

PROGRAM OF REPORTS

The present program of truck-crop reports includes regular estimates regarding 21 crops for fresh consumption and 11 crops for canning, packing, or manufacture. The fresh market crops for which such reports are issued are: Asparagus, beets, snap beans, lima beans, cabbage, cantaloupes, carrots, cauliflower, celery, cucumbers, eggplants, escarole, lettuce, onions, green peas, peppers, potatoes, spinach, strawberries, tomatoes, and watermelons. Occasional reports are made on kale, peppermint, and horseradish. Crops for canning, packing, or manufacture for which regular estimates are made are: Asparagus, beets, green lima beans, snap beans, cabbage for sauerkraut, cucumbers for pickles discontinued in 1932, sweet corn, green peas, pimientos, spinach, and tomatoes. (For dates of these reports see page 7.)

Estimates of commercial truck-crop production are concerned only with those areas that grow the crops primarily to supply consuming markets more or less distant from the producing center. Production in home and market gardens, intended principally for local sale or use, is almost entirely excluded as the estimating of this type of production involves such detailed field investigations and technical difficulties as to make it impossible under present facilities. Market-garden areas are included in the estimates only in rare instances; usually the area contributes some long-haul shipments by rail, truck, or boat and therefore partly qualifies under the commercial description. Compared with the strictly commercial areas, however, the acreage of market gardens is of minor importance except in certain Northern and Eastern States. Similarly with truck crops grown for commercial canning or manufacture, the estimates include only quantities grown for use by canning or packing establishments and exclude quantities canned in the home. The truck-crop estimates are designed to include the total quantity produced on the estimated commercial acreage harvested in the areas concerned, whether or not the entire crop finds a market or a use.

In the case of each fresh market crop, the acreage is divided into groups of States or areas according to the usual period of harvest. These groups usually consist of early, second-early, intermediate, and late-shipping States. Estimates are made for each of these groups and the various groupings are carried separately throughout the season. This gives a useful statistical picture which shows what part of the crop has already been harvested, the portion in the process of being harvested, the planted acreage in later shipping areas, and perhaps the intended acreage in other areas. With canning crops, this grouping has not been considered necessary, since the greater part of this acreage is grown in areas that have approximately the same growing season. Since these crops are processed and stored, and the greater part of the total production is marketed later under direct competition, seasonal groupings are of less vital importance.

Most of the commercial truck and canning-crop production is a localized and exceedingly specialized business, concentrated in areas particularly adapted to the various crops, and often controlled by a group of distributors and grower operators or by packers. Because of the several circumstances described, the crop-estimating procedure for these crops differs markedly in a number of respects from methods used on the more generally grown crops. In some areas, the individual farm-sample method can be employed to advantage to obtain necessary information on the acreage of crops like cabbage, onions, potatoes, strawberries, and watermelons. The use of this type of inquiry is however, limited to States or areas in which the specific crop as grown by a large number of producers, frequently as a cash-crop enterprise on general farms. For the most part, constant contact and investigation must be maintained through the travels of trained field representatives in order to obtain and issue timely information.

Schedule inquiries by mail are a necessary adjunct to the field investigations but they are invariably secondary to them in value. Without field investigation, schedule returns are likely to prove misleading. It is rarely possible to secure fully adequate representation by the schedule method because of inability to secure reports from a large number of growers and operators, consistently, season after season. Many of the growers are unfamiliar with the general situation in their localities or they are handicapped by language or educational limitations in making satisfactory answers to inquiries. In a number of instances, large operators who are in position to report on the local situation, object to furnishing the requested information, or, for other reasons, are indifferent to mail inquiries. Many of these operators gladly cooperate by furnishing full details in personal interviews with the field man and assist in every possible way when he arrives for first-hand observations. Objections to answering schedules are not necessarily based upon a desire to withhold the information. More pronounced is the feeling that the Government estimates cannot give a true conception of production changes in these specialized crops unless they are viewed personally by a competent investigator.

[7] UNITED STATES DEPARTMENT OF AGRICULTURE, BUREAU OF AGRICULTURAL ECONOMICS, COMMERCIAL PEACH ORCHARD SURVEY. Mar. 18, 1930. [Mimeographed.]

[8] UNITED STATES DEPARTMENT OF AGRICULTURE, BUREAU OF AGRICULTURAL ECONOMICS, ESTIMATED NUMBERS OF APPLE TREES BY VARIETIES AND AGES IN COMMERCIAL AND FARM ORCHARDS. March 1929. [Mimeographed reports for the United States and individual States.]

DEVELOPMENT OF TRUCK-CROP REPORTS

The first Government truck-crop report was made on November 5, 1914. It dealt with the acreage and production of onions and cabbage in the Northern States that produced a surplus for storage and future comsumption. It was based upon the first field investigation devoted strictly to the estimating of truck-crop production. Then, as now, onions and cabbage were the most highly speculative of that group of perishable commodities usually embodied in the term "commercial truck crops." For the reason that most interest attached to these speculative crops, the very limited truck-crop project, when first developed early in May 1914 was concentrated upon field investigations and reporting services covering the two crops. The reports aimed to fill a need for timely statistical information on plantings in each important State, on progress of the crop from planting to harvest and sale or storage, and finally, on the size of the crop and its value in returns to the growers.

Organization of this new phase of crop reporting was undertaken with the idea of having the system fully operative beginning with the 1915 crop season and of gradually adding more crops to the list. Since funds were lacking for personal field investigations of all the important truck crops in every section of the country, schedule inquiries were to form the major background of the reports. The beginning of a representative reporting list was made by requesting names of commercial growers from township crop correspondents, postmasters, growers' associations, and other informed sources.

From July 1914 until January 1917, the truck-crop work was handled entirely by one person. This truck-crop specialist divided his time between Washington and the field. He prepared and mailed schedules before leaving for the field where he observed crop conditions, established new contacts, and obtained additional reporters. He returned to Washington in time to tabulate the schedules and issue the report. This program prevented adoption of any very extensive program of reports to be issued at intervals through the season although, by the close of 1916, the service included estimates of acreage and production for cabbage, onions, commercial early potatoes, cantaloupes, watermelons, celery, and strawberries; and for corn, peas, and tomatoes for canning and cucumbers for pickles.

On January 1, 1917, two field assistants were appointed, one assigned to the Atlantic Coast States, the other to the Pacific coast and most of the inland Western States. In May 1917 an additional assistant was obtained, who was assigned to the interlying territory east and west of the Mississippi River. There were also employed 25 paid reporters in key locations in important commercial truck-crop areas. The work progressed favorably until the winter of 1918–19, when the special emergency appropriation for "estimating agriculture" under which this expansion of the truck-crop work had been accomplished was discontinued. The truck-crop force was held together until the spring of 1920 but, lacking definitely allocated funds, it was then reduced to the specialist in charge with one clerk for assistant, and such field assistance as could be arranged through State offices.

From 1920 to the date of the special allotment for fruit, potatoes, commercial truck, and canning crops (in July 1929) estimates were continued on the full list of truck and canning crops, but with considerable difficulty and with very little assurance that the reports fully and accurately covered the situation with respect to each crop reported.

When new funds were made available in 1929, a separate section was organized in the Washington office of the Division of Crop and Livestock Estimates in charge of a senior agricultural statistician with two technical assistants, to handle the fruit, truck, and canning-crop estimates. Additional field men were employed so that most of the important truck-crop areas were covered by experienced investigators.

In 1931 seven trained regional truck-crop estimators had been assigned to field investigations in major commercial areas as follows: (1) California; (2) Washington, Oregon, and Idaho; (3) New York and northern Pennsylvania; (4) southern Pennsylvania, Delaware, Maryland, West Virginia, and Virginia; (5) North Carolina, South Carolina, Georgia, and Florida; (6) Alabama and Mississippi; and (7) Texas. A number of the remaining commercial areas are handled by the State agricultural statisticians in charge of the crop and livestock estimating work in the States concerned, or by one of his assistants who devotes part time to the collection of data on truck crops. Colorado, Utah, Arizona, Louisiana, Minnesota, Missouri, Illinois, New Jersey, and New England are the chief areas in which this method is followed.

COLLECTION OF TRUCK-CROP INFORMATION

The seven truck-crop estimators devote practically their full time to the collection of information on truck and canning crops, although a few give a varying amount of attention to the fruit crops. Since truck crops are of a perishable or semiperishable nature, the element of timeliness is of vital importance in the collection and dissemination of all information pertaining to condition of the growing crops and to probable production. A report that is delayed a few days may be comparatively useless when it reaches the producer, dealer, or processor. Therefore the regional estimator spends a large part of his time in field travel, personal observation, and investigation. The automobile is chiefly used for this travel as it not only gives the investigator a freer range into all sections of his area, but enables him to work more quickly and efficiently. Moving rapidly from one point to another, he observes the growing crops and makes the necessary contacts with growers, dealers, cooperative associations, bankers, and others who may have the information he is seeking. From these sources he obtains information on the number of acres planted, the general condition of the growing crop, or probable yields per acre, the date when harvest will begin, the time when peak movement is expected, quality of the product, prices paid to the grower, and other pertinent details regarding the crops.

Owing to limited time and large territory covered, it is impossible for the investigator to interview a great number of growers in each locality or to make very many "repeat" visits during the season. After becoming thoroughly acquainted with his territory, he finds there are certain men in each community whose knowledge and information on truck crops can be taken as reliably representing the situation. These men are usually glad to furnish information for their localities because they realize that they are cooperating in an enterprise that gives them a picture of the truck-

crop situation in the country as a whole. They know that a report giving similar information for competing areas is of real value in marketing the current crop and in planning future plantings.

As the investigator travels through his territory he is constantly summarizing and analyzing his data in order to forward it to Washington as quickly as possible, for use in current reports. If the crop in his territory has been subjected to unusual conditions, like floods or frosts, he may find it advisable to telegraph his report directly from the field to Washington, where it is immediately put on the leased wires through arrangement with the market news service and transmitted to all parts of the country. Otherwise, after each trip (usually taking 5 or more days, traveling from 100 to 150 miles a day), he returns to his field office before attempting to complete his report. Here he will have the benefit of supplementary information obtained through special questionnaires mailed to growers and others. This is analyzed, together with the information secured by field travel, and his report is prepared and mailed to Washington without delay.

When the field investigator's report reaches the Washington office it is summarized with reports from other areas. In doing this work the Washington members of the fruit and truck crop section carefully review and verify the data from all sources for each State. While the investigator has been working in the field standard questionnaires have been mailed from the Washington office to a special list of 6,400 growers and cooperators. (Samples of these schedules are shown in figures 49 to 52 inclusive.) By means of these returned inquiries, check indications have been secured which can be compared with the growers' reports received by the field investigator and the results of his own travel. These inquiries are also of great value in securing information from certain areas that may not be adequately covered by field travel. The final published reports for each crop show the data by States and for the country as a whole.

From a statistical point of view, the general method of obtaining information from truck-crop correspondents by schedule and analyzing this material is somewhat similar to the method used with field crops. In general, the procedure is as follows:

The first inquiry on many of the crops is made before planting operations begin. It requests information on the acreage that growers have in mind to plant for the coming season compared with that grown during the last season. This inquiry is to make it possible for the Department to put before the growers a comprehensive report on intentions to plant which will serve as a guide in further planning and adjusting of acreage in line with seasonal marketing requirements, before planting operations are very far advanced.

After planting is completed, another request is made for data on actual plantings. This information helps to establish a preliminary estimate of planted acreage, which is used later in making seasonal forecasts of probable production.

During the growing season for each crop, growers are asked to report the condition on the 1st of the month and to report further on the progress of the crop on the 15th of the month. Condition is asked as a percentage of "normal", letting 100 percent represent a normal state of growth to the date of inquiry. From these condition reports an estimate of probable yield per acre is made. The method of analysis is similar to that used in determining yield on field crops; that is, a study is made of the relationship existing for a period of years between the average condition reported on certain dates and the yields finally obtained. More recently, reports from growers on the yields to be expected, judging by conditions existing at the time of inquiry, have been helpful in forecasting production. In a few instances, weather relationships have furnished valuable suggestions of yield prospects.

On the condition and progress schedules, is an item asking for the prices paid to growers during the preceding 2 weeks on all crops upon which sales have been made. The prices thus obtained, weighted by the quantities that go to market during these 2-week periods, are a valuable check against the seasonal prices finally reported after harvest is complete.

When the crop is completely harvested, an inquiry is sent to the cooperators asking figures for harvested acreage for the current season compared with that of the previous season, the percentage of the total crop produced which was not harvested, the average yield per acre on the harvested acreage, the average seasonal price received by growers, and the utilization of the harvested crop.

Local or shipping-point data are obtained from cooperators, who are usually commercial growers, officials of cooperative marketing associations, county agents, and responsible dealers or operators. Nearly all the information on truck crops grown for fresh market consumption is collected on a locality or shipping-point basis rather than for the individual farm. It has been found that, sample-farm reports are less reliable for truck crops than for field crops. As commercial truck-crop growing is concentrated in certain restricted areas and as the number of growers is relatively small compared with those growing field crops, it is very difficult to obtain uniform and representative samples. There is also the element of indifference on the part of the small grower which tends to limit the number of schedules returned to the Washington office. But it has been found that there are a sufficient number of interested and observant growers and operators who are well enough informed about their particular localities, to furnish satisfactory judgment figures on a locality or shipping-point. An average of locality judgment data usually gives a reliable indication regarding the crop, although the number of reports may be relatively small.

ANALYSIS OF TRUCK-CROP DATA

In the analysis of data secured by schedule, various methods must be employed with reference to (1) acreage changes, (2) indicated yield per acre, (3) forecasts and estimates of production, (4) utilization of harvested production, and (5) average farm price for the season.

Basic figures on acreage are first established. These are determined for a census year in conjunction with the findings of the Federal census for those counties or areas represented in the commercial truck-crop estimates. The census data for such areas are analyzed along with the evidence upon which the estimates were previously based consisting of recorded shipment and utilization and other details secured by mail inquiry or through the investigations of the field estimators. Census figures are not always strictly comparable with the estimates of commercial truck-crop production even when both are presumed to cover an identical area.

A number of circumstances may give rise to such differences. The most important point of difference is due to the fact that the census data include market-garden acreages, whereas truck-crop estimates emphasize the acreage devoted to production for shipping. In some counties the acreage consists almost entirely of market-garden plantings; in others, it may be a combination of market-garden and commercial-shipping acreage. Again, in areas in which more than one crop is usually grown on the same land in a given season, the census data may not always reflect the full acreage devoted to each crop. Succession crops are always difficult to enumerate, especially when the enumeration is made a year or more after the crops are harvested. Another point of difference arises from the fact that the census season does not always correspond with that of the crop estimates. In States that produce for the early market, the season for some crops begins in the late fall and extends into the following year, thus embracing parts of two calendar years. In such instances—of harvest and shipments continuing without a break from late fall into the following year—crop estimates correspond with the shipping season rather than with the calendar year. A fourth point of difference, in the case of minor crops, is due to the large acreage of "other" or "mixed" vegetables carried by the census.

Any comparison with census data must take into consideration these four points of difference. In cases in which the acreage as reported by the census is exceeded in results obtained by other dependable surveys, or when car-lot shipments and other sound utilization records indicate it to be too low, the establishing of basic-acreage estimates is largely influenced by the latter type of data.

Once the basic acreage is established, the procedure is to determine the change in acreage from one year to the next. On this point, the field investigator sends in his judgment of change based on information gathered through travel, personal interviews, and records from other sources. Supplementing this, the material received by schedule in the Washington office is listed by States, counties, and shipping points, and is subjected to careful analysis. From these listings an average percentage change for each major county or group of counties is determined; then each percentage is weighted by the approximate acreage that was grown in the county or area during the preceding season. Thus a weighted measure of change is obtained for each State.

The chief problem in this type of analysis is the element of bias. There is always the probability of a strong downward bias in reports dealing with cash crops grown for commercial sale. Consequently, the statistician reviewing this material must always be on guard to make the proper allowance to offset this bias, as developed from past reports of similar character.

Much progress toward discounting bias has lately been made by the comparison of reports from identical reporters. Records are kept, year after year, showing the acreage reported by each correspondent during the growing season and after the crop has been marketed. In this way, a fairly good measure of bias can be determined for a given group whose members report consistently season after season. Acreage changes shown by such a group, with allowance for bias, are followed more closely than the changes indicated by the average of all reports. This method goes a long way toward eliminating the influence of "in-and-out" reporters, whose degree of reliability has not been thoroughly established. Its usefulness, of course, depends upon the consistency of correspondents in reporting regularly on all acreage inquiries.

Other methods of measuring acreage changes in certain areas are comparisons of seed sales and fertilizer shipments, and the use of the frontage measurements along identical routes. Seed sales are a reliable indication only in those areas in which all seed used is grown in some other part of the country and shipped in. Such an indication has proved very dependable on early commercial potatoes in Florida and south Texas. Fertilizer shipments are a rough measure of change only. The accuracy of such an index depends upon a knowledge of the relative quantities to be used on each crop and the application per acre, which may vary from season to season. Frontage measurements by means of the crop meter have been made for several years in the Eastern Shore of Virginia potato section. This is a highly specialized potato section concentrated in two counties. With uniform distribution of the crop and a network of roads touching all points, it has been possible to measure a frontage on both sides of the road of approximately 90 miles of potatoes in the course of 3 days. A comparison of these linear frontages along identical roads from one season to the next has given a very dependable measure of acreage changes. In fact, it has now become the most reliable indication for that area. Its use can be extended to other areas that have similar characteristics.

As with acreage reports, the analysis of condition figures in relation to yield per acre, is based upon the county or local area unit rather than upon a wider territory. Truck crops are more restricted in area and location than are field crops and are subject to greater changes in condition over a short period of time. Crop conditions in adjacent localities may be entirely different, owing to sudden inroads of insect pests and disease, or caprices of the weather. In the same general area, one locality may have irrigation, the other be devoted to dry-land trucking; another locality may have a muck soil which is subject to floods or to frost damage, whereas the neighboring locality may be on high ground and of an entirely different soil type. Again, the same condition in percentage of a normal crop may mean an entirely different yield per acre for different but adjacent localities. An area favored with a fertile soil or having the assurance of a constant supply of moisture through irrigation will have a higher normal yield than one less favorably situated. In the commercial truck-crop industry, such conditions are quite common within the same State and even within the same county or locality. Therefore, with a limited and nonuniform distribution of crops, and with special conditions applying to each area, the analysis of condition must be carried out on a small-unit basis.

The procedure involves the careful determination of the average condition for each area and the bringing together of these averages into properly weighted State figures. Here, again, the method of estimating the change in condition from one period to another by a comparison of successive reports from identical reporters is applicable. Although this gives an excellent measure of change in condition, its strict application depends upon the representativeness and reliability of the average condition established for the preceding period. As applied to condition, the comparison of successive reports from identical reporters

does not attempt to measure bias, for such a measure is not necessary. Representativeness is by far the more important consideration. Since to ascertain the probable yield per acre from condition, an analysis is made of the relationship that has existed for past years between condition reported on specified dates and the yield finally harvested at the end of the season, the element of bias is taken care of in this average relationship. In other words, if the reported condition is consistently too low, the 100 percent equivalent, or par yield, will be high. If the reported condition is consistently too high, the reverse will be true as to par yield. Thus, the effect of bias tends to be eliminated.

In the practical application of the condition-yield relationship, as is the case with general crops, two general procedures are followed, each being applied chiefly on a State-wide basis: The first is the graphic analysis by dot charts upon which freehand curves of best fit are drawn. At present, this type of chart has its limitations in connection with truck-crop estimates, primarily because records on most truck crops cover a period of only 14 years (1918–31). Since the value of the condition-yield relationship depends largely upon the size, uniformity, and representativeness of the sample, great reliance cannot be placed upon the records of the earlier years, when the work was getting under way and methods of analysis were in the process of development. Owing to the specialized and localized nature of truck crops, it has always been a difficult matter to obtain a representative sample by mail, and this will probably continue a major problem of the future.

The second approach to estimates of yield based on condition is the par or 100 percent equivalent yield method which assumes a constant relationship between condition and yield for all values of condition. A third approach, which shows some promise but has not yet had adequate test, is the reporting of correspondents of the prospective yield indicated by current condition of the crop in their localities.

Neither the first nor the second mentioned approach to yield per acre as applied to truck crops takes into full account the factor of trend. For most truck crops, however, the period for which estimates have been made is so relatively short that it is rather difficult to determine trend as a separate factor. At the same time it is conceivable that a shifting of the areas of production and the introduction of new varieties, better cultivation, or more liberal application of fertilizer, may cause a change in pars over a short period of years. At present, the only attempt to measure this trend in connection with most truck crops is to adjust the par closely in line with the 100 percent equivalents for the last 3 or 4 years and to give close attention to acreage shifts from one locality to another.

The third-yield approach mentioned is an attempt to obtain a check against the yield indicated by the par-condition method. This is obtained through an item of inquiry recently added to the condition schedule. Toward the latter part of the growing season, when yields can be more definitely ascertained, the grower is asked to report the probable yield per acre in connection with the condition of the crop. Since this type of inquiry, as applied to truck crops, is at present little more than an experiment, no definite assertions can be made as to its value. Any judgment on probable yield is subject to bias. Eventually, when records on probable yields for a series of years become available, it is fully expected that this item will furnish a valuable indication in its relation to final yields. For the present, its usefulness comes largely in checking against careless condition reports or as an approximate measure of the reliability of the yields indicated by the par-condition method.

In the early part of the growing season no attempt is made to interpret condition reports in terms of yield per acre. Since all such interpretations involve the assumption that average growing conditions will prevail during the remainder of the season, any forecast of production at the beginning of the season would be of little value. However, these early condition figures are always published as a measure of the relative progress of the crop. When published in comparison with condition on the same date for the previous season and with the 10-year average condition for the same date, they give a relative picture of the state of growth for the current season. A comparison with condition for the preceding month of the same season is often misleading. With many crops there is a seasonal downward trend in reported condition with a lower condition for a given month frequently signifying the same yield per acre as a higher condition reported the preceding month. Therefore, such condition changes may have relatively insignificant effect upon production prospects even at times when the difference in reported condition is material. Frequently also, the condition figures for States in which successive plantings of the same crop are made, may reflect widely different conditions as one crop ends and the next begins.

From a study of the foregoing, it is readily apparent that a forecast of production of truck crops based upon the reported condition on a certain date cannot be precise. It is, rather, an attempt to portray the state of growth of a crop on a certain date and to give an indication of production should average growing conditions prevail for the remainder of the season. Such a forecast does not anticipate unusual growing conditions which may subsequently develop, nor does it attempt to forecast the future, except in the light of what has happened, on the average, during past years. Its primary objective is to keep growers and the general public advised of the crop's progress and promise. It is about the only practical method of following the sudden and wide variations in condition which are especially peculiar to truck crops. When used in conjunction with the observations of field investigators, the forecast of production has proven a reliable measure of the possibilities throughout the growing season.

Estimates of production differ from forecasts of production in that they are based upon reported yield per acre and harvested acreage at the end of the season. Insofar as truck crops are concerned, estimates of production are usually closely in line with the production actually harvested. At present, whenever unusually large quantities of a crop are left unharvested in the fields by reason of low prices, these quantities are included in the estimates of total production, but unit values are applied only to harvested production. Harvested acreage consists of that commercial acreage from which any quantity of produce is taken, no matter how small. No deductions in acreage are made for poor stands or spotted conditions within fields, these losses being reflected in the yield per acre. Allowances made for abandoned acreage include only that part of the acreage which was a

total failure through destructive floods, hailstorms, frosts, drought, etc.

As in the case of acreage changes, the harvested yields per acre reported by growers are subject to bias, especially for those crops that are commonly stored, like cabbage, onions, and potatoes. With these crops, the reported yields per acre are usually considered as minimum indications and further checks are necessary to establish their validity. The first-hand observations and personal investigations of the traveling estimator or field men, are given foremost consideration. Other check information that may be used after the crop has moved to market consists chiefly of records of car-lot shipments of fruits and vegetables which are reported by all railroads and steamship lines to the Bureau of Agricultural Economics. These reports, summarized weekly by the Division of Fruits and Vegetables, show comparative State totals for corresponding weeks of the current and preceding season together with seasonal totals to date compared with the total season's shipment for the past season. At the end of the current season, these totals may be converted into the unit equivalents of production and may be used in conjunction with utilization studies as a check against total estimated production.

Utilization data are secured on the harvest schedule along with harvested acreage and yield per acre. The most important item of the utilization inquiry refers to the percentage of harvested production that moves to market by rail or boat. A similar item, of growing importance in recent years, is the movement by motor truck. With representative judgment data on rail and boat movement for each important State, it is a comparatively easy matter to use car-lot shipment records as an index of total harvested production. However, this type of check is becoming much more complicated for these highly perishable crops because of the increasing volume of movements over the highways by motor truck. For example, more than half of the commercial crop of strawberries grown in Virginia, Maryland, and Delaware now moves to the centers of consumption by truck. A large part of the North Carolina crop moves in a similar manner. It is now possible to secure an approximate check on truck movement for these particular areas, but there are many other areas for which no similar information is available.

With reference to truck-crop estimates, "price to the grower" is a term that is often misunderstood and, therefore, requires a word of explanation. The objective of this type of estimate is to arrive at the average price per unit for the season received by the grower at the farm or shipping point, this then to be applied to the estimate of harvested production as a measure of farm value to the grower. Actually, it is likely that this objective does not uniformly display itself in the various series of truck-crop prices from 1918 to date, since may difficulties operate to prevent collection of comparable truck-crop prices for all crops and all areas in any one crop-movement season. Methods of analysis used since 1928 indicate that the published seasonal prices for recent years are fairly comparable, having roughly identical methods of sale between States, but that their greatest use is in relating prices one year with another in a given State, assuming the prices to be approximate averages of sales at shipping point in the customary mode of delivery whether in bulk or in containers.

Since truck crops are usually marketed in some form of package or container the price per unit is largely on the basis of the packaged product. At first glance, the price per unit, including the container, may be considered too high to represent the true farm price, and it may be argued that the cost of the container should be deducted from the price received. However, when it is considered that the cost of the container is just another item in the cost of producing and delivering the crop at the local shipping point, its inclusion is justified. The object is not to estimate the net price to the grower, but to arrive at the price actually received without reference to cost of production. The average price per unit, as finally estimated, is usually a combination of prices at the shipping point of the packaged product and sales that may be made locally or directly from the field to dealers who do their own packing.

Reference has already been made to the methods of obtaining price data. During the harvesting season prices paid to the grower are asked twice a month, and refer to sales made during the preceding half month. These prices are weighted by county car-lot shipments during the period for which the prices are reported, and an indication of the seasonal price is thus obtained. At the end of the season, the grower is asked to report the average price received for the season in his particular locality. These prices are then weighted on a county or area basis similar to the weighting in the case of acreage and condition reports. In addition to these indications, there are other available checks consisting of a daily range of shipping-point prices collected by the market news service for certain points, records of auction sales, the marketing transactions of cooperative marketing associations, and supplemental information secured through field travel by truck-crop estimators and State statisticians.

Reference has been made only to those methods which are usually employed in gathering and analyzing data on truck crops. These methods, for the most part, have been based upon personal judgment inquiries. Recently, some progress has been made in the way of an objective approach in truck-crop estimating. This approach involves studies of price-acreage, weather-yield, and production-price relationships. Prices received during the previous season have been studied in their relation to acreage changes the following season; precipitation and temperature during the growing season have been related to final yields per acre; and the influence of size of production upon prices of the current season has been analyzed. To date, some promising relationships have been obtained in the study of the effect of weather upon yield of potatoes in Maine, Virginia, and Florida; upon the yield of onions in Massachusetts and of cantaloupes in Michigan. However, this method of approach is still in the experimental stage. It has given promise of becoming a valuable check on estimates, but a background of more extensive research must be developed before the results can be considered anything more than another indication to be used in connection with established methods.

CANNING-CROP REPORTS

Although the making of estimates for truck crops for canning or manufacture follows the same general procedure as outlined for truck crops for fresh con-

sumption, there are certain features about the industry that deserve special consideration.

Canning crops differ from the fresh-market truck crops in that possibly 90 percent of the acreage devoted to canning or manufacture is either on a contract basis or otherwise under the control of the packers. The vegetable-packing industry is carried on by some 2,300 firms. Each of these firms contracts with nearby farmers to grow a definite number of acres each season, the produce of which is delivered to the canning factory. Some firms grow a large percentage of their requirements on their own lands. Open-market purchases are limited to only a few areas, and such purchases are negligible on some crops, as green peas and sweet corn. Each firm keeps accurate records of acreage under its control, total tonnage of each crop handled during the season, total number of cases packed, and average prices paid to growers. Moreover, canners keep in close touch with the progress of the crops throughout the growing season. Thus they are in a better position than anyone else regularly to furnish reliable information on these crops.

Practically all information, therefore, is secured directly from the canners rather than from individual growers. Inquiries are based upon the operations of the individual firm rather than upon the locality. Most of the estimating work is handled directly from the Washington office with only supplementary assistance from the traveling estimator in checking up on firms from whom reports are lacking. California and the New England States are the only areas for which the canning inquiries are handled entirely through the State branch offices.

Under the conditions peculiar to this industry, the program of gathering data on canning crops takes on some fairly definite statistical aspects. The "universe" to be sampled is limited to about 2,300 canners and packers, who, in the aggregate, are able to give a complete statistical picture of the industry. It is always possible to determine what percentage of the "universe" is represented by a sample of reports. Comparison of reports for identical canners and packers becomes a matter of comparative ease. On the other hand, the failure of 1 or 2 of the larger firms to report may cause serious errors in estimates for those States in which they are the dominating factors. So far, however, most of the larger firms have been among the most consistent and willing cooperators in furnishing information. On some inquiries, more than 80 percent of the total acreage is sometimes represented in the sample. Incidentally, the furnishing of data by all cooperators is done voluntarily. Such information is strictly confidential and is used only for the purpose of making up State totals. Those States which have only 1 or 2 canning firms are thrown together in 1 group called "other States" in order not to disclose the operations of individual firms.

Since canners are interested primarily in the probable size of the season's pack for the several canning crops, the main objective becomes one of furnishing forecasts and estimates of production which will be reliable indexes of the probable number of cases that will be packed. For the major canning crops (sweet corn, snap beans, green peas, and tomatoes) the United States Department of Commerce makes a census of the packs at the close of each season. During the growing season, however, the industry and trade wish statistical information on the crops so that the situation can be systematically appraised in arranging for the disposal of the carry-over and in booking orders for future sales.

The present program of estimates consists of the following: Preliminary plans to contract acreage, intended acreage, preliminary estimate of planted acreage, condition reports on the 1st and 15th of the month during the growing season, forecasts of production at 2-week intervals after the crops are sufficiently advanced in growth, and revised estimates of planted acreage, harvested acreage, yield per acre, production, seasonal price to growers, and farm value at the end of the season. The final estimate of total production on tomatoes for manufacture is supplemented by an estimate of that part of the total tonnage which is used for canned tomatoes and for other tomato products, such as puree, paste, catsup, and juice.

The report on preliminary plans to contract acreage is issued about 2 months before general planting begins. Its purpose is to put before the industry an approximate measurement of the acreage which packers have in mind to contract so that proper adjustments may be made before these contracts are actually entered upon. Later, when packers are in the process of making these contracts, another report on intended acreage is issued to serve as a guide for further adjustments that may be necessary. Neither of these reports is in the nature of an estimate of the acreage that will finally be planted. They are, rather, indications of the acreage that would be planted should the packers carry out their reported intentions. The acreage actually planted is determined after planting operations have been completed.

In all requests for data on intended or planted acreages, packers are asked to give the acreage contracted or planted for the current season and the acreage planted or contracted during the past season. Thus, all comparisons are kept on a planted basis. This has been found to be more satisfactory than asking packers to report planted acreage for the current season compared with harvested acreage the past season. Since most of the acreage is on a contract basis, packers are more likely to keep in mind the planted acreage of the previous season than they are the harvested acreage. Although the planted acreage reported during the previous season is kept on record for each firm, it is highly desirable to include this item again on all acreage requests during the following season.

This duplication of requests for last season's acreage accomplishes two purposes. For those firms operating several factories, it serves to keep the data on a comparable basis. A firm's report for the current season might refer to only one of its plants whereas for the preceding season, the firm may have included all of its plants in the report. Again, a packer may purchase another plant and include data on it for the current season. In either case, the current reports in the respective seasons would not be comparable. The other purpose is to get a check on the acreage of those firms that failed to report during the past season. In this way, information is obtained on the past acreage of firms for which no previous reports are on record and of other firms that have just started operations.

Condition reports and forecasts of production are handled by much the same methods employed in the

case of truck crops for fresh consumption. For canning crops, however, reports on condition are issued every 2 weeks from May until October. The two reports each month refer to condition of the crop on the 1st and 15th, respectively. After the crops are sufficiently advanced in growth, forecasts of production are also made at 2-week intervals.

In connection with the reports on condition, packers are also requested to give their judgment on probable yield per acre on those dates when forecasts of production are made. This item has so far been found a more significant check on the yield of canning crops than on the crops grown for fresh consumption. In years when acreage is large and an overproduction is threatened, there is a tendency to harvest some crops at an earlier stage of maturity and to cull more closely on others. This tendency has lately become more pronounced by reason of the effects of the McNary-Mapes law, which requires the labelling of all goods that are substandard in quality. In areas in which a sudden shift may be made toward earlier harvesting and closer culling, the reported condition will not fully reflect these factors. Therefore, a judgment figure on probable yield per acre is needed as a check on the par-condition indication. The probable yield item, however, must be taken as a minimum indication, since it is subject to personal bias. During the past season, a comparison of the reported probable yield with that indicated by condition, has shown a remarkable agreement in most of the important States.

With reference to the inquiry on harvested acreage and production, it is possible to make a very satisfactory set-up when dealing with canning vegetables. On this inquiry, packers are asked to report for the current season the acreage planted, acreage harvested, yield per acre on harvested acreage, tonnage or quantities procured from contract and open-market acreage separately, and the total number of cases packed in terms of a standard unit. The repetition of the item on planted acreage serves the purpose of catching any changes that may have taken place after the preliminary estimate of planted acreage was made. From reports on tonnage or quantities procured by individual firms, checks on yield per acre may be calculated. A direct comparison on production may also be made for those firms that have reported similar data during the past season. The chief uses made of the reported pack are to learn the number of cases packed per ton and to check against the estimates of total acreage in each State. From a representative sample of reports giving planted acreage and total number of cases packed for identical firms, the yield in terms of cases per acre may be determined. After the complete census of pack is taken by the Department of Commerce, an approximation of the total acreage in each State is obtained by dividing the total State pack by cases obtained per acre. For such crops as green peas, snap beans, and sweet corn, of which most of the production goes into the canned product, this method has proved to be a good check on acreage estimates. Its reliability, of course, depends upon obtaining a representative sample of the average number of cases packed per acre.

At present, no attempt is made to forecast or estimate the size of the pack in terms of cases. The work, as now organized, is devoted primarily to the problem of giving the industry accurate estimates on production which may prove useful in approximating the size of the pack in a relative way. Forecasts and estimates of production have both been a means to this end. With tomatoes for manufacture, there is a high degree of correlation between the first forecast of production on August 1 and the number of cases of canned tomatoes that are finally packed. For sweet corn, green peas, and snap beans, there is a close relationship between preliminary estimates of production and size of pack. The closeness of this relationship is illustrated by a comparison of reports on green peas for canning in 1931. The July 15 forecast of production bore a straight percentage relationship to production of the previous season which, applied to the pack, of the previous season indicated a pack of 13,640,000 cases for 1931. The final census of the pack showed a total of 13,286,000 cases. A similar relationship, in connection with the preliminary estimate of tomatoes for manufacture in 1930, indicated a pack of canned tomatoes of 16,580,000 cases. The final outturn, as shown by the census survey, was 16,998,000 cases. In fact, indications of pack based upon preliminary estimates of production of the four major canning crops (tomatoes, sweet corn, green peas, and snap beans) do not usually vary more than 5 percent from the final census figures. Both the canning industry and the trade have come to rely upon these estimates as one of the closest indications of the total number of cases that will finally be packed.

LIVESTOCK REPORTS

A COMPARATIVELY NEW PROJECT

The present work of the Division of Crop and Livestock Estimates covering estimates of numbers, production, supplies, and value of and income from livestock, is a comparatively new project, the greater part of it having been developed since 1923.[9] The increase in the statistical information on the livestock industry can best be shown by a comparison of the livestock reports issued by this Division 10 years ago with those issued in 1932.

Prior to 1923 the reports or estimates of this Division that had to do with livestock were limited to the following: By States—annual estimates as of January 1 of the number of head, the value per head, and total value of the different species; estimates in the spring of the number of brood sows and of livestock losses from various causes during the preceding 12 months; an estimate in the summer of the weight per fleece and total production of wool; and an estimate in the fall of the number of stock hogs. For several years, also, figures showing the indicated monthly changes in numbers of cattle and hogs on farms had been published.

At present, the reports or estimates of this Division cover a wide range of subjects having to do with many aspects of livestock production and marketing. Among these are annual estimates, by States, as of January 1 of the numbers of livestock by species separated into significant age and sex classes; annual estimates by States of the amount of production in pounds of live weight of various meat animals, the value of this production, and the annual income from sale and slaughter; annual balance sheets showing the items of increase and decrease in livestock numbers by States; estimates of the spring and fall pig crops by States and of the

[9] For discussion of dairy reports see pp. 55 to 57; for poultry reports see pp. 58 and 59.

number of sows to be kept for farrowing during the following 6 months; estimates of the size of the lamb crop by States; estimates of the change in the number of early spring lambs and reports on their development and probable marketings; estimates of the number of cattle and lambs on feed in important States at stated dates and periodic reports on developments in the feeding situation; estimates of the probable marketing of different species of livestock over seasonal periods; and monthly reports on range and livestock conditions in the Western States.

This enlarged program of livestock reports and estimates has necessitated a material increase in the proportion of time devoted to livestock work both in the Washington and the field offices of this Division. In the Washington office a separate section devoted entirely to livestock has been developed with two technical men assigned to it and with two technical men in the field devoting their time entirely to livestock work. In the field offices the livestock work, especially in the important livestock States, has developed from a position of an incidental character to one of primary importance, with a material proportion of the office activities devoted to procuring and tabulating livestock data and preparing reports that cover a large variety of livestock information.

Because of the peculiar difficulties involved in procuring information on livestock in the Western States, the livestock work in that area has been decentralized to a considerable extent. The area has been separated into two groups of States and a regional livestock statistician is in general charge of the work of each group. The regional statisticians prepare and release reports peculiar to this area and they review most of the regular livestock reports from the separate States in these areas.

As a basis for many of these estimates and reports a large amount of statistical information has been compiled, much of it from original sources. This includes monthly shipments of livestock from and into different States, car loadings and unloadings by stations in different States, brand and sanitary board inspections, livestock slaughter by States, shipments of wool and mohair by States, etc.

There has been a marked change both in the character of the information used in making livestock estimates and in the methods of securing it. Judgment questions on livestock have been largely discarded and replaced by reports of numbers on sample farms. The use of such sample data has necessitated the securing of much larger and more representative returns. The samples upon which the principal livestock estimates are now based are obtained from schedules distributed and collected by the rural mail carriers (figs. 53, 54) except in the western States where special cattle and sheep schedules are mailed directly to stockmen who return these reports by mail to the State office. These sample data, when finally organized on summary sheets for the States and the United States, represent a cross section of the livestock industry in this country. Practically all of the primary tabulation work is now done in the various field offices and detailed summary sheets are sent to the Washington office where the final estimates are prepared and released. (See figures 63, 66, 67, 68, and 69.)

Livestock, as such, was not bought and sold for future delivery on organized exchanges until such trading was inaugurated by the Chicago Livestock Exchange early in 1930 and this practice has since been discontinued. There has been future trading in hog products for many years but this "provision market", so-called, has been very limited in its activities compared with the grain or cotton futures markets. Hence, the regulations and procedure followed in preparing and releasing the speculative reports have not been applied to livestock reports. For the two pig-survey reports in June and December, however, and the annual inventory report as of January 1, the day and hour of publication are set in advance and the releases are made in the same room and in the same way as are those of crop reports.

ESTIMATES OF PRODUCTION AND VALUE OF LIVESTOCK PRODUCTS

Although annual estimates, by States, of the quantity and value of crop production had been issued for many years, similar estimates for the principal meat animals—cattle, hogs, and sheep—have been made only since 1924.

Because of the marked difference in the methods of production, estimates of livestock production are much more complicated than estimates of crop production. Crops are largely raised in definite yearly quantities that are ascertained by multiplying the estimated acreage by the estimated yield per acre, and production is in terms of fairly uniform units, as bushels, bales, or tons. Crops are produced entirely within the locality in which the acreage is located. Livestock production, on the other hand, is not in definite yearly amounts but results from an addition to numbers due to births and from increase in weight due to growth of young animals toward maturity. Only a fraction of the animals born reach maturity, since disposition is continuous, with no uniformity in ages or weights or in the proportions disposed of from year to year. Livestock production is not always completed within the locality in which the animals are born. There is an extensive movement of unfinished animals out of some States into others to be grown out or finished. The weight added to these animals is also livestock production.

In the methods worked out for ascertaining the yearly amount of livestock production by States there are three distinct operations. The first is concerned with inventories. The number of each species, as estimated at the beginning and end of each year, is separated into different significant age and sex groups. The average weight per head of each of these groups is estimated and the sum of the total weights of all groups gives the total inventory weights at the beginning and end of the year. The difference between these total weights is the difference in inventory. Although differences in feed supplies, weather conditions, and other factors from year to year, doubtless result in differences in average weights of different classes of each species at the end of each year, specific data on inventory weights per head are lacking and the estimated average inventory weights per head of the various age groups are held constant from year to year.

The next operation is to determine the items of increase and decrease responsible for the changes in inventory numbers during the year. For this purpose State balance sheets (fig. 69) are prepared, in which estimates are made for each species, on the debit side, of the number on hand at the beginning of the year, the number of young animals born (or saved), and the number shipped into the State; and on the credit side,

of the numbers shipped to markets, sold locally for slaughter, slaughtered on farms, and lost through accident or natural causes. The sum of the credits, subtracted from the sum of the debits, gives the number at the end of the year.

The third operation is to convert into pounds the items in these balance sheets that are factors in determining the amount of production. This is done by multiplying the number of head by an estimated average weight per head. These total weights are then combined to arrive at the total production. The method of combining these is as follows: The total weight of animals shipped, sold for local slaughter, and slaughtered on farms (which give the amount disposed of during the year) is obtained; from this total is subtracted the total weight of animals shipped into the State during the year; the resulting difference is then either increased or decreased by the change in inventory weights according as the inventory has increased or decreased. This final amount is the total production in pounds.

This total production is evaluated by multiplying the weight produced by the weighted average farm price per pound. This weighted farm price is obtained by weighting the monthly farm prices by each month's proportion of the total yearly marketings. The inventories at the beginning and at the end of the year are not evaluated; hence, changes in inventory values due to change in unit values are not included in value of production. The animals shipped into the State are not evaluated at an average cost; only the increase in weight of these is evaluated, not separately, but as a part of the total production. Animals that die are not considered as animals produced. In the case of young animals that die within the year in which they were born no consideration is given them in the production figures; animals that were in the beginning-of-the-year inventory, and that die during the year, were included in the previous year's production but are deducted from that of the following year. These inclusions and these deductions, however, are made in the balance sheets and not in the actual production figures.

SAMPLING AND BIAS

A large part of the technical methods used in estimating crop production is not applicable to livestock. But since, in both cases, estimates are based largely upon sample data the problems involved in sampling are common to work with both. The same problems of memory bias and of intentional or "price-conscious" bias are encountered in livestock sample data as in crop data. Methods for measuring or eliminating such bias have had to be developed in much the same way.

THE PIG SURVEY

A detailed description of the methods used in handling the pig-survey cards may be useful as illustrating how the problems of sampling and bias are approached. A copy of the June 1, 1932 survey card is shown in figure 54. On this card information is furnished on pigs saved, lambs saved, and wool shorn, during different periods prior to June 1, these periods being determined by the character of the product.

The hog schedule asks for inventory numbers June 1, number of sows farrowed and pigs saved during the preceding 6 months and during the same period of the previous year, and number of sows bred or to be bred for farrow during the following 6 months and sows farrowed during the same 6 months of the previous year. The most important part of the report is that showing the change in the spring pig crop from that of the previous year.

The first question that arises relates to the adequacy of the sample. Since timeliness is an important element of the report, it is issued as soon as practicable. Hence, only the minimum number of reports needed to give stable results can be tabulated. It has been found that in the principal hog-producing States a 3 percent sample of farms that handle hogs is sufficient, if the farms are well distributed. Hence, for these reports there have been established county quotas of cards to be tabulated—an equivalent of one card for every 30 farms reporting hogs as shown by the 1925 census. In States in which returns are small, all cards are tabulated. The tabulation is by crop-reporting districts and straight and weighted percentages of change or averages are computed. In States in which county quotas are used the sample is self-weighted. When thus tabulated a number of indications as to hogs can be obtained and different methods must be used in obtaining them.

The inventory numbers, since they cover only the current year, cannot be compared directly with the previous year. This comparison is made by first computing the ratio of hogs per farm or per 100 acres of land from the current tabulations of the 2 years and then comparing these ratios—the so-called ratio-relative method.

Both current and historical reports are made as to sows farrowed and pigs saved. By relating the number farrowed in 1932 with the number reported in 1932 as farrowed in 1931 a direct ratio of change can be obtained. This ratio, however, may be affected either by memory or by intentional bias. For instance, the report for a farm for 1932 may be correct but that for 1931 may be wrong, because of a faulty memory of the number last year; this would give a memory bias to the ratio of change. Incorrect memory bias alone would tend to be compensating—that is, about the same proportions of reports would overremember last year as would underremember. But there are other elements of bias that are not compensating.

If there were intentional bias in the report, this would tend to underindicate the ratio to the previous year—that is, to make the increase appear less than it was or to make the decrease appear greater than it was. These biased reports might be of two kinds; this year's number might be reported correctly but last year's might be too large; or this year's number might be reported too small and last year's might be either correct or too large.

Several methods of checking these indications of change for bias are available. The ratio relatives of sows farrowed and pigs saved per farm and per 100 acres may be computed. Since the ratios used are based upon the current reports, no memory bias can be involved. If the intentional bias is in overreporting the previous year, it will be eliminated; but if it is in underreporting the current year it will be eliminated only if it is a constant bias occurring from year to year.

A second method of measuring bias is to use reports from identical farms for the two years and to tabulate for the previous year both the current and the historical numbers reported, to determine how and to what

extent the historical reports differ from the current; that is, how the number of sows reported June 1, 1931, as farrowed in the spring of 1931, differs from the number reported June 1, 1932, as farrowed in the spring of 1931. If the bias is due to faulty memory or is intentional through overreporting the previous year, this method will give a measure of it. If it is intentional through underreporting the current year, the method will not measure it.

These comparisons for identical farms show that there is apparently some intentional bias in the reports from the North Central States—the area of commercial hog production. In all these States the historical reports tend to be somewhat larger than the current reports, while in other areas the historical reports are larger in some States and smaller in others.

Check-data on the indications of the survey, which may be a measure of bias or a measure of representativeness of the sample, are the comparisons of hog marketings over seasonal periods to determine whether the change in the size of the pig crop shown by the survey is reflected in marketings during the months when the crop is marketed. These data, however, are better adapted to measuring the accuracy of the combined spring and fall surveys than of either of them separately, since there may be variations in the months of marketing of both the spring and fall pigs from year to year. If the sample is representative, then such a check would be a measure of bias. If the change in marketings agrees with the change in the size of the pig crops indicated by the comparison of this year's current data to last year's historical data, corrected for bias shown by identical-farm tabulations, it is evident that the bias was about as shown by the identical farms. If the change in marketings does not agree with the survey indications corrected for bias, it is not possible to determine whether this was due to unrepresentativeness of the sample or to error in the measure of bias.

It is to be noted that prior to 1932 the results of these pig surveys as published are not estimates of changes in the size of the pig crop but are simply the changes shown by the tabulation of reports from a large number of farms with no allowance for bias or unrepresentativeness.

This type of report was published (1) because the number of years in which these pig surveys had been made were too few to give a series from which dependable estimates by States could be made in view of the fact that allowance needed to be made both for bias and for unrepresentativeness of the sample, and (2) because no basic data from census enumerations or elsewhere were available as to the number of sows farrowing in the spring, or in the fall, or in any year.

For some years, however, there had been a growing demand for actual estimates of the size of the pig crops instead of these survey reports which, in themselves, did not give accurate indications of percentage change in the size of the pig crops by States and did not show what the percentage changes shown would mean in numbers.

After the 1930 census figures became available (they gave the number of brood sows and gilts on farms Apr. 1 that had farrowed since Jan. 1 or would farrow before June 1 in 1930) and had been studied in relationship to information from the surveys as to pigs saved per litter, and to records of marketings, and records of farm and local slaughter and death losses, it was decided that they gave a basis for making actual numerical estimates of sows farrowed and pigs saved. In June 1932, therefore, the type of report was changed and instead of issuing a report showing the result of the survey tabulation as made, an actual estimate was issued showing the number of sows farrowed and pigs saved in the springs of 1930, 1931, and 1932, and giving a forecast of the number of sows to farrow in the fall of 1932 with an estimate of the number farrowed in the fall of 1931.

The studies conducted before it was finally decided to make this change showed that the ratio-relatives of sows farrowed per farm and per hundred acres, and the percentage changes in these items from the identical-farm tabulations, gave better indications of actual changes, as checked by records of marketings and slaughter, than did the current to historic changes in which the apparent bias from year to year was not constant. Hence, it was decided that in the future the historical questions would not be included on the survey cards and that estimates would be based upon these other indications.

SHEEP, LAMBS, AND WOOL

The questions on sheep and lambs are designed to secure information on the size of the lamb crop and the amount of wool production. A question is asked as to lambs saved the previous year, but the indicated change shown by comparison of the number of lambs in the 2 years is not used in determining the size of the current year's crop. This is obtained by first computing the ratio of lambs saved per 100 ewes on January 1 and then applying this ratio to the number of breeding ewes on January 1 as estimated in the previous January. Determining the ratio of lambs saved to ewes is an undertaking similar to determining the yield of crops per acre from individual farm returns, showing acres harvested and total bushels obtained. The lamb-crop report is made in terms of actual head and not of ratios of change from the previous year.

The wool returns are handled in somewhat the same way as those for lambs. The total number of sheep reported on the cards as shorn, is divided into the total wool reported shorn, to get an average weight per fleece. The actual number of sheep shorn is computed from the estimated number on farms January 1, by subtracting from this number the marketings, slaughter, and death losses between January 1 and shearing. The product of sheep shorn and average weight per fleece gives the total amount of wool shorn. The weight per fleece is a figure similar to yield per acre.

The experience of the last few years in using sample returns for estimating livestock numbers shows the need of methods for either measuring or eliminating bias when the sample is sufficiently large to give stability in the indications. Stability in this case is used in the sense that further increase in the size of the sample would not materially change the indications. When the sample is not large or representative enough to give such stability, other methods are needed to secure dependable indications of change.

MORE CHECK-DATA NEEDED

For eliminating or measuring bias the method of comparing reports from identical farms is the most promising and in the future it will be depended upon very largely. There are some types of livestock information, however, concerning which dependable indications cannot be secured by the sample method. In some cases a survey amounting to a complete enumeration is needed. For others an annual enumeration of selected areas would be of great value, provided

such enumeration be made by trained and experienced enumerators.

At present, it appears that the reports covering numbers, supplies, and production of livestock are sufficient in number and kind to cover the immediate needs of the industry. For the next few years efforts will be devoted to improving the character of the information upon which these reports are based and to securing additional check-data by which the accuracy of the reports can be measured.

For livestock valuable check-data on estimates of inventory numbers of livestock are available in many States in the records of livestock assessed. Although the totals shown in these assessment records are below actual numbers, the ratio of changes in the number assessed from year to year have been found to be very dependable indicators of actual changes. With accurate census enumerations as a basis, estimates that are revised each year in line with changes in assessments will never be far from actual numbers in the case of all species except hogs.

That these estimates may be periodically checked against actual enumerations made by the Bureau of the Census, the date of these enumerations should be that of the estimates, which are as of January 1 each year. The census enumerations of 1920 and 1925 were made as of January 1. The enumeration of 1930, however, was made as of April 1 and is not comparable either with the enumerations of 1920 and 1925 or with the estimates by the Department of Agriculture. In order that these April numbers could be compared with January numbers, it was necessary to increase the April numbers, excluding young animals born between January and April, by the amount of disappearance from January 1 to the date of enumeration. No exact information of such disappearance was available for any State, although information as to shipments to market during this period was available. Other items of disappearance, such as death losses, farm slaughter, and local retail slaughter, could only be estimated.

The Department used all available information as to changes in numbers between January and April, by States, to adjust the census April figures to a January 1 basis, and these converted figures were used to check the estimated numbers of January 1, 1930. Such checks revealed any large errors in the estimates, but when the difference between the estimates and the census adjusted figures was relatively small—3 percent or less—it was not possible to determine whether the error was in the estimate or in the adjustment of the census figures.[10]

DAIRY REPORTS, 1899 TO 1931

The first comprehensive national records of milk production in the United States were those obtained by the census of 1890. A much more complete record, supplemented by estimates for missing items, was published in the census of 1900 but the census of 1930 was the first really adequate enumeration of production and utilization of milk, made in such detail that the individual records could be checked and missing figures accurately supplied.

Unfortunately the last 6 census enumerations of agriculture have been taken on 4 different dates and careful analysis of the records on milk production show that they were very greatly affected by the quantity of milk being obtained at the time of the enumeration. As a result, the census enumeration of April 1930 appears to be comparable with the enumeration made in April 1910 but it does not appear to be comparable with the earlier census record taken in June or the 1920 and 1925 enumerations made in January.

To meet the need, annual estimates of production were, for a while, prepared by the Division of Dairy and Poultry Products chiefly from reports of crop correspondents on farm use of milk, reports from city boards of health, and records of dairy products manufactured, with missing items estimated. This series was discontinued in 1926 and no further official estimates of milk production in the United States were issued until November 1932 when the detailed reports of the 1930 census and a further study of both production and utilization indications made it possible to begin publication of a new series of estimates by States. For some important dairy States, however, statisticians employed in cooperation with State agencies have been preparing annual estimates of milk production for a number of years, and the experience gained in preparing these State estimates has greatly facilitated the task of preparing estimates for all other States.

SOURCES OF DATA

The foundation for the present reports on the current trend of milk production was laid in September 1924 when the regular monthly schedules sent to crop correspondents included questions on the number of milk cows on their farms on the first of each month, on the number of these cows milked, and on the quantity of milk produced on that one day. These records, covering an average of somewhat over 20,000 herds each month, have provided an invaluable record of monthly changes in the percentages of the cows being milked and of the quantity of milk produced per cow. From these records it has also been possible to determine in a general way the increase or decrease in milk production that may ordinarily be expected to result from a given change in the condition of pastures or from a change in the relative prices of dairy products and feed.

In addition to the monthly records for their own herds, crop correspondents have supplied much information regarding conditions in their respective localities. They have submitted estimates of the average yearly production per cow, of the average butterfat test, of the average percentage of the cows of each breed, and of the percentage of the calves dropped by dairy cows that are born in each month. They have also reported on the ages of the milk cows and heifers in their own herds and the yearly production of butter on their farms. From these reports and available census records it has been possible to calculate fairly closely the quantities of milk and butterfat produced in various parts of the country as well as to collect much valuable information as to the cause of the regional and seasonal differences that exist.

The next step in developing dairy statistics was to secure semiannual records of milk cows, cows being

[10] For an appraisal of the 1930 census of livestock and a detailed description of the methods used in converting the census April numbers to a January 1 base, see the July 1932 issue of the Journal of Farm Economics.

milked, and milk production on about 140,000 farms, by putting questions regarding these items on the livestock survey cards distributed and collected each June and December by rural mail carriers. These records differ from those secured from crop correspondents in that, while often less accurate individually, they are more representative of farms as a whole. This is because they show the production on average farms rather than that secured by the skillful and progressive farmers who serve as crop correspondents.

Another forward step in the direction of better dairy statistics was made when, by cooperating with the Bureau of the Census, the agricultural schedule for the 1930 census was expanded to secure a more complete and accurate record of both the annual production of dairy products and of the daily production of milk at the time the census was taken. The 1930 census also obtained from farmers their estimates of the quantity of butterfat sold from their farms during 1929 as well as the usual records of butter made and of butter, milk, and cream sold. These records are of inestimable value to the dairy industry in that they provide a basis for reasonably accurate annual estimates of milk and butterfat production.

The chief difficulty with the dairy production records of previous censuses has been that many of the individual farmers questioned have not known the annual production of milk on their farms. In the case of the 1930 census records, however, production at the time of enumeration was so close to the average daily production during the year that annual production could be calculated fairly accurately from daily production at the time of enumeration. Furthermore, the 1930 census record of butterfat sold can be compared directly with the butterfat in the creamery butter manufactured, and, after proper allowance is made for butter manufactured from whey cream and from whole milk, it is possible to calculate the extent to which the farmers' estimates of butterfat sales differed from actual deliveries.

Beginning in the fall of 1930 the Department secured the cooperation of thousands of dairymen in all parts of the country and began the collection of more complete monthly records for their herds. From a small beginning the number of herds included has been increased to a total of about 6,000 each month. These reports show the quantity of milk produced, the number of milk cows on the farm, the number of cows milked, pounds of grain fed, and the butterfat test where this is known. Four times each year beginning with February the records show the disposition of the milk produced, including the quantities used in the farm household, fed, skimmed for sale of cream, skimmed for making butter on the farm, and sold as whole milk. These quarterly records also show how many of the milk cows on these farms were milked, how many were partly milked by hand and partly sucked by calves, how many were sucked by calves and not milked, and how many of the cows were dry. Such records are particularly important in the areas in which it is customary for the farmers to allow the calves to suck the cows when the price of butterfat is low. Four times each year beginning with December the inquiries determine the prices being received for the milk, cream, and butterfat sold. Twice each year information has been secured regarding the numbers of young stock being raised, the number of cows and heifers freshening by months, and the plans of farmers to increase or decrease their dairy herds. Samples of three of these schedules are shown in figures 55, 56, and 57.

These regular reports from dairy correspondents furnish a vast quantity of information regarding methods of dairying in various parts of the country and regarding the adjustments being made to meet current conditions. If, for example, milk deliveries in an area decline, it is possible to learn from these records whether the decrease was due principally to a decrease in the number of milk cows, to an increase in the number of calves allowed with the cows, to a decrease in the quantity of grain fed, to a shift in freshening dates, or to a change in the quantity of milk retained on the farms.

DIFFICULTIES IN SAMPLING

One of the difficulties that has delayed the preparation of adequate statistics of milk production is the lack of uniformity in the use of some common English terms. For example, there is considerable individual, regional and seasonal variation in the point of view of farmers as to which animals should be classed as "milk cows." Thus some farmers report cows as milk cows in those months of the year when they are being milked and as beef cows when they and their calves are on the range or pasture with the beef herd. Even cows milked regularly may be in fact kept "principally for beef" and be so reported, particularly when the price of butterfat is low compared with the price of beef cattle. In some areas grown heifers not yet fresh are commonly reported as milk cows but on the other hand young cows with their first calves are sometimes reported as heifers; in other words a heifer may be either a young cow or one which has not yet had its first calf.

Securing comparable reports on milk production is sometimes equally difficult. In market-milk areas many farmers are so accustomed to thinking of milk production as the output of their farms that no matter how the questions are asked they report as production only the pounds of milk marketed. On the other hand, farmers who allow calves to suck part of the milk often include some of the milk sucked in their calculations of milk production, thus including as "produced" all milk secreted by the cows. The Department of Agriculture, in preparing its estimates, has endeavored to follow the wording most commonly in use. Thus the estimates of numbers of milk cows aim to include all cows milked for an appreciable length of time during the year but to exclude heifers not yet in production. The estimates of milk production aim to include all milk drawn by hand or machine except milk spilled or wasted. This definition excludes milk sucked by calves but includes all drawn milk fed to calves, all milk used on the farms where produced, and all milk marketed in any form. The estimates, therefore, differ somewhat from census and other statistics based on slightly different definitions of these words.

There are some other questions of definition which should be understood by those using the published estimates of milk cows, cows being milked, milk production, and grain fed to milk cows. The milk produced the first few days after calving is different in composition and is known as colostrum. Even if drawn by hand this colostrum is not usually included in the quantity of milk reported as produced but it is frequently included in the quantity of milk reported as fed to calves. Farmers reporting on sales of milk, cream, and butterfat naturally report the quantities for which they receive payment. Actual deliveries

may, however, exceed quantities paid for by an average of perhaps 1 percent, because purchasing agencies, in calculating deliveries, do not usually allow for fractional pounds and do not usually calculate the test of milk closer than tenths or of cream closer than 1 percent. In estimating the number of cows being milked at any one time some difficulty is encountered from differences in point of view as to whether a cow that is practically dry is milked or merely stripped. The quantity of milk produced by cows that are nearly dry may be negligible but the inclusion or exclusion of such cows may materially affect the indicated production per cow milked, and there is some reason to believe that farmers who take pride in the good showing of their herds are inclined to be somewhat conservative in reporting the number being milked.

Estimating production and deliveries of dairy products from the reports of individual farmers is also made difficult by the wide differences in the dairy practices of the various classes of producers. For example, farmers with only 1 or 2 cows commonly use on their own farms a large part of the milk produced. For this reason a large proportion of the cows in these small herds are of the breeds that produce milk of high butterfat content. On the other hand, the very large herds are found chiefly in market-milk sections and include a high proportion of the breeds that produce milk of a lower butterfat content. The test of milk delivered is thus often misleading as an indication of the average test of all milk produced, so in areas in which farmers do not know the test of the milk produced, estimates of butterfat content have to be based in part on such information as can be obtained on the relative number of cows of high- and low-testing breeds kept.

ESTIMATES AND FORECASTS

Annual estimates of milk and butterfat production in each State are now based primarily on the 1930 census record of production in 1929, with careful allowance for differences in definitions and for definite evidence of incompleteness. The annual change in production is calculated from estimated changes in numbers of milk cows and from indications of change in milk production per cow, the results being checked against commercial deliveries wherever possible. The estimates of milk cows are based principally on the rural-carrier surveys and the Department's published estimates of "cows and heifers, 2 years old and over, kept for milk on farms, January 1", with allowances for 2-year-old heifers not yet fresh and for the extent to which the average number of milk cows on farms during each year exceeds the number on farms on January 1. The estimates of changes in milk production per cow are based principally on the daily production reported by crop correspondents on the 1st of each month, on the daily production obtained by special dairy correspondents (adjusted so as to include a proper proportion of herds of each size) and on the semiannual records on milk production per cow secured in connection with the semiannual livestock surveys that are conducted in cooperation with rural mail carriers. In using these indications, however, allowance is made for the fact that most of these records are obtained from progressive farmers who have more-than-average skill and who have larger and better herds than are typical of all producers.

Monthly estimates of milk and butterfat production will be based on similar statistics with careful allowance for the weather conditions prevailing on the days for which production is reported and for the extent to which the seasonal trend of production secured by crop correspondents, dairy reporters, and other groups differs from the true seasonal trend. Furthermore, allowance will have to be made for the seasonal trend in the percentage of butterfat in the milk produced, for this varies rather sharply between regions according to the time of year at which the cows freshen. As these regional differences are not accurately known, monthly estimates of milk and butterfat production for individual States cannot be undertaken until much preliminary research work has been accomplished, and, except in a few States, the necessary accuracy cannot be secured until the estimates are based on a much larger number of reports than can now be handled.

Forecasts of milk production have not yet reached a point at which definite statements can be made, for time will be required to develop and test out new statistical technic. In a broad way, however, it seems probable that the general trend of milk-cow numbers can be calculated from the number of young stock being raised, from the number of cows being marketed, and from the reported plans of farmers as to increasing or decreasing their herds. Milk production per cow tends to respond rather definitely to changes in feed and pasturage conditions, to changes in season freshening, and to variation in the number of calves allowed to suck the cows. Considerable information concerning these items is published monthly in the mimeographed reports, Milk Production Trends. Charts, reprinted from those reports, are shown in figures 64 and 65.

With all available information on current changes in number of milk cows, milk production, pasturage condition, rate of feeding, young stock being raised, time of freshening, and so forth, summarized in terms of the probable effect on production, producers should be able to adjust their output much more accurately to prospective supply conditions than has hitherto been possible. In the past, lack of adequate information has at times caused farmers to reduce too much the number of heifer calves raised in times of depressed markets for dairy products and increase too much the number of heifers raised when prices were temporarily high. This has resulted in cyclical movements of cow numbers and milk production with very heavy losses to the industry when the number of cows brought into production was too great for stability.

Lesser cycles in the production and prices of dairy products have been due to shifts in the intensity of feeding. When prices of grain have been relatively low in comparison with butterfat, there has been a shift toward more intensive feeding and heavier production which brought about a realignment of prices so as to cause a relatively unfavorable feeding situation, followed in turn by a further readjustment of feeding practices, production, and prices. These irregularities in production have been largely due to the lack of adequate information regarding current practices on competing farms. Each producer has been compelled to adjust his practices to the prices that have been received rather than to prospective demand and supply conditions.

POULTRY REPORTS

PRESENT PROGRAM STARTED IN 1925

Little work on poultry was done by the crop-reporting service prior to 1919, except that farm prices of eggs and chickens were collected monthly beginning with 1910. In 1919 an inquiry was inserted in the annual January crop schedule, which at that time carried questions concerning numbers of different classes of livestock on the reporter's farm, asking for the numbers of poultry (layers and nonlayers) in the current year and the previous year. This inquiry was repeated each year until January 1924. When the United States census of 1920 was published it was found that the number of chickens relative to number of work stock enumerated as on hand January 1 was practically identical with the relations existing between the two on the farms of crop reporters as shown in the January 1920 livestock schedule. Estimates of numbers of work stock on farms had been published for many years. Thus it appeared that by determining the relation of the number of poultry reported by farmers for their own flocks to the numbers of work stock reported for the same farms, and applying this relation to the current estimates of numbers of work stock, reasonably close annual estimates of numbers of chickens and of the changes in numbers of chickens from year to year were possible. Such estimates of percentage of change were applied to the census figures of chickens on hand January 1, 1920, to give figures on hand January 1, 1921. Estimates established by this method were made annually until January 1925.

Pending provision of an adequate service of information on numbers of poultry and production of poultry products, a better groundwork for poultry estimates was laid by inclusion, in the annual livestock schedule and the monthly crop schedules sent to crop reporters in 1925, of additional basic questions concerning their own flocks. The annual inquiry, with some subsequent amplification and refinement of the form of question, now asks for number of hens, number of pullets, number of other chickens and total number of all chickens on hand, number of young and mature chickens eaten on farms reporting chickens and number of each sold during the preceding year, numbers of turkeys and of ducks and geese on hand and numbers raised in the previous year.

In addition to these questions on the annual schedules of inquiry, questions were added to the regular monthly crop schedule concerning the number of hens and pullets of laying age in the farm flocks and the number of eggs laid by these on the first day of the month. Some additional questions have been included subsequently in certain months. In April, May, June, and July the number of chicks and young chickens of the current year's hatching is asked. In October the number of pullets of laying age and number not of laying age, and the number of other chickens than hens and pullets, are asked. The number of roosters is called for in April, and number of pullets being saved for layers in December. In February, questions are asked regarding eggs sold, eggs eaten on the farm, average weight of young chickens and of old chickens sold, and number of turkeys, sold and eaten.

Practically all of these questions relate to definite quantities and concern matters within the personal knowledge of the reporter. These additional sources of information have been used as the basis of the poultry estimates since 1924. As the reports are sufficiently numerous to establish stability in the averages for most States, they afford a dependable basis for estimates, and the indications drawn from them have agreed closely with conditions on farms as a whole, so far as could be determined by available checks, including receipts at markets and the results of the 1930 census. These data are assembled and analyzed when the pressure of work on established projects permits, and they have afforded indications of annual and monthly changes in numbers of poultry, and of production and disposal of poultry products, that are extremely useful to the industry. They afford in gross form information heretofore lacking of the direction and extent of current changes in numbers of layers, numbers of pullets being saved, surplus birds for market, production of eggs, etc. Properly analyzed, they afford indications not only of current trends, but of probable future changes in numbers and production. These indications relate to farm flocks of less than 400 hens and pullets on January 1, and will not give a true reflection for the entire poultry industry until it is possible to collect comparable information from commercial producers.

ANNUAL AND MONTHLY ESTIMATES

The estimates of numbers of chickens on hand at the beginning of 1925 agreed rather well with the numbers shown by the 1925 census enumeration.

Revised estimates were made for 1924 and 1925 on the basis of the census figures with some allowance for an apparent incompleteness of a few percent in a number of States, in the census numbers of chickens on hand. The census for 1930 was taken in April. Allowing for changes in numbers from January to April and adjusting census figures to a January 1 basis, the 1930 estimates were found to agree rather closely for the United States as a whole, although adjustments were needed in a number of individual States.

Starting with figures in the census year, based mainly on the census enumerations, supplemented by State enumerations and other available data, estimates are made of numbers on hand on the first of each succeeding year in accord with the indications of change shown in farm flocks. For the purpose of this comparison all flocks of 400 or more birds reported on January 1 are excluded from the tabulations, as it was found that the inclusion of large flocks disturbed the averages unduly and lessened the accuracy of the indication. No adequate data are available concerning changes in commercial flocks. A separate tabulation of the 500 to 600 large flocks usually reported affords some indication, though rather doubtful, of changes in these for the United States as a whole, but returns for commercial flocks in individual States are too few to afford trustworthy indication of changes in any particular State, being especially inadequate in the States where commercial production is most important. Estimates of total production for such States are made only partly on the basis of farm returns, and partly upon the study of records of receipts at primary and central markets, so far as these are available.

The estimates of the annual production of poultry are based for census years on the census enumerations of reported numbers raised, on studies of market receipts, of urban consumption as indicated by receipts for a few principal markets and by a limited number of city surveys of consumption, and upon farm consump-

tion as indicated by reports from crop correspondents concerning number of chickens eaten in their own households. Changes in numbers of chickens produced from year to year are estimated on the basis of changes in the number of young birds eaten on the farm, number sold, and number remaining on hand at the close of the year, as reported by crop correspondents. Farm consumption in the census year is based upon census-reported production minus census-reported sales with allowance for change in number of chickens on hand at the beginning and at he end of the census year, and upon the reported numbers consumed in the households of crop reporters, checked by studies of various surveys of farm consumption, and by analysis of indicated farm consumption shown by successive census reports on numbers raised minus the numbers sold.

Estimates of sales of poultry are based mainly upon the estimates of total supply available for disposal, minus estimated farm consumption and loss, supplemented by study of the records of shipments and of reported receipts at principal markets.

Estimates of annual production of eggs in the year covered by the census enumerations have been made by adding to the census figures for 1924 an allowance sufficient to provide conservatively for the number consumed on farms and in towns and cities, and used for hatching, as estimated on the evidence before mentioned. The census figures of 1920 and 1925 on production of eggs were disproportionately low compared with numbers of chickens, as shown by other censuses. These low figures can probably be attributed to the fact that the enumerations of those 2 years were made on January 1, when the number of eggs being laid on general farms is the lowest during the year, and when the producer is therefore most likely to underestimate the yearly production.

Estimates for production of eggs in the years intervening between censuses are based upon the estimated changes in numbers of layers and on the reported production of eggs per 100 hens and per flock on the farms of crop reporters for the different States checked by records of shipments and receipts at principal markets. Such checks are especially needed for States in which large commercial flocks are an important factor in the total production. Estimates of farm consumption of eggs in the census year are made from reports by crop correspondents for numbers used by their own households, from various farm-consumption surveys, and from analysis of successive census returns of numbers of eggs produced minus the number sold and used for hatching. Estimates of farm consumption in subsequent years are based upon changes in the annual returns of numbers consumed in the households of the crop reporters. The estimates of sales of eggs in census years are made in the same way as are those of sales of poultry. Estimates of changes in numbers sold from year to year are based upon the changes shown by the returns of crop correspondents to the annual inquiries on this subject and upon the computed number available after deducting from the estimate of number of eggs produced the estimated number consumed on farms where produced and the number used for hatching.

Estimates of absolute number of hens, pullets, and other chickens at different periods of the year, and of the monthly quantitative production of eggs, have not been published, but monthly figures are available showing the relative numbers of these from month to month compared with previous months and years.

FARM-PRICE REPORTS

ESSENTIAL DATA FOR AGRICULTURE

An adequate knowledge of relative changes in farm prices, especially as they compare with the trends of other prices, wages, land values, and so forth, is fundamental as a basis for an intelligent, constructive program for agriculture, whether of Federal or State agencies, or of organizations of farmers.

Prices and price changes are both causes and effects in the field of economic phenomena. In the long run the prices of farm products tend to control the supply. Changes in farm organization and types of farming can frequently be traced to absolute and relative changes in farm prices. For many problems of this kind it is desirable to have a price series which represents price changes in the local farm market and at the same time is a composite for a definite geographical unit, such as a State, as well as a composite for the entire crop, including all grades and classes.

Three distinct types of price series are collected by the Division of Crop and Livestock Estimates: The annual estimates of December 1 farm prices of crops and January 1 farm values of livestock which constitute the oldest series, beginning in 1867; the 15th-of-the-month farm prices of commodities sold by farmers, which were first collected in 1908, for crops, and in 1910, for livestock and livestock products; and the prices of articles bought by farmers, beginning in 1910.

HISTORY AND METHODS OF COLLECTING FARM PRICES

Systematic collection of farm prices by the Department of Agriculture began in 1867, when farm prices of crops and farm values of livestock as of January 1 were obtained from correspondents. In 1872 the date for reporting prices of crops was changed to December 1. After this change was made it became customary to consider the crop prices reported as of January 1, 1867–72, as equivalent to the prices prevailing one month earlier (December 1 of the previous calendar year), and for many years past these prices have been published as of December 1, 1866–71, making a full series of December 1 prices for crops since 1866. No change has been made in the date for reporting values of livestock. The prices of crops and the values of livestock for the period 1866–78, as now published, have been reduced to a gold basis, using equivalents supplied by the United States Treasury Department. Both the December 1 crop prices and the January 1 livestock values are reported by the township list of crop reporters.

Beginning with the development of the field-aid list, the December 1 prices of crops and the January 1 values of livestock have been obtained from both the township and field-aid lists, and the separate results have been combined in obtaining the State average published.

Beginning with 1867, the January 1 values of livestock have been obtained by asking the average value or price per head for all ages and sexes of a given kind of livestock. This method has been employed to date in reports on swine and milk cows, but begining with 1894 the inquiry on horses, mules, sheep, and "other cattle" (as distinguished from milk cows) has been made on the basis of an age classification and, in the case of sheep, on the basis of a sex classification. The values as obtained for the different age groups were averaged to obtain the value per head of all the animals of a given kind. This change in the nature of the inquiry was undoubtedly an improvement, but the comparability of the series was somewhat disturbed.

Between January 1926 and January 1928 the value of swine was obtained in the old way; that of "swine of all ages" from some of the correspondents; and from the rest of the correspondents values were obtained on the basis of three subclasses: (1) Sows and gilts bred or to be bred for spring pigs, (2) all other hogs 6 months old and over, including boars, and (3) pigs under 6 months old. When the results of these two inquiries were compared for individual States, the average value of swine of all ages obtained by the old method was lower than that obtained by the subclass method. A similar comparison between the value of all cattle on the basis of the inquiry used beginning with 1894, and the value as obtained by a more detailed subgrouping, showed that the price ascertained by the old method was higher than that ascertained in the new way.

In January 1908 the Department began to collect monthly prices paid to farmers for corn, wheat, oats, barley, rye, buckwheat, flaxseed, potatoes, cotton, and hay. The following February, butter, eggs, and chickens were added to the schedule. These prices were as of the 1st of each month, and were obtained from crop reporters of the Department. Beginning January 1910 prices were collected as of the 15th of the month from a list of country dealers and merchants, for the following products: Hogs, beef cattle, veal, sheep, and lambs, per 100 pounds live weight; horses and milk cows per head; wool per pound; apples, pears, dry beans, sweetpotatoes, onions, and cloverseed, per bushel; and peanuts, per pound. Prices for timothy seed and cottonseed were first obtained in September 1910. Maple-sugar and maple-sirup prices date from March 1912; prices for alfalfa seed from June 1912; prices for turkeys, per pound, from October 1912. The prices for a few other farm products have been added from time to time.

The 15th-of-the-month prices are reported by an additional list of about 13,500 voluntary correspondents, most of them country merchants, or dealers at country shipping points, and a few well-informed farmers. Prior to December 1923 the prices of the major crops were reported on the 1st of the month by the county reporters in connection with monthly crop reports. Beginning with December 1923 all monthly prices are for the 15th of the month. The 1st-of-the-month prices for the period prior to December 1923, have been converted to an approximation of a 15th-of-the-month price by taking the average of the prices reported on the 1st of two consecutive months. The monthly prices of livestock have always been reported on the 15th of the month. For a few products prices had been reported both on the 1st and 15th. Whenever possible, the 15th-of-the-month prices have been used.

One would expect a greater lag upon the current prices at primary markets when the reporters are farmers than when they are dealers. A comparison of dealers' and farmers' reports on staple crops indicate that there is no great difference other than a slight lag. It is felt that the old and the new series of the monthly prices may be safely combined. Since March 1913 all egg prices and since May 1913 all chicken prices are those reported on the 15th of the month.

In several of the small States the change from crop reporters to country dealers and merchants marked the end of reports on prices of crops unimportant in those States, such as wheat in the New England States.

The source of the information and the wording of the inquiry [11] influence the price quotation. For example, the monthly price of horses, as determined from the reports of the regular price reporters of the Department when they are asked for the "average prices paid to producers in your market", is usually considerably higher than the January 1 value obtained from the crop correspondents, who are requested to report the "average price per head of horses in your locality" by size groups. The 15th-of-the-month price represents more nearly the price at which horses were being bought and sold in a given locality and would tend to be higher than the January 1 price, which is really an estimate on the average value of all horses of a certain age on farms in that locality.

The same difference exists between milk-cow prices from the two sources. Although the monthly prices of milk cows and horses vary considerably and tend to have a seasonal movement, the general trend indicated by the series is practically the same as that of January 1 values.

The prices of articles bought by farmers were first collected in 1910 when crop reporters were asked to report the prices paid for certain articles, like feed, implements, and fertilizer. This inquiry was made annually up to 1922 when it was placed on a quarterly basis. At the same time the inquiry was shifted to a greatly expanded list composed largely of small-town dealers in farmers' supplies. Subgroupings were made according to the types of dealers and the schedules were subgrouped accordingly. Prior to 1927 prices were obtained on about 100 commodities and beginning with 1927 on about 175 commodities.

DESCRIPTION OF FARM PRICES

The prices received by producers of farm products commonly called "farm prices", represent the price-reporting estimate of the average price of all grades and classes of commodities being sold in the local farm market on or about the 15th of each month. The grades and classes vary from one season to another and even from one month to the next. The "wholesale price" of farm products usually means the price of a particular grade or class at a primary or central market, such as Chicago, Kansas City, New Orleans, or New York, for a given day or weekly or monthly average of daily quotations. Both farm and wholesale prices are distinguished from future prices in that they both represent cash transactions for immediate delivery.

The farm price is seldom an f.o.b. price, except where products are marketed cooperatively. In the case of potatoes, for example, there is usually some agency at the local market to buy from the producer, and these buyers must receive some compensation for their services. There is usually some spread between the farm price and the f.o.b. price. When the farmer sells direct to the consumer in a neighboring town the farm price and the retail price may be one and the same.

Strictly speaking, the actual farm price or "price at the farm" of a farm product is practically impossible to learn. The price which is usually ascertained is the one the farmer receives at his local market. For most farm products there is no price at the farm. The price is made only when the product changes hands. The prices reported to the Department of Agriculture are the prices at which the products first changed hands when sold by the producer. The price of wheat as

[11] A representative sample of the schedules used is shown in figures 58 and 59. A complete set of the schedules may be obtained upon request to the Division of Crop and Livestock Estimates, U.S. Department of Agriculture, Washington, D.C.

reported includes the cost to the farmer of handling and delivering the wheat to the local elevator. The local handling cost may be relatively large with such products as butter, eggs, wool, and cotton.

SOURCES OF INFORMATION

The most reliable sources from which current, local market, or farm price data on farm products are gathered may be classified into seven groups: (1) Country mill and elevator operators, (2) managers of local creameries and milk-receiving stations, (3) country merchants, (4) farm-produce dealers at local shipping points, (5) cooperative marketing organizations, (6) country bankers, and (7) well-informed farmers.

On the other hand, the principal sources of current local market price information on commodities farmers buy are: (1) Country merchants, (2) furniture dealers, (3) operators of lumber and coal yards, (4) hardware dealers, and (5) feed, seed, and fertilizer dealers.

ORGANIZATION

The satisfactory collection of current local market price data requires an organization which may well be classified under three heads: (1) A section is devoted to the organization and maintenance of lists, and the mailing of schedules. Before a representative and reliable price sample can be obtained, a competent list of price correspondents must be built up. This task is accomplished by circularizing a representative list of farmers, asking to whom they sell their agricultural produce and of whom they buy their groceries, machinery, equipment, supplies, etc. The reporters solicited in this manner may then be requested to act as regular price correspondents. Ordinarily, little difficulty is encountered in assembling a list of reporters in this manner.

(2) The second group is the tabulating and computing section. The functions of this unit are to list the information on returned questionnaires on especially prepared tabulation sheets, to summarize the data by means of arithmetic and weighted averages for districts within the universe sampled, combinations of these districts, or strata, and finally for the universe as a whole.

(3) The third unit of the organization necessary for the efficient handling of the collection of current data regarding local market prices is concerned with the editing of the data, their analysis, preparation for publication, and the appraisal of their reliability and adequacy. Editing is particularly necessary to detect errors due to the reporter's misunderstanding of various questions and to delete nontypical items in the price sample.

UNITS OF MEASURE

Many of the discrepancies apparent in a sample of local market price data may be accounted for by the careless statement of price on the schedule in a unit of measure entirely different from that requested. This is especially true where a general questionnaire is distributed throughout a comparatively large universe wherein local customs and marketing practices decree that the same product shall be bought or sold in terms of two or more units. For example, apples are sold by the bushel, the barrel, the box, or the ton in various parts of the United States. Even in the same locality, fruit may be sold according to two or more different units of measure.

The Department of Agriculture has surmounted this difficulty in collecting data on farm prices (local market prices of farm products) by asking prices of such commodities according to the two most prevalent methods of sale. The price of potatoes, and of timothy, clover, and alfalfa seed are asked on both the bushel and hundredweight basis. Apple prices are asked on both the bushel and barrel basis. The price of baled hay is asked separately in order that baled-hay prices will not be reported mistakenly in the space provided for the report on loose hay. Quotations are more likely to apply to a given unit of measure if space is provided for the reporter to enter the price in the unit with which he is most familiar. It is a simple matter to convert the price of potatoes from the hundredweight basis to a bushel of 60 pounds after the questionnaires are returned and the reports tabulated.

SAMPLING

A weighted stratified sample as used by the Department of Agriculture in the collection of farm prices, is generally conceded to be the most practical means of securing representative samples of local-market or farm-price data. According to this method the counties of a typical State are subdivided into nine districts of approximately equal size which are in most States the same as the crop-reporting districts.

A regrouping of counties for price-report weighting is resorted to where more homogeneous marketing or trading areas may be segregated by such a procedure. An effort is then made to secure reports from each county within each district, the number of reports per county varying in accordance with its importance in agricultural production. This provides for including within the sample all known differentiations of the universe from which the sample is drawn. The returns are checked month by month to see from which counties reports are received and which are not represented. Steps are then taken to secure new reporters in the agricultural counties not represented and thereby maintain a well-distributed list of correspondents.

The choice of the interval at which local-market prices are to be sampled depends entirely upon the frequency of price fluctuations and the use to be made of the data. The interval may vary from a year to a day.

Although the collection of prices as of a single date is fairly satisfactory for the evaluation of most crops, the collection of annual average prices received for farm products by means of a questionnaire sent out once a year usually fails to give representative returns. Answers to such inquiries are usually biased by the prices prevailing at the time the questionnaire is filled out by the correspondent. Even when the reporter attempts to give an estimate of the average price during the entire marketing season his replies are commonly influenced by the price he received for that last portion of the product sold. This is especially true when an attempt is made to gather annual average prices from farmers, since the reporter seldom keeps account of the amounts sold at different prices throughout the entire marketing season. In consequence, the mean of the returns on the average price of eggs for the year would be biased upward if the inquiry were made during the winter season of light production and high prices, while the returns would be biased downward in most cases, if the inquiry were made in the spring and summer season of comparatively heavy production and low prices.

It is necessary, therefore, to sample the farm prices of agricultural products more often than once a year if reliable indications of annual average prices are to be obtained. Seasonal fluctuations of farm prices may also be determined when this procedure is followed. The frequency of such sampling will depend largely upon the relative amount of change in the prices of different products throughout the season and the purpose for which the data are collected.

Thus, when it is desired to construct an index of changes in local market prices of commodities farmers buy, the quarterly assembly of information on prices of these commodities will suffice. Local market prices of food, clothing, furniture, building materials, equipment, and supplies vary but little from month to month. Hence, unless a relatively large sample of monthly data were obtained, it would be most difficult to ascertain whether minor changes from month to month were due to actual price changes in the universe from which the sample was drawn or to mere fluctuations of sampling. Moreover, farmers buy nearly all of their fertilizer and seed prior to or during the spring and fall planting season and it would be useless to collect prices of the commodities in these groups more than twice a year. Feed, then, is about the only group for which local prices vary to any considerable extent from month to month. Even here the local market prices of mixed feed and by-product feeds from the milling and livestock-packing industries do not show any pronounced degree of monthly change in normal times.

Prices of products sold by farmers fluctuate to a much greater extent, owing to rapid changes in the present and prospective supply and demand situation. These changes may be seasonal, as in the case of work animals, dairy and poultry products, or may occur intermittently without regard to season as with cotton which is traded on a highly organized speculative market. It is desirable, therefore, to sample prices of farm products at much shorter intervals than is the case with articles farmers buy, as for example at monthly or weekly intervals. Hence, the Department of Agriculture collects prices paid producers for farm products on or about the 15th of each month in order to measure current changes in the farm-price level, and to secure a basis for ascertaining weighted average prices for the year or crop season.

COLLECTION OF DATA

The collection of current farm-price data is handled by means of mailed questionnaires. Constant checking of returns and the filling of gaps with new reporters is necessary to assure a representative sample. While the returns are selective to a certain extent, this is no serious handicap in price sampling, since the more intelligent type of dealer who will answer questionnaires usually handles a goodly portion of trade in his locality and is naturally familiar with prices in the local market.

Errors in farm-price data collected through mailed questionnaires are most often due to misinterpretation of the question. Even when the greatest care is taken in wording the inquiry, instances of misinterpretation are found to occur now and then. For example, reporters in deficit areas of grain production in the Western States are likely to report prices farmers pay for grain on a hundredweight basis when asked the price per bushel received by producers. In other instances, the reporters may enter farm prices in a different unit than that specified on the questionnaire, especially where space does not permit the statement of the question in all of its varied units in a general inquiry. The reporter also may record the farm price in the wrong column. The latter type of error can be avoided generally, however, by definitely marking off the space provided for the answer so that it will not be confused with spaces allotted for other questions. Confusion of units can usually be detected when editing the returns, if the question is asked for two of the most common units.

Six different questionnaires are circularized each month. A sample is shown in figure 58. These may be classified according to the section of the country to which they are sent: (1) Questionnaires are sent to the southern States which ask the farm price of general farm commodities produced in that territory. (2) A separate questionnaire is sent to the northern States; this differs from those sent into the South in that questions on buckwheat and flaxseed are substituted for cotton and cottonseed, questions are added to cover the seed crops, and the price of spring wheat is asked as well as the price of winter wheat. (3) A special questionnaire is sent to the durum-wheat States (Minnesota, North Dakota, South Dakota, and Montana). This schedule requests additional information on wheat prices, splitting the spring-wheat question into durum wheat and other spring. Some crops of minor importance, like tobacco and pears, are also omitted from this schedule. Three other questionnaires are provided—one each for New England, for the northern grain-sorghum States,and for the southern grain-sorghum States. These are designed to meet the particular needs for farm-price information for each section.

The questionnaires circularized quarterly by the Department of Agriculture in the collection of local market prices of commodities farmers buy are similar to the sample shown in figure 59.

These questionnaires are classified according to the type of dealers from which this information is solicited. Thus, prices paid by farmers for clothing, food, and household articles are obtained from country merchants, prices paid for furniture and floor-coverings from furniture dealers, and so on. Questionnaires circulated among farm-implement dealers and the feed, seed, and fertilizer dealers vary slightly for the different quarters in order to cover commodities that are purchased seasonally. For example, seed and fertilizer prices are asked only in March and September, the months corresponding to the spring and fall planting seasons; these questions are omitted from the schedules sent in June and December. In regard to farm machinery, prices on corn planters and other spring crop-planting equipment are asked in March, prices on mowers and other harvesting machinery in June, prices on grain threshers and fall crop-planting equipment in September, and prices on automobiles, and trucks (commodities for which prices usually change but once a year) in December.

LISTING AND SUMMARIZING FARM PRICES

Quotations received from the correspondents on the questionnaires concerning prices paid farmers, are tabulated alphabetically according to county of origin, in their respective price-reporting districts. An arithmetic average is computed for the reports received from each district on each commodity. These averages are transferred to the State summary sheets where they are weighted with the production estimates

for the corresponding commodities and districts during the calculation of weighted averages for the State. The State averages are then transferred to commodity summary sheets for the United States, where they are reviewed by a member of the Crop Reporting Board. Changes in reported prices from surplus-producing States are checked with changes in available market price quotations and the official estimates of prices paid farmers are made at this point. A United States weighted average of these estimates is then computed for each commodity using current production data as weights.

Prices paid by farmers for articles bought in local markets are listed and summarized in a somewhat different way, inasmuch as practically no information is available for weighting district and State averages of reports. The information on the questionnaires returned by local dealers is listed alphabetically by counties in the State as a whole. No district averages of prices are computed and a simple average of the returns for each item is computed for the entire State. These averages are transferred directly to United States summary sheets where an arithmetic mean is calculated for each commodity for the country as a whole. Thus the number of reports acts as the sole weighting factor as between the districts within a State and between States. This makes it necessary for the Department of Agriculture to secure a representative return from various sections of the country.

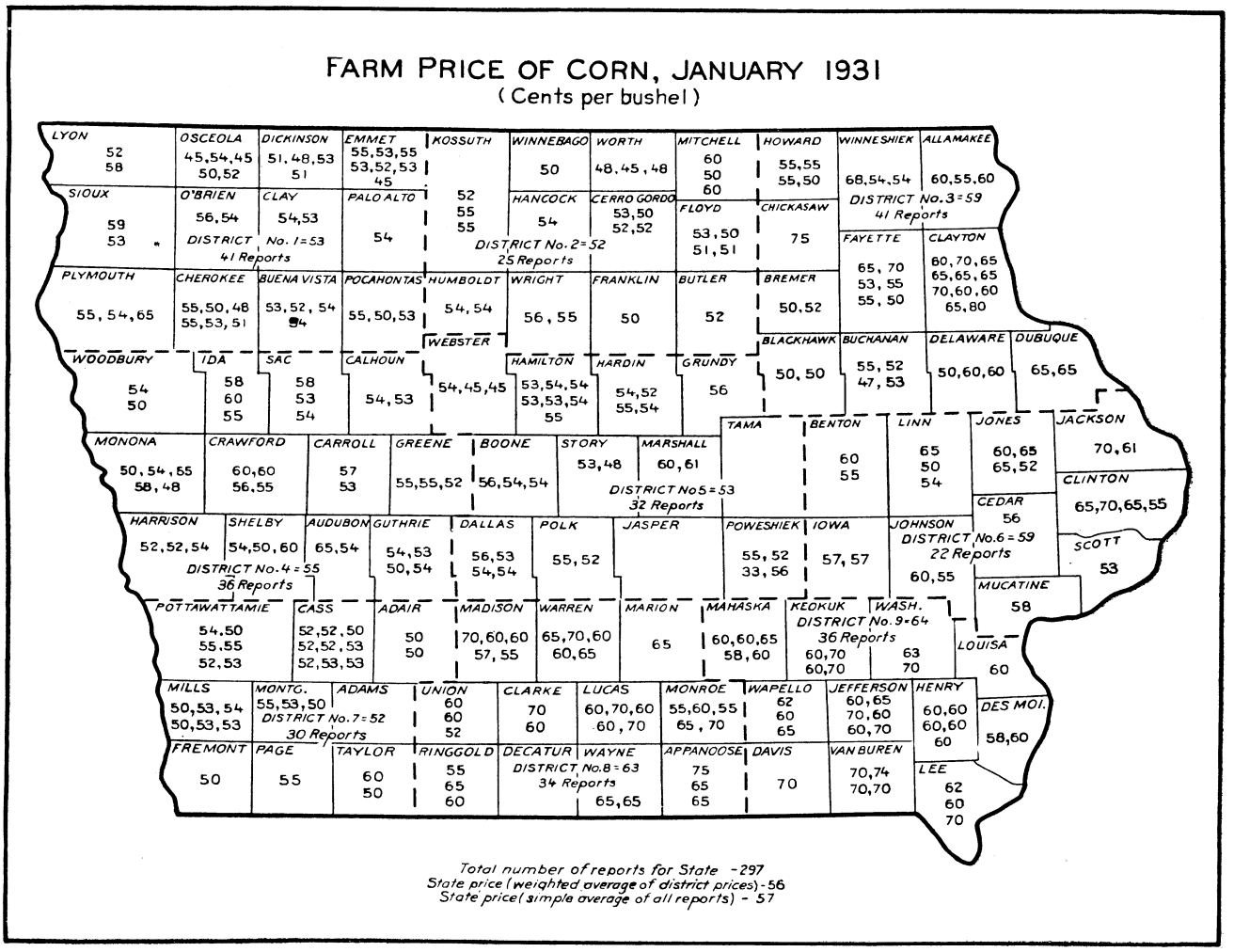

FIGURE 33.—Distribution of Iowa reports on farm price of corn, January 1931. Each report is entered in its respective county, all counties except three being represented. District prices are shown for each of the nine districts.

METHODS OF ANALYSIS

The methods of analysis of farm-price samples have been discussed in a bulletin issued by the Department of Agriculture.[12] Averages of commodity prices obtained in the way described in the preceding section provide the basis for the making of farm-price estimates. State price estimates then are averaged by geographical divisions and for the country as a whole. Weighted averages of State prices are always used by the Department in combining the estimates for a group of States.

The selection of weights for this purpose depends upon the purpose for which the average is being computed. If an average price for the total production is desired, the individual State estimates naturally would be weighted by the production of the particular commodity in the corresponding State. If it is desired to compute the average price received for that portion of a particular commodity which is sold, State price estimates are weighted by sales.

The importance of obtaining a representative price sample has been adequately stressed in numerous statistical papers. As an example of the method suggested earlier in this discussion for the testing of the geographical representativeness of the price sample, a chart showing the distribution of reports on Iowa corn prices, for January 1931 is shown in figure 33.

[12] SARLE, C. F. RELIABILITY AND ADEQUACY OF FARM-PRICE DATA. U.S. Dept. Agr. Bul. 1480: 20-43, illus. 1927.

It is evident from this distribution that a fully representative price sample was obtained. Reports were received from about 97 percent of the counties. Of the 3 counties missing, no 2 were immediately adjacent to each other, although 2 of the 3 were in district 5. All of the variation that might be expected in the price of corn in Iowa was certainly included. The representativeness of the sample was further improved by the method of weighting the average price for each district by the production of corn in computing a weighted average price for the State.

Another check on the geographic representativeness of the sample is made by comparing the straight or simple average of all reports with the weighted average. The closeness with which the simple arithmetic mean of all reports checks with the weighted average for a State indicates that the sample is distributed in the various districts in about the same proportion as the crop. Under some conditions, weighting brings a marked improvement in representativeness. This is true in the case of cotton prices in Mississippi where it is much more difficult to secure reports on the relatively high-priced long-staple cotton grown in the Delta section than on the short-staple crop produced on the upland. Weighting wheat prices by production of the various classes materially improves the representativeness of the average.

The possibility of bias in current farm-price data collected by the questionnaire method has been suggested. A marked tendency to quote top prices instead of average prices is apparent at times. This tendency is most often noticed in reports on livestock prices. Prices of livestock and poultry may be reported on a dressed basis, although it is requested that they be made on the basis of live weight. Although the latter discrepancies can usually be detected and edited out, it is not always possible to distinguish top prices of live animals from average prices where there is considerable variability in the universe. Thus, farm-price samples may be biased in some instances. Farm prices of fruits and vegetables may also be biased owing to the inclusion of too large a proportion of f.o.b. prices. In some localities, dealers may tend to report f.o.b. prices of graded potatoes almost exclusively instead of the prices paid to farmers for the field-run ungraded product, on which basis the purchases are made. In other instances, f.o.b. prices of dry edible beans will be given on a cleaned basis even when the commodity is sold as thresher-run beans. This type of bias is not characteristic of the dealer reporter alone; the same type of error is experienced with farmer reporters who are asked to give the average price received for their potatoes or beans.

This kind of bias is not a very grave sort of error when farm prices are collected for the express purpose of showing relative changes from month to month or from year to year. Such bias is more or less constant since farm prices change in about the same percentage as f.o.b. prices, therefore, it is not nearly so serious as lack of representativeness.

Another type of error is prevalent in farm prices collected by the schedule method. Collectively, these errors are termed errors of observation. It is difficult for a dealer to estimate accurately exactly the average farm price for all grades and classes of a commodity purchased as of a given date. This need not destroy the value of the results, however, since the estimates made too high by one may be compensated by those of another made too low. Thus, the average from a large number may represent the true value very closely. Errors of observation in farm-price data are usually accentuated by the tendency of correspondents to report prices in round numbers which are divisible by five. For example, in the chart showing Iowa farm prices of corn for January 1931, 168 of the 297 replies were given on even 5-cent intervals, such as 50, 55, 60, or 65 cents. Insofar as these errors of observation are truly compensating, they do not affect the accuracy of the average, provided the sample is large enough to enable them fully to compensate.

APPENDIX

SELECTED SCHEDULES AND FORMS USED BY THE CROP REPORTING SERVICE

[C. E. 2-3650]
"C-1"

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF AGRICULTURAL ECONOMICS
DIVISION OF CROP AND LIVESTOCK ESTIMATES
WASHINGTON, D. C.

INTENDED ACREAGE OF CROPS, MARCH 1, 1932

Report made by.....

P. O. Address..... *R. D. No*.....

County.....

State.....

The United States Department of Agriculture has established regular annual reports on **intended acreage of important crops to be planted.** Such reports, published before spring planting is actually accomplished, are of great value to farmers in modifying their plans to prevent serious overplanting or underplanting of particular crops. Will you cooperate by giving for your own farm the information requested? Please return schedule in the inclosed envelope, **which requires no postage. If you receive more than one schedule, hand extra copy to a neighbor to fill out and send in.**

W. F. Callander
Chairman, Crop Reporting Board.

RETURN SCHEDULE EVEN THOUGH YOU CAN REPORT FOR ONLY ONE OR TWO ITEMS

Show below acreage of crops grown on your farm **for harvest last year** (1931)		Show below intended acreage of crops to be grown on your farm **for harvest this year** (1932)	
Winter wheat	.....acres	Winter wheat (left for harvest)	.....acres
Spring wheat	.....acres	Spring wheat	.....acres
Rye	.....acres	Rye (left for harvest)	.....acres
Corn	.....acres	Corn	.....acres
Oats	.....acres	Oats	.....acres
Barley	.....acres	Barley	.....acres
Potatoes, Irish	.....acres	Potatoes, Irish	.....acres
Sweet potatoes and yams	.....acres	Sweet potatoes and yams	.....acres
Grain sorghums	.....acres	Grain sorghums	.....acres
Beans, dry edible	.....acres	Beans, dry edible	.....acres
Peanuts	.....acres	Peanuts	.....acres
Rice	.....acres	Rice	.....acres
Tame hay cut, all kinds (alfalfa, clover, timothy, grains cut for hay, annual hay crops, etc.)	.....acres	Tame hay to be cut, all kinds (alfalfa, clover, timothy, grains cut for hay, annual hay crops, etc.)	.....acres
All other crops	.....acres	All other crops	.....acres
Total of all crops **last year**	.....acres	Total of all crops **this year**	.....acres
Total of ALL LAND in farm	.....acres	Total of ALL LAND in farm	.....acres

COMMENTS CONCERNING CHANGE IN ACREAGE IN YOUR LOCALITY WILL BE APPRECIATED. USE SPACE BELOW

COMMENTS: .....

.....

.....

.....

.....

.....

.....

FIGURE 34.—This type of schedule requests historic data for "last" year and current data for "this" year thereby permitting computation of current X historic, current X current, and ratio relative indications of acreage changes. Abandonment data are also obtained.

[Iowa, Ill., Kans., Nebr., Mo.] [C. E. 2-3743] [JUNE, 1932]

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF AGRICULTURAL ECONOMICS—DIVISION OF CROP AND LIVESTOCK ESTIMATES
WASHINGTON, D. C.

SPECIAL ACREAGE SCHEDULE

Name .....

P. O. Address ..... *R. D. No.* .....

County in which I live .....

State .....

Total acres of all land in this farm or ranch ..... acres
(Include pasture, land lying idle and fallow, woodland, etc., as well as crop land)

If you operated a different farm or ranch last year, or had more land or less land, **report total acres in farm or ranch last year** ..... acres

CROP CORRESPONDENT:

The purpose of this inquiry is to assist the United States Department of Agriculture in estimating the acreage planted to principal crops this year as compared to acres grown last year. Please fill out schedule **for your own farm or ranch,** and return in the inclosed penalty envelope, **which requires no postage.** If you receive more than one schedule, please hand extra copy to a neighbor to fill out and send in.

Thanking you in advance, I am,

Very truly yours,

W. F. Callander
Chairman, Crop Reporting Board.

Please report acreages for BOTH years; otherwise comparisons can not be made. For 1932, show acreage already planted and any you still intend to plant for this year. For 1931, show acreage grown last year.			**Acres, this year, 1932**	**Acres, last year, 1931**	
1		Corn for all purposes	.....	.....	1
2		Spring wheat for grain	.....	.....	2
3		Oats for grain	.....	.....	3
4		Barley for grain	.....	.....	4
5		Flax	.....	.....	5
6	**For winter grains show acreage you EXPECT TO HARVEST this year and acreage HARVESTED last year**	Winter wheat for grain	.....	.....	6
7		Rye for grain	.....	.....	7
8		Grain sorghums (kafir, milo, feterita, etc.)	.....	.....	8
9		Sweet sorghums for all purposes	.....	.....	9
10		Sugar beets or cotton (cross out crop not grown)	.....	.....	10
11		Potatoes	.....	.....	11
12		Soy beans grown *alone* for all purposes	.....	.....	12
13		Cowpeas grown *alone* for all purposes	.....	.....	13
14	**For hay crops show acreage you EXPECT TO CUT for hay this year and acreage CUT for hay last year**	Alfalfa hay	.....	.....	14
15		Clover and timothy hay (both alone and mixed)	.....	.....	15
16		All other tame hay (include red top, sudan, millet, grain hay, etc.)	.....	.....	16
17		Wild hay	.....	.....	17
18		Broomcorn	.....	.....	18
19		All crops not listed above	.....	.....	19
20		Total acres of all crops (sum of items 1 to 19, above). This sum may be more or less than the acres of land in farm or ranch. Some land may not be in crops, or more than one crop may be grown on the same land in a single season.	.....	.....	20
21		Plowland idle (no crop taken off and not pastured)	.....	.....	21
22		Land used only for pasture	.....	.....	22

USE BACK OF SCHEDULE FOR COMMENTS

FIGURE 35.—These schedules are used to obtain sample indications of relative acreages of crops for the current year and samples of change in acreages of crops upon which to base the estimates of acreage used in making forecasts of production.

C. E. 2-3774] 1932 Minn., N. Dak., S. Dak.

SPECIAL CROP ACREAGE SURVEY

POST OFFICE DEPARTMENT IN COOPERATION WITH THE UNITED STATES DEPARTMENT OF AGRICULTURE

Before filling out read carefully instructions on other side of card.

Name ..... State .....

Post office ..... County .....

R. D. ..... Show by X if Owner ☐ or Renter ☐

	Acres in 1932
1. Total number of **acres of all land** in this farm or ranch (include land rented from others)	1
Crops harvested or to be harvested this year	
2. Corn for grain, silage, fodder, and hogging off	2
3. Winter wheat for grain (acres harvested this year)	3
4. Winter wheat **sown or to be sown this fall**	4
5. Durum wheat for grain (include ½ of the acreage of mixed durum wheat and flax)	5
6. Other spring wheat for grain (include ½ of the acreage of mixed wheat and flax)	6
7. Oats for grain (include also oats cut to be fed unthreshed as a combined grain and hay ration)	7
8. Barley for grain	8
9. Rye for grain (acres harvested this year)	9
10. Rye **sown or to be sown this fall**	10
11. Buckwheat (acres harvested this year)	11
12. Flax (include ½ of the acreage of mixed flax and wheat)	12
13. Sugar beets for sugar	13
14. Potatoes	14
15. Dry edible beans	15
16. Alfalfa cut for hay	16
17. Sweet clover cut for hay	17
18. Clover and timothy, alone or mixed, cut for hay	18
19. Grains cut for hay (wheat, oats, barley, rye, etc.)	19
20. Other grasses and legumes, tame or cultivated, cut for hay (peas, millet, Sudan, Brome, etc.)	20
21. Wild, marsh, or prairie grasses cut for hay from uncultivated lands	21
22. Land in fruit orchards and vineyards	22
23. All other crops not listed above	23
24. Land which has been plowed or cultivated in past years and which was used this year for **pasture** only	24
25. Other land used this year for **pasture** only	25
26. Land which has been plowed or cultivated in past years and which was **idle** or in **summer fallow** this year (not used for crops or pasture)	26
27. Land from which no crop was harvested this year because of **crop failure** or **destruction** from any cause	27

(Write on back of card **names of crops** and **acres that failed**)

8—6790 [OVER]

A

REASONS FOR MAKING THIS SURVEY

The purpose of this survey is to furnish a basis for determining the acreage in each of the important crops grown in the United States.

Government Crop Reports are valuable to farmers in furnishing a basis for the exercise of intelligent judgment in—

1. Planning his future production program.
2. Deciding upon the disposition of his crops when an alternative is possible; that is, whether to harvest the crop or graze it off; whether to market the crop or feed it to livestock, etc.
3. Determining whether the market situation warrants sale of his products immediately or later in the marketing season.

If Government reports were abolished, farmers would be compelled to depend almost entirely on crop reports prepared by dealers in farm products.

INSTRUCTIONS FOR FILLING OUT SCHEDULES

Give the information asked for on this schedule as accurately and completely as circumstances will permit. Where acreages of crops are not definitely known, careful estimates should in all cases be made.

Total acres in this farm (Item 1).—In answer to this inquiry include all land in the farm, ranch, or plantation whether in cultivation, idle or fallow, pasture, woodland or other unimproved land, and that occupied by farm buildings and yards. Include any land rented **from** others but do not include land rented **to** others.

Crops harvested or to be harvested on this farm in 1932.—Report acres from which crop was cut, dug, picked, or otherwise harvested. Omit acres abandoned. Study carefully the list of crops printed on the schedule, and if crops other than those listed were grown, report combined acreage of such crops under "All other crops."

Land plowed past years used this year for pasture.—Do not include land that was pastured after a crop was harvested, nor grain fields which were pastured for a time in the spring but which later produced a crop, nor land upon which there was a crop failure and later was pastured. Land previously plowed but now grown up in brush should not be included.

Other land used this year for pasture.—Include permanent pasture and woodland pastured.

Land plowed past years idle (or in summer fallow) this year.—Do not include any land which is to be reported as pasture or under crop failure.

Land on which there was crop failure this year.—Land from which no crop was harvested on account of failure, even though it afforded pasturage, should be reported under this inquiry.

When you have filled out the card, simply put it into your mail box. The carrier will forward it to the Department.

CROP FAILURE, 1932
(Total reported on other side)

Name of crop	Acres failed

8—6790a [OVER]

B

FIGURE 36.—These crop-acreage schedules are distributed by the rural mail carriers to 10 farmers on each rural route. The returned schedules give one of the best indications of changes in acreage of crops harvested. A, front of schedule; B, back of schedule.

[C. E. 2-3854]

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF AGRICULTURAL ECONOMICS
DIVISION OF CROP AND LIVESTOCK ESTIMATES
WASHINGTON, D. C.

[Va., N. C., S. C., Ga., Fla., Ala., Miss., La., Tenn., Ark., Tex., Okla.]

[NOVEMBER 15, 1932]

ACREAGE AND PRODUCTION OF PRINCIPAL CROPS

Name .....

Post Office ..... *R. D. No.* .....

County in which I live .....

State .....

Total acres of all land in your farm or plantation this year ..... acres

Total acres of all land in your farm or plantation last year ..... acres

CROP CORRESPONDENT.

DEAR SIR:

To provide further information on the **yield of the principal crops,** can you fill in the schedule below **FOR YOUR FARM OR PLANTATION?** Please return this schedule promptly in the inclosed penalty envelope, **which requires no postage.**

Respectfully,

W. H. Callander

Chairman, Crop Reporting Board.

RETURN SCHEDULE EVEN THOUGH YOU CAN REPORT FOR ONLY ONE OR TWO ITEMS

CROP PRODUCTION, 1932	Acres harvested or to be harvested	Quantity harvested or to be harvested	CROP	
1 Corn for grain	.....	..... bushels	Corn for grain	(1)
2 Corn for silage	.....	..... tons	Corn for silage	(2)
3 Corn for forage, hogging off, etc.	.....	X X X X X	Corn for forage, hogging off, etc.	(3)
4 Winter wheat	.....	..... bushels	Winter wheat	(4)
5 Oats for grain, including cut when ripe to feed without threshing	.....	..... bushels	Oats for grain	(5)
6 Barley	.....	..... bushels	Barley	(6)
7 Grain sorghum for grain (kafir, milo, durra, etc., including cut in head but not threshed)	.....	..... bushels	Grain sorghum for grain (kafir, milo, durra, etc.)	(7)
8 Sorghum for forage (and hay)	.....	..... tons	Sorghum for forage (and hay)	(8)
9 Rice	.....	..... bushels	Rice	(9)
10 Cotton	.....	..... bales	Cotton	(10)
11 Peanuts for nuts	.....	..... pounds	Peanuts for nuts	(11)
12 Soybeans gathered for beans	.....	..... bushels	Soybeans gathered for beans	(12)
13 Cowpeas gathered for peas	.....	..... bushels	Cowpeas gathered for peas	(13)
14 Potatoes (Irish)	.....	..... bushels	Potatoes (Irish)	(14)
15 Potatoes (sweet)	.....	..... bushels	Potatoes (sweet)	(15)
16 Tobacco ..... (Write name of type grown by you)	.....	..... pounds	Tobacco	(16)
17 Tame hay of all kinds except sorghum	.....	..... tons	Tame hay of all kinds except sorghum	(17)
18 Wild hay	.....	..... tons	Wild hay	(18)
19 Alfalfa cut for seed	.....	..... bushels	Alfalfa cut for seed	(19)
20 Clover cut for seed ..... (Write name or kind)	.....	..... bushels	Clover cut for seed	(20)

SEEDING OF FALL-SOWN GRAINS

21 Acres of **winter wheat seeded** or to be seeded **for grain** this fall (1932) ..... acres (21)

22 Acres of **winter wheat seeded for grain** last fall (1931) ..... acres (22)

23 Acres of **winter oats seeded** or to be seeded **for grain** this fall (1932) ..... acres (23)

24 Acres of **winter oats seeded for grain** last fall (1931) ..... acres (24)

USE BACK OF SCHEDULE FOR COMMENTS

FIGURE 37.—These schedules are used to ascertain acreage, yield, and production of important crops on a large number of individual farms. Such data provide a valuable check on information obtained from the regular monthly reports and from the acreage schedules used by rural mail carriers.

[C. E. 2-3788]
"D"

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF AGRICULTURAL ECONOMICS
DIVISION OF CROP AND LIVESTOCK ESTIMATES
WASHINGTON, D. C.

[AUGUST, 1932]

AUGUST CROP SCHEDULE

This schedule is to be mailed by August 1, 1932. Report ONLY on such crops named as are grown in your locality; report for that part of the country about you which comes under your personal observation, or with which you are familiar. Please read carefully the instructions on the other side before making report.

Condition should be reported on the basis of 100 representing a normal condition. (See instructions 1 and 2 on other side.)

RETURN SCHEDULE EVEN THOUGH YOU CAN REPORT FOR ONLY ONE OR TWO ITEMS

Corn	Winter wheat	Durum wheat	Other spring wheat	Oats		Barley		Rye	Buck-wheat	Flax for seed	Potatoes	Tobacco	Beans, dry, edible	Hay (all tame) (See instruction 5)	Hay (wild, salt, or prairie)	Alfalfa hay	Grain cut green for hay	Pasture
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(14)	(16)	(17)	(18)	(19)	(20)	(21)
Condition	Yield per acre this year	Condition	Condition	Condition	What percentage of **last year's oat crop** remains on farms Aug. 1, 1932? (See instruction 4)	Condition	What percentage of **last year's barley crop** remains on farms Aug. 1, 1932? (See instruction 4)	Yield per acre this year	Condition	Condition	Condition	Condition	Condition	Condition	Condition	Condition of growing crop	Yield per acre this year (dry weight)	Condition
Per cent	*Bushels of 60 lbs.*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Bushels of 56 lbs.*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Tons of 2,000 lbs.*	*Per cent*

A.

[C. E. 2-3788]
"D"

AUGUST CROP SCHEDULE

[AUGUST, 1932]

INSTRUCTIONS TO REPORTERS

WASHINGTON, D. C., 1932.

1 The **condition of the crops** on the date indicated for mailing the schedule is **not** in comparison with a condition at any former period, but with a **normal** condition of growth and vitality, such as would be expected at this time in a crop starting out under favorable conditions and not subjected afterwards to unfavorable weather, insect pests, or other injurious agencies. If condition is asked for any crop that has already been harvested, give condition at time of harvest.

2 In **estimating condition of crops** in comparison with a normal condition of growth and vitality giving promise of a full yield per acre, 100 is the basis; if nine-tenths of a full (normal) yield per acre are indicated by the present condition, the answer should be filled in as 90; if one-tenth, or 10 per cent, more than a normal yield per acre is indicated, the answer should be reported as 110, etc.

3 Reporters are requested to note briefly and clearly after "Remarks" the effect on the crops of weather conditions in July, whether favorable or otherwise, and other **causes for very high or very low conditions** of the growth and vitality of the crops. Exceptionally favorable seasons support very high figures; long-continued drought, excessive moisture, disastrous floods, etc., show why a report is very low.

4 In estimating the **percentage of last year's oat and barley crops remaining on farms August 1, 1932,** make comparison **not** with the amount on farms a year ago on August 1, but with the **total production of 1931. Do not** include any that may have been harvested this year, but **do** include that which may have been carried over from preceding years. Suppose, for example, the quantity of oats remaining on farms from 1931 and preceding years is 1,000 bushels, and the production of 1931 was 4,000 bushels, then the quantity of oats on farms would be one-fourth, or 25 per cent, of the crop of 1931. Include in the amount of oat and barley crops remaining on farms August 1, 1932, only such as is actually on the farm on which produced or in the producer's private granary, and **not** such as may have been removed to public elevators, public granaries, railway stations, or on board cars, even though still belonging to the producer. (See items 6 and 8.)

5 Include under **"All tame hay"** all cultivated grasses and legumes, alone or mixed, such as timothy, clover, alfalfa, millet, Johnson grass, etc., as well as other grasses which naturally come into meadows, including June grass, red top, etc., and all grains, including field beans and peas, intended to be cut green and cured for hay; but exclude salt or prairie grasses, or other wild or swamp meadows which are not cultivated in rotation. (See item 17.)

FIGURE 38.—This is a typical monthly crop schedule mailed by and returned to branch offices. A, front of schedule; B, front of schedule (p. 71); C, back of schedule D, back of schedule (p. 71). It is folded backward down the middle to fit into a no. 9 envelop.

C.

PLEASE WRITE PLAINLY YOUR NAME AND ADDRESS BELOW

Use Symbols as directed

SYMBOLS TO BE USED

X Use cross (X) when crop is not grown at all or is grown to so small an extent as not to be worth reporting.
— Use dash (—) when information is not sufficient for an estimate.
"Failure" Write in the word "Failure" to indicate an entire failure.
O Use cipher (O) only when zero or none is meant.

THIS SCHEDULE SHOULD BE MAILED BY AUGUST 1, 1932

Name ..... *County in which I live* .....

Post Office ..... *R. D. No.* ..... *State* .....

Apples	Grapes	Milk production (Report for your own farm)				Egg production (Report for your own farm)		Farm labor	
(22) Condition (per cent of a full crop)	(26) Condition (per cent of a full crop)	(27) Number of **cows milked** on your farm yesterday	(28) Number of **all milk cows** in your herd yesterday (both dry and in milk)	Total production of **milk** by your herd yesterday. (Report in either pounds or gallons) (29)	(30)	(31) Number of **hens** (including pullets of laying age) in your poultry flock yesterday	(32) Number of **eggs** produced by your flock yesterday	Number of persons working on **this farm** (Do not include household workers) (33) Family labor, including operator	(34) Hired help including monthly, day, and piecework hands
Per cent	*Per cent*	*Number*	*Number*	*Pounds*	*Gallons*	*Number*	*Number*	*Number on Aug. 1*	*Number on Aug. 1*

[OVER]

B

6

SYMBOLS TO BE USED

Use Symbols as directed

X Use cross (X) when crop is not grown at all or is grown to so small an extent as not to be worth reporting.
— Use dash (—) when information is not sufficient for an estimate.
Failure" Write in the word "Failure" to indicate an entire failure.
O Use cipher (O) only when zero or none is meant.

THE REPORT

7 Use the schedule only for the report. Make all other communications on a separate sheet of paper, which may be inclosed in envelope with schedule; but each sheet of paper should have your name, **county,** State, and post-office address written plainly thereon.

8 It is important that reporters mail their reports by the date indicated, as the report of the Department can not be delayed for those which are not promptly returned.

Respectfully,

W. F. Callander
Chairman, Crop Reporting Board.

U. S. GOVERNMENT PRINTING OFFICE: 1932

REMARKS: .....

[OVER]

D

FIGURE 38 (continued).—The form of the schedule permits very rapid and accurate listing of replies on permanent listing sheets having identical ruling. Editing can be done much more satisfactorily and quickly on listing sheets than on the individual schedules.

[C. E. 2-3824]
"D"

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF AGRICULTURAL ECONOMICS—DIVISION OF CROP AND LIVESTOCK ESTIMATES
WASHINGTON, D. C.

[OCTOBER, 1932]

OCTOBER CROP SCHEDULE

This schedule is to be mailed by October 1, 1932. Report ONLY on such crops named as are grown in your locality; report for that part of the country about you which comes under your personal observation, or with which you are familiar. Please read carefully the instructions on the other side before making report.

Condition should be reported on the basis of 100 representing a normal condition. (See instructions 1 and 2 on other side.)

RETURN SCHEDULE EVEN THOUGH YOU CAN REPORT FOR ONLY ONE OR TWO ITEMS

Corn		Durum wheat	Other spring wheat	Oats	Barley	Rye	Buckwheat	Flax for seed		Potatoes		Beans, dry, edible		Hay (all tame) (See instruction 4)	Alfalfa hay	Millet and Sudan	Other hay (red top, orchard grass, mixed hay on old meadows)	Pasture
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(20)	(21)	(22)	(23)	(24)	(27)	(28)
Condition	Probable yield per acre this year	Yield per acre this year	Yield per acre this year	Yield per acre this year	Yield per acre this year	Yield per acre this year	Condition at time of harvest	Condition at time of harvest	Probable yield per acre this year	Condition	Probable yield per acre this year	Condition	Probable yield per acre this year	Yield per acre this year	Yield per acre (all cuttings combined) this year	Yield per acre this year	Yield per acre this year	Condition
Per cent	*Bu. of 70 lbs. in car*	*Bushels of 60 lbs.*	*Bushels of 60 lbs.*	*Bushels of 32 lbs.*	*Bushels of 48 lbs.*	*Bushels of 56 lbs.*	*Per cent*	*Per cent*	*Bushels of 56 lbs.*	*Per cent*	*Bushels of 60 lbs.*	*Per cent*	*Bushels of 60 lbs.*	*Tons of 2,000 lbs.*	*Tons of 2,000 lbs.*	*Tons of 2,000 lbs.*	*Tons of 2,000 lbs.*	*Per cent*

A.

[C. E. 2-3824]
"D"

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF AGRICULTURAL ECONOMICS—DIVISION OF CROP AND LIVESTOCK ESTIMATES

[OCTOBER, 1932]

OCTOBER CROP SCHEDULE

INSTRUCTIONS TO REPORTERS

WASHINGTON, D. C., 1932.

1 The **condition of the crops** on the date indicated for mailing the schedule is **not** in comparison with a condition at any former period, but with a **normal** condition of growth and vitality, such as would be expected at this time in a crop starting out under favorable conditions and not subjected afterwards to unfavorable weather, insect pests, or other injurious agencies. If condition is asked for any crop that has already been harvested, give condition at time of harvest.

2 In **estimating condition of crops** in comparison with a normal condition of growth and vitality giving promise of a full yield per acre, 100 is the basis; if nine-tenths of a full (normal) yield per acre are indicated by the present condition, the answer should be filled in as 90; if one-tenth, or 10 per cent, more than a normal yield per acre is indicated, the answer should be reported as 110, etc.

3 Reporters are requested to note briefly and clearly after "Remarks" the effect on the crops of weather conditions in September, whether favorable or otherwise, and other **causes for very high or very low conditions** of the growth and vitality of the crops. Exceptionally favorable seasons support very high figures; long-continued drought, excessive moisture, disastrous floods, etc., show why a report is very low.

4 Include under **"All tame hay"** all cultivated grasses and legumes, alone or mixed, such as timothy, clover, alfalfa, millet, Johnson grass, etc., as well as other grasses which naturally come into meadows, including June grass, red top, etc., and all grains, including field beans and peas, cut green and cured for hay; but exclude salt or prairie grasses, or other wild or swamp meadows which are not cultivated in rotation. (See item 22.)

Farm wages (Average wages being paid to **hired** farm labor at present time in your locality)				Farm labor supply and demand (See instruction 6)		Farm labor		
(49)	(50)	(51)	(52)	(53)	(54)	Number of persons working on **this farm.** (Do not include household workers)		
By the month, with board	By the month, without board	By the day, with board (including average daily earnings of piece-workers)	By the day, without board (including average daily earnings of piece-workers)	**Supply** compared with normal	**Demand** compared with normal	(55) Family labor, including operator	(56) Hired help, including monthly, day, and piecework hands	
$	$	$ Cts.	$ Cts.	*Per cent*	*Per cent*	*Number on Oct. 1*	*Number on Oct. 1*	

C

FIGURE 39.—Another typical crop schedule. A, front of schedule; B, front of schedule; C, back of schedule; D, back of schedule. It is folded backward down the middle to fit into a no. 9 envelop.

PLEASE WRITE PLAINLY YOUR NAME AND ADDRESS BELOW

SYMBOLS TO BE USED

Use Symbols as directed

X Use cross (X) when crop is not grown at all or is grown to so small an extent as not to be worth reporting.
— Use dash (—) when information is not sufficient for an estimate.
"Failure" Write in the word "Failure" to indicate an entire failure.
O Use cipher (O) only when zero or none is meant.

THIS SCHEDULE SHOULD BE MAILED BY OCTOBER 1, 1932

Name ..... *County in which I live* .....

Post Office ..... *R. D. No.* ..... *State* .....

Apples	Grapes	Milk production (Report for your own farm)				Chickens and eggs (Report for your own farm)					Wheat		Oats		Corn		
(29) Condition (per cent of a full crop)	(32) Condition (per cent of a full crop).	(34) Number of **cows milked** on your farm yesterday	(35) Number of **all milk cows** in your herd yesterday (both dry and in milk)	Total production of **milk** by your herd yesterday. (Report in either pounds or gallons) (36)	(37)	(38) Number of **hens** (including pullets of laying age) in your poultry flock yesterday	(39) Number of **eggs** produced by your flock yesterday	**Pullets** of 1932 hatch being saved for layers (40) Number now of laying age. (See instruction 5)	(41) Number not yet of laying age	(42) **Other chickens** (including roosters, cockerels, capons, pullets not for layers, and late-hatched chicks)	(43) Total number of bushels of **wheat produced** on this farm in 1932	(44) Number of bushels of **wheat on hand** Oct. 1, 1932	(45) Total number of bushels of **oats produced** on this farm in 1932	(46) Number of bushels of **oats on hand** Oct. 1, 1932	(47) Total number of bushels of **corn produced** on this farm in 1931, **last year**	(48) Number of bushels of **old corn on hand** Oct. 1, 1932	
Per cent	*Per cent.*	*Number*	*Number*	*Pounds*	*Gallons*	*Number*	*Number*	*Number*	*Number*	*Number*	*Bu. of 60 pounds*	*Bu. of 60 pounds*	*Bu. of 32 pounds*	*Bu. of 32 pounds*	*Bu. of 70 lbs. in ear*	*Bu. of 70 lbs. in ear*	**[OVER]**

B.

5 Pullets of the 1932 hatch now of laying age are to be shown under item 40 and also included in item 38.
6 Report per cent of present **farm labor supply and demand** at current wages, in comparison with the normal supply and demand at this season of the year. (See items 53 and 54.)
7

SYMBOLS TO BE USED

Use Symbols as directed

X Use cross (X) when crop is not grown at all or is grown to so small an extent as not to be worth reporting.
— Use dash (—) when information is not sufficient for an estimate.
"Failure" Write in the word "Failure" to indicate an entire failure.
O Use cipher (O) only when zero or none is meant.

THE REPORT

8 Use the schedule only for the report. Make all other communications on a separate sheet of paper, which may be inclosed in envelope with schedule; but each sheet of paper should have your name, **county,** State, and post-office address written plainly thereon.
9 It is important that reporters mail their reports by the date indicated, as the report of the Department can not be delayed for those which are not promptly returned.

Respectfully,

W. F. Callander
Chairman, Crop Reporting Board.

REMARKS: .....

.....

.....

.....

.....

[OVER]

D

FIGURE 39 (continued).—As the season progresses different questions must be asked, as may be seen by comparison with the August crop schedule (fig. 38). This October schedule also carries questions concerning farm wages and grain stocks on reporters' own farms.

[C. E. 2-3826]
"W"

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF AGRICULTURAL ECONOMICS
DIVISION OF CROP AND LIVESTOCK ESTIMATES
WASHINGTON, D. C.

[OCTOBER, 1932]

WESTERN OCTOBER SCHEDULE

Name .....

Post Office ..... *R. D. No.* .....

County in which I live .....

State .....

This schedule is to be mailed by September 27, 1932. Report ONLY on such crops named as are grown in your locality; report for that part of the country about you which comes under your personal observation, or with which you are familiar. **Please read carefully the instructions on the other side before making report.**

Condition should be reported on the basis of 100 representing a normal condition. (See instructions 1 and 2 on other side.)
Production should be reported on the basis of 100 representing a production normally or usually raised in a favorable season. (See items 2 and 4.)

RETURN SCHEDULE EVEN THOUGH YOU CAN REPORT FOR ONLY ONE OR TWO ITEMS

FRUIT CROPS	Put answers in this column
1 **Apples,** condition in per cent of a full crop	.....
2 **Peaches,** production this year, in per cent of a full crop	.....
3 **Pears,** condition in per cent of a full crop	.....
4 **Prunes (for use fresh),** production this year, in per cent of a full crop	.....
5 **Prunes (for drying),** condition in per cent of a full crop	.....
6 **Grapes,** condition in per cent of a full crop	.....

GRAIN STOCKS	
7 Total number of bushels of **wheat produced** on this farm or ranch in 1932, in bushels of 60 lbs.	.....
8 Number of bushels of **wheat on hand** Oct. 1, 1932, in bushels of 60 lbs. (See instruction 4.)	.....
9 Total number of bushels of **oats produced** on this farm or ranch in 1932, in bushels of 32 lbs.	.....
10 Number of bushels of **oats on hand** Oct. 1, 1932, in bushels of 32 lbs. (See instruction 4.)	.....
11 Total number of bushels of **corn produced** on this farm or ranch in 1931, **last year,** in bushels of 70 lbs. in ear	.....
12 Number of bushels of **old corn on hand** Oct. 1, 1932, in bushels of 70 lbs. in ear. (See instruction 4.)	.....

FIELD CROPS	Put answers in this column		
13 **Flax for seed,** condition at time of harvest, in per cent of a full crop	.....		
14 **Flax for seed,** probable yield per acre this year, in bushels of 56 lbs.	.....		
15 **Sugar beets** (for sugar only), probable yield per acre this year, in tons of 2,000 pounds	.....		
16 **Millet and Sudan,** yield per acre this year, in tons of 2,000 lbs.	.....		
17 **Other hay** (red top, orchard grass, mixed hay on old meadows), yield per acre this year, in tons of 2,000 lbs.	.....		
18 **Pasture,** condition in per cent	.....		
		Put answers in this column for crops grown on **irrigated** land	Put answers in this column for crops grown on **nonirrigated** land
19 **Corn,** condition in per cent of a full crop		.....	.....
21 **Corn,** probable yield per acre this year, in bushels of 70 lbs. in ear		.....	.....
23 **Spring wheat,** yield per acre this year, in bushels of 60 lbs.		.....	.....
25 **Oats,** yield per acre this year, in bushels of 32 lbs.		.....	.....
27 **Barley,** yield per acre this year, in bushels of 48 lbs.		.....	.....
29 **Grain sorghums,** condition in per cent of a full crop		.....	.....
31 **Potatoes,** condition in per cent of a full crop		.....	.....
33 **Potatoes,** probable yield per acre this year, in bushels of 60 lbs.		.....	.....
35 **Dry field beans (edible),** condition in per cent of a full crop		.....	.....
37 **Dry field beans (edible),** probable yield per acre this year, in pounds.		.....	.....
39 **Hay (all tame)** (see instruction 5), yield per acre this year, in tons of 2,000 lbs.		.....	.....
41 **Alfalfa hay,** yield per acre (all cuttings combined) this year, in tons of 2,000 lbs.		.....	.....

LIVESTOCK, ETC.	Put answers in this column
Milk production (report for your own farm or ranch):	
43 Number of **cows milked** on your farm or ranch yesterday	.....
44 Number of **all milk cows** in your herd yesterday (both dry and in milk)	.....
Total production of **milk** by your herd yesterday (report in either pounds or gallons):	
45 Report on this line, in pounds	.....
46 Report on this line, in gallons	.....
Chickens and eggs (report for your own farm or ranch):	
47 Number of **hens** (including pullets of laying age) in your poultry flock yesterday	.....
48 Number of **eggs** produced by your flock yesterday	.....
Pullets of 1932 hatch being saved for layers—	
49 Number now of laying age. (See instruction 6.)	.....
50 Number not yet of laying age	.....
51 **Other chickens** (including roosters, cockerels, capons, pullets not for layers, and late-hatched chicks), number	.....
Farm wages (average wages being paid to **hired** farm labor at the present time in your locality):	
52 By the month, with board, dollars	.....
53 By the month, without board, dollars	.....
54 By the day, with board (including average daily earnings of piece-workers), dollars	.....
55 By the day, without board (including average daily earnings of piece-workers), dollars	.....
Farm labor supply and demand (see instruction 7):	
56 **Supply** compared with normal, in per cent	.....
57 **Demand** compared with normal, in per cent	.....
Farm labor, number of persons working on **this farm or ranch** (do not include household workers):	
58 Family labor, including operator, number on October 1	.....
59 Hired help, including monthly, day, and piecework hands, number on October 1	.....

[OVER]

FIGURE 40.—This type of schedule brings a high percentage of returns but it is not so easily listed as the strip form shown in figure 38. It is used in the Western States from which the number of returns is relatively small. Note that information is requested concerning both irrigated and nonirrigated crops.

[C. E. 2-3716] UNITED STATES DEPARTMENT OF AGRICULTURE [JULY 1, 1932]

BUREAU OF AGRICULTURAL ECONOMICS

DIVISION OF CROP AND LIVESTOCK ESTIMATES

WASHINGTON, D. C.

JULY COTTON SCHEDULE

Name .....

Post Office ..... *R. D. No.* .....

County in which I live .....

State .....

This schedule is to be mailed promptly in the inclosed penalty envelope WHICH REQUIRES NO POSTAGE.

W. F. Callander
Chairman, Crop Reporting Board.

RETURN SCHEDULE EVEN THOUGH YOU CAN REPORT FOR ONLY ONE OR TWO ITEMS

REPORT FOR YOUR NEIGHBORHOOD OR COUNTY				REPORT FOR YOUR OWN FARM			
(1) What was the average **date of planting cotton** this year in your county?	(2) What was the average **date that cotton was up to a stand** this year?	(3) On what **date did cotton begin blooming** in your locality this year? (If blooms have not yet appeared, note the fact and give probable date)	(4) **Boll weevils** Considering complete infestation as 100 per cent, what would you estimate the **present infestation** in your locality?	(5) Total acres of all land in your farm or plantation	(6) How many acres of cotton now on your farm (standing or cultivated)? (Do not include any already plowed under or abandoned)	(7) How many acres of cotton in cultivation on your farm **July 1 last year?** (Do not include any already plowed under or abandoned at that date)	
Date	*Date*	*Date*	*Per cent*	*Acres*	**Actual Acres**	**Actual Acres**	

USE BACK OF SCHEDULE FOR COMMENTS

FIGURE 41.—Cotton, because of its peculiarities and importance, requires consideration separately from other crops. A complete separate series of schedules is used. Other typical cotton schedules are shown in figures 42 to 46.

[C. E. 2-3805] UNITED STATES DEPARTMENT OF AGRICULTURE [SEPTEMBER 1, 1932]
BUREAU OF AGRICULTURAL ECONOMICS
DIVISION OF CROP AND LIVESTOCK ESTIMATES
WASHINGTON, D. C.

SEPTEMBER 1 COTTON SCHEDULE

Name .....

Post Office ..... *R. D. No.* .....

County in which I live .....

State .....

This schedule is to be mailed promptly by September 1, 1932, in the inclosed penalty envelope, WHICH REQUIRES NO POSTAGE. **Please read carefully the instructions below before making report.**

INSTRUCTIONS TO REPORTERS

1 **CONDITION OF COTTON**

A **"normal"** or **"full" yield,** represented by 100 per cent, is that yield per acre which is expected when the season is favorable and insects and diseases have caused little or no damage. A **"normal"** or **"100 per cent" condition** of **cotton** is that condition of growth and vitality and relative freedom from insects and diseases which is expected in a generally favorable season. While the **"normal"** (100 per cent yield or condition) is higher than that of ordinary seasons, it may be exceeded by the bumper yield, or very high condition, of an exceptionally favorable year. In estimating the **condition** of the cotton crop, a reporter should take into consideration not only the growth and appearance of the plant, but every factor within his knowledge which influences the probable yield per acre. In estimating **condition,** quality should not be taken into consideration except in so far as it affects the quantity that will be actually harvested. If the present condition is 10 per cent above the normal, the answer should be filled in as 110; if 5 per cent below, it should be reported as 95, etc. (See item 1.)

2 Include under **"abandoned"** acreage only cotton standing July 1, which has been plowed up, turned out, or abandoned. (See item 2.)

Respectfully,

W. F. Callander
Chairman, Crop Reporting Board.

RETURN SCHEDULE EVEN THOUGH YOU CAN REPORT FOR ONLY ONE OR TWO ITEMS

REPORT FOR YOUR IMMEDIATE LOCALITY						(7)
(1) **CONDITION** of cotton September 1, 1932, as compared NOT with last year's condition, but with a NORMAL condition of growth and vitality, giving promise of a full yield per acre, represented by 100. (See instruction 1.)	(2) Of cotton acreage under cultivation on July 1, what percentage has been **abandoned to date?** (See instruction 2.)	(3) How many **bolls** per plant are **safe to date** this year?	(4) **Size of mature bolls** this year compared with usual size? (Let usual=100%)	(5) On what date did (or will) picking begin this year?	(6) **Boll weevils** Considering complete infestation as 100%, what would you estimate the **present infestation** in your locality?	How many **bales** do you estimate will be **ginned** in your **county** this season?
Per cent	*Per cent*	*Number*	*Per cent*	*Date*	*Per cent*	*Bales*

USE BACK OF SCHEDULE FOR COMMENTS

FIGURE 42.—Measures of crop progress and boll weevil activity as well as condition and probable ginnings are obtained from this September schedule.

[C. E. 2-3688] **[SEPTEMBER 23, 1932]**

UNITED STATES DEPARTMENT OF AGRICULTURE
WASHINGTON, D. C.

SPECIAL COTTON COUNTS

To Special Cotton Reporters:

This is one of the series of four special reports which you volunteered to fill out in order to assist the Department in improving its cotton forecasts. Please make the counts promptly and return this card in the inclosed return envelope, **which requires no postage.**

Very truly yours,

W. F. Callander

Chairman, Crop Reporting Board.

SEE INSTRUCTIONS ON OTHER SIDE

Name .....

Post Office ..... *R. D. No.* .....

County .....

State .....

On the first card sent this year you were given the following directions for choosing row for counts:

Select as convenient to your home as possible a row of cotton that is fairly representative of cotton growing in your locality. Measure and mark off with stakes 15 feet of the row, with another stake to divide the 15 feet into a 6-foot and 9-foot portion, upon which certain counts may be made during the season.

On the 15-foot strip of cotton, which you marked off, make the following counts:

1 How many bolls as large as or larger than a 25-cent piece are in the entire 15 feet? (Include also open bolls and bolls already picked.) .....

2 The above count includes how many bolls already picked? .....

On the **6-foot portion** of the 15-foot strip make the following count:

3 How many bolls smaller than a 25-cent piece, but large enough to be seen without opening the form, are in the 6-foot portion? .....

From a **near-by row,** pick from a few plants **all** bolls as large as or larger than a 25-cent piece, including any that may be open, until you have picked 10 bolls. Examine them and report:

4 How many locks, good and bad, in the 10 bolls? .....

5 How many locks in the 10 bolls are damaged? .....

In the same way pick 10 bolls smaller than a 25-cent piece, but showing out of the form. Cut each boll open and examine for weevil damage.

6 How many locks, good and bad, in the 10 bolls? .....

7 How many locks in the 10 bolls are damaged? .....

Please be sure to answer every question

[OVER]

A

[C. E. 2-3688] **[SEPTEMBER 23, 1932]**

INSTRUCTIONS CONCERNING SPECIAL COTTON COUNTS

After having staked out 15 feet of a row, correspondents should stick to this particular section of row throughout the season, even though it becomes less representative of the field or locality than in the beginning. It is to be used as a sample and, even though it may cease to reflect conditions for the locality, it will show in our average the extent to which cotton fields as a whole change as the season progresses.

This special inquiry, if carried out, will involve the destruction of a small number of bolls, but the benefit to the growers of the information thus obtained far outweighs this small sacrifice of cotton.

When the crop in the field is finished and entirely picked out, the reporter should send a final count report and state on the card, "Crop all out and picked." If this is done, he can disregard later cards which may be sent him, as these will be intended only for sections where the crop is not yet picked out.

Correspondents sometimes fail to fill in an answer to some one or more of the questions. It will save time and help us to avoid mistakes if no item is left blank, but always answered either by a positive figure or by "0," or, in case you can not answer the question, if you will state the reason why you can not reply.

Counts that require the pulling or injury of any bolls are to be made on a fresh strip of a near-by row, to avoid influencing later counts on the measured portion of row.

Some report "all" where number of squares or bolls is called for. We can not tell from such reports whether there are few or many squares or bolls injured or uninjured on the plants and we need to know just how many of each.

Many reporters write explanatory notes on the card whenever their reports show unusual conditions or striking changes from the previous report, and such comments help us to understand the figures.

The weight of the dry-seed cotton in August and October is desired where the reporter has conveniently at hand a scale weighing to the half ounce. Most grocery scales weigh that close.

Reporters sometimes give estimates rather than the results of actual counts. When very busy one is tempted to do this. It is realized that this count will require a little extra work for reporters, but it is especially asked that actual counts and not guesses be given. If unable to make the count, omit making the special boll count report for that date. At the same time we are anxious to have as many of the correspondents as possible make the counts regularly.

[OVER]

B

FIGURE 43.—During the season, in addition to monthly "opinion" inquiries and individual farm reports, definite sample measurements and counts are made by selected reporters. This schedule is a convenient size to slip into a no. 9 envelop. A, front of schedule; B, back of schedule.

[C.E. 1-85B]

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF AGRICULTURAL ECONOMICS
DIVISION OF CROP AND LIVESTOCK ESTIMATES

To GINNERS:

In order to make our cotton estimate as nearly accurate as possible, we are asking all ginners to answer the questions listed below. It will be of great help if you will answer these questions IMMEDIATELY, in order that your reply may come to this office within **two days** after the date shown below.

Use the enclosed envelop for your reply. It does not need a stamp for mailing.

Very truly yours,

Agricultural Statistician.

1 How many bales of cotton have you ginned this season prior to	..... bales
2 About how many MORE bales do you expect to gin from the above date to the end of the season?	..... bales
3 How many bales did you gin **ALL** last season?	..... bales
4 How many bales do you estimate your **COUNTY** will gin all this season?	..... bales

Name of gin ..... *Reported by* .....

Post office ..... *County in which gin is located* .....

8—7295

FIGURE 44.—This schedule sent to a selected number of ginners, provides information on the percentage of the crop ginned and the quantity ginned to specific dates.

[C. E. 2-3858] UNITED STATES DEPARTMENT OF AGRICULTURE [DECEMBER 1, 1932]

BUREAU OF AGRICULTURAL ECONOMICS—DIVISION OF CROP AND LIVESTOCK ESTIMATES

WASHINGTON, D. C.

DECEMBER 1 COTTON SCHEDULE

Name .....

Post Office ..... *R. D. No.* .....

County in which I live .....

State .....

This schedule is to be mailed promptly by December 1, 1932, in the inclosed penalty envelope, WHICH REQUIRES NO POSTAGE. **Please read carefully the instructions below before making report.**

INSTRUCTIONS TO REPORTERS

1 It is the intention of the Department of Agriculture to issue a preliminary estimate of the cotton crop of 1932–33, and with this object in view the Department is calling upon its regular and special corps of reporters to furnish the best information available at this time. You are therefore respectfully requested to supply the information asked for below.

2 **PROBABLE YIELD IN POUNDS OF SEED COTTON AND OF LINT COTTON PER ACRE (See items 1 and 2)**

While it may be too early to make an exact statement as to the final yield per acre, picking is undoubtedly sufficiently advanced to enable reporters to approximate it very closely. An estimate is desired as to the total yield per acre of SEED COTTON and of LINT COTTON as indicated by present conditions. It is to be borne in mind that this is to include the total yield in pounds per acre for the entire season.

3 Do **not** include under **abandoned area** any that may have been planted early, and abandoned before July 1, the date when the estimate of acreage in cultivation was made. Include under abandoned only that part of the area which has not yielded and will not yield any cotton this year. (See item 3.)

Respectfully,

W. F. Callander

Chairman, Crop Reporting Board.

RETURN SCHEDULE EVEN THOUGH YOU CAN REPORT FOR ONLY ONE OR TWO ITEMS

REPORT HERE FOR YOUR IMMEDIATE LOCALITY					(6)	REPORT HERE FOR YOUR OWN FARM ONLY				
(1) Probable yield of SEED COTTON per acre this season (See instruction 2)	(2) Probable yield of LINT COTTON per acre this season (See instruction 2)	(3) What percentage of the **cotton acreage** under cultivation July 1 has been **abandoned?** (See instruction 3)	(4) What percentage of the total **cotton crop** in your locality was **ginned** by Dec. 1?	(5) What percentage of the total **cotton crop** in your locality was **picked** by Dec. 1?	How many **bales of cotton** do you estimate will be **ginned in your county** this season?	(7) Number of **acres of cotton picked** or to be picked on this farm **this season**	(8) Number of **acres of cotton picked** on this same farm **last season**	(9) How many **bales of cotton do you expect to make this season** on this farm?	(10) How many **bales of cotton did you make last season** on this same farm?	(11) Number of **acres of all land** in this farm
Pounds	*Pounds*	*Per cent*	*Per cent*	*Per cent*	*Bales*	*Actual acres*	*Actual acres*	*Bales*	*Bales*	*Acres*

USE BACK OF SCHEDULE FOR COMMENTS

FIGURE 45.—In December different schedules are sent to five separate lists of cotton reporters. The one shown above is typical of the two main approaches to production forecasts—acreage multiplied by yield per acre and ginnings.

[C. E. 2-3860]
[COTTON GINNERS]

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF AGRICULTURAL ECONOMICS—DIVISION OF CROP AND LIVESTOCK ESTIMATES
WASHINGTON, D. C.

[DECEMBER 1, 1932]

DECEMBER 1 COTTON SCHEDULE

Name .....

Post Office ..... *R. D. No.* .....

County in which gin is located .....

State .....

This schedule is to be mailed promptly by December 1, 1932, in the inclosed penalty envelope, WHICH REQUIRES NO POSTAGE. This schedule is to be returned to the SECRETARY OF AGRICULTURE, and NOT to the CENSUS BUREAU. **Please read carefully the instructions below before making report.** Information furnished on this schedule will be regarded as STRICTLY CONFIDENTIAL.

INSTRUCTIONS TO REPORTERS

1 It is the intention of the Department of Agriculture to issue a preliminary estimate of the cotton crop of 1932–33, and with this object in view the Department is calling upon its regular and special corps of reporters to furnish the best information available at this time. The cotton ginners being on the ground, thoroughly posted as regards every phase of the cotton business, deeply interested in the outcome of the crop, and alive to the importance of accurate and trustworthy estimates, the Department feels that it can confidently call upon them for the information necessary to compile its estimates. They are therefore respectfully requested to supply the information asked for below.

2 **PROBABLE YIELD IN POUNDS OF SEED COTTON AND OF LINT COTTON PER ACRE (See items 1 and 2)**

While it may be too early to make an exact statement as to the final yield per acre, picking is undoubtedly sufficiently advanced to enable reporters to approximate it very closely. An estimate is desired as to the total yield per acre of SEED COTTON and of LINT COTTON as indicated by present conditions. It is to be borne in mind that this is to include the total yield in pounds per acre for the entire season.

3 **NUMBER OF POUNDS OF SEED COTTON REQUIRED TO MAKE 100 POUNDS OF LINT (See item 5)**

The answer to this question should be for this year only.

4 **GROSS WEIGHT, AND WEIGHT OF BAGGING AND TIES, PER BALE (See items 6 and 7)**

In answering the questions as to gross weight per bale and weight of bagging and ties, if no record is kept, reporters are respectfully requested to estimate as closely as possible, as the Department feels that it can confidently rely upon the judgment of the ginners.

IMPORTANT

All information furnished will be treated as strictly confidential, and under no circumstances will the figures relating to the operation of any particular gin be made public. The public information will be given by States in such a manner as to render impossible the separation of figures for individual gins.

Respectfully,

W. A. Callander
Chairman, Crop Reporting Board.

RETURN SCHEDULE EVEN THOUGH YOU CAN REPORT FOR ONLY ONE OR TWO ITEMS

REPORT HERE FOR YOUR IMMEDIATE LOCALITY				TO COVER OPERATION OF YOUR OWN GIN ONLY			
(1) Probable yield of SEED COTTON per acre this season (See instruction 2)	(2) Probable yield of LINT COTTON per acre this season (See instruction 2)	(3) Estimate of the percentage of total crop **ginned** to December 1	(4) What percentage of the total **cotton crop** in your locality was **picked** by December 1?	(5) Number of pounds of SEED COTTON required this year to make 100 pounds of LINT (See instruction 3)	(6) Average **gross weight** this season per bale of cotton ginned, including bagging and ties (See instruction 4)	(7) Average weight of bagging and ties per bale this season (See instruction 4)	
Pounds	*Pounds*	*Per cent*	*Per cent*	*Pounds*	*Pounds*	*Pounds*	

USE BACK OF SCHEDULE FOR COMMENTS

FIGURE 46.—In December cotton ginners report on the above schedule, information relating to probable yield per acre, ginnings, and the average weight per bale.

Colorado Cooperative Crop Reporting Service

United States Department of Agriculture
Division of Crop and Livestock Estimates

Colorado State Board of Immigration

Office of the Agricultural Statistician, Denver, Colorado

SPECIAL FRUIT INQUIRY, OCTOBER 1, 1932

To our Fruit Growers:

Please report for your locality upon the following fruit crops and return promptly in the enclosed franked envelope which requires no postage. Please mail to reach Denver by September 30th. You will receive a copy of the October 1 report when completed.

Thanking you for your cooperation, I am

Very truly yours,

HLC-ab 9-22-32

H. L. COLLINS, Agr'l Statistician.

(Report CONDITION on the basis of 100 representing a full crop)

1. APPLES: Condition ..... ___ % of a full crop

2. PEACHES: Production this year ..... ___ % of a full crop

3. PEARS: Condition ..... ___ % of a full crop

Report for your own district or locality

Estimate of total commercial movement from your district this season, including carlots, express shipments, and fruit to be moved by truck:

	Number of Cars	County, district, etc., covered in this report
4. APPLES:	_____	_____
5. PEACHES:	_____	_____
6. PEARS:	_____	_____

Report for your OWN farm
(Total production in bushels)

	Harvested last year 1931 Crop	Harvested or to be harvested this year, 1932 Crop
APPLES	_____	_____
PEACHES	_____	_____
PEARS	_____	_____

COMMENTS covering development or change in fruit crops in your locality will be appreciated: _____

_____ _____ _____

Report by (Name) (Post Office) (County)

FIGURE 47.—The branch offices and States having important commercial fruit interests use special schedules adapted to their local needs to supplement the fruit questions on the regular monthly crop schedules.

183174°—33——6

[C. E. 2-3569]. "E"

UNITED STATES DEPARTMENT OF AGRICULTURE

BUREAU OF AGRICULTURAL ECONOMICS—DIVISION OF CROP AND LIVESTOCK ESTIMATES

WASHINGTON, D. C.

[NOVEMBER, 1931]

FRUIT PRODUCTION SCHEDULE

NAME.....

POST OFFICE ..... R. D. No. .....

COUNTY IN WHICH I LIVE.....

STATE.....

DEAR CROP CORRESPONDENT:

To assist us in making more accurate estimates of **fruit production,** will you kindly fill out the schedule below and return in the inclosed addressed envelope **which requires no postage?**

Thank you.

W. F. Callander

Chairman, Crop Reporting Board.

RETURN SCHEDULE EVEN THOUGH YOU CAN REPORT FOR ONLY ONE OR TWO ITEMS

PLEASE REPORT FOR YOUR FARM

1 Total acres of all land in this farm ..... Acres (1)

	APPLES	PEACHES	
2 **Trees** of bearing age **now** on this farm	.....	.....	Trees (2)
3 **Bushels** harvested **this year** (1931)	.....	.....	Bushels (3)
4 **Bushels** harvested **last year** (1930)	.....	.....	Bushels (4)
5 **Bushels** of **this year's** (1931) crop sold or for sale	.....	.....	Bushels (5)
6 **Bushels** of **this year's** (1931) crop used or saved for use in the farm household	.....	.....	Bushels (6)
7 Of the **total crop produced this year** (1931) about how many **bushels** were **not** harvested on account of **low** price?	.....	.....	Bushels (7)

	PEARS	PLUMS	
8 **Trees** of bearing age **now** on this farm	.....	.....	Trees (8)
9 **Bushels** harvested **this year** (1931)	.....	.....	Bushels (9)
10 **Bushels** harvested **last year** (1930)	.....	.....	Bushels (10)
11 **Bushels** of **this year's** (1931) crop sold or for sale	.....	.....	Bushels (11)
12 **Bushels** of **this year's** (1931) crop used or saved for use in the farm household	.....	.....	Bushels (12)
13 Of the **total crop produced this year** (1931) about how many **bushels** were **not** harvested on account of **low** price?	.....	.....	Bushels (13)

14 **Cherry trees** of bearing age **now** on this farm	.....	Trees (14)
15 **Quarts** of **cherries** harvested **this year** (1931)	.....	Quarts (15)
16 **Quarts** of **cherries** harvested **last year** (1930)	.....	Quarts (16)
17 **Quarts** of **cherries** of **this year's** (1931) crop sold	.....	Quarts (17)
18 **Quarts** of **cherries** of **this year's** (1931) crop used in the farm household	.....	Quarts (18)
19 Of the **total crop produced this year** (1931) about how many **quarts** of **cherries** were **not** harvested on account of **low** price?	.....	Quarts (19)
20 **Grape vines** of bearing age **now** on this farm	.....	Vines (20)
21 **Pounds** of **grapes** harvested **this year** (1931)	.....	Pounds (21)
22 **Pounds** of **grapes** harvested **last year** (1930)	.....	Pounds (22)
23 **Pounds** of **grapes** of **this year's** (1931) crop sold	.....	Pounds (23)
24 **Pounds** of **grapes** of **this year's** (1931) crop used in the farm household	.....	Pounds (24)
25 Of the **total crop produced this year** (1931) about how many **pounds** of **grapes** were **not** harvested on account of **low** price?	.....	Pounds (25)

USE BACK OF THIS SCHEDULE FOR COMMENTS

FIGURE 48.—These reports concerning operations of thousands of individual fruit growers are an important indication of production and of utilization and sales as well.

T.O.S. 706

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF AGRICULTURAL ECONOMICS
Division of Crop and Livestock Estimates
WASHINGTON, D. C.

CONDITION, YIELD AND PRICE
of Commercial Truck Crops
SEPTEMBER 1, 1932.

For our monthly summary of commercial truck crop prospects, we need a report on condition in your area as of the first of the month. We hope that you will make prompt return of this schedule, giving complete and timely information from your knowledge of the important truck crops grown in the vicinity of your shipping point.

We desire that you make a report, if possible, for all truck crops produced in large quantities in your locality, especially those intended principally for shipment to distant markets by rail, truck or other means. Some of these crops you will find listed in this inquiry; please write in the names of others for which you can report.

Any comments you can furnish (on other side of sheet) concerning progress of the crops, marketing, etc., will be of material assistance to us. Your report should be mailed promptly in the enclosed official envelope, which requires no postage.

Very truly yours,
W. F. CALLANDER,
Chairman, Crop Reporting Board.

INSTRUCTIONS FOR FILLING IN REPORT

CONDITION: For each crop now growing, report condition on the first of the month, on the basis of 100%, representing a full or normal condition for that date.

YIELD: For growing crops, that have advanced sufficiently for you to judge, give some idea of the yield to be expected on the basis of the condition you report.
For crops partially or entirely harvested, give your estimate of the average acre yield obtained over the entire area covered in your report.

PRICE: Report the average price received by growers on sales made at the shipping point during the period from August 15 to September 1.

UNIT: Name and describe the package or unit upon which you base your reports on yield and price, and if not a common unit, such as bushel or ton, state also the size and net weight of contents. (For example, "crate of 48 pounds")

CROP	CONDITION SEPTEMBER 1 1932	AVERAGE YIELD PER ACRE	PRICE RECEIVED BY GROWERS AUG.15-SEPT.1	NAME AND SIZE OF UNIT AND WEIGHT OF CONTENTS
BEANS (snap)				
BEANS (lima)				
BEETS				
CABBAGE (Domestic)				
(Danish)				
CANTALOUPES				
CARROTS				
CAULIFLOWER				
CELERY				
CORN, (sweet)				
CUCUMBERS				
EGGPLANT				
LETTUCE				
ONIONS				
PEAS (green)				
PEPPERS (green)				
POTATOES, early Irish				
SPINACH				
STRAWBERRY PLANTS				
TOMATOES				
TURNIPS				
WATERMELONS				

SHIPPING POINT (OR POINTS) COVERED _____ DATE _____ 1932

REPORTER _____ POST OFFICE _____

COUNTY _____ STATE _____

FIGURE 49.—Commercial truck and canning crops are usually grown in localities that specialize in particular crops. This schedule is sent to 7,000 growers of truck crops for shipment. Average yield is included with condition to secure information on that part of the crop which has been harvested.

T.C.S.527 (November 1, 1931)

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF AGRICULTURAL ECONOMICS
Division of Crop and Livestock Estimates
WASHINGTON, D. C.

PRODUCTION OF ONIONS
(Harvest schedule)
1931

Dear Sir: We are soon to prepare our report covering the production of onions in your State during the 1931 season and we would be pleased to have a report from you in regard to the crop grown in the area around your shipping point. Space has been provided for inserting county information on this blank if you wish to make report for your county instead of, or in addition to, the shipping point report. Answer all questions, if possible, giving your best estimate in each case.

Your report should be returned in the enclosed franked envelope, which requires no postage. It should be mailed not more than three days after you receive this schedule to be of use in our summary.

Very truly yours,
W. F. CALLANDER,
Chairman, Crop Reporting Board.

PRODUCTION OF ONIONS in 1931	For the area adjacent to the SHIPPING POINTS named	For your COUNTY
1. How many acres do you estimate were HARVESTED in 1930 (a year ago)?	_____ acres	_____ acres
2. What is your estimate of the acreage harvested in 1931 (this year)?	_____ acres	_____ acres
3. How many of the total acres planted for harvest this year (1931) were ABANDONED OR LOST from various causes (if any)?	_____ acres	_____ acres
4. What percent of the total crop produced this year (1931) was NOT HARVESTED (if any)?	_____ P.ct.	_____ P.ct.
(State briefly, reasons for abandonment and non-harvest)		
5. What is your estimate of the HARVESTED YIELD PER ACRE this year (1931)?	_____ bushels	_____ bushels
(Name the package you use in reporting yield, if not in bushels, specify size or net weight of contents)	_____	_____
6. What was the average PRICE RECEIVED BY GROWERS for the 1931 crop (per bushel or your own unit)?	_____	_____
UTILIZATION OF THE HARVESTED CROP	P.ct.	P.ct.
7. Considering the total crop harvested this year as 100%, in your opinion what percentage belongs in each of the following:		
a. Shipped to more or less distant markets by rail or boat (including express)	_____	_____
b. Hauled to more or less distant markets by auto truck	_____	_____
c. Sold for local consumption in nearby (home) markets	_____	_____
d. Stored on farms or in commercial storage for future sale	_____	_____
e. Used or to be used on farms where grown (for home consumption, etc.)	_____	_____
f. Other uses (please specify each)	_____	_____
g. Part of HARVESTED crop not sold, used nor stored (i.e. wasted or otherwise lost)	_____	_____
If you have shown the distribution of the entire harvested crop, your estimates will total to 100%		100%

Additional information concerning the production and marketing of the crop in your locality this year will assist us greatly. Use other side of sheet for comments.

SHIPPING POINT (OR POINTS) COVERED _____ DATE _____ 1931

REPORTER _____ POST OFFICE _____

COUNTY _____ STATE _____

FIGURE 50.—Since movement and utilization of the onion crop are important, these data are requested by shipping points on the annual "harvest schedule" which carries questions concerning acreage, yield, and production.

T.C.S.707

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF AGRICULTURAL ECONOMICS
Division of Crop and Livestock Estimates
WASHINGTON, D. C.

CONDITION OF CANNING CROPS

ON SEPTEMBER 1, 1932.

For any of the crops listed below with which you are familiar, please give the condition of the crop on September 1. The condition you report should represent your judgment of the crop's present possibilities as a percentage of a normal yield per acre (represented by 100 per cent). If the crop is partially or completely harvested, condition at time of harvest should be reported. In addition, your judgment on probable yield per acre, based on present prospects, is desired for certain crops.

The enclosed envelope, which requires no postage, may be used for your reply.

Very truly yours,
W. F. CALLANDER,
Chairman, Crop Reporting Board.

LOCATION OF ACREAGE (Please report separately for each county in which you have acreage)		CONDITION (Considering a normal yield per acre as 100%) AND PROBABLE YIELD																	
		BEETS	GREEN LIMA BEANS		SNAP BEANS		CABBAGE FOR KRAUT		CUCUMBERS FOR PICKLES		SWEET CORN		PIMIENTOS		TOMATOES	
STATE	COUNTY	Condition	Condition	Probable yield per acre	Condition	Probable yield per acre	Condition	Probable yield per acre	Condition	Probable yield per acre	Condition	Probable yield per acre	Condition	Probable yield per acre	Condition	Probable yield per acre
		P.ct.	P.ct.	Pounds (shelled)	P.ct.	Tons	P.ct.	Tons	P.ct.	Bushels	P.ct.	Tons (in husk)	P.ct.	Tons	P.ct.	Tons

(Use other side of sheet for comments)

FIRM NAME _____ Report prepared by _____

POST OFFICE _____ DATE _____ 1932

COUNTY _____ STATE _____

FIGURE 51.—Bimonthly forecasts of production of canning crops are based upon condition data secured on these and similar schedules sent to 2,300 canners and packers. Probable yield per acre is requested for crops that are approaching maturity.

T.C.S.740

(November 10, 1932)

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF AGRICULTURAL ECONOMICS
Division of Crop and Livestock Estimates
WASHINGTON, D. C.

TOMATOES FOR MANUFACTURE

ACREAGE, PRODUCTION AND
PRICE TO GROWERS IN 1932.

For the purpose of estimating production of tomatoes for canning or manufacture in 1932, information is desired on harvested acreage, yield per acre, total tonnage obtained from both contract and open market acreage, price to growers and utilization of tonnage. A report by your firm on these items will assist greatly in making this estimate of production. All information relating to individual firms will be treated as strictly confidential. A summary, by States, of revised acreage and estimated production, will be released December 1.

The enclosed envelope, which requires no postage, may be used for your reply.

Very truly yours,
W. F. Callander,
Chairman, Crop Reporting Board.

LOCATION OF ACREAGE (Please report separately for each State in which you operate)		TOMATOES FOR MANUFACTURE EITHER CONTRACTED OR GROWN BY YOUR FIRM				OPEN MARKET PURCHASES	AVERAGE PRICE PAID TO GROWERS IN 1932		UTILIZATION OF TONNAGE		NUMBER OF CASES OF CANNED TOMATOES PACKED PER TON IN 1932
		ACREAGE		YIELD PER ACRE ON HARVESTED ACREAGE	TONNAGE PROCURED FROM CONTRACT AND OWN PLANTINGS IN 1932	TONNAGE BOUGHT ON OPEN MARKET IN 1932	For Contract Tonnage (all grades)	For Open Market Purchases (all grades)	Quantity Used for CANNED TOMATOES	Quantity Used for OTHER TOMATO PRODUCTS	
STATE	NAME FACTORIES COVERED	Planted in 1932	Harvested in 1932								
		Acres	Acres See Note1	Tons	Tons	Tons	Per Ton	Per Ton	Tons	Tons (See Note 2)	Cases of 24 No. 2's

NOTE 1: - Harvested acreage should include all acreage from which any tonnage was obtained, without making deductions from planted acreage on account of poor stands.

NOTE 2: - In "Other Tomato Products" include all tonnage used in the manufacture of tomato juice, pulp, paste, soups, sauce, ketchup, etc.

What is the usual date of harvest in your section? Begins _____ Ends _____

FIRM NAME _____ Report prepared by _____

POST OFFICE _____ DATE _____ 1932

COUNTY _____ STATE _____

FIGURE 52.—This schedule is typical of "harvest" or production inquiries sent to canners and packers to secure final data on acreage, production, and farm value of crops canned or processed.

[C. E. 2-3876]
"N. A."

LIVESTOCK REPORT, DEC. 1, 1932

POST OFFICE DEPARTMENT IN COOPERATION WITH THE UNITED STATES DEPARTMENT OF AGRICULTURE

Report for farm operated by— State.....

Name .....

Post Office .....

R. D. ..... **County** .....

1. **Total acres of all land in this farm** ..... (1)
2. Number of **COWS** and **HEIFERS,** two years old and older, **kept for milk.** (Include all milk cows whether now in milk or dry and all 2-year-old heifers which will be milked when fresh) ..... (2)
3. Number of **COWS** and **HEIFERS,** two years old and older, **not kept for milk.** (Include beef cows, 2-year-old beef heifers, etc.) (Do not include any cows and heifers listed under Question 2) ..... (3)
4. Number of **STEERS,** two years old and older ..... (4)
5. Number of **BULLS,** two years old and older ..... (5)
6. Number of **HEIFERS,** one year old and under two now **being raised for milk cows** ..... (6)
7. Number of **HEIFERS,** one year old and under two intended for beef cows or for beef, not intended for milk cows. (Do not include any heifers listed under Question 6) ..... (7)
8. Number of **STEERS,** one year old and under two ..... (8)
9. Number of **BULLS,** one year old and under two ..... (9)
10. Number of 1932 **HEIFER CALVES** ..... (10)
11. Number of 1932 **BULL CALVES** and **STEER CALVES** ..... (11)
12. TOTAL NUMBER OF ALL CATTLE AND CALVES OF ALL AGES NOW ON THIS FARM (about December 1, 1932). (Sum of answers to Questions 2 to 11, inclusive) ..... (12)

13. Number of **COWS MILKED** on this farm yesterday ..... (13)
14. Number of **ALL MILK COWS** in this herd yesterday (both dry and in milk). (**Do not** include heifers not yet freshened) ..... (14)
15. Total production of **MILK** by this herd yesterday. Report in either pounds or gallons:
    Pounds..... (15)
    Gallons.....

16. Number of **PULLETS BEING KEPT FOR LAYERS** on this farm **NOW** ..... (16)
17. Number of **HENS** (do not include pullets) on this farm **NOW** ..... (17)
18. Number of **OTHER CHICKENS** on this farm **NOW** ..... (18)

Help to make these reports accurate and they will help you!

(See other side for report on Hogs, Sheep, and Work Stock)

A

[C. E. 2-3876]
"N. A."

19. Total number of **HOGS** of all kinds **over six months old** now on this farm ..... (19)
20. Total number of **PIGS** of all kinds **under six months old** now on this farm ..... (20)
21. Total number of **HOGS** and **PIGS** of all ages now on this farm (sum of items 19 and 20) ..... (21)

FALL FARROWING THIS YEAR, 1932

22. Number of **SOWS** which farrowed (gave birth to pigs) on this farm during the **last six months (between June 1 and December 1, 1932)** ..... (22)
23. Number of **PIGS SAVED** from all litters farrowed on this farm during the **last six months (June 1 to December 1, 1932)** ..... (23)

FALL FARROWING LAST YEAR, 1931

24. Number of **SOWS** which farrowed (gave birth to pigs) on this farm between **June 1 and December 1, 1931** ..... (24)
25. Number of **PIGS SAVED** from all litters farrowed on this farm between **June 1 and December 1, 1931** ..... (25)

SPRING FARROWING THE COMING EAR, 1933

26. Number of **SOWS** which **have been bred or will be bred to farrow** on this farm between **December 1, 1932, and June 1, 1933** ..... (26)

SPRING FARROWING THIS YEAR, 1932

27. Number of **SOWS** which farrowed (gave birth to pigs) on this farm between **December 1, 1931, and June 1, 1932** ..... (27)
28. Of the **SOWS** which farrowed during the **last six months** (Question 22), how many farrowed in each of the following months:

    June ..... July ..... Aug. .....

    Sept. ..... Oct. ..... Nov. ..... (28)

29. Number of **EWES** one year old and over ..... (29)
30. Number of **EWE LAMBS** under one year ..... (30)
31. Number of **WETHERS** and **RAMS** one year old and over ..... (31)
32. Number of **WETHER** and **RAM LAMBS** under one year ..... (32)
33. Total number of **SHEEP** and **LAMBS** (sum of items 29 to 32, inclusive) ..... (33)

OF THE ABOVE, HOW MANY ARE ON FEED FOR MARKET?

34. Number of **SHEEP,** including yearlings ..... (34)
35. Number of **LAMBS** under one year ..... (35)

36. Number of **HORSES** and **MULES** two years old and over ..... (36)
37. Number of **HORSE** and **MULE COLTS** one year old and under two ..... (37)
38. Number of **HORSE** and **MULE COLTS** under one year ..... (38)
39. Total number of **HORSES** and **MULES OF ALL AGES** (sum of items 36 to 38, inclusive) ..... (39)

KINDLY SEE THAT EVERY QUESTION HAS BEEN ANSWERED

(If nothing to report, please indicate by cipher "0")

(See other side for report on Cattle and Poultry)

B

FIGURE 53.—More than 700,000 of these schedules are distributed by the rural mail carriers. The returns are the principal source of information used in estimating numbers and production of livestock each year. This schedule is a convenient size to slip into a no. 9 envelop. A, front of schedule; B, back of schedule.

[C. E. 2-3707]

HOG, MILK COW, AND SHEEP REPORT

JUNE 1, 1932

POST OFFICE DEPARTMENT IN COOPERATION WITH THE UNITED STATES DEPARTMENT OF AGRICULTURE

Report for farm operated by— State.....

Name .....

Post Office .....

R. D. ..... **County** .....

1. Total acres of all land in this farm or ranch ..... (1)
2. Total number of **HOGS** of all kinds **over six months old** now on this farm ..... (2)
3. Total number of **PIGS** of all kinds **under six months old** now on this farm ..... (3)
4. Total number of **HOGS** and **PIGS** of all ages now on this farm (sum of items 2 and 3) ..... (4)

SPRING FARROWING THIS YEAR, 1932

5. Number of **SOWS** which farrowed (gave birth to pigs) on this farm during the **last six months (December 1, 1931, to June 1, 1932)** ..... (5)
6. Number of **PIGS SAVED** from all litters farrowed on this farm during the **last six months (December 1, 1931, to June 1, 1932)** ..... (6)
7. Of the **SOWS** farrowed as shown **under question 5,** how many were **gilts;** that is, farrowed for the first time? ..... (7)

SPRING FARROWING LAST YEAR, 1931

8. Number of **SOWS** which farrowed (gave birth to pigs) on this farm between **December 1, 1930, and June 1, 1931** ..... (8)
9. Number of **PIGS SAVED** from all litters farrowed on this farm between **December 1, 1930, and June 1, 1931** ..... (9)

FALL FARROWING THIS YEAR, 1932

10. Number of **SOWS** which **have been bred or will be bred to farrow** on this farm **this year** between **June 1 and December 1, 1932** ..... (10)

FALL FARROWING LAST YEAR, 1931

11. Number of **SOWS** which farrowed (gave birth to pigs) on this farm **last year** between **June 1 and December 1, 1931.** Report sows farrowed, **NOT** pigs saved ..... (11)
12. Of the **SOWS** farrowed during the **last six months** (Question 5), how many farrowed in each of the following months:

    Dec. .....; Jan. .....; Feb. .....;

    Mar. .....; Apr. .....; May..... (12)

MILK COWS AND MILK PRODUCTION

13. Number of **COWS MILKED** on this farm yesterday ..... (13)
14. Number of **ALL MILK COWS** in this herd yesterday (both dry and in milk) ..... (14)
15. Total production of **MILK** by this herd yesterday. Report in either pounds or gallons: Pounds ..... Gallons ..... (15)
16. Number of **HEIFERS KEPT FOR MILK** that freshened for the first time during the last six months ..... (16)
17. Number of **HEIFERS FOR MILK** expected to freshen during next six months ..... (17)
18. Number of **MILK COWS** shipped to market, slaughtered, or sold for slaughter during last six months ..... (18)
19. Number of **MILK COWS** which will probably be so disposed of during next six months ..... (19)
20. Number of this spring's **HEIFER CALVES** being saved for milk cows ..... (20)

SEE OTHER SIDE FOR REPORT ON SHEEP

A

[C. E. 2-3707]

SHEEP REPORT, JUNE 1, 1932

SHEEP AND LAMBS

EWES ON JANUARY 1, 1932

21. Number of **BREEDING EWES,** including **EWE LAMBS** kept for breeding ewes, on this farm or ranch **January 1, 1932** (do not include ewes on feed for market) ..... (21)
22. Of the ewes and lambs as shown under question 21, how many were **EWE LAMBS** being kept for breeding ewes? ..... (22)

LAMBS SAVED THIS YEAR, 1932

23. Number of **LAMBS SAVED** (living June 1 or sold before June 1) from lambs dropped on this farm or ranch between **November 1, 1931, and June 1, 1932** ..... (23)

LAMBS SAVED LAST YEAR, 1931

24. Number of **LAMBS SAVED** (living June 1 or sold before June 1) from lambs dropped on this farm or ranch between **November 1, 1930, and June 1, 1931** ..... (24)

WOOL

25. Total number of **SHEEP AND LAMBS SHORN** on this farm or ranch **this year—January 1 to June 1, 1932** ..... (25)

26 Total weight of **WOOL** shorn (pounds) ..... (26)

FOR THE INFORMATION OF THE FARMER

A sound program for improvement in general agricultural conditions must be based upon accurate up-to-date information as to production, supplies, and demand of agricultural products. Information on demand is gathered by the Department of Agriculture from many sources. Information on production must be obtained largely from farmers themselves and the Department of Agriculture is the designated agency to secure it. The accuracy of such information depends upon the completeness and accuracy of reports made by farmers.

This report has to do with prospective supplies of three important agricultural commodities—hogs, milk, and lambs. The report from your farm is needed for this nation-wide survey. Help your carrier by filling it out completely at once and returning it to him promptly.

Help to make these reports accurate and they will help you!

SEE OTHER SIDE FOR REPORT ON HOGS AND MILK COWS

B

FIGURE 54.—Cards are distributed to farmers by rural mail carriers and the returns are used as constituting the principal indicator of the lamb crop and the spring pig crop. This schedule is a convenient size to slip into a no. 9 envelop. A, front of schedule; B, back of schedule.

[C. E., 2-3738]

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF AGRICULTURAL ECONOMICS
DIVISION OF CROP AND LIVESTOCK ESTIMATES
WASHINGTON, D. C.

JUNE 1, 1932, DAIRY INQUIRY

GENERAL INSTRUCTIONS: (1) In reporting on cows, do **not** include heifers that have not yet freshened. (2) In reporting on milk production, do **not** include milk sucked by calves. (3) Report milk in either gallons, quarts, or pounds as you find most convenient, but be careful to put answers in the proper columns. (4) Be sure to report **"O"** when that is the proper answer

Name .....

Post Office ..... *R. D. No.* .....

County in which I live .....

State .....

DEAR SIR:

The following questionnaire is for the purpose of providing farmers with better information for adjusting the production of milk and dairy products to prospective demand. Reports covering items of interest to producers will be sent to those returning questionnaires.

The inclosed return envelope does not need a stamp.

Very truly yours, W. F. Callander
Chairman, Crop Reporting Board.

COWS AND MILK

1. Number of **cows milked** on your farm yesterday ..... number
2. Number of **all milk cows** on your farm yesterday (both dry and in milk) ..... number

Gallons or **Quarts** or **Pounds**

3. **Milk produced** on your farm yesterday ....

FEED

4. How many pounds of **grain** (including mill feeds and concentrates) were fed yesterday to **milk cows** on your farm? (Report **total** amount fed to **milk cows,** not pounds per milk cow) ..... pounds

PRICES RECEIVED

Report below the price for the **product which you sell,** and report the approximate average price received from all sales or deliveries during the latest month for which you have received payment or for which the price is known:

5. Month for which price is reported ..... month
6. (*a*) **Milk,** retailed, price per quart, bottled, ... cents per quart; not bottled, ... cents per quart
   (*b*) **Milk** sold in bulk to distributors or others to be used chiefly for consumption as fluid milk or cream:
   Report **either** average price, including all allowances for butterfat, quality, surplus, etc. $..... per 100 lbs.
   or show total pounds of milk delivered ..... pounds
   and total of payments received $.....
   (*c*) **Milk** sold or delivered to cheese factories $..... per 100 lbs.
   (*d*) **Milk** sold to condensaries, creameries, ice cream factories, etc., to be used chiefly for manufacturing purposes $..... per 100 lbs.
   (*e*) **Milk** which was sold on a butterfat basis ..... cts. per lb. of butterfat
   (*f*) **Sweet cream,** ..... cts. per lb. of butterfat; (*g*) **Sour cream,** ..... cts. per lb. of butterfat
   (*h*) **Butter** made on farm, per pound ..... cts. per lb.
7. Approximate butterfat test of milk produced (if known) ..... per cent

HEIFERS KEPT FOR MILK COWS

8. Number of **heifers one year old and over,** not yet fresh, now being kept for milk cows ..... number

MONTH OF FRESHENING

Only approximate figures are expected and the total shown may not agree with the number on hand because of purchases and sales and because of cows freshening twice or not at all during the 12 months.

9. Report below the number of **milk cows** now on hand that freshened in each of the **last** six months:

Dec., 1931	Jan., 1932	Feb., 1932	Mar., 1932	Apr., 1932	May, 1932
Number	*Number*	*Number*	*Number*	*Number*	*Number*

10. Report below the number of **milk cows** now on hand that are expected to freshen in each of the **next** six months:

To freshen in June, 1932	To freshen in July, 1932	To freshen in Aug., 1932	To freshen in Sept., 1932	To freshen in Oct., 1932	To freshen in Nov., 1932
Number	*Number*	*Number*	*Number*	*Number*	*Number*

11. Report below the number of **heifers kept for milk cows** now on hand that are expected to freshen for the **first time** in each of the **next** six months:

To freshen in June, 1932	To freshen in July, 1932	To freshen in Aug., 1932	To freshen in Sept., 1932	To freshen in Oct., 1932	To freshen in Nov., 1932
Number	*Number*	*Number*	*Number*	*Number*	*Number*

12. What percentage of the feed of milk cows is now being secured from pastures and stalk fields?
(If the cows are not on pasture, report "0" per cent. If living on pasture without other feed, report "100" per cent. If cows are on pasture and are also receiving hay or grain, give a guess as to the proportion of the feed secured from pasture, so that the progress of pastures in the various sections of the country can be measured. Include with pastures grains, or other crops being grazed by milk cows.) ..... per cent.

USE OTHER SIDE FOR COMMENTS

FIGURE 55.—Monthly schedules similar to the above are sent to a limited list of dairymen to secure information concerning trends of milk production.

[C. E. 2-3836]

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF AGRICULTURAL ECONOMICS
DIVISION OF CROP AND LIVESTOCK ESTIMATES
WASHINGTON, D. C.

OCTOBER 1, 1932, DAIRY INQUIRY

Name ..... *Date* .....

Post Office ..... *R. D. No.* .....

County in which I live .....

State .....

DEAR SIR:

The following questionnaire is for the purpose of providing farmers with better information for adjusting the production of milk and dairy products to prospective demand. Reports covering items of interest to producers will be sent to those returning questionnaires.

The inclosed return envelope does not need a stamp.

Very truly yours,

W. F. Callander

Chairman, Crop Reporting Board.

GENERAL INSTRUCTIONS: (1) In reporting on cows, do **not** include heifers that have not yet freshened. (2) In reporting on milk production, do **not** include milk sucked by calves. (3) Report milk in either gallons, quarts, or pounds, as you find most convenient, but be careful to put answers in the proper columns. (4) Be sure to report "0" when that is the proper answer. Please answer the first three questions even though your cows are all dry.

COWS AND MILK

1. Number of **cows milked** on your farm yesterday ..... number

2. Number of **all milk cows** on your farm yesterday (both dry and in milk) ..... number

	Gallons	Quarts	Pounds
3. **Milk produced** on your farm yesterday	.....	.....	.....

FEED

4. How many pounds of **grain** (including mill feeds and concentrates) were fed yesterday to **milk cows** on your farm? (Report **total** amount fed to **milk cows** yesterday, not pounds per milk cow.) ..... pounds

5. Show below the approximate number of **pounds** of each kind of **grain** (including mill feeds and concentrates) fed yesterday to **milk cows** on your farm:

	Pounds Fed Yesterday: Home-Grown	Pounds Fed Yesterday: Purchased
Corn, whole or ground	.....	.....
Oats, whole or ground	.....	.....
Barley, whole or ground	.....	.....
Wheat, whole or ground	.....	.....
Cottonseed	.....	.....
Cottonseed meal or cottonseed cake	XXXXX	.....
Gluten feed or gluten meal	XXXXX	.....
Hominy feed	XXXXX	.....
Wheat bran	XXXXX	.....
Wheat shorts or middlings	XXXXX	.....
Linseed meal	XXXXX	.....
Commercial mixed feed	XXXXX	.....
Other grains and concentrates. (Include here whole or ground rye, buckwheat, grain sorghums, cowpeas, soy beans, soybean meal, dried beet pulp, etc.)	.....	.....

6. Indicate by a (✓) the kind or kinds of other feed now being fed to milk cows on your farm. (Do not include here stalk fields or crops being grazed.)

Alfalfa hay	.....
Other hay	.....
Straw	.....
Dry corn fodder, stover or sorghum	.....
Green feed, as corn or alfalfa cut and fed green	.....
Silage	.....
Cottonseed hulls	.....
Cull potatoes or sweet potatoes	.....
Other feeds	.....

7. What is the **value per 100 pounds** of the **grain** (including mill feeds and concentrates) being fed to milk cows on your farm? $..... per 100 pounds
(If feeding purchased grain, report the price paid; if feeding home-grown grain, report the price it would bring at your local market; if you are feeding a mixture of home-grown and purchased grains, give your best estimate of the average value per 100 pounds of the mixture.)

FUTURE PLANS

8. How many **milk cows** do you expect to have on your farm one year from now (October 1, 1933)? ..... number

9. What percentage of the feed of milk cows is now being secured from pastures?
(If the cows are not on pasture, report "0" per cent. If living on pasture without other feed, report "100" per cent. If cows are on pasture and are also receiving hay or grain, give an estimate as to the proportion of the feed secured from pasture, so that the progress of pastures in the various sections of the country can be measured. Include with pastures stalk fields, stubble fields, or other crops being grazed by milk cows.) ..... per cent

USE OTHER SIDE FOR COMMENTS

FIGURE 56.—Dairy schedules are sent monthly to several thousand dairymen. Some of the questions are asked monthly, others quarterly, etc. See also pages 89 and 91.

[C. E. 2-3856]

UNITED STATES DEPARTMENT OF AGRICULTURE

BUREAU OF AGRICULTURAL ECONOMICS

DIVISION OF CROP AND LIVESTOCK ESTIMATES

WASHINGTON, D. C.

NOVEMBER 1, 1932, DAIRY INQUIRY

Name ..... *Date* .....

Post Office ..... *R. D. No.* .....

County in which I live .....

State .....

DEAR SIR:

The following questionnaire is for the purpose of providing farmers with better information for adjusting the production of milk and dairy products to prospective demand. Reports covering items of interest to producers will be sent to those returning questionnaires.

The inclosed return envelope does not need a stamp.

Very truly yours,

W. F. Callander

Chairman, Crop Reporting Board.

GENERAL INSTRUCTIONS: (1) In reporting on cows, do **not** include heifers that have not yet freshened. (2) In reporting on milk production, do **not** include milk sucked by calves. (3) Report milk in either gallons, quarts, or pounds as you find most convenient, but be careful to put answers in the proper columns. (4) Be sure to report "0" when that is the proper answer.

Please answer the first three questions, even though your cows are all dry.

COWS AND MILK

1. Number of **cows milked** on your farm yesterday ..... number

2. Number of **all milk cows** on your farm yesterday (both dry and in milk) .... number

Gallons or **Quarts** or **Pounds**

3. **Milk produced** on your farm yesterday ....

4. Approximate butterfat test of milk produced (if known) ..... per cent

5. How much **butter** was made on your farm during October? (If answering before the end of October, include an estimate of the amount that will be made during the remainder of the month) ..... pounds

FEED

6. How many pounds of **grain** (including mill feeds and concentrates) were fed yesterday to **milk cows** on your farm? (Report **total** amount fed to **milk cows**, not pounds per milk cow) ..... pounds

7. What percentage of the feed of milk cows is now being secured from pastures?

(If the cows are not on pasture, report "0" per cent. If living on pasture without other feed, report "100" per cent. If cows are on pasture and are also receiving hay or grain, give an estimate as to the proportion of the feed secured from pasture, so that the progress of pastures in the various sections of the country can be measured. Include with pastures stalk fields or other crops being grazed by milk cows.) ..... per cent

USE OTHER SIDE FOR COMMENTS

FIGURE 57.—This schedule is designed to secure data concerning milk utilization as well as the monthly milk-production trends. See also pages 89 and 90.

[C. E. 1-131]
"N"

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF AGRICULTURAL ECONOMICS
DIVISION OF CROP AND LIVESTOCK ESTIMATES

WASHINGTON, D. C.

DEAR SIR: The Bureau of Agricultural Economics of the United States Department of Agriculture desires to record the average prices **paid to producers** in each State for various farm products on or about the 15th of each month. For this purpose you are respectfully requested to report on this schedule your estimate of the average prices **paid to producers** in your locality, about the 15th of this month, for such products as you are familiar with. As only one quotation is desired for each product, it should be representative of all transactions; that is, such a price as, if multiplied by the total quantity sold by the producers, would give approximately the total value of all such sales. Please return on or about the 15th in the accompanying envelope, **which requires no postage.** In return, a reprint of excerpts from "Crops and Markets," containing the results of this inquiry, and special releases on items of particular interest in the agricultural situation will be mailed to you.

Respectfully,

W. F. Callander
Chairman, Crop Reporting Board.

RETURN SCHEDULE EVEN THOUGH YOU CAN REPORT FOR ONLY ONE OR TWO COMMODITIES PRICES PAID TO

FIELD CROPS

(1) **Corn,** per **bu.** of 70 pounds if in ear, or 56 pounds if shelled	(2) **Winter wheat,** per **bu.** of 60 pounds	(3) **Spring wheat,** per **bu.** of 60 pounds	(4) **Oats,** per **bu.** of 32 pounds	(5) **Barley,** per **bu.** of 48 pounds	(6) **Rye,** per **bu.** of 56 pounds	(7) **Buckwheat,** per **bu.** of 48 pounds	(8) **Flaxseed,** per **bu.** of 56 pounds	**Potatoes** (Report in either unit) (9) Per **bu.** of 60 pounds	(10) Per **100 pounds**	(11) **Sweet potatoes,** per **bu.** of 55 pounds	(12)	(13) **Beans (dry edible),** per **100 pounds**
$ Cts.	$ Cts.	$ Cts.	$ Cts.	$ Cts.	$ Cts.	$ Cts.	$ Cts.	$ Cts.	$ Cts.	$ Cts.		$ Cts.

A

[C. E. 1-131]
"N"

IMPORTANT.—THIS SCHEDULE SHOULD BE

RETURN SCHEDULE EVEN THOUGH YOU CAN REPO

U. S. GOVERNMENT PRINTING OFFICE: 1932

PRICES PAID TO F

LIVESTOCK—Continued				**LIVESTOCK PRODUCTS**						NOTE.—In answering items 36 and 37, give y mixed, p		
(26) **Horses,** per **head**	(27) **Mules,** per **head**	(28) **Chickens** (live weight), per **pound**	(29) **Turkeys** (live weight), per **pound**	(30) **Butter,** per **pound**	(31) **Butterfat,** per **pound**	(32) **Milk (whole),** retail, per **quart**	(33) **Milk (whole),** wholesale, per **100 pounds** (11.6 gals.), **to dealers, factories, etc.**	(34) **Wool (unwashed),** per **pound**	(35) **Eggs,** per **dozen**	(36) **Hay, all (loose),** per **ton** of 2,000 pounds (See note)	(37) **Hay, all (baled),** per **ton** of 2,000 pounds (See note)	(38) **Alfalfa hay (loose),** per **ton** of 2,000 pounds
$	$	Cents	Cents	Cents	Cents	Cents	$ Cts.	Cents	Cents	$ Cts.	$ Cts.	$ Cts.

C

FIGURE 58.—Farm price schedule. A, front of schedule; B, front of schedule; C, back of schedule; D, back of schedule. It is folded backward down the middle to fit into a no. 9 envelop.

IMPORTANT.—THIS SCHEDULE SHOULD BE MAILED BY THE 15TH OF THIS MONTH

Name ..... *County* ..... *Date* .....

Post Office ..... *R. D. No.* ..... *State* .....

Report prices ONLY for such farm products as are produced in your locality and marketed in this month. Do NOT report prices of farm products shipped INTO your market. **Please quote prices in the unit of measure given for each product.**

Quotations should be, as near as can be given, the average prices **paid to producers;** that is, such a price as, if multiplied by the total quantity bought from the producer, would give the total value of all such purchases. Do **not** give the range of prices. **Give the average prices.**

PRODUCERS — **RETURN SCHEDULE EVEN THOUGH YOU CAN REPORT FOR ONLY ONE OR TWO COMMODITIES**

			FRUIT CROPS			LIVESTOCK					
(14) **Soybeans,** per **bu.** of 60 pounds	(15) **Cowpeas,** per **bu.** of 60 pounds	(16) **Tobacco,** per **pound**	(17) **Apples,** per **bu.** of 48 pounds	(18) **Apples,** per **barrel**	(19) **Pears,** per **bu.** of 48 pounds	(20) **Hogs** (live weight), per **100 pounds**	(21) **Beef cattle** (live weight), per **100 pounds**	(22) **Veal calves** (live weight), per **100 pounds**	(23) **Sheep** (live weight), per **100 pounds**	(24) **Lambs** (live weight), per **100 pounds**	(25) **Milk cows,** per **head**
$ Cts.	$ Cts.	Cents	$ Cts.	$ Cts.	$ Cts.	$ Cts.	$ Cts.	$ Cts.	$ Cts.	$ Cts.	$

[OVER]

B

MAILED BY THE 15TH OF THIS MONTH

RT FOR ONLY ONE OR TWO COMMODITIES

PRODUCERS

HAY CROPS our estimate of the average price of alfalfa, clover, timothy, rairie, and all other hay				**SEEDS** (Report only prices paid to farmers for seed sold by them)							
				Alfalfa seed (Report in either unit)		**Red clover seed** (Report in either unit)		**Sweet clover seed** (Report in either unit)		**Timothy seed** (Report in either unit)	
(39) **Clover hay** (loose), per **ton** of 2,000 pounds	(40) **Timothy hay** (loose), per **ton** of 2,000 pounds	(41) **Mixed clover and timothy hay** (loose), per **ton** of 2,000 pounds	(42) **Prairie hay** (loose), per **ton** of 2,000 pounds	(43) Per **bushel** of 60 pounds	(44) Per **100 pounds**	(45) Per **bushel** of 60 pounds	(46) Per **100 pounds**	(47) Per **bushel** of 60 pounds	(48) Per **100 pounds**	(49) Per **bushel** of 45 pounds	(50) Per **100 pounds**
$ Cts.	$ Cts.	$ Cts.	$ Cts.	$ Cts.	$ Cts.	$ Cts.	$ Cts.	$ Cts.	$ Cts.	$ Cts.	$ Cts.

[OVER]

D

FIGURE 58 (Continued).—Schedules of this type are sent each month to thousands of country merchants and dealers in farm products who are familiar with prices actually being paid to producers.

[C. E. 1-06]
"D-1"

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF AGRICULTURAL ECONOMICS
DIVISION OF CROP AND LIVESTOCK ESTIMATES
WASHINGTON, D. C.

PRICES PAID BY FARMERS FOR EQUIPMENT, SUPPLIES, AND MACHINERY

Name ..... *Date* .....
Post Office ..... *R. D. No.* .....
County in which I live .....
State .....

IMPORTANT.—THIS SCHEDULE SHOULD BE MAILED BY THE 15TH OF THIS MONTH

Quotations given should be for kinds usually sold to farmers

DEAR SIR: The Bureau of Agricultural Economics of the United States Department of Agriculture desires to record the average price paid by farmers for **equipment, supplies, and machinery.** The Department is publishing monthly an index of prices received by farmers for what they sell. It is desired to show a corresponding index of prices paid by them for articles bought. A return of this schedule on or about the 15th of this month, with your estimate of the general average price for such of the articles listed below as are known to you, will be appreciated. In return, a news letter will be mailed to you each month showing these indexes and a discussion of the general business and agricultural situation.

Respectfully,

W. F. Callander
Chairman, Crop Reporting Board.

RETURN SCHEDULE EVEN THOUGH YOU CAN REPORT FOR ONLY ONE OR TWO COMMODITIES

EQUIPMENT, SUPPLIES, AND MACHINERY

(1) Cream separators, centrifugal, hand, 250-qt. capacity, **each**	(2) Milk cans, 10-gal., **each**	(3) Gas engines, 3-h. p., **each**	(4) Farm wagons, double, complete, **each**	(5) Horse collars, leather, **each**	(6) Iron pipe, galvanized, 2-in., per **ft.**	(7) Auto tires, 30 by 4.50 in., balloon, **each**	(8) Cylinder oil, medium, per **gallon**	(9) Stoves, 6-hole kitchen range, wood or coal-burning, **each**	(10) Kerosene stoves, 4-burner range, with built-in oven, **each**	(11) Wash-boilers, copper bottom, galvanized steel sides, **each**
$	$ Cts.	$	$	$ Cts.	Cents	$ Cts.	$ Cts.	$	$	$ Cts.

EQUIPMENT, SUPPLIES, AND MACHINERY—Continued

(12) Wringers, hand-power, **each**	(13) Washing machines, hand-power, **each**	(14) Incubators, 250-egg capacity, **each**	(15) Nails, 8d., wire, per **lb.**	(16) Barbed wire, galvanized, per **100 lbs.**	(17) Poultry netting, per **bale** (5 by 150 ft.)	(18) Hoes, 7-in. blade, **each**	(19) House paint, ready-mixed, per **gal.**	(20) Pumps, windmill force, **each**	(21) Windmills, 8-ft. double-geared, without tower, **each**	(22) Manure spreaders, 70-bushel capacity, **each**
$ Cts.	$ Cts.	$	Cents	$ Cts.	$ Cts.	$ Cts.	$ Cts.	$ Cts.	$	$

EQUIPMENT, SUPPLIES, AND MACHINERY—Continued

(23) Corn planters, 2-row, check, **each**	(24) Grain drills, disk drills, 12 tubes, **each**	(25) Walking plows, 1-horse, **each**	(26) Walking plows, 2-horse, **each**	(27) Plows, 2-bottom, horse-drawn, **each**	(28) Disk harrows, 7 ft., single, **each**	(29) Spiketooth harrows, 3-section, **each**	(30) John Deere tractors, 15–30 h. p., **each**	(31) Fordson tractors, **each**	(32) I. H. C. Farmall tractors, **each**	(33) McCormick-Deering tractors, 10–20 h. p., **each**
$	$	$	$	$	$	$	$	$	$	$

USE BACK OF THIS SCHEDULE FOR COMMENTS

FIGURE 59.—Thousands of small-town dealers in farmers' supplies report actual prices farmers pay for articles purchased. The schedule shown covers machinery and equipment, others carry groceries, furniture, lumber, etc.

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF AGRICULTURAL ECONOMICS
WASHINGTON, D. C.

October 8, 1932, 11 A.M. (E.T.)

COTTON REPORT AS OF OCTOBER 1, 1932

The Crop Reporting Board of the United States Department of Agriculture makes the following report from data furnished by crop correspondents , field statisticians, cooperating State Boards (or Departments) of Agriculture and Agricultural Colleges. The final outturn of cotton will depend upon whether the various influences affecting the crop during the remainder of the season are more or less favorable than usual.

STATE	ACREAGE FOR HARVEST 1932 (PRELIM.) Thous. acres	Oct. 1 CONDITION 10-yr. av. 1921-1930 a P. Ct.	1931 P. Ct.	1932 P. Ct.	YIELD PER ACRE 10-yr. av. 1921-1930 Lbs.	1931 Lbs.	Indicated 1932 Lbs.	PRODUCTION (Ginnings) 500 lb. gross wt. bales 1931 Crop b Thous. bales	1932 Crop Indicated Oct. 1 Thous. bales
Va.	76	64	80	49	246	289	182	42	29
N. Car.	1,251	59	75	56	242	271	198	756	519
S. Car.	1,755	48	68	50	165	245	166	1,005	610
Ga.	2,924	50	64	46	142	194	130	1,393	795
Fla.	91	60	76	44	124	175	84	43	16
Mo.	344	61	88	65	246	397	265	289	191
Tenn.	1,042	56	77	54	180	255	175	594	381
Ala.	3,030	56	68	48	158	200	132	1,420	836
Miss.	3,687	57	63	47	184	209	143	1,761	1,100
La.	1,753	54	69	52	164	220	147	900	540
Texas	13,908	52	69	59	126	165	140	5,320	4,063
Okla.	2,960	49	63	58	133	178	155	1,261	959
Ark.	3,424	54	80	52	160	256	151	1,907	1,081
N. Mex.	113	c 79	87	83	c 302	412	385	101	91
Ariz.	d 113	84	80	86	309	313	356	115	d 84
Calif.	123	c 83	82	89	329	440	467	177	120
Other	17	--	83	60	c 190	363	262	12	10
U. S. TOTAL	36,611	52.8	69.3	54.2	151 4	201.2	149.3	17,096	11,423
Lower Cal. e	27	----	76	91	c 244	182	213	26	12

a Prior to 1924 interpolated from September 25 and October 25 reports.
b Allowances made for interstate movement of seed cotton for ginning
c Less than a 10-year average
d Including Pima Egyptian long staple cotton, 22,000 acres and 13,000 bales
e NOT included in California figures NOR in United States total

APPROVED:

C. F. MARVIN,

ACTING SECRETARY OF AGRICULTURE.

CROP REPORTING BOARD.
W. F. Callander, Chairman,
John A. Hicks, Secretary,
J. A. Becker, D. A. McCandliss,
V. C. Childs, F. W. Gist,
F. H. Whitaker.

FIGURE 60.—This is a typical cotton report of the crop reporting service.

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF AGRICULTURAL ECONOMICS
WASHINGTON, D. C.

Released:
October 10, 1932.
3:00 P.M. (E. T.)

CROP REPORT AS OF OCTOBER 1, 1932.

The Crop Reporting Board of the United States Department of Agriculture makes the following forecasts and estimates FOR THE UNITED STATES, from reports and data furnished by crop correspondents, field statisticians, and cooperating State Boards (or Departments) of Agriculture and Agricultural Colleges:

CROP	CONDITION			TOTAL PRODUCTION IN MILLIONS			
	Oct. 1, 10-yr.av. 1919-1928	Oct. 1, 1931	Oct. 1, 1932	5-yr av. 1924-1928	1931	Indicated a Sept. 1, 1932	Indicated a Oct. 1, 1932
	Per cent	Per cent	Per cent				
Corn.....bus.	78.1	71.4	77.2	2,625	2,563	2,854	2,885
Winter wheat....."	----	----	----	549	789	b 442	b 442
Durum wheat, 4 States"	----	----	----	67	18	45	b 43
Other spr.wheat, U.S."	----	----	----	213	86	228	b 227
All wheat....."	----	----	----	829	894	715	b 712
Oats....."	----	----	----	1,277	1,112	1,245	b 1,265
Barley....."	----	----	----	219	198	303	b 313
Rye....."	----	----	----	44.1	32.5	b 42.5	b 42.5
Buckwheat....."	82.3	77.3	65.1	11.8	8.9	7.2	7.1
Flaxseed....."	72.4	41.4	48.0	23.3	11.1	13.3	13.2
Rice, 4 States....."	c 83.8	81.1	79.0	38.8	45.2	37.7	37.7
Grain sorghums d....."	79.8	70.3	68.4	98.1	105	118	116
Hay, all tame.....tons	----	----	----	73.8	64.2	68.6	b 68.5
Hay, wild....."	----	----	----	12.0	8.1	b 11.4	b 11.4
Hay, all clover and timothy e....."	----	----	----	36.2	27.4	b 26.0	b 26.0
Hay, alfalfa....."	----	----	----	23.0	21.0	26.5	b 26.4
Pasture.....	80.1	63.5	67.1	----	----	----	----
Beans, dry edible d 100-lb. bags	----	----	----	----	12.7	9.9	b 10.2
Soy beans.....	f 80.3	82.2	79.6	----	----	----	----
Peanuts (for nuts) lbs...	73.8	73.1	63.5	759	1,083	1,026	1,019
Cowpeas.....	71.6	76.5	67.3	----	----	----	----
Apples, total crop....bus.	58.2	70.5	48.6	180	202	138	134
Apples, com'l crop..bbls.	f 60.4	69.3	53.1	32.4	34.6	29.6	27.9
Peaches, total crop..bus.	g 64.9	g 79.8	g 50.4	h 56.8	h 76.6	h 46.4	bh 46.3
Pears, total crop. ... "	68.2	64.3	60.9	21.5	h 23.3	22.2	22.2
Grapes i.....tons	78.2	54.3	74.6	h 2.34	h 1.62	2.09	2.14
Pecans.....lbs.	f 51.2	59.6	48.4	56.8	76.7	51.2	53.7
Potatoes.....bus.	76.1	69.5	69.3	361	376	357	357
Sweet potatoes....."	75.8	67.8	69.9	57.8	62.9	76.2	74.6
Tobacco.....lbs.	77.4	79.4	65.8	1,299	1,601	1,028	1,012
Broomcorn d.....tons	----	----	----	j 51.2	j 44.6	j 37.1	bj 34.7
Hops d.....lbs.	----	----	----	30.3	25.9	26.0	b 25.3
Sugar beets.....tons	----	----	----	7.39	7.90	8.21	b 8.59

a Indicated production increases or decreases with changing conditions during the season.
b Preliminary estimate.
c 5 States including Missouri.
d Principal producing States.
e Excludes sweetclover and lespedeza For 1931-32 excludes minor States.
f Short-time average.
g Production in percentage of a full crop.
h Includes some quantities not harvested.
i Production is the total for fresh fruit, juice, and raisins.
j Thousands of tons.

FIGURE 61.—First page of a monthly crop report.

Page 2

CROP REPORT AS OF OCTOBER 1, 1932

(Continued)

Released:
October 10, 1932
3:00 P.M. (E.T.)

CROP	ACREAGE 1.000 Acres 5-yr. av. 1924-1928	1931	1932	1932 P. ct. of 1931	YIELD PER ACRE 10-yr. av. 1919-1928	1931	Indicated Oct. 1, 1932 a
Corn.....bus.	99,979	105,100	108,609	103.3	27.2	24.4	26.6
Winter wheat....."	36,026	41,363	33,245	80.4	14.8	19.1	b 13.3
Durum wheat, 4 States"	4,932	c 2,869	4,141	144.3	11.8	6.4	b 10.5
Other spr wheat,U.S."	15,173	c 11,067	18,028	162.9	12.6	7.8	b 12.6
All wheat....."	56,131	55,299	55,414	100.2	14.0	16.2	b 12.8
Oats....."	41,865	c 39,719	41,994	105.7	29.6	28.0	b 30.1
Barley....."	8,991	c 11,428	13,895	121.6	22.8	17.3	b 22.6
Rye....."	3,509	3,127	3,324	106.3	12.5	10.4	b 12.8
Buckwheat....."	718	505	495	98.0	16.8	17.7	14.3
Flaxseed....."	2,933	c 2,325	2,667	114.7	7.6	4.8	5.0
Rice, 4 States....."	934	974	845	86.8	d 40.5	46.4	44.6
Grain sorghums e....."	6,330	7,152	8,102	113.3	16.4	14.6	14.4
Hay, all tame.....tons	55,771	53,431	52,424	98.1	1.31	1.20	b 1.31
Hay, wild....."	14,129	11,966	13,327	111.4	.88	.68	b .86
Hay, all clover and timothy f....."	30,960	24,811	23,668	95.4	1.16	1.10	b 1.10
Hay, alfalfa....."	10,771	11,643	12,504	107.4	2.18	1.80	b 2.11
Beans, dry edible e..lbs.	1,614	1,860	1,477	79.4	——	684	b 693
Soy beans g.....	2,016	3,058	2,807	91.8	——	——	——
Peanuts (for nuts)....lbs.	1,068	1,419	1,586	111.8	701	763	642
Cowpeas g.....	1,887	1,468	1,915	130.4	——	——	——
Velvet beans g.....	h 99	57	57	100.0	——	——	——
Potatoes.....bus.	3,081	3,371	3,411	101.2	109.3	111.4	104.6
Sweet potatoes....."	641	778	872	112.1	92.9	80.9	85.5
Tobacco.....lbs.	1,700	2,030	1,447	71.3	769	789	699
Broomcorn e....."	298	295	285	96.6	317.6	302.4	b 243.1
Hops e....."	22	21	22	101.4	1,254	1,208	b 1,167
Sugar beets.....tons	701	713	i 745	104.5	10.2	11.1	b 11.5

a Indicated yield increases or decreases with changing conditions during the season
b Preliminary estimate.
c Acres harvested. Heavy abandonment of planted acreage
d 5 States including Missouri.
e Principal producing States. (See sheets for separate crops.)
f Excludes sweetclover and lespedeza For 1931-32 excludes minor States.
g Grown alone for all purposes.
h Short time average.
i Planted acreage less probable abandonment.

APPROVED:

C. F. MARVIN,

ACTING SECRETARY OF AGRICULTURE

CROP REPORTING BOARD.
W. F. Callander, Chairman,
John A. Hicks, Secretary,
J. A. Becker, J. L. Orr,
S. A. Jones, C. G. Carpenter,
P. L. Koenig, J. H. Jacobson,
S. R. Newell, L. M. Carl.

FIGURE 62.—Second page of a monthly crop report. The crop reports are released in the form shown in this and preceding figure at an exact time that has been previously set. Skeleton forms, which do not contain the current figures, are mailed to the press about 2 weeks before each report is released for the convenience of press workers.

183174°—33——7

U. S. DEPT. AGR.
BUR. AGR. ECON.

PIG REPORT JUNE 1, 1932

July 12, 1932.
12:00 (Noon) (E. T.)

State	Pigs Saved Spring (Dec. 1 to June 1) No. 1930 (000)	No. 1931 (000)	% of 1931	Number 1932 1/ (000)	No. per litter 1931	1932	Sows Farrowed Spring (Dec. 1 to June 1) No. 1930	No. 1931 (000)	No. 1932 1/	Fall (June 1 to Dec. 1) 1932 2/ No. 1931	% of 1931	Number (000)
											100	4
											100	1
											100	3
											90	8
											100	1
											100	3
											110	21
											90	8
											110	56
											105	104
											110	253
											106	321
											107	424
											110	67
											85	119
											105	1,184
											83	199
											100	673
											111	410
											70	28
											100	95
											85	249
											97	241
											97	1,895
											100	3,079
											110	3
											108	18
											115	64
											107	19
											110	88
											110	48
											106	118
											100	46
											108	404
											115	89
											118	99
											100	66
											105	64
											115	70
											110	48
											108	96
											110	157
											110	689
											70	18
											80	22
											80	6
											80	43
											112	7
											90	3
											75	6
											80	2
											90	20
											95	24
											95	62
West.	1,758	2,083	90	1,884	6.1	5.9	292	341	321	247	86	213
U. S.	49,431	53,851	93	50,093	6.02	5.79	8,296	8,951	8,654	4,435	101	4,488

1/ Preliminary
2/ Number indicated to farrow this year from breeding intentions reports.

W. F. Callander
Chairman, Crop Reporting Board.

U. S. DEPT. AGR.
BUR. AGR. ECON.

July 12, 1932.
12 (Noon) (E. T.

THE PIG CROP REPORT AS OF JUNE 1, 1932.

The number of pigs saved during the six months December 1, 1931 to June 1, 1932 for the United States was 50,093,000 head, this being a decrease of 3,758,000 head or 7 per cent from the number saved during the corresponding period a year earlier, according to the estimate of the United States Department of Agriculture. This decrease resulted from a decrease of 3 per cent in the number of sows farrowed and of 4 per cent in the average number of pigs saved per litter. This estimate is based largely upon the returns from the June Pig Survey made in cooperation with the Post Office Department through the rural mail carriers.

The decrease for the United States was due to the smaller number of pigs saved in the Western part of the Corn Belt. Of the seven States in the West North Central group five showed decreases, ranging from 11 per cent in Iowa to 40 per cent in South Dakota, but with increases in Kansas and Missouri. Increases are reported for all the States in the East North Central group, except Wisconsin. For the whole North Central group (The Corn Belt) the number of pigs saved this season was 39,783,000 head, a decrease of 4,554,000 head or 10.3 per cent from a year earlier.

In areas outside the Corn Belt there was a general increase in the number of pigs saved, except in the Far Western States which suffered severely from the drought of 1931. In the North Atlantic States the number of pigs saved increased one half of one per cent, in the South Atlantic States 10.2 per cent and in the South Central 17.2 per cent; in the Western States there was a decrease of 9.6 per cent.

The number of sows to farrow during the six months, June 1 to December 1, 1932 is estimated at 4,488,000 head, an increase of 53,000 head or 1.2 per cent over the number farrowed in the corresponding period of 1931. Increased farrowings are estimated for all regions except the West North Central and Far Western States. This estimate is based upon interpretation of breeding intentions reported about June 1. Any changes in the hog price situation or in crop prospects during June and July materially different from normal changes during those months may be expected to result in farrowings this year somewhat different from this estimate which is based on average relationship between breeding intentions and estimated farrowings.

The indicated number of hogs over six months of age on June 1, based upon the average number of such hogs per farm and upon the relationship of hogs over six months to pigs saved as shown by the pig survey reports, was about 5 per cent larger this year than last for the United States. Except in the States most seriously affected by the 1931 drought, all of the Corn Belt States had larger indicated numbers this year than last and materially larger numbers are indicated in nearly all of the Southern States and in some Western States.

The decrease in pigs saved per litter this year resulted chiefly from the severe weather in March, which caused above normal losses during that

FIGURE 63.—Sample of pages 1 and 3 of an annual report showing the results of the June pig survey made in cooperation with the rural-mail carriers. The report shows the size of the spring pig crop and probable farrowings during the following 6 months.

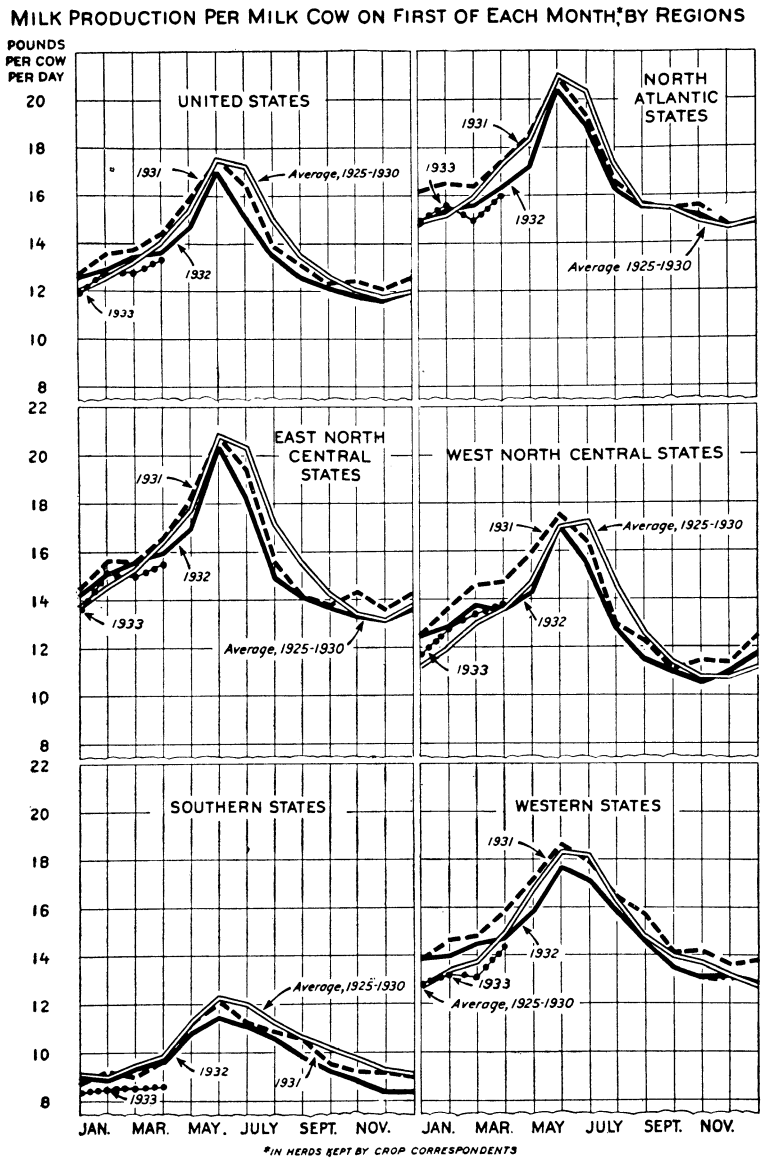

FIGURE 1 - ON APRIL 1, MILK PRODUCTION PER COW WAS QUITE GENERALLY BELOW THE VERY LOW PRODUCTION ON THE SAME DATE LAST YEAR, THE CHIEF EXCEPTIONS BEING A FEW OF THE MIDDLE WESTERN AND GREAT PLAINS STATES WHERE FEED WAS VERY SCARCE LAST SPRING BECAUSE OF THE 1931 DROUGHT

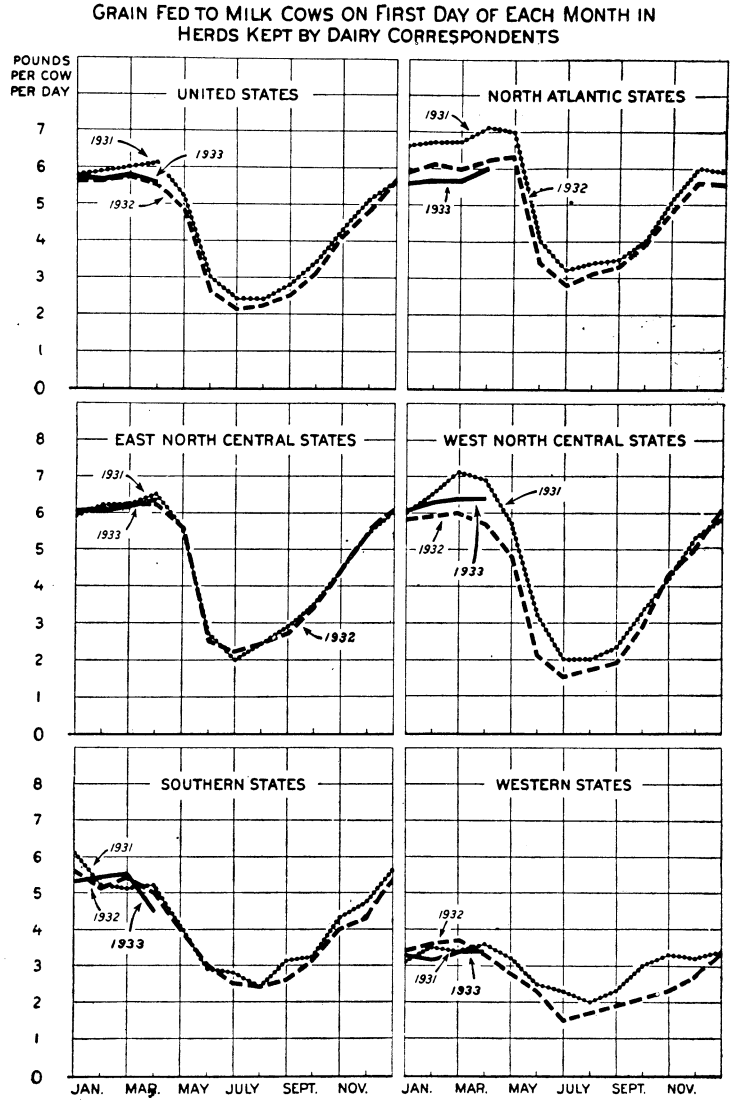

FIGURE 2 - IN THE WESTERN CORN BELT, WHERE THERE ARE LARGE SUPPLIES OF GRAIN ON FARMS, MILK COWS ARE BEING FED FAIRLY LIBERALLY BUT FEEDING CONTINUES LIGHT IN SECTIONS DEPENDENT ON PURCHASED GRAIN. SINCE THE FIRST OF THE YEAR, DAIRY CORRESPONDENTS IN THE COUNTRY AS A WHOLE HAVE BEEN FEEDING SLIGHTLY MORE GRAIN PER COW PER DAY THAN AT THE SAME SEASON LAST YEAR BUT THE NUTRITIVE VALUE OF THE RATION IS MARKEDLY LOWER

FIGURE 64.—Specimen pages from monthly mimeographed report entitled "Milk Production Trends."

TABLE 2 MILK AND BUTTERFAT PRODUCED AND MILK USED FOR EACH PURPOSE ON FARMS, 1932

STATE	Number of milk cows on farms 1/	Estimated production per milk cow during year 2/		Percentage of butterfat in milk produced	Total production on farms 2/		Disposition of milk					
		Milk	Butterfat		Milk	Butterfat	Used as whole milk or cream on farms where produced	Used for making butter on farms	Whole milk fed to calves	Milk skimmed or separated for sale of butterfat	Retailed by producers 3/	Milk sold at wholesale 4/
	Thousands	Pounds	Pounds	Per cent	million pounds	million pounds	million pounds	million pounds	million pounds	million pounds	million pounds	million pounds
Me.	140	4,620	189	4.1	647	26	72	164	15	91	105	200
N.H.	76	4,900	191	3.9	372	15	28	32	9	14	43	246
Vt.	275	4,800	194	4.05	1,320	53	64	37	29	220	58	912
Mass.	126	5,710	217	3.8	719	27	52	13	14	12	135	493
R.I.	21	6,300	243	3.85	132	5	7	1	3	--	12	109
Conn.	110	5,660	215	3.8	623	24	42	11	16	5	115	434
N.Y.	1,370	5,357	194	3.63	7,340	266	376	294	220	180	560	5,710
N.J.	116	5,900	217	3.68	684	25	45	11	14	-	192	422
Pa.	877	4,980	189	3.8	4,367	166	380	365	109	170	730	2,613
N. ATL.	3,111	5,209	195.1	3.75	16,204	607	1,066	928	429	692	1,950	11,139
Ohio	912	4,470	183	4.1	4,077	167	552	334	122	1,151	384	1,534
Ind.	731	4,160	173	4.15	3,041	126	396	164	82	1,150	214	1,035
Ill.	1,054	4,510	171	3.8	4,754	180	544	361	133	1,525	408	1,783
Mich.	822	5,100	194	3.8	4,192	159	394	327	168	1,380	300	1,623
Wis.	2,074	5,300	196	3.7	10,992	407	522	71	330	2,880	210	6,979
E.N.CENT.	5,593	4,837	185.8	3.84	27,056	1,039	2,408	1,257	835	8,086	1,516	12,954
Minn.	1,827	4,800	180	3.75	7,810	293	571	222	226	5,850	190	751
Iowa	1,406	4,300	163	3.8	6,046	229	597	360	169	4,300	165	455
Mo.	1,012	3,540	149	4.2	3,582	151	555	490	97	1,800	200	440
N.Dak.	602	3,750	141	3.75	2,258	85	241	344	79	1,490	64	40
S.Dak.	560	3,580	136	3.8	2,005	76	233	206	72	1,380	67	47
Nebr.	672	4,100	156	3.8	2,755	105	350	328	105	1,642	125	205
Kans.	817	4,000	156	3.9	3,268	127	405	307	124	1,907	190	335
W.N.CENT	6,696	4,140	159.2	3.85	27,724	1,066	2,952	2,257	872	18,369	1,001	2,273
Del.	33	3,950	154	3.9	130	5	15	9	3	2	20	81
Md.	180	4,250	168	3.95	765	30	95	75	15	15	98	467
Va.	381	3,360	138	4.1	1,280	53	296	460	40	130	110	244
W.Va.	210	3,560	150	4.2	748	32	181	262	26	94	110	75
N.C.	304	3,660	157	4.3	1,113	48	332	536	16	49	89	91
S.C.	141	3,450	152	4.4	486	21	149	229	6	20	54	28
Ga.	328	3,080	136	4.4	1,010	45	269	510	10	58	58	105
Fla.	86	2,770	119	4.3	238	10	35	43	2	6	64	88
S.ATL.	1,663	3,470	146.7	4.23	5,770	244	1,372	2,124	118	374	603	1,179
Ky.	522	3,440	148	4.3	1,796	77	436	448	31	527	145	209
Tenn.	496	3,240	143	4.4	1,607	71	356	595	21	251	80	304
Ala.	384	3,000	134	4.45	1,152	51	288	647	9	60	64	84
Miss.	484	2,740	123	4.5	1,326	60	261	500	11	226	55	273
Ark.	406	3,000	129	4.3	1,218	52	279	498	11	281	77	72
La.	244	2,230	98	4.4	544	24	192	117	5	27	65	138
Okla.	710	3,450	147	4.25	2,450	104	462	471	49	1,040	170	258
Tex.	1,261	3,180	140	4.4	4,010	177	939	1,190	60	996	285	540
S.CENT.	4,507	3,129	136.7	4.37	14,103	616	3,213	4,466	197	3,408	941	1,878
Mont.	183	3,990	156	3.9	730	29	97	106	26	360	66	75
Idaho	186	5,440	215	3.95	1,012	40	106	52	28	535	41	250
Wyo.	69	3,790	146	3.85	262	10	36	29	8	125	24	40
Colo.	251	4,000	152	3.8	1,004	38	136	81	40	427	49	271
N.Mex.	67	3,300	132	4.0	221	9	43	29	4	94	35	16
Ariz.	42	4,640	179	3.85	195	8	25	12	5	41	42	70
Utah	107	5,300	201	3.8	567	22	64	36	17	163	37	250
Nev.	21	4,880	185	3.8	102	4	8	4	4	66	14	6
Wash.	295	5,680	230	4.05	1,676	68	147	64	59	545	141	720
Oreg.	247	5,200	224	4.3	1,284	55	121	53	45	555	87	423
Calif.	599	6,600	251	3.8	3,953	150	175	38	119	975	400	2,246
WEST.	2,067	5,325	209.5	3.93	11,006	433	958	504	355	3,886	936	4,367
U. S.	23,637	4,309	169.4	3.93	101,863	4,005	11,969	11,536	2,806	34,815	6,947	33,790

Bureau of Agricultural Economics. Estimates of Division of Crop and Livestock Estimates. Preliminary.

1/ Estimated average number of milk cows on farms during 1932. The estimates exclude heifers not yet fresh, but include some cows which had calves running with them much of the year.

2/ These estimates exclude milk sucked by calves, milk spilled or lost up to the time it is measured, skimmed or delivered by farmers and milk produced by cows not on farms.

3/ Approximations based chiefly on the population in small towns and rural areas where most families purchase their milk supply directly from local farmers. Estimates include milk equivalent of cream.

4/ Estimates include milk delivered to creameries, condensaries, cheese factories and market milk receiving stations, but exclude market milk sold to other farmers for local retail delivery.

FIGURE 65.—Specimen page from monthly mimeographed report entitled "Milk Production Trends."

State Iowa

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF AGRICULTURAL ECONOMICS
FIELD SERVICE, DIVISION OF CROP AND LIVESTOCK ESTIMATES

Subject
Date

Identical Comparison of June 1932 and June 1931 Pig Surveys.

	1	2	3	4	5	6	7	8	9	10	11
	No. of farms Tabulated for Hogs		Hogs on Identical Farms								
			Hogs 6 mo. +			Pigs 6 mo. -			All Hogs		
	Entire Survey	Identical	1932C	1931C	1932C/1931C	1932C	1931C	1932C/1931C	1932C	1931C	1932C/1931C
1	931	261	6509	6944	93.7	21,225	25 132	84.5	27 734	32 076	86.4
2	823	216	3732	3745	99.6	12 171	14 506	83.9	15 903	18 251	87.1
3	964	215	3011	3697	81.4	12 251	14 104	86.9	15 262	17 801	85.7
4	905	249	6442	6535	98.6	18 530	21 408	86.5	24 972	27 943	89.4
5	1010	235	7112	5917	120.2	16 641	18 697	89.0	23 753	24 614	96.5
6	834	200	4988	5034	99.1	14 649	15 895	92.2	19 637	20 929	93.8
7	570	150	4372	4186	104.4	9 393	10 813	86.9	13 765	14 999	91.8
8	542	113	2014	1624	124.0	4 990	5 406	92.3	7 004	7 030	99.6
9	697	193	4178	3935	106.2	9 422	10 990	85.7	13 600	14 925	91.2
State	7276	1832	42,358	41,617	101.8	119,272	136,951	87.1	161,630	178,568	90.5

	12	13	14	15	16	17	18	19
	Sows farrowed spring							Sows farrowed
	1932C	1931H	1931C	1932C/1931H	1932C/1931C	Bias + -	1931H/1931C	1932C/1931H
1	3740	4410	4233	84.8	88.4	3.6	104.2	86.7
2	2077	2488	2368	83.5	87.7	4.2	105.1	82.2
3	2039	2234	2245	91.3	90.8	.5	99.5	90.6
4	3330	3865	3677	86.2	90.6	4.4	105.1	90.6
5	2928	3194	3053	91.7	95.9	4.2	104.6	89.8
6	2458	2699	2558	91.1	96.1	5.0	105.5	96.3
7	1737	1992	1854	87.2	93.7	6.5	107.4	89.7
8	821	883	824	93.0	99.6	6.6	107.2	99.2
9	1543	1691	1632	91.2	94.5	3.3	103.6	92.9
State	20 673	23456	22444	88.1	92.1	4.0	104.5	89.9

17 15 - 16. If 16 is less than 15 the sign is plus. If 16 is more the sign is minus.

19 From the June 1932 Pig Survey column (21)

25 23 - 24 See note (17) above for sign

27 From the June 1932 Pig Survey column (27)

(20 + 12) (21 + 13) (22 + 14) — From June Pig Survey Columns (17) (19) (18)

	20	21	22	23	24	25	26	27
	Pigs Saved on Identical Farms							Pigs Saved
	1932C	1931H	1931C	1932C/1931H	1932C/1931C	Bias + -	1931H/1931C	1932C/1931 (comp)
1	20896	26070	25021	80.2	83.5	3.3	104.2	82.5
2	11 980	15 054	14 284	79.6	83.9	4.3	105.4	77.7
3	12 157	13 960	14 067	87.1	86.4	.7	99.2	86.2
4	18 460	21 510	21 169	85.8	87.2	1.4	101.6	85.8
5	16 626	19 314	18 817	86.1	88.3	2.2	102.6	84.0
6	14 094	16 112	15 892	87.5	88.7	1.2	101.4	91.6
7	9 317	11 199	10 757	83.2	86.6	3.4	104.1	85.5
8	4821	5560	5422	86.7	88.9	2.2	102.5	93.4
9	9 076	10 697	10 829	84.8	83.8	1.0	98.8	86.8
State	117,427	139,476	136,258	84.2	86.2	2.0	102.4	85.3

	28	29	30	31	32	33
	Pigs Saved per litter - Spring					
	Identical Farms			Entire Survey		
	1932	1931H	1931C	1932C	1931H	1931C
State only	5.68	5.94	6.07	5.67	5.87	5.97

ALL CALCULATIONS TO 3 SIGNIFICANT FIGURES

	34	35	36	37	38	39	40	41	42	43
	Ratio Comparison from Entire Surveys 1932 - 1931									
	Hogs 6 mo.		Pigs 6 mo. -		All Hogs		Sows Farrowed - Sp.		Pigs Saved - Sp.	
State only	per farm	100 A.	per farm	100 A.	per farm	100 A.	per farm	100 A.	per farm	100 A.
1932	22.5	12.7	62.1	35.0	84.6	47.6	10.9	6.12	61.6	34.7
1931	22.1	12.4	71.1	39.8	93.3	52.2	11.9	6.66	71.2	39.8
R. R.	101.8	102.4	87.3	87.9	90.7	91.2	91.6	91.9	86.5	87.2

State Iowa

FIGURE 66.—Data from pig survey schedules received from the same farmers in 1931 and 1932 are summarized on forms like this. They show, by direct comparison, the changes in the 1932 spring pig crop as compared with that of 1931, and the relative comparison of the different classes of hogs per farm and per 100 hogs.

CARBONDIC
State Colorado

(C. E. 1-22-A)

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF AGRICULTURAL ECONOMICS
FIELD SERVICE, DIVISION OF CROP AND LIVESTOCK ESTIMATES

Subject COLORADO
Date February 2, 1933

Non-Identicals

SPECIAL WESTERN SHEEP SURVEY JANUARY 19 33.

Dist.	1 Number Reports	2 Ewes a Aged	3 Ewes b Young	4 Ewes c Yearling	5 Ewes Total 1 + (2 + 3 + 4)	6 Ewes d coming yearling	7 Rams and wethers all ages	8 Total sheep + lambs Jan. 1933	9 Total sheep + lambs Jan. 1932	10 Total sheep + lambs 1933 2 (8 + 9)	11 Lambs Raised 1932
1	75	10788	35266	4241	50295	3592	1878	55765	56109	99.4	38723
2	28	1873	3273	296	5442	536	212	6190	5496	112.6	4639
6	37	5149	8010	1849	15008	1100	469	16577	18298	90.6	12574
7	77	5814	36755	5906	48475	7941	1691	58107	58170	99.9	39820
8	56	3848	23063	5365	32276	4080	964	37320	37975	98.3	18849
9	32	2230	11774	2684	16688	1827	573	19088	21771	87.7	12262
State	305	29702	118141	20341	168184	19076	5787	193049	197819	97.6	126867
Avg. No. per report		97.4	387.3	66.7	551.4	62.5	19.0	632.9	648.6	xxx	416.0
1932 Survey		104.6	467.7	106.9	678.2	63.3	27.8	xxx	xxx	xxx	492.3
R. R. 1933/1932		93.1	82.8	63.0	81.3	98.7	68.3 o/H	97.6 c/c	82.3		84.5
% each class of total 1933		15.4	61.2	10.5	87.1	9.8	3.0	100%	xxx	xxx	xxx
1932 Survey		13.6	60.8	13.8	88.2	8.2	3.6	100%	xxx	xxx	xxx

% Total Ewes which are:
yearlings (4 + 5) 12.1 %
ewe lambs (6 + 5) 11.3 %

% ylg. ewes which are lambs (6 + 4) 93.8 %

% lambs raised which are: ewe lambs (6 + 11) 15.0 %

farm slaughter
average per farm report · slaughter
sheep ((22 + 21)) 17.5
lambs ((23 + 21)) xxx

Deaths
sheep ($9 + 5 11.2 %
lambs (20 + (11 20) 4.9 %
133383

Disposition Items

Dist.	15 Bought 1932 Sheep	16 Bought 1932 Lambs	17 Sold 1932 Sheep	18 Sold 1932 Lambs	19 Deaths 1932 Sheep	20 Deaths 1932 Lambs %	21 Farm Slaughter Farms Reporting	22 Farm Slaughter Sheep & Lambs	23 Farm Slaughter Lambs	24 Wool Produced 1932 Sheep Shorn	25 Wool Produced 1932 wool shorn lbs.	26 Wool Produced 1932 Average wt. per fleece
1	6630	415	31140	34461	7273	13.0 19.12	56	729		82416	652337	7.92
2	631	60	131	3612	3144	5.1 171	12	579		6672	53743	8.06
6	692	281	2399	11290	960	5.8 391	24	212		18787	164613	8.76
7	1063	232	25505	30149	6959	12.0 2238	46	846		72062	485829	6.74
8	1117	2294	500	16189	4272	11.4 1015	32	625		47500	425017	8.95
9	745	385	3514	10607	1906	10.0 789	18	301		35845	317687	8.86
State	10878	3667	12189	106308	21684	8.3 6516	188	3292		263282	2099226	8.0

* Reports showing either slaughter of sheep, lambs or both

Note: Calculations one decimal

Dist.	Deaths LAMBS	Deaths % 20 / 11+20
1	40635	4.70
2	4810	3.56
6	12965	3.02
7	42058	5.32
8	19864	5.11
9	13051	6.04
STATE	133383	4.885

1932 Lamb crop

July 1932 - % Docked

Spec. W. Schedule 75.6 %
R. C. (born)
Opinion Inquiry

Statist 70
Reg. Board 70
Washington 70

January 1932 - Lambs Raised

11 + (Ewes-1-32 as a % of total sheep 88.2 applied to sheep for 1-1-32 197819 reported 92 H. SH. 1-1-33 = 174476) Ewes from 32 H. SH. = 72.9 %

11 + (Bureau Est. ewes 1-1-32 as a % of total Sheep 86.7 applied to numbers 1-1-32 197819 reported 1-1-33 = 174509) = 74.0 %

Statist ——— %

State Colorado

FIGURE 67.—In the Western States, Texas, and South Dakota returns from individual sheep growers are summarized in this form to show changes in numbers from the preceding year, number in each class, method of disposal, and the lamb crop.

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State Illinois

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF AGRICULTURAL ECONOMICS
FIELD SERVICE, DIVISION OF CROP AND LIVESTOCK ESTIMATES

Subject ..... ILLINOIS
Date .....

DECEMBER 1932 LIVESTOCK SURVEY - CATTLE

	1	2	3	4	5	6	7	8	9	10	11	12	13	14 (5 + 9)	15 (6 + 10)
	Farms listed for all livestock (State only)	No. farms listed for cattle	Cattle 2 +				Cattle 1 - 2				Calves		Total		
			Cows				Heifers					Steers and Bulls			
			Milk	Beef	Steers	Bulls	Milk	Beef	Steers	Bulls	Heifers		All Cattle	Steers	Bulls
7		1140	11007	2492	1669	557	2495	1129	2071	323	3708	3545	28598	3746	880
8	No. farms	1481	15629	1161	1724	741	3520	785	2069	407	3880	2184	35125	3793	1168
4	1079	802	4580	1890	690	242	957	645	1348	150	2102	2493	15400	2038	395
4a		1134	7329	1601	1454	335	1481	552	2051	222	2211	2389	19725	3505	557
5		1098	6993	1396	804	347	1581	642	1619	232	2245	2131	18090	2423	579
6	Acreage	1240	5323	1051	678	382	1785	752	1375	285	2696	1885	18937	2053	667
6a	1916 836	1480	8268	1024	216	301	1788	545	926	233	2741	2437	18679	1142	534
7		957	5925	449	150	272	1226	254	319	168	1298	826	10890	469	440
9		697	3342	631	114	155	792	212	208	100	1133	791	7478	322	255
State		10079	74429	11695	7499	3355	15625	5516	11986	2120	22164	18921	173320	19485	5475
Per cent of total (col.13)			42.9	6.7	4.3	1.9	9.0	3.2	6.9	1.2	12.8	10.9	100%	11.2	3.2
" " " " (1931 survey)			44.8	7.3	4.6	2.4	9.6	2.8	6.7	1.4	11.9	9.6	100%	10.8	3.5
R. R. 1932 / 1931			95.8	92	101.9	95.2	97.8	108.3	102.8	88.2	102.6	116.5	100%	103.2	91.4

Average number per farm (all Farms)

	1931	1932	R.R.
Cows 2 + for milk	7.11	7.21	102.8%
Heifers 1 - 2 for milk	1.49	1.54	102.4
All Cattle	15.9	17.0	106.9

Per 100 Acres

Cows 2 + for milk	4.20	4.35	103.6
Heifers 1 - 2 for milk	0.80	0.823	103.8
All Cattle	9.38	10.18	108.2

Per farm reporting cattle

1931	1932	R. R.
7.24	7.38	104.9
1.52	1.55	102.0
16.2	17.2	106.2

Ratio Heifers 1-2 for milk to milk cows

1932 (7 ÷ 3) 24.0

1931 Survey 20.9

R. R. 1932/1931 100.5%

Identical Cattle Farms

	16	17	18	19	20	21	22	23	24	25	26
	Number Identical Cattle farms	Cows 2 +				Heifers 1 - 2				Total Cattle	
		Milk		Beef		Milk		Beef			
		1932	1931	1932	1931	1932	1931	1932	1931	1932	1931
1		2842	2726	652	706	588	728	309	440	7734	7714
2		5852	5713	363	352	1044	1015	131	121	10524	10136
3		1210	1191	475	441	242	229	141	108	3924	3549
4		2007	1964	405	365	437	400	166	112	5060	4401
5		1363	1350	412	406	318	275	147	101	3603	3334
6		2144	2067	221	211	448	469	232	156	4635	4326
7		2419	2354	355	248	517	487	191	154	5552	5063
8		1875	1877	178	152	414	354	107	97	3699	3340
9		1053	1035	199	196	242	203	59	38	2406	2159
State		20765	20277	3260	3077	4250	4163	1483	1327	47159	44066
1932/1931		(17 ÷ 18)		(19 ÷ 20)		(21 ÷ 22)		(23 ÷ 24)		(25 ÷ 26)	
		102.4 %		106.9 %		102.1 %		111.8 %		107.0 %	

State Illinois

FIGURE 68.—This summary of returns received from farmers shows the classification of cattle; the changes in numbers between December 1, 1931 and 1932 by direct comparison of numbers on farms reporting both years; and relative changes in numbers per farm and per 100 acres. This is used in estimating numbers on farms January 1.

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UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF AGRICULTURAL ECONOMICS
DIVISION OF CROP AND LIVESTOCK ESTIMATES
WASHINGTON

Preliminary 1933 STATE Iowa

(In Thousands)

HOGS: - BALANCE SHEET AND VALUE OF PRODUCTION

	On hand January 1					
	1932			1933		
	Head	Average weight	Total weight	Head	Average weight	Total weight
Pigs 6 mo.	3925	100	392500	3980		
Sows & Gilts	2100	230	483000	2100		
Other hogs 6 mo. +	5115	210	1074150	4733		
TOTAL	11,140	175	1949650	10,813	173	1874930

Dr.	Head	Cr.	Head
On hand, Jan. 1932	11140	Shipped	12,474
Pigs saved:		Local slaughter	160
Spring 1897 sows @5.67 per litter	10,756	Farm slaughter	625
Fall 654 sows @6.02 per litter	3937	Other Disp.	
Shipped into State	20	Deaths:	
Total	25,853	Old hogs 235	
		Spr. pigs 1236	
		Fall pigs 310	1,781
		Total	15,040
		On hand, Jan. 1, 1933	10,813
		TOTAL	25853

Ba 9 8
Directs 12

On hand, Jan. 1, 1932, 11140 head @ 175 lbs. 1949650 lbs.
On hand, Jan. 1, 1933, 10813 head @ 173 lbs. 1874930 lbs.
Difference in inventory (plus or minus) -74720 lbs.

Shipped	12474 head	@ ~~246~~ 227	lbs.	2831598	lbs.
Local slaughter	160 head	@ 240	lbs.	38400	lbs.
Total	12634 head	@ 227	lbs.	2869998	lbs.
Farm slaughter	625 head	@ 245	lbs.	153125	lbs.
Total	13259	228		3023123	lbs.
Minus, shipped in	20 head	@ 115	lbs.	2300	lbs.
Balance				3020823	lbs.
Difference in inventory, plus, minus				-74720	lbs.
Net production				2946103	lbs. @ 3.2¢ per lb.

VALUE OF PRODUCTION 94275

FIGURE 69.—State summaries like this one are based upon estimated numbers on farms at the beginning and end of the year, estimated pig crops published in July and December, marketing records, farm and local slaughter based upon the 1929 census, and death losses based upon information from the disposition-of-livestock inquiry.