Chairman HUMPHREY. Gentlemen, I have a time problem this afternoon, and will have to leave shortly. If it would be possible, I would like to ask Dr. Abel to give us a summary of the OTA Food Advisory Committee report. I would ask you gentlemen to bear with us for a little while and permit us to ask you questions later. Dr. Abel, would you please come forward.

STATEMENT OF DR. MARTIN ABEL, DIRECTOR, ECONOMIC DEVELOPMENT CENTER, UNIVERSITY OF MINNESOTA, MINNEAPOLIS, MINN.

Dr. ABEL. Thank you, Mr. Chairman.

The chairman of the Food Advisory Committee, Dr. Clifton Wharton regrets that he could not be here and has asked me to represent the committee for him.

I would like to make a few comments on the report of the Food Advisory Committee of the Office of Technology Assessment, Food, Agriculture, and Nutrition Information Systems: Assessment and Recommendations. While the views expressed are my own, I have consulted with and benefited from the views of other members of the Food Advisory Committee in the preparation of my remarks.

The Food Advisory Committee report contains 12 recommendations for improving food, agriculture!, and nutrition information systems. These recommendations deal with (a) ways by which the Congress can strengthen its own capabilities to deal with ever-growing amounts of information; (b) ways to eliminate obsolescence and improve the timeliness and reliability of food and agricultural data: (c) the need to improve information on fertilizer, a key agricultural input; (G?) the need to strengthen information systems dealing with current domestic and world food and agricultural situations; (e) development of new technology for improving crop forecasts that utilizes satellites; (f) improving nutrition information systems; and (g) improving international food and agricultural information systems.

The Technology Assessment Board has already heard from several people who have commented on the Food Advisory Committee report and its recommendations. The recommendations stand by themselves. I shall confine my remarks to actions the Congress might take to implement in the near future some of the recommendations of the report that appear to be of vital importance to our information systems, and to the status of further work being done by the Food Advisory Committee on improving nutrition information.

The first two recommendations deal with how the Congress can stengthen its own information and analytical capabilities through (a) increasing the analytical capabilities of staffs of the agricultural committees and the agricultural specialists in the Congressional Research Service, and (b) making fuller use of the analytical capabilities in the executive agencies and the land-grant universities. We recommend that the Congress move quickly in Implementing these two recommendations. Their implementation would provide valuable additional staff capacity to help the Congress implement the other recommendations of the Food Advisory Committee report.

We recommend that congressional action to improve its own staff capability not be limited to increasing the number of professional

staff members. Attention should also be given to how to make the professional staff resources more responsive to the needs of the Congress.

Improved communication and coordination of activities among, the Congressional Research Service, Office of Technology Assessment, General Accounting office. Congressional Budget Office, and staffs of the agricultural committees could eliminate unnecessary duplication of effort and achieve a sharper focus of the work of the various, staffs on the important issues that confront the Congress.

These congressional organizations have the authority and resources to draw on a wide range of expertise in the executive branch, in universities. and in the private sector. Coordinated use of these respect ii-e authorities and resources could make more readily available to the Congress a greater amount of information and expertise than is presently the case.

The, Food Advisory Committee and the testimony by Howard W. Hjort highlighted the need to improve the analytical capability and objectivity of the Department of Agriculture in the preparation of supply-demand estimates nationally and internationally. Mr. Hjort outlined several weaknesses in the present system related to inadequate data collection. Inadequate analytical work, and the organizational structure responsible for the preparation of supply-demand estimates with the USDA. Mr. Hjort made several recommendations as to how the USDA could improve supply-demand estimation work including reorganization of units of FAS and ERS within the USDA to achieve better coordination of effort, improved analytical capacity, and greater objectivity.

We recommend that either the Joint Economic Committee or the agricultural committees hold hearings on what USDA is doing or plans to do to improve the quality of its supply-demand estimates. We also recommend that these hearings focus on the need to create an economic intelligence unit within USDA as a way to improve the reliability and objectivity of national and international supply-demand estimates. We think it is important that this unit be independent of the operating agencies of USDA, whose interests may impair the reliability of the information generated.

With respect to obsolescence-of data. the Food Advisory Committee recommends that either the Joint Economic Committee or one or both of the agriculture committees request the Secretary of Agriculture to establish an agricultural statistical review committee to propose to the Congress and appropriate executive agencies ways to modernize, coordinate, and standardize data series on food and fiber.

The appropriate committees of the Congress might. early in 1976, request the Secretary of Agriculture to act on the recommendation. A report of the statistical review committee established by the Secretary might. be made to the Congress within 6 to 9 months. Information would then be available to the Congress and executive agencies for action in 1977 on modernization of our food and fiber data series.

In a similar fashion. the congressional committees which have jurisdiction over the Department of Agriculture and the Bureau of Census data activities could in early 1976 request a study of a joint Department of Agriculture-Bureau of Census committee on the feasibility of integrating the staff and activities of the Agricultural Census into the statistical reporting services of the Department of Agriculture. There

could be a report to the Congress within 6 months on this matter. If integration of functions is feasible and desirable, legislation to accomplish it could be proposed earl in 1977.

Our committee feels that the present division of responsibility for data collection seriously impairs the quality and quantity of data being collected and required to run an effective 'agricultural information system. This unhappy situation needs to be resolved as quickly as possible. To date, no action has been taken to reconcile the differences between the Department of Agriculture and the Agricultural Census.

In a paper prepared for the OTA Board, Dr. Harry Trelogan deals with the issues and problems involved.[1] For example, in the 1969 agricultural census there was incomplete reporting of the magnitude of 17.6 percent and evidence indicates that the problem is as bad if not worse in the 1974 census.

The inadequacy of data on Soviet food and agriculture continues to be a problem. While the June 1973 agreement on agricultural cooperation with the Soviet Union has provided the United States with additional data, as Assistant Secretary Richard E. Bell pointed out, ● bThere has been little progress in acquiring data to enable an improved assessment of current production and foreign trade prospects. The Soviets have not yet demonstrated a willingness to implement the forward estimates provision of the Agreement." Yet these are the crucial data needed to achieve orderly production planning and marketing by the United States.

The recent long-term grains agreement between the United States and the Soviet Union is an alternative way of obtaining some information from the Soviets about trade prospects. However, this agreement is only a partial answer to minimizing the erratic price movements in grains caused by large changes in Soviet purchases. The Soviets are free to buy grain from other countries which, like the United States, do not have accurate and timely information on either Soviet grain production or trade intentions. Thus, the Soviets can still influence U.S. markets through their trade behavior with other grain exporting countries.

It may be time for the agricultural committees to take another hard look at just how far we have come in getting needed information from the Soviet Union, why we are not getting more information, and what can be done about it. It may be. as some have suggested, that the Soviet information system does not produce timely information on production and, therefore, trade prospects. If this is the case, it might be worth considering ways by which the United States might help improve the timing and reliability of Soviet data. If. on the other hand, such collaboration is not possible or desirable, then continued efforts will have to be made to find ways to keep the Soviet Union from unduly disrupting world grain markets.

Additional recommendations of the report deal with ways by which the United States can help other countries improve their agricultural information systems. We recommend that the Congress request the appropriate executive agencies to encourage and support development of FAO's efforts to expand its global information and early warning system on food and agriculture, consistent with resolution XVI of the 1974 World Food Conference.

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1 See P. 326.

Amen other things, strengthening of domestic food and agricultural information in other countries will be required. The Statistical Reporting Service has valuable experience and expertise for doing this. Consideration might 'be given to the Statistical Reporting Service playing a bigger role in assisting other countries to improve their food and agricultural information systems. The United States might also provide financial assistance to these nations for this purpose.

The Food Advisory Committee recommends that the Agency for International Development be directed to place high priority in its foreign assistance program on helping less developed countries improve their information s stems, including the use of advanced information technology. TZe appropriate congressional committees might in 1976 explore with AID how it can expand its technical assistance efforts to improve national agricultural information systems. This exploration could be part of the appropriation hearings for the fiscal year 1977 budget.

One aspect of the report requires further comment. The Food Advisory Committee indicated their 'plans to consult further with leading nutritional scientists and make recommendations for establishing a continuing nutritional status surveillance program.'' The Food Advisory Committee report quoted the testimony of the Nutrition and Special Groups Panel of the June 1974 national nutrition policy study, in which concern was expressed that "recent studies have added little to our knowledge and completely ignore questions which we feel must be answered if the United States is to develop a sane and equitable nutrition policy.))

The Food Advisory Committee report went on:

> Nutrition scientists also are not fully agreed on the significance and reliability of specific tests for nutrition deficiencies. Information on nutritional status also involves consideration of nutritional-related public health issues, where in many instances cause and effect relationships are not clearly established. It is because of these problems that little progress has been made in establishing a monitoring and surveillance program as recommended by the **1969** White House Conference.

Since information on the nutritional status of target groups on a timely and continuing basis is essential to the development of policies and programs, it is essential that the Congress and other agencies of government have accurate and timely information on the nutritional status of target groups in order to develop and implement effective " policies and programs.

Since other areas of nutritional concern are so dependent upon the quantity and quality of information concerning the nutritional status of individuals and target population groups, the Food Advisory Committee plans to review national nutrition surveillance and related programs and make recommendations on alternative ways to provide the information required for developing and implementing nutrition policies and programs.

I have a statement prepared by a subcommittee of the Food Advisor-v Committee that goes into more detail concerning the plans and activities of the Food Advisory Committee in the nutrition area and I would like to submit that for the record.

Mr. BROWN. Without objection that will be inserted in the record.

[The above-referred-to statement of Dr. Nesheim follows:]

STATEMENT OF DR. ROBERT NESHEIM, CHAIRMAN, NUTRITION PANEL OF THE FOOD ADVISORY COMMITTEE BARRINGTON, ILL.

In June 1975, the Food Advisory Committee (FAC) issued their preliminary assessment and recommendations on food, agriculture, and nutrition information systems. One of the assumptions underlying their recommendations is the need for a national nutritional status surveillance program. The FAC indicated their "plans to consult further with leading nutritional scientists and make recommendations for establishing a continuing nutritional status surveillance program." The FAC report quoted the testimony of the Nutrition and Special Groups Panel of the June 1974 National Nutrition Policy Study, in which concern was expressed that "recent studies have added little to our knowledge and completely ignore questions which we feel must be answered if the United States is to develop a sane and equitable nutrition policy." The FAC report went on:

"Nutrition scientists also are not fully agreed on the significance and reliability of specific tests for nutritional deficiencies. Information on nutritional status also involved consideration of nutritional-related public health issues, where in many instances cause and effect relationships are not clearly established. It is because of these problems that little progress has been made in establishing a monitoring and surveillance program as recommended by the 1969 White House Conference."

Thus, one of the results of this report was the development of a nutrition panel as a sub-group of the FAC, whose immediate goal is to assess the quantity and quality of the nutritional information necessary and available to Congress and the improvements that can be made in this regard.

The Panel is chaired by Dr. Robert Nesheim, Vice-President of Research and Development, Quaker Oats Company. The other panel members are Mr. Arnold Mayer, Legislative Representative, Amalgamated Meat Cutters and Butcher Workmen of North America; and Mrs. Esther Peterson, President, National Consumer League and consumer advisor to the president of Giant Food Incorporated.

Additionally, in September a nutrition conference workshop was held in conjunction with the Community Nutrition Institute. The workshop report provides a basis for exploring the impact of food technology on nutritional values of food and also analyzes the effectiveness of the RDA as a nutritional standard. This report will provide a sound background for present, proposed, and future assessments.

Nutrition Information Assessment

Although Congress has passed dozens of bills affecting the nutritional status of Americans, surprisingly little is known about the nutritional status of this nation. In an effort to alleviate hunger and the manifold problems related to it, numerous food delivery programs have been legislated and implemented. These programs are aimed at providing food to the target populations believed to be most in need of supplemental nutritional assistance. Thus these programs attempt to provide a level of nutritional sufficiency to the target population. This assumption raises many poignant questions relating to the quantity and quality of the information which Congress received prior to making these determinations. How is the target group selected? Who are the nutritionally deficient in this nation? What are their deficiencies? Why do deficiencies exist in their diets?

a. Inadequate purchasing power.
b. poor selection of food items from money available.
c. Cultural food habits.
d. Inadequate preparation facilities. etc.

What are the nutritional requirements of the population? Are these programs, in fact, meeting their intended objectives?

Because of the serious implications these questions raise as to the adequacy of ***channels*** of nutrition communication ***and*** the quality of information available, the nutrition panel will explore in depth the nature of available and necessary nutrition information and examine how it might be used in Congress.

In an effort to assess the extent and adequacy of nutritional information, it is essential to study the various components of the nutrition process and the information flow related to it.

Although several studies are presently being undertaken or considered which involve analysis of various components that we will evaluate, it is important to note from the outset that their thrust is not identical to ours.

The National Center for Health Statistics, HEW, is now administering Health and Nutrition Examination Surveys (HANES) to obtain data for use in national health program planning. Although the information is being collected on a rather small scale, this will be among the information networks that our assessment will evaluate. Furthermore, the Administration is considering the establishment of a multi-agency federal food consumption data bank. It is anticipated that our assessment will be of assistance in establishing and implementing such a system. It should also be pointed out that the Food and Nutrition Board of the National Academy of Sciences will be updating the Recommended Dietary Allowance (RDA) guidelines in the near future. Such an effort, however, will not overlap or infringe upon the nutrition panels proposed undertaking.

This assessment will, in fact, analyze the information input and utility of the RDA to the consumer and, if necessary, propose improvements. It is anticipated that our assessment may utilize and analyze other studies being done, but it is not expected to duplicate the research effort of these studies.

Before Congress makes any decisions regarding food delivery programs, members should be aware of the nutritional state in this nation, Thus it is imperative that a knowledge of the nutritional status of the population and its various segments be obtained. Several attempts have been and are presently being made to accomplish this formidable task.

Presently, there are government agencies gathering varied and often overlapping nutrition information. Both the USDA and HEW are involved in food delivery programs and have to some extent gathered nutritional information and statistics relating to the nation's population. There is, however, no clear, concise understanding of exactly what or how much information each agency collects or distributes or whether the frequency of the surveys is adequate. Neither has there been an analysis of the collection processes. If a national surveillance System is to be implemented, an evaluation of the information presently being collected would be a first step. This system should indicate the magnitude and extent of nutritional deficiencies by geographical area, income level, age group, ethnic group, and other identifiable characteristics. It would be necessary to evaluate proposals for surveillance systems considering such questions as: How should the sample to be monitored be drawn? Are there particular groups which should be observed because of suspected nutritional problems? Should the information be gathered by a government agency or through a contractual agreement with a private firm?

How often should the information be reported? How shall it be collected? Moreover, it would be necessary to consider the type of information which might be collected: Should the monitoring be conducted on a random sample of the population or merely on certain specified target groups? Should the existing food delivery systems be monitored for effectiveness in their ability to reach their target groups and/or for the nutritional quality of the food delivered? Nutrition surveys tend to be expensive and time-consuming. Are there innovative approaches that can yield timely and useful information on a cost-effective basis ?

These are some of the most obvious questions, the answers to which would help Congress determine if a survey and surveillance is feasible or even desirable. our objective will be to explore the questions that would have to be addressed in establishing a surveillance system, evaluate the information that we have presently and/or need to obtain, and outline the alternative surveillance options available to Congress.

9

Food Consumption

Since people require nutrients but eat foods to obtain these nutrients, it is important that we have sound information on what people eat. First, we must collect and analyze the existing surveys of food consumption, most notably the USDA's Household Food Consumption Survey (HFCS). This should be evaluated with regard to the adequacy of the survey's consideration of differences between the total household consumption and the consumption level of individual family members as well as differences between consumption levels based on age, sex, ethnic group. income. and geographical areas, Varying food consumption habits result in deviations in nutrient intake.

Thus. it is essential to monitor food consumption habits to maintain information on the nutritional status of key segments of the population and thus gain

some insight into the nutritional status of the population. In this respect, we should analyze the differences in quality and type of food consumption for each group and the effect of these differences on the health of individuals within a particular group. The end result will be to state the options available for implementing a survey of food consumption with cost and feasibility alternatives.

We will, at the same time, attempt to synthesize the existing information into a cohesive framework. In doing so, we will gain insight into the quantity and quality of information that is currently available, how these sources of information contrast with each other, and how they can be improved.

Food Composition

Because people eat food but require nutrients, it is essential to determine the nutrient. composition of specific foods, both processed and unprocessed. Many recommendations have been made as to possible methods of analyzing food composition. It is important to determine what these theories are, how they relate to each other, and where they differ Additionally. these must be assessed in terms of their ability to be implemented in a continuous and consistent manner for all foods.

The USDA has for years been determining and recording the composition of a broad spectrum of the foods available for American consumption, Known as Handbook 8, this volume has been relied upon by all ***segments*** of the food delivery chain for ready reference on food composition. Thus one task before the nutrition panel will be to examine Handbook S to determine if it provides a comprehensive analysis in terms of food surveyed and nutrients enumerated ability to remain current, validity of findings, and dissemination of information t to the public in a comprehensible manner.

Consideration should also be given to the following:

Which nutrients are or should be included in the analysis?

Does the Handbook properly reflect the influence of processing and storage on nutrient content of foods as delivered to the consumer?

Does the processing and storage technology differentially affect the nutrient content of food? What are the trade-offs in terms of food availability, nutrient preservation and economic viability ?

Thus the assessment should evaluate whether it is in fact possible to validly and in a meaningful manner analyze the nutrient content of foods in light of tile technology applied in the food chain and to summarize it in a meaningful way which can provide timely and useful information for use by the various users of this data.

Nutrient Requirenments

Nutrition is intrinsically related to health. It is impossible, however, to recommend nutrient intake levels of individuals without an evaluation of the nutrient requirements of these individuals. Moreover, an assessment of nutrient requirements should evaluate the feasibility of considering the varied requirements of different segments of the population based on age, sex. present state of health, and environmental situation.

Any assessment of nutrient requirements should also examine the RDA-what it is, what information it utilizes and provides, and how effective it is. Particular attention should be given to the RAD and its ***users,*** since this is used extensively in measuring adequacy of nutrient intakes. recommending diets. evaluating nutritional needs, etc. Further, other suggestions for establishing nutrient requirements should be considered and analyzed with attention to ease of obtaining information, cost, timeliness of obtaining results, and the validity of applying the information to the target population.

What we must bear in mind in considering each of these components is that this assessment will deal with information options rather than with policy alternatives. By enumerating the nutritional components and evaluating the available information in terms of quantity. quality, what information is needed find how, or if, it can be obtained, we will have completed the first step towards helping Congress to formulate a nutrition policy. If this is to be achieved. it is only with quality information in sufficient quantity that responsible decisions can be made.

OTA's Board has approved a request by Congressman Tom Foley, chairman, House Committee on Agriculture: Senator Herman Talmadge, chairman, Senate Committee on Agriculture and Forestry : Senator George McGovern, chairman, Senate Select Committee on Nutrition and Human Needs; and Senator Humphrey to develop and evaluate alternatives in U.S, food policy. This request

will initiate a number of OTA studies to be undertaken in the next year. Initially, the staff and advisory panels will assess available nutrition information, nutrition gaps, and research priorities. This overall assessment will provide us with an opportunity to evaluate numerous aspects of nutrition in America and develop alternatives to issues which will be useful to Congress when considering nutrition policy alternatives.

This assessment is expected to be conducted simultaneously with the nutrition information project, with which we are presently involved. By the year's end we believe we will have made a significant contribution to the nutrition information needs of Congress, whether it be for individual legislation or comprehensive nutrition policy formation.

Mr. BROWN. We want to express our appreciation. I know the Board will pay close attention to the full report, particularly Senator Humphrey who has played the leading role in encouraging the work of your committee, and it will be included.

Would any of the other members of the Food Advisory Committee like to add any comments of their own with regard to the report, or their activities with regard to the committee?

Mrs. PETERSON. I would like to submit a statement for the record.

Mr. BROWN. Without objection it will be made a part of the record at this point.

STATEMENT OF ESTHER PETERSON, VICE-PRESIDENT, CONSUMER PROGRAMS, GIANT FOOD, INC., LANDOVER, MD.

Mr. Chairman, members of the Technology Assessment Board, I appreciate the opportunity to present my views on the activities of the Food Advisory Committee of the Office of Technology Assessment from the consumer viewpoint. I have served on many advisory committees, and I hope to continue to do so. Few, however, have been more challenging or more elusive than the Food Advisory Committee.

My perspective has developed through daily contacts with consumers in the supermarket.

I work every day with customers who ask me for help about how to make wise choices among the foods in our stores. (10,000-12,000 items) A growing number want to know how to make their food purchases more meaningful to their diet and health. Consumers want expert advice, and I have been trying to find experts to provide that advice.

I can find experts who disagree with other experts;

I can find experts who tell me that consumers are expecting more than science can deliver;

I can find experts who tell me that we need a lot more research and information;

But it's hard to find experts who can help consumers by providing reliable standards to deal with a food system where man's technology may have more influence on nutrition than Mother Nature.

I face many problems as a consumer advocate as I testified before the Committee on Science and Technology last September.

For Example:

1. We are told that on the average Americans eat twice as much protein as they need. In our diet, protein sources are the largest single cost item. If we need less protein, how do consumers adjust their food planning to this condition? There is no official acknowledgement of this overconsumption rind, therefore, no public resources are available to supply educational information and materials. Instead, the Congress passed a bill from the Agriculture Committee which would have Congress endorse a public policy to eat more meat. It is back in committee now, I'm told, but not because the public is to be informed of the facts or told of the dietary options they should consider. No, it's only because the two Houses cannot quite agree on the wording of the same fundamental policy to eat more meat.

2. There are problems which arise because technology has gotten way ahead of our understanding of nourishment. For thousands of years, nature has put trace elements in our food. We have adapted to them. In less than 50 years, however, man has put "trace elements" in our food supply as "additives".

Now some of our children seem to be telling us that technology's trace elements, these additives, are having strange and harmful effects on their health. Dr. Benjamin Feingold, a physician who has studied the effect of technology's trace elements in children, has evidence that seems to show that diet control can reverse hyperkineses, or hyperactivity.

Some food technologists and some in the nutrition field argue that food additives are necessary and essential to sustain our food system. But a sharply rising cancer rate makes consumers question how much longer we can tolerate continuing changes in our environment which includes the foods we eat.

Scientists say we must conduct research and evaluate the data from these conflicting viewpoints. But in the meantime, what is the consumer supposed to do? Life is not a process of waiting for experts to agree on research topics.

3. What about nutrient changes in pre-plated and fully processed meals, including those served in and outside of our homes and in some school lunch programs? A large part of our population eats at least one meal outside the home every day. Here we find ourselves confronted with more technological innovations in preservation and preparation, the effects of which are fundamentally unknown. We are way beyond cooking and freezing as the consumer understands it; using the stove and refrigerator freezer is as far as most o?' us have progressed. Once again, we just don't know what's happening to the food we hope is nourishing us. We don't know the answer to the question, "Is it nourishing?" To say nothing about taste!

4, Technology has made possible the growing and processing of fresh fruits and vegetables for quantity production. Let us not forget that ultimately these products must be eaten. Fresh fruits and vegetables are technologically ripened, colored and processed to preserve freshness and to extend their handling time. In some cases, these products carry pesticide residues, and they may be sprayed with a waxy substance to seal them from the atmosphere; Experts set residue limits and they tell us the coating substances are safe, but the Food and Drug Administration proposed banning PVC (polyvinyl-chloride) coatings on citrus fruits as a health hazard. Who should the consumer believe? What can I tell consumers? I wish policy could be bent more toward the position of "when in doubt, leave it out".

5. Food grading illustrates where consumers' buying needs are beyond agriculture's thinking. We all are aware that the food grading systems follow no uniform standard, and they are very confusing to consumers. I applaud the proposed rationalization of these grades by the USDA, but still the basic intent is not to serve the consumer's need for nutritional information. Food grading is cosmetic. It is a description of appearance.

Most of us have eyes. We may not judge appearance like the experts, but really we can make an approximation suitable for our needs. What consumers don't know is nutritional value. What's not talked about to the public is that grades, as done now, are not signs of nutritional quality. In fact, I'm told that the nutritional content of all the grades is quite similar. Where does this leave the consumer? When we buy for quality we are paying more than necessary for nourishment.

Consumers want and need this very basic information and yet we do not appear to have the data to develop a nutritional grading system. Of course, it may be that we will not need a nutritional grading system for some processed foods if we develop such programs as percentage of ingredient labeling in conjunction with nutritional labeling. The aim must be basic nutrition information for the consumer.

6. Processing may reduce or eliminate nutrients from food. It also can restore nutrients and add others which were never an important part of the basic food.

In a few instances, such as Vitamin "D" in milk, or iodized salt, the added nutrient was placed there largely as a public health measure.

However, in typical fashion, some food processors have assumed that if some is good, then more is even better. Now we find ourselves with highly fortified cereals and snack foods, and the prospect of much more.

We are in the position of wanting a food supply that is nourishing, but we do not know for certain what is happening to our health because of the nutrients being lost, or why they are disappearing, and we are not prepared to say what will happen to the nutrients we are adding to food products. We do not know if there is a cumulative effect, nor do we know whether the loss of one nutrient will cause harmful effects because it was necessary to the function of another nutrient, or if the adding of one will unleash harmful properties in still another.

These are the implied questions in the consumer query: "What's a good cereal for my child?" It isn't a simple question, and there is no easy answer.

It is from these day to day problems of consumers that I derive my perspective on the Food Advisory Committee.

We were charged with advising Congress on the impact of technology on the food system.

As I recall, we had some difficulty at the outset in defining the purpose of our activity, and in identifying the particular goals we would hope to achieve. The decision was to assess the agriculture information systems and to improve their capability for agricultural policy planning. This was at a time when the very structure of policy development in agriculture seemed to be disintegrating, when the cost of food was rising very fast and its availability to U.S. consumers did not appear to be a national priority.

I felt and tried to indicate, that we were starting at the wrong place. I tried to say so, and thought no ***one*** was listening. It seemed to me that we had to define the policy framework within which an information system would function. Otherwise, it seemed we were saying, in effect, that the breakdown in the food and agriculture policy could be corrected by simply improving some of the internal data mechanism and evaluation procedures. We were chasing mosquitos and ignoring the swamp.

I expressed these thoughts in three letters of dissent to the Food Advisory Committee Report, one to Clif Wharton and one to Mim Daddario on June 10th. 1975, and a later letter of clarification to Clif Wharton on July 30th. I would appreciate these letters being made part of the record. I ask this to illustrate the difficulty that a lay person encounters while trying to bring policy matters into focus for the benefit of the end user.

I am thankful, Senator Humphrey, to note that you held a hearing in December where three papers on the shape of a food-farm policy for the future was presented. Two of those papers dealt with the substance of food-farm policy, including one co-authored by my fellow committee member. Lauren Seth. The third paper analyzed the administrative structure which has evolved within the executive branch to deal with food policy issues. a structure which reflects the absence of a food policy and the inability of Secretary Butz to recognize the problem. I wish I could have heard the discussion at the time those papers were presented, and I wish they had received greater public attention. But I am pleased that OTA has now begun to set down a frame of reference in which to consider food and farm policy issues.

I would like in this testimony to add a consumer dimension to the policy structure which has been proposed, primarily to ensure that policy considerations include both food and farm issues. The two are but one sphere, although too often the food problems are treated as the dark side of the moon, never visible.

For clarification purposes, I want to define food policy as a framework for issues of concern to users of food, or consumers. Farm policy relates to issues of concern to producers, and is production oriented.

Farm policy and food policy obviously have many common features; there are more similarities than differences and the differences are often matters of emphasis. Food policy, because it deals with many areas of concern that production issues do not touch, is broader.

The following outline of a national food policy will give you specific examples of these general concepts. I think you will recognize many of the elements in the nine-point consumer food policy. They are, in fact, the same as those in the Cochrane and Soth paper presented at the December 10 hearings. We began formulating our consumer policy papers with an earlier draft of a farm policy statement prepared by Dr. Cochrane.

The first element of a food policy is a National Food Budget. It contains four components:

1. Domestic commercial and food assistance requirements.
2. Commercial exports.
3. Foreign aid commitments.
4. Supplies required to maintain food reserves, once a domestic and world reserve program is developed.

We would measure domestic requirements in terms of RDA's, the Recommended Dietary Allowances which state individual food needs in nutritional terms. This not only will convey to the individual citizen that national food policy is committed to nutritional adequacy for each person, but also enable planners to

include the needs of those at nutritional risk, such as the poor, the elderly, pregnant women and infants. National policy should not only reflect production goals, but also health and social goals.

At some point, domestic requirements would be converted into units of bushels, pounds and acres, terms which have meaning to producers and which are necessary to production planning by farmers. Domestic production needs would be added to commercial and foreign aid expert goals and these production {objectives would be expanded to include whatever reserve supplies are needed for the year.

The second element is a food reserve.

The third is a production incentive program—price supports, incentive payments, loans-to enable farmers to meet the needs set forth in the national food budget.

The fourth element is an export policy which would specify that the domestic requirements in the national food budget are guaranteed. It also should include a commitment to long-term foreign aid commitments.

The fifth component of a food policy would be a commitment to producers that farm prices would be guaranteed at a level no lower than an average of a specific period, such as the previous three years.

The sixth element is a research program in the technologies of producing, processing and distributing food with two general goals: insuring adequate nutrition and securing a food supply at a lower real cost.

The seventh objective of a national food policy should be to promote and strengthen competition in the food growing processing and distribution sector. The National Food Marketing Commission warned 10 years ago of the advancing threat of economic concentration in some areas of the food industry. Our food industry is a creature of technology, and, in the absence of any other force. the cost of new technology could cause the food industry to become more concentrated with the passage of time.

The eighth component of a national food policy is a commitment to domestic and foreign aid programs to prevent hunger and malnutrition at home and abroad. We would suggest that nations which seek food assistance be expected to make the same commitment to improving the nutritional status of their citizens as is spelled out in a U.S. food policy.

The ninth element of a national food policy is an educational program based on expanded research in human nutrition. Thus we will increase our knowledge of the relationship of diet and health, improve the capacity of our health programs to employ diet as a preventive measure to control disease and illness, and through education translate such knowledge into lay practice.

The three major killers of the American people-heart disease, cancer and diabetes-are related to the food we eat. Yet we know very little about the relationship of diet and health. We do not as yet have a research program specifically for that purpose, and we do not apply what little knowledge we do have to any great extent.

I feel that any national food policy proposal must be able to demonstrate that it will promote the consumers' welfare and assure adequate nutrition, that it will improve food productivity and maintain a stable food system, and that it has the capacity to alleviate famine and malnutrition abroad while maintaining our international economic position.

I believe that the consumer food policy proposal will help attain all these goals. Let me emphasize, however, that there is much more left unsaid than stated, and that much work remains to be done in specifying the structure and process which will be necessary if the policy is to be implemented.

However, the first step is to describe the problem and outline an approach.

I am glad to see the Food Advisory Committee is now directing its attention toward the areas of food policy and nutrition where I had originally hoped to find it. I feel now that the direction is set, I hope I have made the contribution I wanted to make.

With the recommendations for farm and food policy that have been presented at these hearings, I feel that the committee has all that it requires to get on with the task of helping develop a total food policy for this country.

Consumers will be watching closely. In a year's time I trust we will be able to review substantial progress toward our goal. By then I hope a blueprint will be ready for the achievement of a comprehensive food policy for the United States, one with ***broad enough*** scope to fulfill domestic and world needs, making use of the many benefits that properly directed technology can provide.

[The following information was referred to on page 346 of Mrs. Peterson's testimony:]

JUNE 10, 1975.

Mr. EMILIO Q. DADDABIO,
Director, Office of Technology Assessment,
Congress of the United States,
Washington, D.C.

Dear MIM: I cannot endorse this report.

To me it looks like the committee lost focus of our original charge of helping to develop an improved information system in the food area. In so doing, I am afraid that the issues have been dealt with in a narrow and superficial manner and in some instances the report draws inaccurate conclusions. It would seem from this report that the committee has totally missed the point that the purpose of agricultural production is good nutrition.

While there are sections with which I agree, and while I generally find the material a useful summary of the information infra-structure in agriculture, the section on nutrition is an absurdity. Accepting this report would not be " fair to my colleagues who have worked with me these past eight years. I cannot ask them to accept this report and my view of our joint effort. Nor could I expect the members of the Congress to adopt the distorted view this report gives of the advances in food and nutrition which occurred largely because of Congressional initiative.

In addition, I find it difficult to accept the kind of logic which purports to show that the Food and Agriculture Organization cannot justify its estimates that 400 million persons in the world in 1970 were malnourished. The report makes the same error which has characterized our food and nutrition policy since the end of World War II by suggesting that the problem doesn't exist since we can't count, test, or measure every individual case of malnutrition.

There is much that is simple carelessness in the report ***on*** nutrition. While the food consumption surveys of 1945 and 1955 are used to justify a conclusion that the nutritional status of Americans had improved in those years, there is no mention of the 1965 survey which was the first hard evidence that the nutritional status had begun to decline. This conclusion was reinforced by the ten-State survey carried out by H.E.W. in the late 1900's and by the HANES survey completed only recently by H.E.W. Is a reader to assume that the committee does not believe the food consumption surveys are valid, and cannot be used to justify ***a*** finding of growing malnutrition?

The concept that nutrition planning must begin with blood tests of! each individual is a preposterous strawman. The basic data required for adequate nutrition policy planning can be provided through refinement.s in the presently available Recommended Dietary Allowances, and the reliability of a planning system based on these data can be improved through such monitoring techniques as a statistically valid sampling of individual blood tests.

The recommendation that hearings be held to question the directors of U.S.D.A.'S and H.E.W.'s surveys on nutritional status begs the real question. The Administration has delayed the U. S.D.A.'s 1975 food consumption survey for two years, and still will only permit tests of proposed survey techniques. Ask the Office of Management and Budget how it can justify delaying the gathering of vital information.

The basic reason why I must decline to sign this report is that the treatment of nutritional policy needs betrays a total inability of the Committee to accept any conceptual basis for food and agricultural policy other than its economic role. Nutrition and health are closely related, and health data is difficult to obtain and even more difficult to apply in planning. Food, however, is more a social than a health issue. I find the emphasis on blood tests—which are objectionable to most people-is only a very polite way of telling the committee members that politically the Congress can deal with food only as a production, or economic issue.

As committee members, we ***were*** expected to provide new ideas and new concepts. We are, however, recommending that the solution to Congress' inability to cope with the changes which technology imposes on laws and legislative policy is to do just a little bit more of the same. I do not believe this, and have tried to express by concern with little apparent success.

I request that my name be withheld as a signator to this report and that this letter setting forth my reasons be affixed to the report.

sincerely,

ESTHER PETERSON.

June 10, 1975.

Dr. CLIFTON R. WHARTON, Jr.,
President, Michigan State University,
East Lansing, Mich.

DEAR CLIFF: I tried to reach you on the phone and find you are away till Friday. On Friday I hope to be sitting on a mountaintop in Vermont, far away from telephones, so excuse, please, having ***to receive a*** letter when a telephone call would be far more pleasant.

First, I regret neglecting to answer your letter of May 23. It literally "fell between the cracks". I will respond to your request for suggestions of people for future O.T.A. work in the food nutrition area. I will also give some time to your request to identify a small set of key documents addressing the question of food nutrition achievement.

The major purpose of this letter and what I had hoped to talk to you about over the phone is to inform you that I cannot sign the Wilcox report. I am sending you a copy of the letter that I am sending to Mim with the report, which carries some marginal comments. I am sorry to have to do this, but I do feel, in all good conscience, that I must.

I will leave for further discussion the question as to whether or not I should resign. I do not want to do this without consulting with you, Therefore, I will hold that decision a bit longer.

You know I have enjoyed working with you and I appreciate you leadership through a very difficult, confusing and frustrating situation.

Sincerely,

ESTHER PETERSON.

JULY 30, 1975.

Dr. CLIFTON R. WHARTON, Jr.,
President, Michigan State University,
East Lansing, Mich.

DEAR CLIFF: I take no pleasure in withholding my signature from the Food Advisory Committee report. I write this with deep and heavy regret. I accepted the invitation to serve on the Committee with a sense of hope that many of the problems and weaknesses of food information systems which previously have been overlooked would be addressed in this technology assessment. I cannot help but feel that I have failed my colleagues on the Committee, by failing to express my concerns early enough or strongly enough to elicit an adequate response.

The draft report as presently revised is much improved in its rhetorical analysis of the present situation, but the recommendations on an improved information system which led to my initial letter of concern on June 10 remain unacceptable.

In my judgment the report remains narrow and superficial. It stops short of any attempt to make an in-depth evaluation of the impact of modern technology techniques on information systems or to consider how information systems might be used for policy-making decisions in the Congress. Anyone reading this report could conclude that somehow the difficult times of this decade could have been avoided by doing a little bit more of what we have been doing for two generations and that the subject is just too cumbersome to consider in the first place. I doubt that any legislator would be motivated to use this report as a basis for an approach to future policy-making decisions.

The report still leaves the impression that there is only one goal as it relates to "agriculture"-namely, production. The concept of nutrition being an integral part of the food system seems to be anathema to the Committee. I once again will reiterate my strong feelings that agricultural production should be considered in the context of meeting the food needs of consumers. It seems to me that an intrinsic part of a technology assessment in any field is the realization that value as well as volume must be the goal of the utilization of technology. Any analysis of an information system should have taken this into account.

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My own feeling is that the portion of the report which summarizes the government information infra-structure in-agriculture should be appended to a more substantive report which would meet the full charge of the Committee. My colleague, Martin Abel, has pointed out that the private sector is responsible for a good portion of the research done in agriculture today. The Committee has not begun to take into account the impact of this change in control and orientation of food research.

I am pleased with the decision to move ahead in the nutrition information area, and I am hopeful that the recommendations that flow from this effort will meet the purpose set forth by the Congress in establishing the O.T.A.

The basic function of O.T.A. "is to help legislative policy makers anticipate and' plan for the consequences of technological changes and to examine the many ways, . expected and unexpected, in which technology affects people's lives. O.T.A. provides Congress independent and timely information about the potential effects and side effects-both beneficial and harmful-of technological application."

I do not feel that I can comply with this purpose and sign the draft report.

Sincerely,

ESTHER PETERSON.

Mr. BROWN. Thank you very much for your contribution.

Are there comments from any of the other members of the committee ?

If not, I want to express my appreciation too to Dr. Abel for making his report, and as I say, it will be considered in much greater detail by both the staff and members of the Technology Assessment Board, and I suspect we will want to follow up on that.

Now, if I could get back for a moment to the panel. I think there may be a few questions which we might raise here.

One of the questions which I would like to pose, because the point was mentioned several times, was the degree of probability that we will be able to continue with this remote sensing program. Apparently the Landsat D is not committed. There are uncertainties about it.

I wonder, Mr. Matthews, if you could give us any indication of the extent to which NASA's planning has made it possible to predict whether we will go ahead with this program.

Mr. MATTHEWS. Mr. chairman, there is no basis to say that the program will continue at the present time because although we have a satellite planned for launch in 1977, there are no specific requests in the budget for anything to follow up on that activity.

I do want to point out, however, that we have under development this new sensing instrument that I spoke of earlier which does imply that a system will in fact be in existence in the future and hopefully in the near future.

The third Landsat which will be launched in September of 1977, might last 2 or 3 or 4 years if we are very, very lucky, In that case, I would think we would have a Treasonable chance of continuity particularly if it lasted 3 or 4 years.

Mr. BROWN. You don't know if 'budgetary commitments would give any assurance beyond that period of time ?

Mr. MATTEWS. That's correct.

Mr. BROWN. Would this matter be affected by the degree to which user programs were developed on a more significant basis among the various departments, and is there something here that needs to be given attention? Can you speak to that point ?

I was interested in a comment made by one of the gentlemen about the user committee that has been set up and the degree to which the development and the identifying of high priorities for some of these

uses might be an input into the budgetary process that would allow us to make some commitments.

Mr. MATTHEWS. I really feel, Mr. Chairman, that the using communities both at the Federal level and at the State level, as well as the international using community, are very much behind this program and have moved their activity level as rapidly as the technology that is available to them has allowed. Indeed I think many of these activities have very practical connotations right now.

Perhaps you recall that in testimony before the House Committee on Science and Technology, people in the geological area were talking about actually finding minerals and peroleum. There are many more examples like this.

So I think the using community is very much involved with the program and is using it.

I do think that there is the concern in the using community relative to the future and this is natural when a system is providing a valuable capability.

Mr. BROWN. Well, I know that many of us on the House side are concerned about a longer range of planning. I know Senator Humphrey is very much intere.steel in this matter of long-range planning. And I am just trying to explore the degree to which we are able to make plans in advance for usable pro rams and make commitments to them which will enhance their acceptability by a wide community of people.

Mr. De Simone had a question also.

Mr. I)E SIMONE. Several times you spoke of new technologies. There are several agencies in Government that are involved in this and you represent the principal agencies.

Who is responsible for planning the research and development for bringing these new technologies in? How is this planning -undertaken? Dr. White referred in his testimony to an interagency committee of the Federal Council for Science and Technology. Is this undertaken them or at some other level?

Dr. WHITE. The methods of planning for various programs differs as a function of the program. But as an example, in the case of meteorological satellites, the planning is done by a joint board between NASA and NOAA called the Meteorological Satellite Program Re-. view Board. It plans the research and development effort that would be required to support the operational applications of the meteorological satellite. Other agencies have requirements for such data work with NOAA and we feed their requirements into this planning process.

In the Landsat case there is a different mechanism for doing it which is a broader interagency mechanism.

I also mentioned ocean data buoys as a technology which is emerging and there is much research and development. In that case it is done under the aegis of the Interagency Committee for Marine Science and Engineering and there does exist a plan for a data buoy system which involves the research and technology that would be required as well as 'the deployment of buoys to meet requirements of' all the agencies.

So I think it depends upon the particular kind of technology you are dealing with. The mechanisms within the executive branch are variable. But in most cases they do exist.

While I have the microphone, I would like to comment upon Congressman Brown's question with respect to continuity in the satellite program.

1 would like to comment in the meteorological satellite program, we do have continuity in the sense that it is planned through the early 1980's as an evolving system.

We know exactly how many satellites will be procured and how many will be required based upon estimated lifetimes of the satellites. So in that particular satellite situation, there is a planned continuity.

Mr. BROWN. If any of the rest of you would like to comment on any of these questions, feel free to do so.

Mr. CORDARO. Senator Humphrey asked me to follow up on some of these questions.

Some of these have to do with some excerpts we have made from Dr. Park's testimony. I would like members of the panel to comment on these.

The first one is a statement in Dr. Park's paper that says:

> Even in the U.S. Department of Agriculture there has been a minimal interest in the program and a minimum investment on the part of the Department in this technology.

Dr. Hill, would you like to comment on this?

Dr. HILL. I think you have to look at that judgment in perspective. The Department is making a substantial effort now in the LACIE program and I take it that is what the reference is about. And it has, through the remote sensing task force, given considerable attention to future needs.

My point is that careful planning is being done and that investments might flow from these.

Mr. CORDARO. Dr. Hill, there is a followup question to that.

You mentioned the SIX agencies that had cooperated within the Department on this particular program. Speculating that the LACIE experiment is successful, one could recommend that the program continue on a permanent basis. Which agencies, do you think, would have the most use for this type of information and what specific improvements would this make in those programs?

Dr. HILL. The principal agencies in the Department that we = identify now as user agencies are the Foreign Agriculture Service, the Economic Research Service, the Statistical Reporting Service, and the Agricultural Stabllization and Conservation Services. Also the Federal Crop Insurance Corporation has indicated an interest in participating m LACIE. So that would make another user agency. The Agricultural Research. Service and the Soil Conservation Service are participating in a scientific capacity.

I beg the question about where LACIE might best be done. but tile kinds of uses that it best serves are in line with some of the mission responsibilities of all of those agencies.

Mr. CORDARO. Let's take the Foreign Agricultural Service. I wonder whether under the LACIE experiment, USDA is verifying satellite information with some of the attache reports. Would that be one possibe use?

Dr. HILL. Actually I don't view that as one of the direct activities It might work out indirectly. But I would expect a LACIE-type

system to produce crop estimates which would be assessed, possibly including assessment by attaches in a country as well by commodity experts in the United States.

Mr. CORDARO. I would like to ask Dr. White a question.

I know Senator Humphrey has a great deal of interest in climate and weather. At the first OTA 'hearings, we had a paper prepared by Dr. Epstein in which he mentioned the national weather program. You also mentioned this briefly. There is some question about whether the national weather program should be expanded and extended. Could you elaborate on what the implications of such a program would be and also give us some idea of what the obstacles would be in expanding that program.

Dr. White. As a bit of background, the Domestic Council requested about a year and a half ago that a study be conducted on whether it would be possible to improve our ability to anticipate climate changes and asked the question: What kind of program would you have to institute to do that? A study was conducted. A report was prepared and has been delivered to the Council and it has been released to Members of the Congress.

That report concludes: That our best scientific estimates are that we can improve our ability to anticipate climate changes. It would not be an easy job and we do not know the extent to which improvement could be brought about. And that report recommends specific things that could be done.

You asked the question, why such a program is not in motion, or what are the obstacles to putting it in motion. They are financial.

Given the present stringency of the Federal budget, and given judgments that have to be made with regard to programs that can and cannot be supported, that program came down on the other side of the priority line along with many other vital and important programs.

That would be the principal obstacle.

Mr. CORDARO. I would like to ask one more question.

Dr. Pairk, you seem to be much more optimistic about the usability of this technology today as opposed to waiting for more results.

Does that reflect your bias—the fact that you're in the business of selling the hardware--or does it perhaps reflect some of the biases or obstacles that need to be overcome in the bureaucracy, such as whether the individual agencies represented here have made recommendations to the office of Management and Budget for operationalizing the program ?

Dr. PARK. I think it is a perfectly natural question concerning the profit motive of any consultant in the business. I would be the first to say however, that I don't think there is anything basically dishonest about the profit motive.

But I confess that my principal motivation is that hating participated in the development of the technology in the Government and hopefully having contributed some small measure in spreading the benefits of the program overseas in a private capacity, I am familiar with the slings and arrows of the budget process and the defense of that process.

And I think the answer lies in two parts. One of them deals with the cost-benefit studies that have. been made and the requirement imposed

upon those studies to show benefits for the technology employed in the United States and only for the United States as opposed to the world.

And the second part of that is an imposition, I believe by statute, on the restrictions that the Department of Agriculture has relative to spending money outside of the United States. That the budget put forth by the Department includes only requests for money spent domestically with possibly one exception and I believe that is the screwworm program in Mexico.

The development of technology has been a difficult one to defend as the cost-benefit guidelines have imposed rather severe restrictions on those studies.

I think the proper question is: What is the cost to the Government of not having the data rather than the relative costs of acquiring it.

Mr. CORDARO. Thank you.

Mr. BROWN. I have just one or two more additional comments.

Dr. Park, I was impressed by the comprehensiveness of your presentation and I think it indicates a great deal of work. I haven't perused it in sufficient detail to know whether or not you have included sufficient economic data with regard to the cost of implementing the complete program that you have contemplated so that we could make a judgment as to some of the budgetary aspects of it. I hope that we can get further into it.

I think one Of the values of having someone in your position outside of a particular agency environment examine these is that you can pull together in a more comprehensive way a total program. And I think your testimony is of particular value because of that.

I wanted to just get another bit of information and understanding of the LACIE program. It is an experiment and it is moving into a phase where it will involve activities outside the United States as I understand it in the near future.

I am wondering about the foreign policy aspects of this. I note in the testimony from Dr. Abel, he quoted, I think, Dr. Hill as saying we are still not getting the cooperation from the Russians that we needed in certain areas to develop the information we needed.

Is it possible that we may encounter resistance at the international level from conducting programs which may have substantial possible implications ? Could any of you comment on that ?

Mr. MATTHEWS. Mr. Brown, I think there are two aspects of this that are important. First, in all the experience with satellite programs by and large the acceptance generally has been truly very, very positive. I think that is because their potential for doing good for everyone is so large.

Nevertheless there are occasions when this is not the case and they relate to questions of sovereignty and so forth associated with satellite observations or communications, either one.

Generally these questions have been discussed in the United Nations in working groups, but they never have really reached a situation where the have been raised to a higher level. I think this again indicates that, in general, as people discuss these things, the value of them to the individual and to the individual nation is high enough to prevent a serious concern,

Now, that doesn't say that as time goes on that there won% be further discussions. But if I were to guess, I certainly would say I think the value judgments would prevail over some of these concerns. I think it will also be a great benefit in more or less helping in some way, to shape and form the internationalization of these activities. We have seen this in the meteorological program and maybe Dr. White might want to comment on that.

Mr. BROWN. Well, the climatology and the meteorological areas are those areas in which we have the most international involvement.

Let me put it this way, in a more specific context. Last year in the House Agriculture Committee we had briefings with regard to the wheat crop prospects in the U.S.S.R, One set from the Department of Agriculture and another from the CIA.

The estimates from the CIA were considerably more accurate and it led to the conclusion based upon open knowledge that they have access to satellite observation data with considerable more resolution than most people have access to; and perhaps they were using data of that sort from other sources. It is possible that that might cause some problems with relation to this?

Would any of you care to comment on whether the CIA% role in making crop estimates has any sufficient bearing on the discussion we have had here?

Mr. MATTHEWS. Mr. Brown, I won't comment directly on that, but I would say that the capabilities in place *in* the civil system described by Dr. Park, and as the LACIE program now underway is indicating, and particularly with the improvements in our new sensor, we should have sufficient ability to produce the type of estimates that are needed.

Mr. BROWN. Well, I am not implying or suggesting even that the CIA already has that capability. I have no way of knowing. But I was rather interested in the relative accuracy of the crop estimates with regard to the U.S.S.R. and this is a matter of considerable policy importance to the U.S.S.R.

I would like to merely make one additional point, that the House Agriculture Committee is proposing hearings on the Department of Agriculture's research and development activities later on this month. And I, personally, as a member of that committee, feel that much of the contribution you have made here this afternoon has a great ideal of pertinence to the object of those hearings.

And I would anticipate it would be very useful from that standpoint. And we might follow up even further in connection with those hearings these aspects we have discussed here.

I have no further questions.

I would just like to conclude by expressing my very sincere appreciation and I am sure I speak for Senator Humphrey in his appreciation to you. I know you are all very busy gentlemen and I am very grateful that you have taken time to assist this Board in this matter. Thank you very much.

[Additional material submitted for the record follows:]

[The following paper was requested from Dr. Trelogan by OTA and is referred to on p. 339.]

STATEMENT OF HARRY C. TRELOGAN, ARLINGTON, VA.

AN INTEGRATED AGRICULTURAL DATA SYSTEM

SUMMARY

Two sets of developments have necessitated changes in methods of collecting farm statistics. They are technogical advances in farming and simultaneous progress in statistical technology.

Quality checks on the 1964 and 1969 Censuses of Agriculture indicated incompleteness of 8 and 17.6 percent respectively. Typically, years rather than months elapsed between the time of the collection of the data and the publication of the reports. Census data no longer meet users' needs with respect to accuracy and timeliness.

A program of sample surveys is proposed to integrate the collection of agricultural data now performed annually or more frequently by the Statistical Reporting Service of the Department of Agriculture and quinquennially by the Bureau of the Census in the Department of Commerce. The potential for gaining efficiency of estimation, economies of scale, and improved employment conditions are substantial through proper design of surveys to meet differing needs.

Methods for probability sampling to yield greater accuracy of estimates are developed and in use for current crop and livestock estimates. They are funded for expansion into the gathering of economic data heretofore made available after serious delays by the Census of Agriculture.

A list sampling frame is being started in the SRS that will facilitate efficient probability sampling for making all farm estimates. Since 1970, improved samples have been developed for hog and cattle estimates. With these developments the stage is set for avoidance of considerable unnecessary duplication of work through an integrated system of farm data collection.

The requests for additional timely and more accurate data relating to United States food and fiber production are becoming more urgent, The burden on farmers to supply data is testing their endurance, as evidenced by resistance to answering recent census inquiries. Integration of the present systems offers opportunities for alleviating these problems with no more expenditures for data collection than are now projected.

Requisites Of Farm *Statistics*

Advances in farming have led inexorably to larger and more specialized units. While this has resulted in fewer and more conspicuous farming operations and seemingly easier work to estimate aggregate production, actually the job of estimating has been made more difficult and expensive because long-established earlier methods became obsolete. No longer can reliance be placed upon simply a large sample of the farms to be representative of all farms in the country. In contrast with 30 years ago, the size and specialization of farms has reached the point where one Is unlikely to gain a valid impression of the agricultural production of a county by taking a random look at a few farms. A single farm may be unique and also account for virtually all the production of particular crops or livestock in a given area. It cannot be ignored in the estimating process. Consequently, the procedure for making estimates calls for a sampling procedure that will give due weight to these large, specialized farms as well as the prevalent types.

Growth of individual farming units has also engendered demand for more accurate estimates and forecasts of farm production aggregated by counties, states, regions, and nationally. The operational units have reached such dimensions that farm families can no longer finance the kinds of equipment or the volume of supplies and services needed without resort to commercial credit. Both the farm management and creditors require reliable information on existing and prospective supplies of farm produce before making the investments or assuming the risks of putting together a viable farming operation in today's agriculture in the United States.

Added to this demand for dependable statistics is that of manifold businesses supplying or servicing farms that must keep tab on farm production to intelligently plan their operations. Assuming greater importance in recent years are the needs of national and international planners and diplomats for protecting large populations now dependent upon United States food supplies.

Higher quality statistics are now required. The quality features most needed are: (1) accuracy and dependability; (2) timeliness in terms of frequency of reports, short time intervals between surveys, and promptness in getting out results of surveys; and (3) adequacy in terms of sufficient detail to meet the purposes, The latter requirement usually refers to geographical detail, number of items or species reported, and indications of quality of products. Almost invariably greater expense is incurred to obtain improvement in any of these quality factors.

Steps Taken to Meet Requirement

Confronted with shortcomings in bases for sampling and more demanding requirements for frequent, detailed, and especially accurate data, the U.S. Department of Agriculture (USDA) has devised feasible means for getting the information. The first step is to collect authentic data from farms quickly and in a form that can be readily transformed into estimates and forecasts useful to economic analysts and business operators, including farmers.

Fortunately, the theory and practice of statistics has advanced along with farming, so the problem is largely one of adapting new tools to the job. As with farming, these new tools are far more expensive than the old tools. This is especially true of the current estimates of production made by the Statistical Reporting Service (SRS), where the notoriously inexpensive mail questionnaire system had *been* perfected for over 100 years. [1] It performed well in this country, where we had the advantages of a literate farmer population willing to give the Government information, and so long as we had an inexpensive, reliable rural mail service and a dependable five-year Census of Agriculture to periodically true-up current estimates.

The inadequacy of the old tools came to public attention following a 10 percent error in the cotton production estimate for 1952. Through research for new methods, instigated by this incident and directed by the House Agriculture Appropriations Subcommittee, a probability sample was designed to replace the previous system. Over a period of 14 years, an area probability sample was put into operation in the 48 contiguous states.[1]

The probability sampling method was initially adopted in the form of an area sample based upon a complete sampling frame for the 48 conterminous states. [2] [3] It was designed to provide national estimates annually with a 2 percent standard error and has replaced the role of the Census of Agriculture in providing benchmarks.

Implementation of area probability sampling for the entire country laid the cornerstone for restructuring the entire agricultural data system. This new foundation, replacing the Census of Agriculture as the underpinning for crop and livestock estimates by providing annual benchmarks. occurred none too soon. It, being the only complete sampling frame available for American agriculture, is useful for backstopping other parts of an agricultural statistical program.

Census Difficulties

The rapidity of change in farming had rendered the Census of Agriculture obsolete. Typically, from three to seven years elapsed from the time an annual estimate was made before a new benchmark was available for comparison. In view of the fact that the number of farms raising dairy cattle, for instance, dropped 40 percent between the 1954 and 1959 Censuses of Agriculture, the old system would no longer suffice. Changes of similar magnitude have occurred repeatedly, necessitating faster methods for getting such basic data as the number of farms, land in cultivation, acreages of major crops, and livestock inventories. These data furnish the undergirding for estimates and forecasts month by month throughout the year.

As farms became larger, requiring huge investments, the structure of ownership changed to accumulate enough capital. Many farms integrated horizontally, causing the farm operations to be done as separated tracts sometimes transcending political boundaries. [12] They also integrated vertically, with marketing firms supplying factors of production *or* processing *or* distributing the farm output. As these developments occurred, the concept of a Census of Agriculture as originally

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[1] Eight years of research and pilot operations preceded the initiation of enumerative surveys to collect these data in 11 southern and 4 Midwestern states in 1961. Thereafter, it was spread across the country as follows: 1962, 5 additional states; 1963, 4 states; 1964, 8 states; 1965, 4 states; 1966, 5 states; and 1967, 7 states. New appropriations for the 48 states totalled $4,137,000.

Conceived-i. e., a full count of independently owned family farms became an anachronism.

Furthermore, the method of collection, using temporarily recruited canvassers for a few weeks once every live years, became impractical. Qualified interviewers became more difficult to find at the low rates paid, and the job become more difficult, involving more personal and intricate information about the ownership relationships and sources of capital. To overcome some of these troubles, the Bureau of Census began to collect the Census of Agriculture by mail.

Then they were confronted with two other major problems. One was to get a satisfactory mailing list of the farms, This has never been adequately solved, judging from the incompleteness of coverage that has evidently been growing in successive censuses.

A quality check made by carefully and thoroughly recanvassing a subsample of farms following the 1964 Census indicated 8 percent incompleteness. The quality check for the 1969 Census made from data collected in the SRS enumerative surveys using the area sampling frame showed 17.6 percent incompleteness. [4] This a check method, by the way, was far less expensive, much more effective, and added no burden to farm correspondents.

With incompleteness of the magnitudes experienced, the Census took on the characteristics of a large but uncontrolled sample. As such, its accuracy could not be measured with statistical precision. The sampling method adopted for the 1969 Census of taking one half of the small farms, construed to be those producing less than $2,500 of sales, also suffered from being an uncontrolled sample. These circumstances dictated considerable adjustment before crop estimators could use the data. The problem *was* particularly onerous in the case of livestock because the surveys are taken for different seasons of the year, and in the case of cattle, for instance, the 1969 estimated incompleteness was 8.5 million head located on 298,000 farms. [4]

These limitations pertain also to economic data obtained by the Census of Agriculture. For 1974 the census definition of a farm has been changed, so that results will probably be reported with less coverage. [5] As we will see later, a shift to SRS for use of the probability sampling frames to acquire economic data is well underway.

The circumstances suggest that to continue taking a Census of Agriculture on the present pattern is a waste of time, effort, and money.

Quest for Greater Accuracy at Less Cost

Before the new area probability sampling became fully operative in the SRS, it became evident that the goal of a 2 percent standard error would not be adequate. The results of the 1964 Census of Agriculture did not become available to the Department of Agriculture for making revisions in its livestock estimates until February 1967. Total cattle estimates had to be revised upward by 2 percent to make the two series consistent. The revisions caused an uproar from cattlemen, who pointed out that they had been misled into raising more cattle during the years since 1959 when the estimating error was accumulating. Price analysts judging from current estimates of cattle inventories and market news slaughter data had concluded that the cattle cycle had turned downward and advised farmers that the price prospects were very favorable. As a consequence of the revision, the price outlook was reversed, causing financial disaster for some and consternation among growers generally.

Two conclusions drawn from this experience were: (1) The area probability sample was more efficient for estimating crops than for livestock; and (2) The former goal of achieving a 2 percent standard error would no longer suffice. To meet these problems, it was further concluded that the area sample needed to be bolstered by less costly methods than simply expanding the existing sample, the usual method for gaining accuracy.

A new method was devised by SRS based on theoretical research by Professor H. O. Hartley of Texas A&M University, which indicated how results from two sampling frames could be embodied into a single probability estimate. This opened a new way for SRS to take advantage of the less expensive mail survey to acquire additional data to bolster the estimates.[2] The major requirement to achieve the attributes of a probability sample was that the samples canvassed

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a To gain the advantage of an expanded probability sample without incurring the very high costs of sending enumerators out to find the farms as In the area samples, the SRS adopted a multi frame system for different kinds of estimates. It consisted of the area frame, a probability list frame, and old mailing lists. The latter were used primarily for state estimates.

by mail be drawn from a list of all the farms growing the products being estimated in the state or nation. Associated with the names and addresses, sufficient control information is needed to draw stratified samples. The farms in each stratum have predetermined probabilities of being selected according to known characteristics such as approximate size. The control data, therefore, include, in addition to location, the farm enterprises and some indication of the size of each. [6]

Search for Lists

inquiring into the possibilities of developing a suitable list led the SRS to seek cooperation with the Bureau of the Census because it was obvious that a similar list would be needed by them if the Census of Agriculture were to be taken by mail. Furthermore, it was apparent that the compilation and maintenance of such a list for the United States would be expensive-on the order of $5 million a year. An early conclusion was that the public would not likely countenance two agencies of the Government incurring the expense and bothering the farmers to maintain independent lists. The best starting point for this pioneering effort, which was going to involve the combining of lists from many sources, was to get the list of taxpayers reporting income from farming to the Internal Revenue Service (IRS). Inasmuch as the Bureau of the Census already had access to this source, cooperation with the Bureau appeared promising, and SRS was encouraged by the Bureau that it might be worked out, *although some* hurdles had to be overcome. One of these involved SRS getting approval to use IRS lists, since the permission granted to the Census Bureau did not extend to the SRS.

The procedure was to get a Presidential order granting access to the lists. After three years of negotiation, President Nixon issued such an order with the White House determining the timing and the manner for publication of the order. When the announcement was made, a furor ensued, resulting in congressional hearings at which SRS was advised that $5 million was not to be regarded as too high a cost to preserve the privacy of IRS records from another government agency for statistical purposes. Other means had to be found for SRS to begin its compilation of suitable lists.

Presumably, the list compiled for the previous census might serve as a starting point. The Census Bureau ruled out this source for SRS, pointing out that under law it was not allowed to reveal such information. Since SRS had the same restrictions imposed by regulation and since both agencies would benefit from combining their lists, it was believed that *a* single farm register could be contributed to and be used by both agencies. Several years of efforts were unsuccessful in getting the Bureau of Census to contribute to such an arrangement.. Meanwhile, the viability of the census lists was deteriorating, being at least five years out of date.

During this hiatus the SRS was conducting research on how to compile lists useful for the purpose. As appropriations were made available, SRS began in 1970 to introduce the use of these on a limited scale, notably in estimating hogs (ultimately in 23 states) and cattle (in 38 states).[3] The experience with livestock clearly demonstrated the practicability of the method and that substantial improvement in accuracy could be achieved. Both the research and the experience support the belief that the most effective approach will be to compile list frames on a state-by-state basis because useful sources of names vary so much between States. Depending upon provisions for state farm censuses, the incidence of different regulations such as brand registrations, the locations of markets with available records, and numerous other circumstance% the jobs are quite different from state to state.

Conversely, no national source of names has been identified that will yield a list consistently by states that has the necessary attributes of being clean, current, and complete. To be clean, a name must appear *once* and only once as the authentic source of information about a farm operation. To be current, the information on ownership should be authentic for the current *year,* and to be complete, all farm enterprises should be included. Unfortunately, the largest known lists compiled by the Agriculture Stabilization and Conservation Service are deficient in all of these qualities and are inconsistent by states.

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[3] Hogs and pigs estimated from multiframe samples were introduced in five states in 1970 : five additional states in 1971 : four states in 1973; and nine states in 1975. The 23 states cover 96 percent of the hog population. Coincidentally, the cattle multiframe samples were introduced in 38 states covering 96 percent of the population. $2,646,900 is the present appropriation for these livestock estimates.

Consequently, the SRS asked Congress for appropriations to compile and maintain general purpose farm lists, as is done on a restricted scale for livestock estimating. In the budget for 1975, SRS was granted an appropriation of $1,225,000 to begin compiling the names for a general purpose list frame suitable for multiframe probability sampling. When this job is completed, the SRS will be in position to reduce the standard error for national estimates for major crop and livestock species to 1 percent.

More importantly from the standpoint of this discussion, it will also be in position to obtain through sampling methods almost any kind of data needed from farms in the United States

Prospects for Additional Data Collection

A headstart has already been made toward the acquisition of economic statistics now needed by the Government and the economy on a more current basis. Three years ago the SRS started a transition to the annual collection of data on farm expenditures for updating the weights used to compare the indexes of prices received and prices paid by farmers. Heretofore the data were collected in large national surveys intended to be taken about every ten years. [71 Owing to the large appropriations needed when they were scheduled, they were actually taken less frequently, to the detriment of the indexes. It is anticipated that the collection of these annual data may be coordinated with other economic data collected especially if data are collected on a regularly scheduled basis. The collection of such data is in prospect for the immediate future.

For many years SRS has collected economic information from farmers for the Economic Research Service. Much of this has been done annually with little or no compensation by adding questions to mail questionnaire surveys scheduled in regular crop-reporting program Closer public scrutiny of economic analyses and an accompanying demand for greater accuracy caused the Office of Management and Budget (OMB) to rule that data collected for them be put on a more acceptable statistical footing. Consequently, SRS has adapted probability sampling methods and expanded the scope of data collected to accommodate these requirements with ERS financing the added costs.

SRS likewise has been called u n to supply farm data for nine other agencies in the Department of Agriculture and seven federal agencies outside the Department of Agriculture in the last five years.[4] These special requests for data usually involve economic data such as utilization of factors of production and costs. In fiscal year 1975, for example, SRS received $&2 million for these services for other agencies that needed current data, promptly reported. Two-thirds of these data were obtained by utilizing the area probability sampling frame.

In 1965 ERS was directed by Congress to analyze costs of production for cotton. Collection of data for this and related studies was done by SRS. This turned out to be the forerunner of similar studies in subsequent years. In 1974 and 1975 there has been a veritable eruption of needs for more current data on farm costs and income. They have been instigated by several developments, among them the imposition of price ceilings on farm products, revelation of - defects in farm income estimates, and efforts to obtain better agricultural income and expenditure statistics for use in the national economic accounts-a very demanding system that has been developed in the Department of Commerce under the guidance of the OMB and the Council of Economic Advisors.

To help meet the needs for additional and more accurate current economic data, the ERS was given $1,330.000 to make an annual economic survey in addition to farm cost analyses. In 1975 ERS was (appropriated $670,000 for wheat, feed grains, and dairy costs studies that were called for by the Agriculture and Consumer Production Act of 1973. It is anticipated that about $1.9 million will be transferred to SRS to collect the data for these studies beginning next year. Multiframe probability sampling surveys will be employed for the **purpose.** Thus, SRS will be coordinating data collection surveys for several different purposes that in years gone by might have been done with census data but that now **require up-to-date** information from a fast-changing agricultural economy. The ability and willingness of SRS to collect these data closely related to census data is clearly demonstrated,

Respondent Fatigue

The proliferating demands for farm data causing repeated surveys of farmers to supply them is taxing the patience and ability of farm respondents. Opera-

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[4] GAO, NASA, AID, Departments of Commerce, Interior, Labor, and HUD.

tors of sufficient size and scope to be included in every sample usually have well-organized management records and professional accountants or bookkeepers to facilitate their response. Their burden can be weighed against the public's right to know of operations that significantly affect the food or fiber supply of the state or nation. It can be regarded as one of the costs of being big in our society. Less influential and specialized operators find the burden not only onerous but more difficult to respond to, even though they may not be included in every sample.

Respondent fatigue has been particularly noticeable in recent censuses as resistance to reporting has grown. One can better understand this reaction if he realizes that a small farmer is likely to receive a form containing about 200 questions to which he has to react in an intelligent manner, ascertaining which questions apply in his case and giving the information. He is reminded that the law requires his response. The large farmer is apt to receive in the mail, with some 750 questions, a form designed for him to fill out and return as required by law. [8]

Incompleteness of returns experienced in taking the Census of Agriculture is partially attributable to deliberate refusals to reply and partially to inability to contact the farm operators.

In the effort to reduce the latter problem, many more census forms were sent out than there were people farming. For the 1974 census, 4.2 million questionnaire forms were mailed out. This compares with 2.7 million farms counted in the previous census. Nevertheless, it appears probable that a substantial incompleteness will occur again. Inasmuch as efforts are still underway to get 1974-census returns, it is premature to judge the amount of the shortfall.

A proposal to alleviate problems of lack of contact and reduce overkill in mail-outs is to conduct a precensus canvass to locate farmers and to obtain preliminary information regarding their size and types of enterprises. This will compound the fatigue problems, but it is hoped that the subsequent distribution of the most appropriate questionnaire forms would be offsetting.

An important secondary benefit sought in sampling schemes adopted by SRS was a reduction in the number of reports needed to get adequate data for estimating national and state totals. With judicious use of control information, the number of farms that need to be contacted are reduced on the order of 75 percent compared with former methods for obtaining the same information. Offsetting this advantage in part is the fact that it is necessary to get data by telephone or personal visits when a respondent fails to reply to mail inquiries. The most promising means to minimize respondent fatigue and still meet the rising demands for data is to coordinate all the farm data requirements into a single system of surveys, thereby reducing both contacts and duplication.

Other Deficiencies *Needing Attention*

A farm data collection system will need to be reasonably flexible to adjust for the correction of some other arising problems. For about five years the American Farm Economic Association has called for a reconceptualization of the relationship of farms to the economic structure. The principal impetus is to obtain better guidance on what data to collect in anticipation of how they are to be used for analysis and decision making. As progress is made in updating the theoretical framework, it is to be expected that changes will he needed in counting and measuring farms and related phenomena.

One of the more important reasons for this will be to fulfill the needs of the national accounts system, which is preempting the economic statistical field. This relatively recent development concentrated first on other parts of the economy, adapting the agricultural data that were available to its needs. Now that the national accounts system is becoming more sophisticated and precise, it is calling for changes in the agricultural data inputs, necessitating more precise data applying to shorter time periods. The agricultural statistics system will be ex–pected to accommodate these needs. **An** integrated system able to collect data at appropriate times is most likely to do so.

Similar needs for data at particular times to compare with data from other censuses and other sources are also likely to occur. The Census of Agriculture has always been taken quite independently of other censuses, except at 10-year intervals when the time of data collection is near to that for the population census. Otherwise, the concepts, timing, and administration of the farm census are quite separate and apart.

A problem may arise from the fact that in the origination and 100-year growth of the crop and livestock estimates, the main focus of attention has been on

facilitating decision making in the private sector. Crop and livestock estimating is unique in that regard among public statistical services. The national accounts have been tailored more to aid public policy makers and Government administrators. To meld data collection for these diversely motivated systems calls for considerable reconciliation. [9] This problem was in the minds of the Agricultural Economists' Committee, which had faith that new concepts could contribute toward that end. They, more than the general economists and statisticians, are conscious of the vital role federal agricultural statistical services have played in guiding the myriads of independent business decisions affecting our food and fiber supplies. The statistics have exercised the strongest cohesive force in the agricultural economy because they provide a common fund of reliable information on which all segments of American agriculture depends. Society can ill afford to reduce their effectiveness if a competitive economy is to be preserved.

The OMB, sensing some of, these problems, began calling for a study of the entire agricultural statistical complex in 1968. Under an OMB directive, the USDA requested in the SRS budget for that fiscal year $50,000 to finance the inquiry. The request was denied by Congress, but the idea arises in one form or another periodically, usually provoked when additional funds are requested to institute new methods. It is being advocated again at the present time, but plans as yet have not clearly indicated how it is to be financed and performed.

SRS has recognized a need for reconciliation of differing objectives in determining the content and timing of farm data collection. It awaits directions from OMB or some responsible source for overall policy guidance. Meanwhile, it has proposed piecemeal improvements and solicits users' reactions. Acceptable proposals are adopted, Two events give evidence that OMB has institutional goals uppermost in mind.

The proposed "Department Reorganization Plan" announced by President Nixon in 1971 "called for concentrating the major statistical agencies of the Departments of Agriculture, Commerce, and Labor in one principal subdivision of the proposed Department of Economic Affairs." [10] In essence, this centralized statistics agency would be divided into two main functional units—a unified data and planning office, and a centralized, service-oriented data collection and processing center. A reorganization plan was instituted in existing departments by the OMB so that the work organizations would be prepared for ready transfer to the Department of Economic Affairs when the Departmental Reorganization Plan was approved by Congress, which did not occur.

USDA had very little adjustment to make internally to adhere to the OMB guidelines because it had for many years maintained a segregation between SRS, mainly in collection and processing activities, and ERS, engaged primarily in economic analysis. Presumably, placing the work of these agencies into a single agency, which also contained the Bureau of the Census, would circumvent the legal and regulatory requirements preventing the agencies from sharing data. It may **be** noted that placing the Census of Agriculture and SRS data collection activities together into one agency oriented to concentrate on agricultural statistics is quite consistent with this idea, but it avoids complete centralization of all federal statistical services. SRS has already amply demonstrated its posture of service for other agencies concerned with analytical and administrative work, so the arrangement is not entirely novel.

Nevertheless, from the standpoint of implementing a single agriculturally-oriented statistical unit, the OMB itself becomes a problem. The standard answer is that they want a thorough inquiry into farm statistical services.

The second event, initiated by OMB in furtherance of their objectives, was establishment of a unified statistical budget for tile Government. Departments were directed to submit to the Office of Statistical Policy (OSP) of OMB their proposed budget requests for statistical activities. This office then proceeded to amend the amounts that could be requested, specifying increases or cuts by agency and activity for the stated purpose **of** improving federal statistics. In the first year of operation of the unified statistical budget, OSP claimed responsibility for a 16 percent increase in the statistical budget as a whole. The Department of Agriculture, however, was told to curtail its statistical budget request by $1 million, later reduced to $750,000. Evidently, the authorizations taken from the USDA's requests were distributed to other agencies. Two years later when the Administration and the public were concerned about what was going to happen to food prices, the Council of Economic Advisors launched an inquiry into the lack of ability of ERS to forecast these prices during the months and , years ahead. The inquiry, by an outside scholar, cited the relationships between budget allowances and the capabilities to do such work, pointing out the status given earlier to agricultural statistical priorities. [11]

The desirability of a closer affinity between the farm census and the economic censuses, especially in terms of the concept of business units, was advocated by American Farm Economic Association's Committee and called to the attention of OSP. The response was the proposal that the Census of Agriculture be postponed and be taken at the same time as the Census of Manufacturers and other economic censuses. This hardly dealt with the crux of the matter, but an integrated system would be more able to accomplish the timing of farm data collection to coincide with such needs than is the case at present. The Census Bureau is asking for legislation to place them together in 1982 for the first time. For years ending in "O" some state or national data wanted in conjunction with the Census of Population could be added in an integrated program.

Potential for Satellite Data

Before examining alternative means for acquiring farm data, we take a moment to examine a source of data looming prominently on the horizon. Perhaps the most frequently mentioned contribution of the Landsat (formerly ERTS) satellite to civilian needs is information relating to food supplies, usually involving crop acreages and yields. Although considerable money is being spent—such as the Large Area Crop Inventory Experiment (LACIE)—to demonstrate the possibilities, they must still be regarded as potentially possible. Crude information about the earth's resource inventories and kind uses is probably within grasp, but many existing claims for detailed information are still to be classed with unfinished research.

Evidently, the most practical ***use of the*** satellite for crop estimates with the present state of the art is to make sampling more efficient. By relating information from the satellite to ground truth, a computer can be trained to stratify land for the purpose of improving the efficiency of collecting agricultural statistical samples.

Up to now, efforts to gain information on crop acreages and yields directly from satellite data, by-passing the use of ground truth, have been fruitless. The possibility sounds dramatic and exciting and has captured the imagination, but it has also diverted attention away from practical ways of combining the two sources of data to yield better results, The great desire for gaining intelligence on crops without dependence upon information from those who own, control, and till the soil is so great in international affairs today that it has led scientists to exert strenuous efforts to find ways for the satellite to give the answers. Hardware salesmen have fostered these efforts. But desire, no matter how intense, and ***money,*** no matter how much, do not in themselves create the means.

No practical way has yet been devised to measure crop acreages by species, to estimate yields, or to count livestock in the absence of ground truth information to check satellite data. Without current data, estimates are likely to be so far off as to be misleading for planning purposes.

Crop yields are of course affected by weather, but the measurement or prediction of yields from only weather data collected by satellite is hazardous, except for gross changes leading to disasters such as major droughts, floods, or freezes. The combinations of moisture and temperature during stages of plant growth are so varied in intensity and duration that these data alone cannot be relied upon to predict yields within reasonably useful ranges of precision. Actually, the measurement or prediction of crop yields from weather data obtained on the ground has never proved reliable in practice for crop estimating.

SRS research indicates means by which satellite data can be useful to improve the efficiency of sampling to obtain more accurate crop estimates. This preliminary research has indicated that gains of up to 50 percent are possible. The research suggests that the coefficient of variation or the standard error can be reduced on the order of one half from their present size based on ground survey data alone. Current satellite imagery, matched with samples of simultaneous ground truth such as is obtained regularly by SRS enumerative surveys, gives correlations between crop identifications from the two sources that can be applied to vastly larger areas supplied by satellite imagery. This method for improving reliability of an estimate has yet to be proved in an operating mode. If it works out, a smaller number of samples may suffice for probability surveys.

Some ***Questions Posed and*** Answers Suggested

Any rationale for continuing the Census of Agriculture is that it will perform different functions than other statistical services. Three functions that the census has performed uniquely among statistical services are: (1) It has sup-

plied demographic data about the farm population, especially in those years ending in "5" when the population census was not taken; (2) It has supplied economic data about farms not included in the current estimates programs; (3) It has supplied county data that can be aggregated into relatively small areas; i.e., areas smaller than states; (4) One variant of this, other than geographic, is that it supplied data in much greater detail than surveys for current estimates. Each of these is discussed in turn below.

(1) At best, demographic data regarding the farm population obtained by the Census of Agriculture was a by-product intended to fill a void. Its capacity for doing this is now seriously circumscribed because of the radical changes that have occurred in the farm structure which has largely separated farm management and ownership from farm residence. [12]

The well-being of farm households could once be measured with data indicating the prosperity of farm enterprises, but correspondence between them has diminished to the point where it is no longer practical to continue such statistical concepts.[6] Farm income data derived from tax sources reveal the degree of noncorrespondence when they show that only 7 percent of the families living on farms in 1971 relied solely on farm self-employment income for family living. Of those relying solely on farm self-employment income, 14 percent resided off the farm; and 31 percent of families residing on farms reported no farm self-employment income. [13] [14] These circumstances suggest that the Census of Population, possibly augmented by current population surveys and by tax data, will be the source of farm demographic data in the future. [121

(2) Economic data, besides crop and livestock estimates, can be obtained from probability samples, as the SRS has amply demonstrated through the extensive use of the sampling frames for the purpose.

(3) The main difference in acquiring county farm data as contrasted with state and national data is the size of the sample, which will also be influenced by the degree of accuracy sought. In order to attain an accuracy level comparable with that obtained with the incomplete counts of the census, a well-designed 25 percent sample will probably do.

(4) The size of survey designed to acquire county data can be expanded in terms of questions asked as well as in sample number sufficient to get the additional detail wanted. Some detail now included in the census would not be necessary, since surveys taken at other times to give state and national estimates would not need to be repeated in county surveys.

An aspect of this fourth item is that the census provided much detail useful for research. This is true especially for studies over time revealing trends, and no doubt regular surveys of all types are a productive source of data for research. But researchers emphasize that profile studies probing economic relationships in depth for inquisition of knowledge require microdata with much more detail and precision than is supplied for applications of knowledge through regular statistical services. [16] In fact, the characteristics of data needed for such research calls for special surveys specifically designed for each research project, [16] For agriculture most of these types of surveys are conducted by researchers in land grant universities. Occasionally, data are collected specially for research studies as an adjunct to a regular SRS survey.

These exceptions notwithstanding, census data have been particularly useful for research analysts who could relate the data to other economic phenomena and could trace the data back through previous Censuses of Agriculture to identify and measure long-term trend changes. This advantage is held in low regard by the Department of Commerce, which proposed to arbitrarily break the series of data by postponing scheduled censuses.

Purveyors, manufacturers, and producers of farm equipment, supplies, and services also used the censuses to get detailed purchase, usage, and farm practice data indicative of the market for their products. The Censuses of Agriculture had more requests for these kinds of data, useful to private industry—for example, sales managers devising sales schemes--than it could accommodate given the limits imposed ***by*** respondent fatigue in filling out questionnaires. An integrated system could furnish these same kinds of data, subject to the same limitations.

Cooperation with State 0ffices

One big advantage accruing to the SRS system for collecting farm data is derived from the use of 44 permanent state offices to decentralize the work of

conducting inquiries and processing results for all states. In connection with the operation of these offices for current data programs, cooperation with state agencies is established in 48 states to obtain additional *or* more detailed farm data needed for state programs. Through these voluntary arrangements, state and federal agencies benefit (1) from cost savings by collecting the data for their respective needs at the same time : (2) from reduced respondent burden by collecting their data together, thus avoiding repetitive inquiries; and (3) from assurance of compatible results so that reports issued by the two sets of agencies are consistent with each other.

Unified support received from federal and state officials in urging farmer cooperation is also a boon. Data collected to satisfy state needs are often valuable as check data that would not otherwise be available. Working together improves understanding of the statistical programs and promotes fuller use of data for carrying out the respective public responsibilities as well as by private industry.

But of much greater significance for operating sample surveys, where extreme care must be exercised to make sure all counts and measurements are recorded accrately, is the better opportunity to clear up inconsistencies uncovered by editing of schedules. Located closer to enumerators or respondents who originate the data, inevitable mistakes owing to misunderstanding of questions or other errors can be corrected more easily and promptly.

Probability sampling requires more voluntary cooperation from respondents than the older mail surveys, in the sense that the data has to be obtained from the persons or places selected, whereas before, replies coming from only those willing to reply quickly and regularly were used. Local enumerators plus state and federal officials working together are better able to elicit the cooperation and get the information straight.

This mutually beneficial state-federal system of data collection is already in place and has demonstrated its superiority. It has the capacity for expansion to also collect data for the clientele usually served by the census. The total job could be done much more expeditiously if the inquiries were spread out over a five-year period rather than all collected in one fell swoop every live years. This is true for a number of reasons, of which several will be briefly cited.

Fitting Samples to Quality Requirement

All farm data does not have to be collected in the same detail or with the same standards of quality. Some data are needed only on national bases, some only for state estimates. and still others on localized or county bases. In general, the greater the aggregation of data, the smaller the samples needed to achieve a given accuracy standard. Exceeding the quality necessary is a waste of money. Over a five-year period agricultural statistical surveys could be classified by quality requirements and scheduled by years accordingly. Where national data will suffice, surveys may be scheduled in given years, for state data surveys. other years will be used, and only once every five years will it be necessary to increase the size of sample to produce county data. Exceptions could be made for those states and for those items for which particular state or federal agencies are willing to bear the extra costs. It is likely that the county data would be collected for ***years*** ending in "2" and "7" to facilitate ***comparisons*** with economic censuses for the same years.

Through this type of scheduling all needed farm data could be collected over each five-year period with the accuracy, frequency, and detail of items and geographical coverage fitted to needs. Drawing of samples to spread out the reporting load among respondents or to minimize ***the chances of*** one respondent being included in every survey may be arranged. The work of enumeration processing, and publishing could also he spread out among years and within years to reduce the peaking of workloads. With prospects of steady work more experienced employees may be attracted. for whom more training can be afforded.

Data collection for current surveys could be made to coincide with some collection made for longer term needs. Probability samples would be designed to yield standard errors adjusted to the needs of each survey, and data collected in one could be designed to supplement and reinforce the other. This principal is now practiced in crop estimating: for example, planted acreages of crops are estimated only once for the year. When subsequent monthly surveys.

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of crop yields are made, a small subsample of acreages is checked to see whether adjustments are needed in acreage estimates.

Possible Cost Savings

Assuming an integrated system of the type described, opportunities for cost savings include:

Reducing the number of times individual farms need to be contacted to collect data ;

Reducing the size of questionnaires or length of interviews for farm data collection by at least 25 percent—more for items needing only national or state estimates;

Eliminating the need for two agencies to compile and maintain lists of farmers in the United States identified by size groups, enterprises, and locations;

Eliminating the printing and distribution of a million census forms that are not used;

Eliminating the need for a precensus canvass in the effort to identify farms and verify control data;

Incorporating newly required data into an operating sampling scheme in less time and at less cost;

Utilizing satellite data more quickly to improve the accuracy of sample estimation. With success, this may be translated into smaller, less expensive samples to get the same accuracy;

—Savings to the economy from greater accuracy. [17]

Savings involving appropriated funds will be offset in part by increased funds needed to complete the compilation of a list sampling frame started in SRS. An additional $3 million is required to make it operational for an integrated program.

Estimated Cost

The main elements of the agricultural data system with which we are concerned are: $9.1 million for the Census of Agriculture and $28.5 million for the crop and livestock estimates, or a total of $37.6 million annually.

The projected cost for an integrated program giving higher quality statistics covering the same ground in a typical future year is $36 million.

These estimates make allowance for the cost increases and decreases discussed, except that they exclude statistics collected for state agencies and for other federal agencies. They also exclude statistical research and clearance activities presently assigned to SRS but not a part of the crop and livestock estimates. None of these exclusions bear on the budget or appropriations for the integrated services. None of these estimates make provisions for inflationary Costs.

Administrative Alternatives

Administration of an integrated system may be arranged in any of several alternative ways, as the discussion has suggested. One would be through a general reorganization of government statistical services to accumulate most or all of them in a single administrative unit. An expressed hope of the American Statistical Association and also of blue ribbon committees with a statistical orientation has involved a change of this character, with the head of the statistical work reporting directly to the President. [18] A strong advantage would be to get ***more*** balance and uniform quality in statistics throughout the Government. A disadvantage would be the separation of statistics from the programs they support; or rather, conversely, the support of statistics from the program administrators, usually Cabinet officers, and their budgets. This proposal, of particular concern in the case of agriculture, was denied along with most ***of*** the Governmental Reorganization Plan of 1971.

Another possibility akin to the first would give the Department of Commerce responsibility for the collection of current agricultural statistics along with the Census of Agriculture. A change in this direction would favor a continuation of the Census of Agriculture in its present form, but with years for collection altered to eventually coincide with the economic censuses.

A third possibility, a reversal of the second, would place the integrated system in the Department of Agriculture. This arrangement would be appropos if the objective to convert the census to a sampling approach is adopted.

Every one of these alternatives would require legislative changes and would involve the transfer of legislative and budgetary responsibility among con-

gressional committees. Administrative responsibilities and appropriations would accordingly be transferred between Cabinet officers pursuant to the legislation. Agricultural statistics have fared well with legislative committees and administrative leadership interested in agricultural policy and have gained professional respect for technical preeminence unequaled at any time or place.

Conclusion

Given the changes in agriculture and in methods of collection adopted by the Census, it makes no *sense* to continue the Census of Agriculture. The Statistical Reporting Service, facing the same problems of technological change, has taken positive steps to solve them, thereby increasing the integrity of its public service and reducing the need for the census by presenting a more viable alternative for acquiring needed data. Thus the time has come to halt pandering with farm statistics by assuring that only data released in time to be useful is collected through an integrated system.

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TABLE 5.—CHARACTERISTICS OF FARMS MISSED IN THE CENSUS BY CLASS

	All farms	Farms sales of—									
		Class 1–5— $2,500 and over	Class 1— $40,000 and over	Class 2— $20,000 to $39,999	Class 3— $10,000 to $19,999	Class 4— $5,000 to $9,999	Class 5— $2,500 to $4,999	Class 6–8— Under to $2,500	Class 6	Class 7— Part-time farms	Class 8— Part-retirement farms
Number of missed farms	252,751	37,973	1,607	2,496	4,350	9,837	19,683	214,778	53,548	99,948	61,282
Land in farms	24,928,805	12,078,980	1,595,745	1,188,573	2,621,058	1,402,050	5,271,564	12,849,815	4,038,305	4,817,732	3,993,778
Average size of farm	98	318	992	476	602	142	267	59	75	48	65
Corn for grain:											
Farms	50,903	10,880	485	1,133	1,478	3,791	3,993	40,023	11,534	18,006	10,483
Acres	507,437	268,705	6,439	66,996	66,480	83,638	45,152	238,732	84,150	83,900	70,682
Sorghums for grain:											
Farms	2,219	1,014			277	624	113	1,205	347		858
Acres	121,845	118,670			33,794	81,712	3,164	3,175	601		2,574
Wheat:											
Farms	3,584	1,977		82	574	869	452	1,607	112	1,089	406
Acres	142,645	135,915		2,544	73,831	45,458	14,082	6,730	224	5,142	1,364
Soybeans:											
Farms	12,695	5,054	155	521	487	2,421	1,470	7,641	2,149	3,525	1,967
Acres	438,405	367,300	137,540	76,862	41,923	68,299	42,676	71,105	27,029	29,067	15,009
Hay:											
Farms	53,463	9,074	377	783	1,740	2,182	2,894	44,389	10,591	20,782	13,016
Acres	673,845	205,152	7,560	25,210	59,911	36,232	76,239	468,693	147,408	194,131	127,154
Cotton:											
Farms	11,028	3,496	137	202	390	1,925	842	7,532	3,401	2,173	1,958
Acres	285,847	235,431	109,600	30,829	21,751	59,742	13,509	50,416	26,725	15,415	8,276
Tobacco:											
Farms	33,535	12,397	18	707	1,461	4,859	5,352	21,138	5,914	9,502	5,722
Acres[1]	70,205	55,049	684	6,240	11,515	22,244	14,366	15,148	3,955	7,426	3,767
Cattle and calves:											
Farms	163,800	23,465	1,167	1,304	3,236	4,422	13,336	140,335	36,398	64,447	39,490
Number	2,631,685	1,230,559	230,162	94,633	251,862	124,829	529,073	1,401,126	407,844	588,805	404,477
Hogs and pigs:											
Farms	79,016	11,765	306	770	1,386	4,082	5,221	67,251	20,506	29,307	17,438
Number	1,068,399	470,481	8,172	98,560	59,222	176,512	128,015	597,918	194,304	274,769	128,845
Hens and pullets:											
Farms	83,027	11,347	179	868	940	2,460	6,900	71,680	19,683	30,256	21,741
Number	9,260,796	7,534,054	6,802	5,743,305	16,659	104,350	1,662,944	1,726,742	481,797	660,469	584,476
Total value of products sold:											
Farms	238,890	37,973	1,607	2,496	4,350	9,837	19,683	200,917	50,954	91,896	58,067
Dollars (1,000)	480,424	335,573	80,680	65,475	56,541	64,984	67,882	144,842	51,212	55,956	37,660

WEST ;

Number of missed farm$	50,142	13,460	1,011	1,030	2, 2io	3,551	5,658	36,682	5,546	25,193	5,943
Land in farms	10, 544,;;;	7,492,221	1 , 6 2 0	2,159,761	1,632>604	1,266,641	795, 362	3,052, 042	489,13	1,072,042	1,490, 846
Average size of farm		556		2,096	738	356				42	
Corn For Grain:											
	1,486	1,041	162		242			445	65	380	
AM*	44,023	38,940	21,060	341	7,034	6 , ; ;	3, 992	5,083	65	5,018	
Sorghums for grain:											
		242						357			
Acres	20, 423	15,815	2, 760	3, 618	3 , 3 ;	4 , %	1, 710	4,608	3 , %	420	618
Wheat:											
Farms	2,986	2,125		297	443	528	791			374	
Acres	172,877	158,488	7 , &	55,707	20,992	42,824	31,425	14, 389	3 , %	7,656	3 , %
Soybeans:											
Farms											
Acres											
Hay:											
	16,666	5378	501	522	1,358	1,344	1,653	11,268	1,239	8,022	2,057
	517,776	350,058	46,353	56,959	104,257	90,034	52,455	167,718	24,053	119,349	24,346
Cotton:											
Farms	537	318			108			219			
Acres	18,935	17,612	6,860	4,551	4,266	1,731	204	1,323		1,143	180
Tobacco:											
farms											
Acres											
Cattle and calves:											
	33,403	8,626	621	578	1,502	2,259	3,692	24,751	3,125	17,941	
Number	932,284	724,168	172,546	126,325	175,834	116,862	132,861	207,856	34,291	130,088	43,467
Hogs and pigs:											
Farms	5,977	1,779					529	4,198	7,217	2,585	
Number	113,851	80,514		7,360	20,%	35,474	16,934	33,337	5,150	25,811	2,376
Hens and pullets:											
	8,541	2,115		123	224		744	6,426		4,168	1,218
Number	532,012	383,111	1,938	1,845	47,306	323,856	18,166	138,901	17,416	94394	30,091
Total value of products sold:											
	47,895	13,460	1,011	1,030	2,210	3,551	5658	34435	5,377	23,231	5,827
Dollars(1,000)1	215,500	191,771	85,897	3&155	30,673	24,568	20,358	23,715	5,188	14,450	4,077

1 Data does not add due to rounding.
2 Does not include data for Alaska and Hawaii.

Note: Includes an estimated 314 abnormal farms. Figures are estimates based on a sample and are subject to sampling errors.

TABLE 6.—CHARACTERISTICS OF FARMS MISSED IN THE CENSUS BY TYPE OF FARM

	Total	Cash-grain farms	Tobacco farms	Cotton farms	Other field crop farms	Vegetable farms	Fruit and nut farms	Poultry farms	Dairy farms	Livestock farms and ranches other than poultry and dairy	General farms	Miscellaneous farms
UNITED STATES												
Number of missed farms	476,670	42,305	24,565	5,069	3,396	10,092	12,322	11,147	22,712	270,218	50,833	24,011
Land in farms	56,360,304	7,362,825	1,278,031	857,563	368,889	400,903	487,720	499,616	4,291,148	34,207,622	5,191,274	1,414,713
Average size of farm	118	174	52	169	108	39	39	44	188	126	102	58
Corn for grain:												
Farms	96,140	21,261	7,131	1,379	608	1,578	356	1,133	8,451	42,976	8,867	2,400
Acres	2,349,694	994,792	91,254	8,496	20,474	7,913	712	18,849	244,141	788,490	165,471	9,102
Sorghums for grain:												
Farms	7,142	2,849	----	60	----	18	858	----	220	2,689	448	----
Acres	370,895	241,510	----	3,363	----	90	2,574	----	220	110,408	12,730	----
Wheat:												
Farms	20,642	7,533	393	----	184	82	----	547	1,355	7,659	2,030	859
Acres	879,981	576,500	1,560	----	1,728	1,334	----	2,964	28,792	190,085	75,406	1,612
Soybeans:												
Farms	33,412	17,052	2,779	1,185	344	249	----	----	1,731	7,574	2,166	332
Acres	1,496,212	872,043	18,139	214,346	11,032	2,737	----	----	85,938	218,411	67,922	5,644
Hay:												
Farms	147,107	9,059	4,462	635	635	814	341	926	13,221	65,535	42,796	8,683
Acres	2,795,235	159,959	54,866	5,799	7,079	12,644	10,499	10,113	560,570	1,158,979	744,016	70,711
Cotton:												
Farms	11,929	1,799	303	5,069	147	----	160	126	47	1,952	2,241	85
Acres	308,240	38,470	1,724	207,368	5,196	----	1,280	1,176	1,880	19,315	31,491	340
Tobacco:												
Farms	34,734	329	24,565	----	----	08	214	425	728	4,158	4,207	----
Acres [1]	71,456	518	61,581	----	----	165	107	1,000	594	2,975	3,514	----
Cattle and calves:												
Farms	*297,753	7,159	7,537	1,484	950	3,426	1,512	2,803	22,379	214,265	23,266	12,972
Number	*5,819,584	146,048	41,599	12,899	16,316	39,182	13,187	28,433	881,406	4,377,477	210,945	52,092
Hogs and pigs:												
Farms	123,416	5,793	7,861	984	711	3,054	680	1,778	6,100	82,741	10,931	2,783
Number	2,818,818	105,085	103,348	4,306	19,610	29,862	4,293	14,175	273,920	2,089,020	157,159	18,040
Hens and pullets:												
Farms	137,851	7,454	4,408	1,957	941	1,434	1,522	9,821	5,897	84,013	15,560	4,844
Number	14,198,839	178,222	125,710	24,372	26,768	12,856	36,017	9,567,412	713,765	2,820,212	613,268	80,237
Total value of products sold:												
Farms	453,419	41,443	24,565	5,069	3,396	10,092	11,766	11,048	22,672	263,561	49,858	9,941
Dollars (1,000) [1]	1,501,766	224,545	78,942	33,981	26,089	16,123	50,405	62,798	258,707	567,206	65,049	117,809

NORTHEAST

Number of missed farms	39,143	2,333	159	508	845	848	1,512	4,850	16,736	6,429	4,923
Land in farms	3,012,141	117,034	1,378	51,595	16,362	60,345	62,223	946,535	1,084,886	497,008	174,775
Average size of farm	76	50	8	101	19	71	41	195	64	77	35
Corn for grain:											
Farms	8,051	1,408	53				126	961	3,792	1,210	501
Acres	69,921	27,598	59				9,540	7,260	8,391	5,540	1,433
Sorghums for grain:											
Farms	36	18			8						
Acres	234	44			0						
Wheat:											
Farms	516	642					9	694	742	242	106
Acres	831	7,653					1,80	180	4,366	726	106
Soybeans:											
Farms	48	48									
Acres	1,338	338									
Hay:											
Farms	21,309	797		134	15	137	530	3,325	7,903	6,195	2,273
Acres	391,435	14,366		641	30	6,850	9,557	148,047	100,437	93,092	18,415
Cotton:											
Farms											
Acres											
Tobacco:											
Farms	159		159								
Acres	344		344								
Cattle and calves:											
Farms	23,637	288		29			400	4,850	13,272	2,632	2,166
Number	319,481	1,757		116			677	182,507	112,978	12,852	8,594
Hogs and pigs:											
Farms	6,078	160		29		53	123	1,275	2,905	1,025	508
Number	50,097	250		58		212	555	3,671	39,258	5,099	994
Hens and pullets:											
Farms	8,515	22		208		234	1,323	1,222	362	1,446	497
Number	1,32,375	4,51		5,805		1,700	1,217,155	30,115	235	56,318	5,529
Total value of products sold:											
Farms	37,384	2,333	159	508	845	848	1,512	4,850	16,736	6,429	3,164
Dollars (1,000)[1]	185,297	3,810	477	3,586	1,037	2,754	9,418	64,062	15,151	3,403	81,582

See at end of ta

TABLE 6.—CHARACTERISTICS OF FARMS MISSED THE CENSUS TYPE OF FARM—Continued

	Total	Cash-grain farms	Tobacco farms	Cotton farms	Other field crop farms	Vegetable farms	Fruit and nut farms	Poultry farms	Dairy farms	Livestock farms and ranches other than poultry and dairy	General farms	Miscellaneous farms
NORTH CENTRAL												
Number of missed farms	134,634	22,339	782	182	271	2,125	1,000	5,326	9,757	68,393	16,413	8,046
Land in farms	17,875,095	4,677,658	58,254	3,640	,897	72,597	9,964	42,823	2,609,061	8,287,312	1,549,096	462,793
Average size of farm	132	209	74	20	7	34	9	26	267	121	94	57
Corn for grain:												
Farms	35,700	10,129						682	4,459	16,546	3,626	
Acres	1,728,313	816,203	4,644					3,694	208,488	603,167	92,117	
Sorghums for grain:												
Farms	4,288	1,899								2,389		
Acres	228,393	123,556								104,837		
Wheat:												
Farms	11,556	4,597						457	559	5,313	630	
Acres	545,628	355,138						1,164	22,350	132,732	34,244	
Soybeans:												
Farms	20,669	11,583	258	182					1,731	5,620	963	332
Acres	1,056,469	742,193	774	1,274					85,938	204,501	16,145	5,644
Hay:												
Farms	55,669	5,353	25°			605		356	6,883	24,199	14,927	3,085
Acres	1,212,179	79,355	2,580			7,840		356	337,239	494,540	266,564	23,705
Cotton:												
Farms	364	182		182								
Acres	3,458	2,184		1,274								
Tobacco:												
Farms	1,040		782							258		
Acres	907		778							129		
Cattle and calves:												
Farms	76,913	3,940	258			296	251	841	9,757	49,629	7,966	3,975
Number	1,936,134	91,963	2,322			296	1,506	3,139	508,336	1,231,384	81,047	16,141
Hogs and pigs:												
Farms	32,345	1,765				546		293	3,124	23,167	3,450	
Number	1,586,471	50,036				1,934		293	254,758	1,195,125	84,325	
Hens and pullets:												
Farms	37,768	3,007						4,644	2,267	21,382	4,750	1,718
Number	2,973,656	44,816						788,555	328,310	1,475,189	298,393	38,393
Total value of products sold:												
Farms	129,250	22,339	782	182	271	2,125	1,000	5,326	9,757	68,142	16,413	2,913
Dollars (1,000)[1]	620,545	175,598	955	163	121	3,903	816	19,690	142,466	244,462	19,445	12,901

[1] Data does not add due to rounding.

Note: Includes an estimated 314 abnormal farms. Figures are estimates based on a sample and are subject to sampling errors.

[The following paper was requested from the Bureau of the Census by OTA :]

STATEMENT OF BUREAU OF THE CENSUS, U.S. DEPARTMENT OF COMMERCE, WASHINGTON, D.C.,

SUMMARY

This paper presents the views of the Bureau of the Census relative to recommendation 4 of the OTA Food Advisory Committee (FAC) Report, Food, Agriculture and Nutrition information Systems: Assessment and Recommendations, which proposes a study of the desirability and feasibility of integrating the staff and activities of the agriculture census into the Statistical Reporting Service (SRS).

This paper also addresses the Issues raised in the FAG report concerning the quality, timeliness, and cost of the agriculture census program. Finally the paper describes improvements introduced into the 1974 agricultural census program and proposals for additional improvements *in* later agriculture census programs.

The Bureau's views, presented in the more detailed sections of this paper, are summarized below:

1. ***Transfer of Agriculture Census Responsbility to the Statistical Reporting Service of the U.S. Department of Agriculture***

The Bureau's view is that consolidation and integration of the agriculture census, now conducted by the Bureau of the ***Census,*** into the Statistical Reporting Service of the U.S. Department of Agriculture would not result in the gains in quality, timeliness, and reduction in costs to the Government described in the FAC report. It should be noted that the FAC report does not document anticipated gains.

It is exceedingly important that an independent agency, such as the Bureau of the Census, continue collecting benchmark data and that these data be obtained from a complete census of agricultural enterprises. Thousands of individuals and organizations rely on the agricultural statistics published by the Census Bureau as an independent source of data in using agricultural data from other sources.

Apart from the distrust that will inevitably be aroused in the user community by a merger of the independent data collection function with the data analysis and policy making function-we feel that there will be a substantial rise in cost (unless offset by serious cutbacks in the amount of data collected or in the level of geographic detail published) coupled with a deterioration in quality and timeliness of the results if the merger is effected. We, therefore, strongly recommend that responsibility for conducting the census of agriculture remain with the Bureau of the Census.

2. ***Coverage and Coverage Improvement***

The contention in the FAC report that "incompleteness in coverage of the ***agri***culture census and technological advances by the Statistical Reporting Service have resulted in the SRS providing the more dependable national estimates" is an assertion not documented by fact. Nowhere in the report are the technological advances by SRS described. The report says nothing about the reliability or coverage of SRS data at the subnational level. In contrast to the Bureau of the **Census,** which has provided measures of undercoverage in its censuses since 1945. SRS does ***not*** publish information on the degree of undercoverage in its surveys. This definitely misleads the user about the quality of SRS data.

While the Bureau continues to be concerned with the socioeconomic characteristics of farmers and farm families. this concern is not as closely related to a census of agriculture as it was when the U.S. was an agrarian nation. To close this major data gap in "statistics pertaining to rural people or households" cited in the American Agribusiness Associates report, major household enumerative surveys conducted by the Bureau of the Census can serve as a basis for a strengthened program of Information about people and households in rural areas. For example, the Current Population Survey annually covers more than ***twice*** the estimated number of households in rural areas covered by the enumerative surveys of the Statistical Reporting Service.

3. Timelines of Census Results

The Food Advisory Committee (FAC) contention that a data series developed by a non-using agency is given only second or third priority in its work schedule is not true with regard to the Bureau of the Census. Collection and publication of general-purpose data is the Bureau's basic mission. The Bureau is not the user of the Weekly Retail Sales report, the Housing Starts report, the Manufacturers' Shipments, Inventories and Orders report or a host of other economic indicators; yet these series are released by the Bureau on an extremely tight time schedule. Moreover, the Bureau is constantly seeking to improve the timeliness of its census benchmark reports.

It is important to note that USDA's time schedule for its Proposed sample survey to be conducted in lieu of an agriculture census is inferior to that of any recent agriculture census conducted by the Bureau. The plan proposed by USDA requires 24-28 months from the reference period until the publication of results.[1] This proposal of USDA, coupled With the generally inferior utility of sample estimates as compared with census results for small areas is a step backward.

4. *Mailout[Mailback*

The problem of how to improve coverage in the agriculture census has concerned the Bureau for some time. It was to correct this deficiency rather than (as claimed in the FAC report) to reduce costs, that the Bureau changed in the 1969 census from an enumerative field canvass to a mailout/mailback canvass. Thus, the principal reasons for the change were to improve coverage of the large significant farms; to improve the overall quality of results; and to reduce respondent burden. 'This change in technique will have important short and long term benefits to the agriculture census program.

5. Transfer of *Mailing* **List to** *USDA*

The proposal of Agribusiness Associates also recommended that a directory of farms be established within the USDA through transfer of the agriculture census mailing list from the Bureau of the Census to USDA. The directory would be maintained by USDA and would be used primarily as a sample frame for the surveys discussed above. This is not a viable proposal for under the strict confidentiality proscriptions set forth in Title 13 of the U.S. Code, these records cannot be made available to the Department of Agriculture In view of the current climate, with regard to the need to maintain the confidentiality of information reported to the Census Bureau, it is unlikely that existing legal restrictions will be relaxed in order to release confidential information. These restrictions were reinforced by the Privacy Act which identified the Census Bureau as the sole agency to which identifiable records may be transferred for statistical purposes without consent of the individual.

6. *Improvements to the Census of Agriculture Program*

a. Timeliness *of* Publication.—Because of changes introduced into the processing of the agriculture census we are releasing the initial reports of the 1974 census on a substantially better schedule than that achieved in 1969. Our publication plans for the proposed 1978 Census of Agriculture (to be taken in 1979) call for a further acceleration so that the publication of preliminary county reports would start by October 1979 and be completed by March of 1980. These shifts in publication dates would provide results in a time period consistent with the dates cited as desirable in the FAC report.

b. Processing Capacity.—The Bureau of the Census has already considerably expanded its computer facilities for handling massive processing operations on a concurrent basis. Additional expansions have been approved and will be installed over the next few years.

A shift in the reference year for the next two censuses of agriculture has been proposed. By 1982 the agriculture and the economic censuses would have the same reference period. This would lead not only to the development of better lists and improved coverage but should *also lead to better* classification of agricultural activities. It will also permit compiling data on agricultural activities related to other economic enterprises.

c. **Data** Improvements.--In addition to the above the Bureau is proposing a program to link agriculture data and economic census data. *This* program will match and link suppliers and services for the agriculture sector with the actual agriculture production and in turn, the production with the processing and

[1] **See Hearings** Before **the Committee** on Post **Office and Civil** Service, U.S. Senate, **SJ Res.** 95, May 23, 1973.

marketing of agricultural commodities. These data are essential to a better understanding of how changing economic structures affect traditional agricultural production patterns. Linkages are proposed to both the other economic ***censuses*** and to the Bureau's annual Company Organization Survey. Such important linkages to economic census information could not be undertaken if another agency collected the agriculture census data, because of confidentiality provisions under which the Census Bureau operates.

d. ***Evaluation of Results.--The*** agriculture census evaluation program-which we have conducted for every agriculture census since 1945--will be expanded to develop a better understanding of the coverage of marginal and nonresident operators.

One should keep in mind that errors are inherent in all censuses and all surveys. Therefore, a combination of a census and a superimposed independent sample survey can provide estimates based on more complete coverage than a census itself. This paired approach has been used by the Bureau of the Census to evaluate its censuses of agriculture. This has permitted us to inform users of agriculture census data as to the quality and has provided us with information for improving future censuses.

A detailed presentation of the views of the Bureau of the Census is found on the pages following.

DETAILED PRESENTATION OF BUREAU OF THE CENSUS VIEWS

Introductory

The Bureau of the Census, as the Government's principal general-purpose statistical agency, welcomes the efforts to improve agricultural statistics. Our interest in agriculture activity dates back to 1840 when we undertook the first U.S. census of agriculture. During the intervening 135 years, the Census Bureau has conducted 19 nationwide enumerations of U.S. agriculture.

A1though our responsibility relates primarily to providing the periodic benchmark data derived from the censuses of agriculture, our interest and attention far exceeds that basic function. Over the years we have become conversant with both agriculture data users and 'agriculture data providers. We have also maintained and benefited from a close liaison with the professional statisticians in the U.S. Department of Agriculture (USDA). We have been gratified that the improved techniques in the fields of sampling, collection, processing, etc., developed at the Bureau have been adopted by other agencies.

We are acutely aware of how U.S. agriculture has changed during the last five decades, with the increasing application of technology and science to agriculture production. Although the number of farms has declined over the years, there has been an accompanying substantial increase in the size and complexity of agricultural enterprises.

The need for improved measures in the agriculture sector has never been greater. We have directed our efforts to this end and fully endorse all serious efforts to provide improved agriculture statistics whether they be interim measures of current activity or important periodic benchmarks of an agriculture census.

Alternatives to the existing data system, however, should be developed without sacrificing the important benefits deriving from the census of agriculture, which include major benchmarking of agricultural activities every 5 years. This census is the only source of agriculture data at the county level on a nationwide uniform basis.

Proposal to Transfer Agriculture Benchmark Statistics to the U.& Department of Agriculture (USDA)

The contention of the American Agribusiness Associates cited in the Food Advisory Committee (FAC) report that more timely and accurate benchmark data could be provided by the USDA Statistical Reporting Service at the same or lower cost than by the continuation of the 5-year agriculture censuses ***con***ducted by the Census Bureau is neither documented by facts nor supportable. The FAC report also contends that "other users" of agriculture census data believe that both the reliability and timeliness of such data could be improved at less cost if the responsibility for providing such data were transferred to the Statistical Reporting Service. Unfortunately the FAC report does not identify the users who hold these views nor does it describe the basis for their beliefs. It is safe to say that contrary views are widely held.[2]

[2] See footnote 1, page 374,

The American Agribusiness Associates report reflects a failure to understand' the decentralized Federal statistical system. Under the present Federal statistical syst.em the responsibility for periodic data collection has been maintained functionally separate from data analysis and policy formulation. The Bureau of the Census is responsible for providing general-purpose data concerning the American economy. Other agencies analyze the data for purposes of policy formulation. Transferring the agriculture census or benchmarking to USDA, which is also responsible for agriculture *programs* and policy, would merge these functions within a single organization.

To have the same *agency* collect by survey what would purport to be benchmark statistics and also collect and publish annual estimates could lead to conflicts of interest. A department responsible for crop estimates, other projections relating both to production, domestic use, and potential exports, and the administration of programs bearing directly on the final outcome of many of those estimates would be subject to great pressures to publish statistics that would reflect favorably on its handling of program responsibilities, or at least would be perceived to be so subject. Such actions could deteriorate further the public's confidence in Federal statistic.

It is exceedingly important that an independent agency, such as the Bureau of the Census, continue collecting benchmark data and that these data be obtained from a complete census of agricultural enterprises. The agriculture census information also is the basis for many Federal, state and local programs. Thousands of individuals and organizations rely on the agricultural statistics published by the Census Bureau as an independent yardstick in using agricultural data from other sources.

According to the proposed plan of American Agribusiness Associates, the anticipated improvement in timing and reduction in cost of the program, if transferred to the Agriculture Department, would come about by discontinuance of the agriculture census program currently conducted by the Bureau of the Census and substituting a variety of rotating sample surveys. This proposal in essence, would reduce the cost of the program by reducing the amount as well as the quality of data produced.

Leaving aside the legalities involved in discontinuing the census, the census of agriculture provides the only complete series of agricultural data available at the county level.

In order to provide county data, *now* collected on a systematic standardized basis throughout the U.S. only in the agriculture census program. It was proposed that a once-in-five years expansion of the sample be undertaken. It was felt that the expanded sample would be adequate to provide the required county data. The adequacy of the proposed sample derived data for the wide range of local area data users, the size of the sample that would be need@ and its level of reliability are not documented in the Agribusiness report.

The plan suggests that a moderate infusion (not quantified) of Federal funds into the state agriculture programs would provide additional county data. if needed. It is unlikely that the kind of data produced by the states would be suitable for aggregation to national totals. States are interested primarily in agricultural activities important to their economy and are much less likely to collect information of general interest.

This means that measures of the total market *activity would be difficult,* if not impossible, to develop. Even in instances where the measurement of a common set of activities would be acceptable to each participant state, information from organizations whose activities cross state lines would be difficult to come by let alone to assess once obtained.

The level of statistical expertise varies widely among states and this may impact seriously on the quality of the aggregated data. Another problem would be timing. Will all the state produced data be available in time to meet publication requirements? If not, the anticipated gains in timing would vanish. Finally. what about the cost of the program? The cost to support the statistical staffs and overheads of the 45 to 50 states participating in a data program is certain to be much higher than the coat of supporting a single staff collecting the same data by mail. This would result in a substantial increase over current costs rather than a decrease.

The proposal of Agribusiness Associates also recommends that a directory of farms be established within the USDA through transfer of the agriculture census mailing list from the Bureau *of* the Census to USDA. The directory would be maintained by USDA and would be used primarily as a sample frame for the surveys discussed above. This is not a viable proposal for under the strict con-

fidentiality proscriptions set forth in Title 13 of the U.S. Code, these records cannot be made available to the Department of Agriculture. In view of the current climate, with regard to the need to maintain the confidentiality of information reported to the Census Bureau, it is unlikely that existing legal restrictions will be relaxed in order to release confidential information.

Timeliness of Census Results

The FAC contention that a data series developed by a non-using agency is given only second or third priority in its work schedule is not true with regard to the Bureau of the Census. Collection and publication of general-purpose data is the Bureau's bade mission. The Bureau is not the ***user of the*** Weekly Retail Sales report, the Housing Starts report, the Manufacturers' Shipments, Inventories and Orders report or a host of other economic indicators; yet these series are released by the Bureau on an extremely tight time schedule. Moreover, the Bureau is constantly seeking to improve the timeliness of its census benchmark reports.

It is important to note that USDA's time schedule for its proposed sample survey to be conducted, in lieu of an agriculture census is inferior to that realised by any recent agriculture census conducted by the Bureau. The plan proposed by USDA requires 24-28 months from the reference period until the publication of results.[3] This proposal of USDA, coupled with the generally inferior utility of sample estimates as compared with census results for small areas, is a step backward.

The Committee's observation that recent agriculture censuses have not been released as promptly as those of earlier ***years*** does not give proper recognition to a number of factors that should be considered when comparing census release dates over time. One must not compare apples and oranges. For example, in the earlier censuses, the content of the preliminary reports was more restricted than that of the reports issued in the later census years. The 1939 preliminary **county reports consisted of roughly 3,000 pages, whereas** the 1969 county census reports consisted of about 24,500 pages. In addition, the 1989 census reports included basically final, rather than preliminary data.

Because of changes being introduced here at the Bureau, we are releasing the initial reports of the 1874 Census of Agriculture on a substantially better schedule than achieved in 1989. The release of the flint preliminary report from the 1974 census bettered, by several months, the 1969 schedule. More Significant, however, is that the reports should be released on a schedule fully comparable to that achieved in the earlier censuses which issued more abbreviated preliminary reports.

Our publication plans for the proposed 1978 Census of Agriculture call for a further acceleration so that the initial publication of county reports would start by October 1979 and be completed by March 1980. These publication dates would provide results in a time period consistent with dates cited as desirable in the FAC report.

Coverage and Coverage Improvement

The contention by FAC that "incompleteness in coverage by the agriculture census and technological advances by the Statistical Reporting Service have resulted in the SRS providing the more dependable national estimates" is an assertion not documented by facts. Nowhere in the report are the technological advances described. The report says nothing about the reliability of (SRS data at the subnational level. Furthermore the report does not describe the degree of undercoverage in the SRS surveys. In contrast to the Bureau of the Census, which has provided measures of undercoverage in its ***censuses since*** 1945, SRS does not publish information on the degree of undercoverage in its surveys, nor on the sampling errors of its estimates. This definitely misleads the user about the quality of SRS data.

If the universe to be covered by a census or survey can simply be defined as a list of "known" units, (whether the list resulted from field canvasses or from administrative records) the coverage of the census or survey can be made as complete as respondent cooperation makes possible. This would be the case, for example, if the universe of a census or sample survey of agriculture were defined to be those units listed in a farm directory. This is not presently the case in agriculture surveys nor censuses! Rather, the universe is defined in terms of all units which meet a combination of criteria based on acreage and value of

[3] **See footnote 1, page 374.**

sales. Coverage thus depends upon identifying all units potentially within the scope of the census or survey and obtaining correctly for each unit the information, needed" to determine whether or not the unit satisfies the definition of a farm. Since all censuses and surveys are subject to error on the part of enumerators and respondents, complete coverage of the intended universe cannot be attained with this kind of definition even with full respondent cooperation.

Despite the error inherent in all censuses and surveys, a combination of a census and a superimposed independent sample survey can provide estimates based on more complete coverage than the census itself even if the coverage of the sample survey is inferior to that of the census. The combination of a check survey with the census makes it possible to provide estimates of coverage with sampling errors small enough to detect undercoverage of just a few percentage points in the census. However, the evaluation must be based on matching and" comparison of data from individual farms in the check survey and the census. It cannot be carried out merely by comparing aggregate statistics from the two sources.

As indicated earlier, since the 1945 Census of Agriculture of the Bureau of the Census has used this technique to evaluate the completeness of coverage of its agriculture censuses with regard to the number of farms and land in farms and—since 1964-also the value of sales. These evaluations have been carried out so that Census Bureau can inform users of its data as to their quality, and to provide the Bureau with information for improving future censuses. In future censuses the agricultural census evaluation program will be expanded to develop a better understanding of the coverage of marginal and non-resident operators.

Coverage ***Experience in Prior Censuses of Agriculture***

Estimates from the evaluation study of the 1969 census indicate that there was. a substantial increase in the number of small marginal economically insignificant farms mimed compared to earlier censuses. These farms, although they account for more than one-third of the total number of farms, account for only about two percent of the total value of farm products sold. In fact, because of the generally poor quality of their records only a limited amount of data are published for the small farms. Moreover, such farms cannot be realistically classified by principal agricultural activity. Although the results of the 1974 census are not yet available, it is felt that with better coverage of the larger, economically significant farms the coverage of farm production has been improved.

Differences between alternative survey and/or census approaches are to be found primarily in the treatment of smaller and marginal farms. The allocation of resources which should optimally be devoted to the coverage of smaller farms. should be justified and determined on the basis of the data objectives of the survey or census. Such decisions would differ for data about agribusiness and for data about people and households in rural areas. While efforts are being made to improve coverage of the small farms it is felt that the Bureau's agriculture census resources would be more effectively utilized by directing them toward improved coverage of economically significant enterprises. Substantial improvement in the coverage of smaller and marginal farms can only be obtained through a household survey approach.

The problem of how to improve coverage in the agriculture census has concerned the Bureau for some time. It was to correct this deficiency, rather than to reduce costs, as claimed in the FAC report that the Bureau changed in the 1969 census from an enumerative field canvass to a mailout/mailback canvass. Thus, the principal reasons for the change were to improve coverage of the large significant farms; to improve the overall quality of results; and to reduce respondent burden. This change in technique will have important short and long term benefits to the agriculture census program,

Censuses of agriculture, up through the census of 1964 had been taken by a field canvass using personal visits by census enumerators. Past experience indicated that this methodology had a number of shortcomings, of which an increasingly significant one was caused by the increasing number of farms operated by persons who do not live on the farms. This made it difficult for enumerators to find nonresident farm operators during door-to-door enumeration and resulted in farms being omitted from the census.

Another major complication that was expected to become more troublesome was the large and growing number of agricultural establishments that are comprised of non-contiguous tracts of land. In many instances, separate tracts lie in two or more enumeration districts, counties or even states. This caused enumerator assignment problems, and created uncertainty as to the land and agricultural

operations that should have been included. The result was that some land areas were counted twice while others were omitted during the field operations and in the data tabulations.

In addition, experience showed that enumerators tended to miss part of the farms in their assigned districts, usually by failure to identify all the separately operated tracts or by failure to cover all back roads and trails.

Other problems were the increasing scarcity of qualified enumerators, the disappearance of clearly recognizable differences between suburban and rural farm areas, and the increasing mobility of farm people, making it more difficult for the enumerator to find the farmer at home. In addition, the increased diversity and complexity of enterprises engaged in agriculture activities coupled with a rise *in* "nonrecognizable" agricultural businesses, such as agricultural services, posed potentially serious problems in coverage of large farms. In 1966, when systematic planning for the 1969 Census of Agriculture started, it was clear that a basic change in data collection procedures-from an enumerative to a mail approach-deserved serious consideration.

Use of *Mailout/Mailback Procedures in Other* Censuses

For the **censuses of manufactures and mineral industries, retail and wholesale trade, and service industries, the change to a mail census had been made successfully over a decade earlier,** in 1948 for the Census of Manufactures and in 1954 for the Census of Business. For these censuses, a mailing list of establishments having employees was prepared from IRS records of firms subject to payments of Federal Insurance Contributions Act (FICA) taxes, and census reports were then collected by mail. In the Census of Business, in addition, data for "nonemployers" or zero-employee establishments were obtained directly from data extracted from tax returns.

This change in economic census procedures, in addition to reducing the costs of data collection and the burden on small respondents, resulted in coverage as good as that resulting from an enumerator canvass. Coverage was probably improved for certain types of "nonrecognizable" businesses, i.e., those operated from homes or on an itinerant basis, and for businesses not in operation at the time of enumeration.

'In subsequent economic censuses, costs and reporting burden were further reduced by using administrative records to furnish data for the smaller employers.

In a roughly parallel fashion, self-enumeration had been used with satisfactory results for a substantial part of the country in the 1960 *Census of* Population and Housing, and the Census Bureau was already committed, based on extensive research and testing of procedures, to use a mailout/mailback procedure for more than half of the population in the 1970 census. Research in the 1950 and 1960 censuses had demonstrated that, in addition to reducing collection costs, self-enumeration could be expected to improve the quality of census data for small areas by minimizing the influence of enumerators on the results. In the 1964 Agriculture Census, advance distribution of questionnaires, to be filled out and held for the Census enumerator, had demonstrated that at least a substantial proportion of farm operators were capable of completing the questionnaires themselves.

Information *About Persons and Households in Rural Areas*

While we shall continue to be concerned with the socioeconomic characteristics of farmers and farm families, this concern is not as closely related to a census of agriculture as it was when the U.S. was an agrarian nation. The American Agribusiness Associates report cites the lack of information about rural people or households as "the biggest single gap in the existing statistical system." To close this gap, the major household enumerative surveys conducted by the Bureau of the Census best serve as a basis for a strengthened program of information about people and households in rural areas.

For example, the Current Population Survey annually covers more than twice the estimated number of households in rural areas than is covered by the enumerative surveys of the Statistical Reporting Service. The Census Bureau conducts other large scale national enumerative sample surveys which also provide information about people and housing in rural areas, and could be utilized to provide additional information not *now* collected if it were of interest to do so. An example is the 250,000 household Survey of Income and Education to be conducted in the spring of 1976. We believe it would be in the public interest, and efficient to the Federal Government, for the Department of Agriculture to utilize Bureau of the Census capabilities for conducting household surveys to obtain information about rural households needed by the Department.

Mailing Ltst Development

Although mail enumeration should be less expensive (and more appropriate in view of the changed nature of the agricultural enterprises) than the personal interview technique, the mail method requires extensive mailing list development and maintenance work in order to achieve full coverage without duplication.

We expect to improve coverage and accuracy by expanding our efforts to obtain better mailing lists; by construct% a more precise mailing register through using administrative sources more effectively; by improving unduplication techniques; by address linkage with the other economic censuses; and @using a short precanvass form to identify the type of operation of each farm, which in turn will reduce the respondent burden through the subsequent use of specialized data collection forms which pertain directly to the respondent's type of agriculture production.

Other Proposals to Improve Coverage and Data

A shift in the reference year for the census of agriculture has been proposed. This should lead to better classification and coverage of agriculture operations of agribusiness firms and the establishment of a base for compiling data on the integration of agricultural operations with other economic enterprises. Additional benefits would include improvements to the accuracy of the Commerce Department's GNP estimates. Much of the data obtained in the census of agriculture is economic in nature and these data are used in compiling the national accounts.

If the data for the agriculture census are collected for the same reference year as that of the economic censuses, there will be a universe list, which will permit the transfer from one census to another of enterprises changing their principal activity subsequent to the preparation of the mailing list.

The result will be a complete and unduplicated, coordinated, simultaneous and consistent treatment of all major economic sectors of the United States economy and will permit the unified planning and execution of the various census programs.

To accomplish the change over in an orderly manner, legislation has been prepared proposing that the next two censuses of agriculture be taken on a 4-year cycle. The 1978 agriculture census year would be 1 year later than the economic censuses scheduled for 1977. The economic and agriculture censuses would be for the same reference year in 1982 and thereafter. Thus, certain priority conflicts with the decennial census that occurred during the processing of the 1969 Agricultural Census will be avoided.

In the event the proposal is not approved, priority conflicts with the 1980 demographic census will still be minimized for the Bureau has considerably expanded its computer facilities for handling massive processing operations on a concurrent basis.

Proposed Data Expansion

The increase of the corporate type farm in today's agriculture sector has become a significant influence upon our agricultural activities.

For the 1974 census the Bureau requested increased funds to provide statistics that are more descriptive of the activities of these corporations. These would provide a measure of the agricultural activity in which such firms are engaged, without consideration of other economic activities of the corporations. The tabulations and publications would be developed from limited data collected in the 1974 census precanvass matched to the general census data. An expansion of this program is planned for the proposed 1978 census which would provide composite statistics about these corporation% including other economic activities in which they are engaged.

In addition to the above, the Bureau is proposing a program to link agriculture and economic census data. This program will match and link suppliers and serv-

ices for the agricultural sector with the actual agriculture production, and, in turn, the production with the processing and marketing of agricultural commodities. These data are essential to a better understanding of how changing economic structures affect traditional agricultural production patterns. Linkages are proposed to both the other economic censuses and to the Bureau's annual Company Organization Survey. Such important linkages to economic census information could not be undertaken if another agency collected the agriculture census data, because of confidentiality provisions under which the Census Bureau operates.

The Census Bureau's Program of Fertilizer Statistics

Although not directly related to the agriculture census program discussed above, the report of the Food Advisory Committee criticized the timeliness of fertilizer data and recommended that studies be conducted and hearings held "to determine ways, means, and costs of improving fertilizer information systems."

Monthly estimates of United States production and stocks of nitric acid, sulfuric acid, and ammonia and phosphatic fertilizer materials are published by the Bureau of the Census about 30 working days following the close of the reference month, Benchmark data for these products were published in the 1972 Census of Manufactures. Product class data are published annually in the Annual Survey of Manufactures.

We believe the quality of the monthly fertilizer production data to be good. Comparisons of the value of shipments estimates developed from the current survey with the 1972 census results show a difference ranging from one to three percent.

The monthly survey is continually monitored for coverage. The annual data published on number of production establishments by state, is reviewed by industry which notifies us of any potential short-fall in coverage, Industry also provides the Bureau with lists of all known producers. The chemical industry also participates in an advisory capacity in the development of data categories.

The Bureau of the Census participated in the Fertilizer Task Force meeting in August 1975, which was organized by the Economic Policy Board. In the course of this meeting, possible improvements of Census fertilizer data were discussed, including expanding manufacturing data, upgrading import and export product content to include products collected in the monthly survey, and the possibility of a retail stock survey to be conducted in the spring and the fall of each year.

While the Bureau of the Census is only one of many organizations that provide fertilizer data, it is actively seeking ways to improve its program.

Conclusion

The evidence is that the consolidation and integration of the quinquennial censuses of agriculture, now conducted by the Bureau of the Census, into the Statistical Reporting Service of the U.S. Department of Agriculture would ***not*** result in the gains in quality, timeliness, and reduction in costs to Government as stated in the report. To the contrary—apart from the distrust that will inevitably be aroused in the user community by a merger of the independent data collection function with the data analysis and policy making function—there will be a substantial rise in cost (unless offset by serious cutbacks in the amount of data collected or in the level of geographic detail published) coupled with a deterioration in quality and timeliness of the results. We, therefore, strongly recommend that responsibility for conducting the census of agriculture remain with the Bureau of the Census.

We also urge that the Department of Agriculture utilize ongoing Census Bureau surveys, and the Bureau's capabilities for conducting large-scale household surveys, to obtain needed information about people and households in rural areas.

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DEC 9 1975

Mr. J. R. Cordaro
Food Program Manager
Office of Technology Assessment
Congress of the United States
Washington, D. C. 20510

Dear Mr. Cordaro:

This is in reply to your letter of November 19 regarding the census of agriculture program.

1. Total expected cost of the 1974 Census of Agriculture

It is necessary to establish the background to the 1974 census in order to relate costs. Although the 1974 census followed essentially the same procedures as used for the 1969 census, it was much more limited in scope. The usual pretesting of new procedures and methodologies that precede a census were not conducted. The 1974 census appropriation was for a period 15 months shorter than normal, the associated censuses of irrigation and drainage were not included since they were conducted in 1969 and are conducted only every 10 years, and follow-on surveys on farm finances, horticulture, etc., were omitted. This abridgement occurred because of the delay in receipt of the census appropriation and the limitations placed on total expenditures. Taking the foregoing into consideration, the cost of the 1974 census is expected to approximate $23 million (exclusive of the October 1975 Pay Act and the December 1975 postage increase). There have been no significant differences between the appropriations for FY 1974 and 1975 and actual obligations.

2. Costs for the proposed 1978 and 1982 Censuses of Agriculture

The cost of the proposed 1978 census is expected to be higher than the 1974, since the 1974 census was significantly abridged in timing and scope. Since neither authority nor funding has been approved for staff to begin planning the 1978 census, detailed plans and cost estimates are not available at this time. Preliminary estimates indicate that the 1978 census, with the censuses of irrigation and drainage and the follow-on surveys as included in the 1969 census, should be comparable to the updated costs of the 1969 census. The 1969 census costs updated to current postage, salary, etc., would approximate $35 million.

This would include continued activity directed toward expanding the analytical information provided in the census by relating statistics on agricultural production to other economic activities. The two primary objectives in this expansion are: 1) to provide a measure of agribusiness through tracing the vertical flow from those supplying materials and supplies to the agricultural sector through the processing and marketing of the agriculture connodities; and 2) to expand a report being developed for the first time for the 1974 census which will provide statistics on corporate activity in agricultural production. In addition, the Bureau will be evaluating new methods for collecting and processing the census, exploring improved uses of administrative records available from other agencies in order to reduce the reporting burden on the public and improve timeliness of the data, and expanding the evaluation and coverage programs for the census for use in planning improved systems for future censuses. It is too early to develop any cost estimates for the 1982 Census of Agriculture.

3. Status of collecting the 1974 data and issuing reports

The Bureau's schedule calls for releasing preliminary county data reports for all 3,100 counties between December 1975 and April 1976. We are pleased to announce that the first reports have been sent to the printer and should be available within the next several weeks. The complete State reports are scheduled to be released beginning in April 1976.

If I can be of further assistance, please do not hesitate to call.

Sincerely,

VINCENT P. BARABBA
Director
Bureau of the Census

[The following paper was requested from the Statistical Reporting Service. U.S. Department of Agriculture by OTA:]

The Statistical Reporting Service appreciates this opportunity to comment for the record of the Technology Assessment Board. National and worldwide economic and agricultural developments since 1972 have probably generated more attention to and interest in the estimates and forecasts of the Statistical Reporting Service than at any time inthe102-vear history of agricultural estimates by the U.S. Department of Agriculture. The Statistical Reporting Service is the primary fact -collecting and fact-reporting organization of the U.S. Department of Agriculture and is responsible for National and State crop and livestock estimates and related statistical data and the coordination and improvement of the U..S. Department of Agriculture's statistical program.

One of the principal purposesof SRS is to present a picture of the current and near-future supplies of agricultural products. For crops, the annual cycle of reports begins with farmers' intentions to plant, followed by forecasts of planted acreages. acreages intended for harvest, probable yields, and forecasted production. Estimates of acreages harvested, actual yields, and production are made at the end of the season. Subsequently, reports on utilization, disposition, and value are issued.

Livestock inventory numbers are published annually or semiannually. Seasonal details on hog production, cattle on feed, and production of eggs, milk, and meat are issued during the year in monthly and quarterly reports. Reports on breed-

ing intentions, farrowing, hatching, chick placements, and calf and lamb crops provide indications of prospective market supplies. Estimates of manufactured dairy products and cold storage holdings of agricultural commodities are also published on a regular basis.

Numerous associated statistics series are also reported: fertilizer use, number and size of farms, farm labor and wages, prices received and paid by farmers, grain stocks, honey, mink, mushrooms, naval stores, and weekly weather 'and crop bulletins.

In addition, an activity that has received an unusual amount of attention during the past three seasons is the Weekly Weather and Crop Bulletin, which includes estimates of relative progress of crop planting, development and harvest. These reports have provided weekly monitoring of unusual situations such as the planting progress during the extremely wet late planting season of 1973 and crop development during the short-term drought conditions of 1974 and 1975.

An important condition for virtually the entire statistical output of the Agency is that all estimates are based on current sample surveys and are not projections or estimates based simply on an evaluation of history, trends, or non-surveyed current developments. A unique feature of the Statistical Reporting Service among the primary Federal statistical agencies is that virtually its entire output of crop, livestock, and agricultural price statistics is released on a firm time schedule. Time and date of each release is published in "Crop Reporting Board Reports—Issuance Dates and Contents" which is distributed each December preceding the calendar year to which it refers. Moreover, its current estimates and forecasts during the growing season are typically released within 10 to 15 days after the collection of survey data.

Most of the major estimates and forecasts of the Statistical Reporting Service are subject at completion of the marketing year to comprehensive data on sales, marketing, movement and commodity usage which make it possible to rather precisely measure the estimating and forecasting performance of the Agency.

The world food and economic situation in 1973, with substantially increased demands for U.S. grain, contributed to abnormal economic stresses on the U.S. livestock industry, primarily related to increased feed prices. As a result, there was substantial speculation among the public and the livestock industry relating to reductions in sizes and numbers of cattle on feed. The higher feed costs resulted in shifting practices for the feeding of grains and concentrates so that long-standing relationships of cattle and hog inventories with disappearance and slaughter data would not hold. As a result, the inventory estimates of the Statistical Reporting Service on hogs, cattle on feed, and cattle were subject to unusually great scrutiny and question due to the general speculation that economic conditions should be forcing reductions of inventories. Speculation continued as the relatively large estimated inventories were not subsequently followed by usual patterns of livestock slaughter and disappearance. The record on slaughter and marketing now confirms the probability sample based estimates of the Statistical Reporting Service and would tend to confirm the estimates of heavier weights for cattle on feed, increasing cattle inventories, and greater reliance on roughage for gains, with the gains extended over a longer period of time. This series of events and conditions provided an unusual test of the estimating system of this Agency. Without the sampling surveys and techniques employed by the Statistical Reporting Service to estimate cattle on feed and cattle and hog inventories, the information available from utilizing common analytical procedures would have misled the public substantially regarding livestock inventories.

The Crops Estimates Program of the Statistical Reporting Service also has been subject to greater and more critical public interest and scrutiny than at any time in the past. The program starts each year with a December forecast of the following year's winter wheat crop acreage and production, then moves through farmers' intentions to plant major crop acreages as of January 1 and March 1.

Estimates of acreage planted to major crops are made as of July 1, Forecasts of yield per acre and production for major field crops are prepared throughout the growing season, starting with the December forecast of winter wheat production. The forecasting schedule is heaviest June through October but continues for the later field crops and ends with December forecasts for cotton and burley tobacco. Forecasts for cotton, corn, soybeans and winter and spring wheat utilize objective yield surveys. These are probability samples of very small plots randomly chosen and systematically placed in fields. The plots are visited throughout the growing season with counts of plants and fruits and other observations made for characteristics which possess usable relationships to mature yield.

The Statistical Reporting Service also prepares estimates quarterly of grain stocks stored on farm and off-farm. Stocks on farms are measured by mailed sample surveys and stocks off farms are the result of mailed surveys combined with enumeration of important storage facilities. The resulting sample coverage for off-farm stocks ranges from 80 to 90 percent of the total. Stocks estimates have been prepared quarterly as of July 1, October 1, January 1, and April 1 for wheat, barley, oats, rye, flaxseed, corn, and soybeans, except that a September estimate is prepared for soybeans which then are not included in the estimates for October 1.

A description of recent achievements of the Statistical Reporting Service must be prefaced by a review of major developments and achievements over the past 15 years. During this period, the methods, facilities and staffing of the Statistical Reporting Service have undergone revolutionary change and modernization as the Agency was successful in obtaining resources and direction to proceed with modern sampling techniques. In the early 1900's, the Agency completed construction of an area sampling frame, stratified by land use and has relied substantially on sample surveys from this frame each June and December to provide the principal inputs into estimates of major crop acreages and livestock inventories. The area sample frame provides an exhaustive record of all the land in the 48 States, classified by agricultural land use, and permits the selection of probability samples which totally assure that every acre of farm land and every farm has a chance of selection in each sample. Its greatest value lies in the fact that it is totally complete and that on the other hand, no elements in the population may be sampled more than once. This represents a substantial breakthrough in the sample survey process which is not possible by the exclusive use of lists, since it is impossible to evaluate lists to assure that no farm or operation is included more than once. Additionally, it is well-known that no totally complete list exists. Area samples have been most effective for producing precise estimates for the major crop acreages. The system also produces estimates of livestock numbers, but with sampling errors larger than for crop acreages. In 1970, the Statistical Reporting Service was authorized to develop survey procedures which would increase precision in its livestock inventory estimates. This project implemented what is known as multiple frame sampling. The procedure involves enumeration of large samples drawn from lists of livestock operations, accompanied by enumerated samples from the area frame. Since no list is totally complete, the area sample has been used to estimate for the incompleteness of the list population sampled, thus assuring complete coverage for the survey and an efficient information collection procedure. **The** coverage for multiple frame livestock surveys done in June and December has gradually been increased over the U.S. and in December 1975, the sample multiple frame estimates will cover about 95 percent of the total U.S. inventories of cattle and hogs. Livestock inventory estimates for the residual States with inventories too small to warrant multiple frame surveys and representing about 5 percent of total inventories. will utilize the December area sample survey. The mailed surveys long employed for livestock estimates have been discontinued. This has permitted the Agency to discontinue for livestock the old procedure of mailing inquires to large numbers of livestock operators and utilizing response from those who voluntarily respond in time to meet survey deadlines. The response to the enumerative surveys replacing these mailed surveys is much higher than for a mailed inquiry, and approaches 100 percent.

A 1973 development of the Statistical Reporting Service was the establishment of a system for rapid review, and August 1 revision if necessary, of the July 1 estimates of acreages planted to major crops. The procedure is based on a July update survey, a following subsample of the June Enumerative area sample survey, This permits a letter indication of the outcome of plantings which were reported for the June survey but may have still been intentions or not completed at the time of the June survey. The update survey was especially important in 1973 for providing badly needed update information following the very wet plant. ing season.

A significant development for the Statistical Reporting Service occurred in 1973, following enactment of the Agriculture and Consumer Protection Act of 1973. The Act directed the Secretary to report weekly export sales outstanding of major agricultural commodities and this responsibility was assigned to the Statistical Reporting Service. The task was substantially one of logistics, requiring prompt reporting by exporters, rapid review of reported data, and a high performance system for data processing, and rapid development and release of weekly results. A highly automated review and processing system employing an

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interactive input-output system to a large computer was developed by the Agency and employed operationally starting in October 1973. The Agency operated and further improved this reporting system until it was recognized as a function of the Foreign Agricultural Service and transferred to that Agency in December 1974.

Since 1970, an important continuing process of the Statistical Reporting Service has been formal program evaluation in which the statistical output of the Agency is examined for its relevance to current agricultural and economic needs and its effectiveness in terms of quality of output. The Agency first examined its program of crop estimates and as a result discontinued some crop estimates and forecasts in some minor States and the frequency of forecasting for crops in States of limited National importance. Subsequently, the Agency has reviewed the livestock estimates program and has made modifications similar to those for crops, that is, the discontinuance of least needed programs of estimates and elimination of estimates for some items in some States where the data possesses only minute importance in the National picture. Since then, the Agency has also modified its program for fruit and vegetable estimates and is in the process of examining its program of prices received and prices paid by farmers.

The final part of these comments will relate to discussions of some of the Agency's current needs.

One of the needs of the Statistical Reporting Service relates to greater protection of confidentiality for the data voluntarily supplied by the respondents to its many mailed and enumerative surveys. The Agency has never in its history of data collection committed a breach of confidence, and has been able to effectively guard these records with provisions of the regulations of the Department of Agriculture. Nevertheless, new developments create the need for explicit statutory protection of data from virtually all access except the use intended by its collection. New legislation such as the Freedom of Information and Privacy Acts and other laws which may be enacted in the future tend to focus public attention on confidentiality. The promise of complete protection, including protection from subpoena by the courts not now provided by the Privacy Act, may be necessary to achieve a high rate of voluntary response to surveys. In addition such protection, which is already present in the law. Title 13, under which the Bureau of the Census operates, would permit the Statistical Reporting Service the potential of greater efficiency of operation by access to administrative records of other Federal agencies. For example, the Statistical Reporting Service is barred from even limited access to IRS records which would greatly enhance its efficiency of sampling-yet the Census Bureau is **granted such access for precisely the same statistical purposes. The Statistical Reporting Service is currently proceeding within the Department of Agriculture to draft proposed legislation to seek** full statutory protection of survey data, and is hopeful that it will be quickly introduced and enacted by Congress.

The Statistical Reporting Service, in its role as the primary Federal statistical agency in the Department of Agriculture, provides reimbursable services to other agencies in the Department of Agriculture for survey design and operation. These activities are limited to what the Agency may undertake within its manpower resources, There is general feeling that some of the statistical survey activities by other Department of Agriculture agencies would be more effective if the Statistical Reporting Service could perform the design and data collection for them. The Agency's current limitation on the amount of these survey activities which it may accept is dictated primarily by manpower ceilings. To be more effective in providing agricultural survey services to other government agencies, the Agency would require permanent provisions for adding and developing professional staff.

Finally, the rapid schedule of release for the agricultural statistics of the Statistical Reporting Service is not matched by a program of similar scope anywhere else in the Government, but there nevertheless is tremendous pressure upon the Agency to shorten the time periods from data collection to release of estimates. It must be recognized that shortening the time periods for data collection and several subsequent survey and estimating procedures would be too costly economically or would promote deterioration of a quality output. An area to which the Agency attributes substantial potential for reducing time to release is in rapid data transmission and an optimum system and facility for data processing. Although the Agency has progressed substantially in equipping for and implementing these activities, it is in the process of seeking funds to proceed with a nationwide adaptation to a common data processing system and network.

This completes the statement for the Statistical Reporting Service and we again thank you for the opportunity to be included in the record of these hearings.

STATE OF NORTH CAROLINA,
DEPARTMENT OF AGRICULTURE,
Raleigh, N.C., December 5,1975.

Mr. EMILIO Q. DADDARIO,
Director, Office of Technology Assessment,
Congress of the United States, Washington, D.C.

DEAR MR. DADDARIO: I wish to report to you on the resolution passed by the National Association of State Departments of Agriculture No. MT-15 on "Agricultural Data Systems" a copy of which, I understand, has been submitted to your committee.

This resolution, which calls for the integration of agricultural statistics into a single system, is of great importance to farmers because of the burden that is being placed upon them to give reports to both the Department of Agriculture's Statistical Reporting Service and to the Bureau of Census. Evidence of this showed up in our State these past months as a reaction against the U.S. Census of Agriculture.

In addition and possibly of even greater importance is the fact that the U.S. Census of Agriculture is now obsolete in view of the new methods of getting farms and agricultural statistics through a sampling process which is employed by the Statistical Reporting Service.

The size, specialization and ownership of farms has changed to the point where it is no longer feasible to endeavor to make a canvass of all the farms in the United States to get the information. Therefore, a new system such as that suggested by the American Agri-Business Association needs to be put into effect.

There are two other advantages that I would like to stress. First, the information will become available much more promptly when it is needed than has been true with the Census for a long time. Second, when the data is collected in cooperation with the State Departments of Agriculture, as is done by the Statistical Reporting Service, it is most advantageous and efficient from the standpoint of the time, work, and expense that is incurred.

I urge your committee to give favorable consideration and support to this resolution.

Cordially,

JAMES A. GRAHAM, *Commissioner*.

AGRICULTURAL DATA SYSTEM

The complexities and rapid changes of modern agriculture have a great impact on farmers, the agri-business industry, and consumers. Effective planning and management of all phases of agriculture require statistical information with great detail, timeliness and accuracy. State Departments of Agriculture in cooperation with the Statistical Reporting Service have demonstrated thatjoint use of resources and personnel can minimize duplication and maximize efficiency of State and Federal agricultural statistics programs. Some overlap in the agricultural data programs of the Statistical Reporting Service and the Bureau of Census is resulting in inefficiencies and duplication of statistical services that **adversely affect the quality of the total agricultural data system. A detailed report entitled "New Agricultural Data System Needed" has been developed by American Agri-business Association. The report reviews the total agricultural statistics program including the agricultural census and makes specific recommendations for improving agricultural data at the local, state and national levels.**

RESOLVED, that the National Association of State Departments of Agriculture in convention at Charleston, West Virginia, October 9, 1975, endorses and pledges to work with the United States Department of Agriculture, Congress and the Executive Branch of the United States Government to implement the recommendations of the American Agri-business Associates as a means of effectively improving agricultural data through the implementation of a combined Federal statistical system built upon the existing Federal-State cooperative programs,

THE STATE OF FLORIDA,
DEPARTMENT OF AGRICULTURE,
Tallahassee, Fla., January 2, 1976.

OFFICE OF TECHNOLOGY ASSESSMENT,
Congress of the United States,
Washington, D.C. 90510,
(Attention Mr. J. B. Cordaro, Food Program Manager).

GENTLEMEN: I am writing to you on behalf of a resolution passed by the National Association of State Departments of Agriculture (NASDA) at Its annual convention in Charleston, West Virginia last fall relative to the agricultural census system.

I have enclosed a copy of this resolution entitled Agricultural Data System (MT-15). You will note in the resolution that NASDA is very much interested in developing an effective system of securing accurate agricultural statistical information based on existing Federal-State cooperative programing.

For many years complaints have been received from our farmers on the volume of work that had to be done regarding agricultural census and the fact that such census programs took so much time, that some of the statistics were useless, and that it took so long to get the facts and figures the census was supposed to acquire.

The NASDA office and its many allied state members have had a very successful relationship with the Statistical Reporting Service. Our past programs with that office have indicated that we were able to get out more useful information faster and much more accurately. The probability sampling approach has been perfected and is far superior as it relates to accuracy and timeliness than any other system of census taking used in the past.

We feel that the advantages of working with State Departments of Agriculture through our Washington office will enable the United States Government to get the census of all agricultural activities in greater detail, in speedier time, and on a more truthful level.

We endorse the concept proposed by the NASDA resolution and offer our complete support in pursuing and reaching the goals of the most effective agricultural data reporting system possible.

With warm personal regards, I am,

Sincerely.

DOYLE CONNER Commissioner.

AGRICULTURAL DATA SYSTEM

The complexities and rapid changes of modern agriculture have a great impact on farmers, the agri-business industry, and consumers. Effective planning and management of all phases of agriculture require statistical information with great detail, timeliness and accuracy. State Departments of Agriculture in cooperation with the Statistical Reporting Service have demonstrated that joint use of resources and personnel can minimize duplication and maximize efficiency of State and Federal agricultural statistics programs. Some overlap in the agricultural data programs of the Statistical Reporting Service and the Bureau of Census is resulting in inefficiencies and duplication of statistical services that adversely affect the quality of the total agricultural data system. A detailed report entitled "New Agricultural Data System Needed" has been developed by American Agri-business Association. The report reviews the total agricultural statistics program including the agricultural census and makes specific recommendations for improving agricultural data at the local, state and national levels.

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FEBRUARY 18, 1876.

Mr. DOYLE CONNER,
Commissioner, Department of Agriculture, The State of Florida,
Tallahassee, Fla.

DEAR COMMISSIONER CONNER: I appreciate very much your sending me a copy of the resolution passed by the National Association of State Departments of Agriculture at its annual convention in Charleston, West Virginia.

I know that you would be interested in some of the work we are doing on our food information systems project. For this reason, I send you a copy of two papers that we have had prepared for this assessment to help us in judging the options that we will be presenting to the Congress on the issue related to whether the Bureau of Census' agriculture activities should be incorporated into the Department of Agriculture. The papers were prepared by Dr. Harry Trelogan and the Bureau of Census.

Again, my thanks and appreciation.

Sincerely,

J. B. CORDARO,
Food Program Manager.

[The following paper was requested from Mr. Frazier by OTA:]

STATEMENT OF FRANK FRAZIER PRESIDENT, AMERICAN AGRIBUSINESS ASSOCIATES, INC., McLEAN, VA.

INFORMATION SYSTEMS : FOOD, AGRICULTUBE, AND NUTRITION

The Office of Technology Assessment has rendered an invaluable service in pointing the way toward improved information systems for food, agriculture, and nutrition, by developing the twelve recommendations in the June 1975 report to their Food Advisory Committee.

This view is strengthened by comments on the report in papers presented by Dr. Don Paarlberg, Director of Economics for the U.S. Department of Agriculture; Dr. Harry C. Trelogan, until recently the Administrator of USDA's Statistical Reporting Service; and by the Bureau of Census of the Department of Commerce.

However, a review of the papers presented by Dr. Trelogan, and by the Bureau of Census, reveals a sharp difference of opinion as to the type of administrative structure needed for improving current information systems. Both agree new statistical tools are now being used that upgrade the accuracy of agricultural data. The Bureau of Census uses some in current sampling techniques to replace the enumerative field canvas used prior to 1$69.' And the Statistical Reporting Service uses recently developed multiple frame sampling techniques to reduce the standard error for @rep and livestock estimates from two to one percent.'

Congress has recognized the need to expand the utilization and implementation of these new statistical 'tools, and included $1,225,000 in USDA's 1975 appropriation to be used in compiling a list of names essential for multi-frame probability samplings

Significantly, the effect of the implementation of improved probability sampling methods, is crop and livestock statistics that surpass the quality of census data.' No longer, therefore, is census data needed to true up the accuracy of USDA's crop and livestock estimates. This gives rise to the charge that a continuation of the Census of Agriculture on the present pattern is a waste of time, effort, and money:

Since new statistical tools have already made data systems of former years archaic, information systems should now be updated to today's data needs, utilizing the economy and efficiency resulting from the improved statistical techniques which have proven effective.

Such a system could result from combining into a single administrative unit, a program of sample surveys that would integrate the present data being collected by SRS and the Bureau of Census.' This approach should more ade-

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1 Census, p. 12.
2 Trelogan, p. 11.
3 Trelogan, p. 11.
4 Paarlberg, p. 4.
5 Trelogan, p. 7.
6 Trelogan, p. 1.

quately meet the needs of public and private decision makers, and also save $1,600,000 annually in federal funds.[7] Logically, the new system should be located in the Statistical Reporting Service, to which Congress has appropriated over 75 percent of current budget for agricultural data.[8] This agency has been out in front in developing and using improved statistical techniques. It competes for resources only with other agricultural services, rather than with all other statistical programs of the entire federal government.

Even so, the Bureau of Census anticipates that the integration of agricultural data systems, as proposed, would lead to a number of difficulties.

The Bureau claims to be an "independent agency," and for this reason should continue collecting "benchmark data."[9] The validity of such a claim is questionable. In USDA the collection of data in SRS is separated from the analysis of data by ERS. And why have "benchmark data" from Census, if they are using USDA surveys to help assure its accuracy?[10]

The Bureau claims failure to accept their views on the organization structure for data collection will lead to user "distrust," a substantial rise in data cost, and a deterioration of data quality and timeliness.[11] While a full scale feasibility study has not been made to either document or refute these charges, certain realities should not be overlooked. No agency in government has achieved a better reputation for safeguarding the confidentiality of data than SRS. Their officials go through "lockup" procedures several times a year. In the absence of the proof of any wrong doing, for any agency that releases agricultural data only once in the years to imply SRS officials are not to be trusted is both invalid and irresponsible.

The Bureau's claim that an integrated data system would result in a substantial rise in data cost not only is not documented, but it seems to completely discount the extensive experience of SRS with budgets involving multiple frame sampling . . . the technique now used for hog estimates in 23 states covering 96 percent of the population, and for cattle estimates in 38 states covering 96 percent of the population.[12] SRS claims the integrated system will result in a substantial saving , . .$36 million in contrast to $37.6 million annually for USDA crop and livestock estimates and the Census of Agriculture.[13]

The Bureau claims timeliness would be adversely affected by an integrated data collection system." Such a claim can hardly be accepted at face value when SRS announces a year in advance the date and the hour reports are to be released giving data collected, only a few days previously, and then meets the deadline. On the other hand, the Bureau of Census released reports on the 1969 agricultural census two to three years after the data was gathered. True, after the 1873 hearings on S.J. Res, 95, before the Senate Post Office and Civil Service Committee, the Bureau of Census promised to mend its ways.

The Bureau claims the FAC Report indicating SRS provides more dependable national statistics are not documented.[15] However, Dr. Trelogan cites the research of Professor H. O. Hartley, Texas A & M University, as the basis for improved statistical accuracy through the application of two sampling frames.[16] Dr. Trelogan indicated SRS, by increasing to a 25 percent sample, could obtain county data comparable in accuracy to that of the agricultural census.[17]

The Bureau claims Title 13 of the U.S. Code prohibits sharing the agricultural census mailing list with SRS.[18] If it is proper to protect the confidentiality of information in this way, then the law should be broadened to restrict access of one federal agency to the classified information of another. However, in many instances it may well be in the public interest for agencies to share such information and, therefore, perhaps Congress should modify the unique privilege restricted to the Bureau of Census.

The Bureau makes reference to a considerable expansion of computer facilities for handling massive processing operations on a concurrent basis.[19] Since many agencies now share computer facilities, there is no reason to believe adequate computer services could not be made available or transferred to SRS.

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[7] Trelogan, p. 28.
[8] Trelogan, p. 28.
[9] Census, p. 1.
[10] Paarlberg, p. 4.
[11] Census, p. 2.
[12] Trelogan, p. 10.
[13] Trelogan, p. 28.
[14] Census, p. 2.
[15] Census, p. 2.
[16] Trelogan, p. 8.
[17] Trelogan, p. 23.
[18] Census, p. 3.
[19] Census, p. 4.

The Bureau is to be commended for suggesting a proposed program for linking agriculture data with economic data, as well as with other censuses and their Company Organizations Survey[20] But this undertaking should be approached with great care, because of the structural changes emphasized by both SRS and the Bureau of Census. No longer is a system of food production located in its entirety on a farm. For example, since the late nineteen forties, SRS has obtained information from hatcheries (an off farm source) as to the number of meat type chickens grown on farms. Nor are food production scheduling decisions necessarily made by farmers. In the broiler industry, they are geared to the financial resources of integrators, who contract with growers. Congress should not permit legal technicalities, or out of date laws to prevent the coordination among federal agencies that is essential to updating services to conform to the changing needs of users of their services.

In summary, recommendation number four in the FAC Report, calling for Congressional study of the transfer of the agricultural census into the Statistical Reporting Service, merits prompt implementation to determine the legislation needed to bring about such an integration of agricultural data systems. Paradoxically, SRS by utilizing new statistical tools has improved data quality to the point that "benchmark data" from the agricultural census is no longer needed. This progress should be applauded and enthusiastically supported. But instead, it seems to be overshadowed by an unfortunate jurisdictional rivalry that may thwart the adoption of the improved system recommended, which is so urgently needed by both public and private data users.

Beyond the question of who is to administer agricultural data systems, is the data needed to guide decisions, public and private, affecting food production and consumption. The twelve recommendations in the FAC Report all merit the careful and continued consideration by the Congress. Information system failures, such as experienced in 1972–73 with feed grains and many other commodities, illustrate emphatically the political pressures that are triggered by economic pressures growing out of decisions based on inadequate information.

In the future, to guard against compounding difficulties caused by the lack of such information, the Office of Technology Assessment has a unique and challenging opportunity to give real leadership. Significantly, the Office of Technology Assessment is the only point in the nation's government to which American agriculture can turn, that transcends jurisdictional boundaries of both Congressional Committees and federal agencies.

[The following paper was requested from Dr. Epstein by OTA:]

STATEMENT OF DR EDWARD S. EPSTEIN, ASSOCIATE ADMINISTRATOR, ENVIRONMENTAL MONITORING AND PREDICTION, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION. U.S. DEPARTMENT OF COMMERCE

WEATHER INFORMATION FOR ASSESSING CROP PROGRESS

Agricultural productivity has always been sensitive to fluctuations in local weather and regional climate. As global food reserves have decreased, and demand rises, natural weather and climate variability plays an increasingly important role in agricultural production and planning. Since 1972, the National Oceanic and Atmospheric Administration (NOAA) has taken several steps to improve its daily weather advisories to farmers, its weather-yield modeling research, and the content of its data publications. This report emphasizes summarization and publication of weather data that relate to crop progress during the growing season. It also gives a brief introduction to N0AA's new weather-yield modeling research.

The principal relevant NOAA periodical is the "Weekly Weather and Crop Bulletin", coedited and published by NOAA's National Weather Service and the Department of Agriculture's Statistical Reporting Service.[21] The NOAA office is

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[20] Census, p. 4.

[21] Publication of U.S. weather data relating to crop progress can be traced back to 1872, when a general 2-page "Weekly Weather Chronicle" was started by the Army Signal Service. In 1877, the newly named Signal Corps began publishing a "Weather and Crop Bulletin" weekly during the growing season and monthly during the rest of the year. In 1924, the current title, "Weekly Weather and Crop Bulletin", was adopted by the Department of Agriculture which included the Weather Bureau. When the Weather Bureau was transferred to the Department of Commerce in 1940, the publication became a cooperative effort jointly supported by funds appropriated to each Department.

located in Room 1137, South Agriculture Building. In addition to its editorial duties, the NOAA office monitors cumulative weather developments, provides monthly briefings for Department of Agriculture officials, and provides data and consultation to Agriculture agencies for planning and operating national programs dealing with the production of food and fiber. As an example, in early 1973, cumulative weather analysis showed that much soybean planting would be significantly delayed due to very wet fields. Accordingly, Agricultural officials increased acreages allowed for soybeans and a record harvest was realized.

The Weekly Weather and Crop Bulletin is released each Tuesday noon throughout the year. Each issue contains precipitation and temperature data and narrative weather and crop summaries for each state and the nation. Circulation has nearly doubled since 1972 and is now about 5,300 copies. In response to the growing concern about the global food situation, NOAA began in February 1874 to prepare world maps of precipitation and temperature. These maps are published in the Bulletin—usually the third issue of each month. The maps show the distribution of the past month's average monthly temperature and total precipitation and departure from normal for the major agricultural areas of the world. Accompanying the maps is a narrative World Agricultural Weather Summary written by a specialist in the Foreign Agricultural Service. A recent issue of the Bulletin, including the world maps and summary, is appended to this report.

The Bulletin's monthly summaries permit only a general and somewhat delayed assessment of global crop situations. To achieve more timely information, NOAA specialists recently have written and are now refining complex computer programs that produce cumulative weekly statistics from conventional 6-hourly coded weather observations. Previously these data, long exchanged internationally, were discarded once used in preparing the next sequence of forecasts. This activity is taking time because of variations in coding practices and limitations of telecommunications facilities in some parts of the world. However, with the cooperation of the World Meteorological Organization, we are making progress in overcoming the difficulties and are already producing preliminary computer printouts of weekly global weather data for two to three thousand stations for use by Agriculture and NOAA specialists. If current progress is maintained, we may be able to realize accurate data consistently enough to justify publication of weekly data for selected foreign areas beginning during the spring of 1976.

We have also made progress in estimating accumulated precipitation from daily NOAA satellite imagery. Such satellite interpretation has been used to help analyze the extent of drought conditions in Haiti and the Dominican Republic during the first half of 1975 for the Department of State (AID). Satellite imagery is also an important source for information NOAA has been furnishing weekly this year to Food and Agriculture Organization (FAO) headquarters in Rome on monsoon rains over the Asian subcontinent. This information is being furnished at the request of FAO and is responsive to a resolution of last November's World Food Conference which called for establishment of a Global Information and Early-Warning System on Food and Agriculture.

NOAA, along with NASA and the Department of Agriculture, is participating in the Large Area Crop Inventory Experiment (LACIE). The Experiment uses satellite data (LANDSAT and eventually NOAA environmental satellites) and surface meteorological data in a coordinated manner to explore new ways of estimating wheat production. Initial systems development and test is on North American winter and spring wheat crops. A major part of the current NOAA-LACIE effort is to develop weather-wheat yield models. Where the data are reliable, yield estimates derived from these models are already comparable to official USDA wheat yield estimates produced by conventional methods, when areas as large as several states are considered. In October of this year, LACIE is scheduled to begin tests to determine the capabilities to go global in scope. Wheat production (acreage and yield) will be determined in sample areas in several wheat producing countries. At each stage of the experiment, NOAA results are provided to Department of Agriculture and NASA for study and evaluation.

The yield modeling research is being led by NOAA's new Center for Climatic and Environmental Assessment, established in November 1974. The Center is rapidly developing two important applied climatological capabilities: (1) assessing impact of weather events on major crop areas as a particular growing season proceeds, and (2) interpreting long-term impacts of growing season weather in terms of variability of future yields. Most of the Center's applied research is being carried on in Columbia, Missouri, while a room for providing briefings on current crop-weather situations has been set up in a NOAA facility in the Georgetown section of Washington, D.C.

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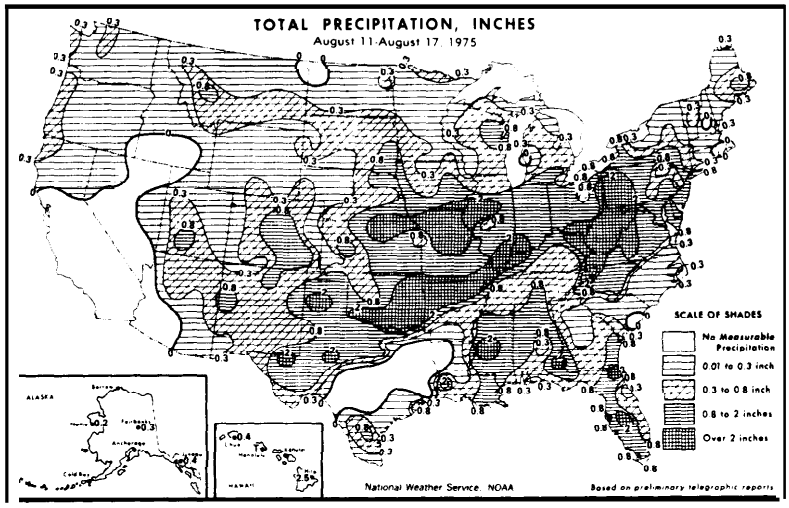
Statistical Reporting Service

Volume 62, No. 33 **Washington, D.C.** Aug. 19, 1975



NATIONAL WEATHER SUMMARY

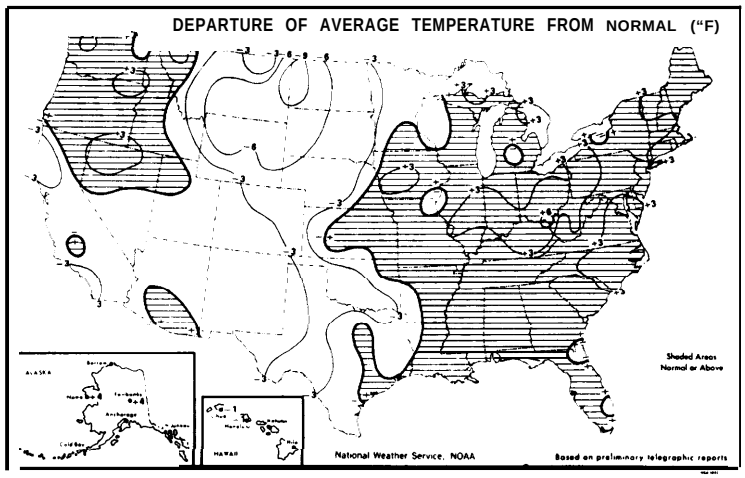
For the Week of August 11-17

HIGHLIGHTS: A slow moving cold front made the news when it broke the hot, dry spell over the Plains and upper Mississippi Valley. Significant rains favored Iowa and spilled over into Missouri. By the end of the week the frontal system stretched eastward, targeting its heaviest rains on the Northeast, central, and Southeast portions. Near normal temperatures dominated most of the Nation, but cooler readings across the northern Plains reflected movement of the weather system eastward.

PRECIPITATION: All eyes were still turned to the central Plains on Monday, as dry conditions persisted there. A few scattered showers turned up in Iowa, but had little effect. In Kansas City, Mo., only 0.25 in. of rain had fallen in 50 days. Other areas, of course, got more than their share. Thundershowers sprang up along the Atlantic and Gulf Coasts, and gained momentum in the Ohio and middle Mississippi Valleys and throughout the southern Great Lakes States. To the West, showers dotted southern portions of the Rockies and Plateau regions. Otherwise, fair weather sprawled across areas from the northern Pacific Coast to the upper Mississippi Valley and from the southern Plains into the southern Appalachians.

An early morning rash of thunderstorms broke out on Tuesday in the central and southern Intermountain regions and deserts and high mountains of California. At the same time, a band of storms assembled in southwest Texas. By afternoon, showers had staked a bigger claim, and also covered an area from the western Great Lakes into the middle Missouri Valley.

It took a while, but substantial rains finally reached the parched Midlands on Wednesday, to lend a hand to those crops that still held on. A slow moving cold front drifting south and east



through the Plains and upper Mississippi Valley touched off storms, mostly in upper Michigan through southern Wisconsin and northern Illinois and across Iowa and southern Nebraska into northern Kansas and eastern Colorado. In the central and southern Plains, afternoon thundershowers kicked up locally heavy rains that continued into the evening hours.

Even though the frontal system drifted slowly east and west on Thursday, rainfall still held its ground against the hot, dry weather in the central Plains. Scattered activity persisted across the northern, west, central, and southwestern Plains. By noontime the front had taken up residence in the upper and middle Mississippi Valley. Scattered showers stretched across the central Gulf States and from the middle Mississippi Valley to the middle Atlantic Coast.

On Friday, rainfall shifted eastward. Thundershowers covered areas from the middle Atlantic States across the Appalachians into the Ohio and Tennessee Valleys. Meantime, more showers turned up along the central and southern Gulf Coast, southern Plains and extended from the northern Plains into the northern Rockies. Otherwise, dry weather dominated the New England States, Midwest, and far western parts of the Country.

Weekend showers were accompanied by isolated severe weather around the Nation. Showers and thundershowers stayed on in the upper Mississippi Valley, following the front from southern New England down the Ohio Valley, through southeast Oklahoma, and into southwest Texas. The coast was clear, along the south Atlantic, except for a few thundershowers in Florida that were accompanied by damaging winds. Fair conditions reigned over much of North Central and Southwest U.S., interrupted by some isolated showers in the northern and central Rockies. General rains spread from the Pacific into western Oregon and northern California. Strongest act i\. i ty , however, focused on the Northeast , Southeast , and centra 1 parts of the Nation.

TEMPERATURE: Readings in the 100's that are so common in the desert Southwest turned up on Monday in Kansas and Missouri as well. Warm weather shoved the mercury into the 80's and 90's across much of the Nation. The Pacific Coast noted temperatures in the 60's and 70's, and a few 70's dotted the northern Appalachians and upper Great Lakes areas.

Warm conditions across the western half of the Nation eased a bit on Tuesday. Readings in the 90's took some of the edge off the 100° heat in the desert Southwest and Middle Plains. In the northern Plains afternoon temperatures in the lower 70's reflected movement of the cold front southward into the central Plains and east to the Missouri Valley.

As a high pressure center trailed the cold front across the northern High Plains, Wednesday morning temperatures dipped into the 40's and 50's. Later on, some cooler readings also turned up in areas from the northern and central Rockies to the upper Great Lakes.

Thursday's temperature pattern in the central and northern Plains again testified to the arrival of cooler air there, with readings in the 60's and 70's. Cooler, but not unusual, temperatures in the 50's and 60's dominated the north and central Pacific Coast. For the rest of the Nation, it was more like summer, ranging in the 80's and 90's.

Friday set the pace for a near normal weekend, temperature-wise, across most of the Nation: some 50's in the mountains and along the Pacific Coast; low 100's in desert areas; and 90's over the southeast quarter. The northern Plains held out as the exception. From Montana to upper Michigan, afternoon highs stopped in the 60's and 70's.

NATIONAL AGRICULTURAL SUMMARY

For the Week of August 11-17

Highlights : Beneficial rain was received over much of the Corn Belt aiding row crop development, however moisture shortages are still causing stress in northern portions of the North Central area. Corn and soybeans continue to progress ahead of both 1974 and normal in most States. Spring wheat harvest made excellent progress as combining passed the one-third mark.

SMALL GRAINS : Harvest of small grains continued to make good progress, but behind last year's excellent pace in nearly all areas.

Winter wheat combining edged closer toward windup as favorable conditions prevailed in the northern States, the only areas with acreage not yet harvested. As of August 17th, 91% of the crop was harvested, much behind last year's excellent progress. Rains interrupted combining in Montana.

Spring wheat harvest advanced rapidly in most major States and by August 17th, 35% of the 1975 crop was harvested, much behind 1974 level. Combining was nearing completion in South Dakota, 46% done in Minnesota, 24% in North Dakota, and 5% in Montana.

Oat harvest continued to move northward with 80% of the Wisconsin crop harvested. 75% in both Michigan and Minnesota, and 36% in North Dakota.

Preparation of fields for seeding this fall's wheat was ahead of usual in Illinois and Indiana, but behind schedule in Ohio.

CORN: Rains eased stress in many parts of the Corn Belt during the week, but above normal temperatures kept topsoil moisture supplies short in much of the area.

In the North Central States, corn development continued to progress at a steady pace ahead of last year and normal in nearly all States. Corn was in mostly good to excellent condition in Illinois, while growing conditions in Iowa were only fair. In Illinois, 53% of the crop was in the dent stage versus only 5% in 1974 and 19% average. Iowa corn was 30% in the denting stage, double the 1974 rate. 30% of Indiana crop was also dented or beyond, while 20% of Ohio corn had reached this stage. Corn on light soils in Wisconsin was still under severe stress and dry weather in Minnesota continued to diminish prospects.

Corn development in Kentucky equal 1974 and was slightly ahead of average, while in Tennessee development was ahead of 1974 and behind average.

COTTON : Cotton continues to make favorable progress in most major States, however insects are heavy in many areas and are causing damage.

Cotton in the Texas Blacklands and South Central was rapidly reaching maturity. Harvest was delayed in the Coastal Bend and Lower Rio Grande Valley, but resumed by the weekend. In Mississippi, cotton was in fair condition and 93% of the crop had set bolls. Heavy [illegible] continued in Arkansas, but most fields were past peak. The Oklahoma crop was 54% setting bolls, 88% in Tennessee 9[illegible]% in Alabama and 95% in Louisiana.

Cotton was in fair condition in New Mexico and only a small percentage of the bolls were opening. California's late crop was blooming and setting [illegible].

FRUITS AND NUTS : Peach harvesting was active in several Northern States and nearing completion in most southern areas. Early apples were sizing well and harvest gained momentum. Citrus trees in Texas benefitted from recent rainfall and groves were in excellent condition in Florida. Pecans were in fair to good condition in Georgia but yellow aphids and webworms were causing problems in Rolling Plains, Texas. Almond harvest was underway in California. In Oregon, the walnut and filbert crops look good.

VEGETABLES : Sweet corn and snap bean harvests continue in New York. Tomato harvest was heavy in Maryland, Pennsylvania, Virginia and Michigan. In Washington, broccoli, bush bean, cauliflower, cucumber, melon, sweet corn and tomato harvests continued. Cantaloup harvest was in full swing in California, but harvest of broccoli, cauliflower, carrots, and lettuce was slower. Carrots, cucumbers, cantaloups, onions, peas, and watermelons were being harvested in Texas. Land preparation was active in Florida for September plantings.

PASTURES AND LIVESTOCK . Pastures and ranges continued to deteriorate throughout much of the Nation except the South Central where above normal precipitation continues to aid new growth. Stock water is getting short in several areas of Arizona, California, and Utah, while fire danger is increasing in several of the Western States. Cattle continue in mostly good condition throughout most of the Nation and supplemental feeding was minimal.

SOYBEANS : Prospects for this year's soybean crop are more encouraging as rain fell over much of the major growing area during the past week. Development of the crop continues ahead of 1974 and normal in most States.

In the North Central States, soil moisture is still rated short in many areas, however, recent rains will aid in pod filling. Pod setting in both Illinois and Iowa reached 92%; 10% of the crop had leaves turning yellow in Illinois and 8% in Iowa; all stages were much ahead of both 1974 and average. Elsewhere in the Region, pod setting ranged from 68% in Missouri to 95% in Minnesota.

Soybeans improved in Kentucky and were good to excellent in Tennessee. In Mississippi, 45% of the crop was podding and in Arkansas early beans were blooming and setting pods, while late beans were blooming.

OTHER CROPS: Sorghum harvest in Texas at 48% continued ahead of both 1974 and average. Development of this year's crop was ahead of normal and 1974 in most major States.

Flue-cured tobacco was 95% harvested in Georgia, 88% in South Carolina, 54% in North Carolina and 27% in Virginia. Rains aided the crop in Kentucky, where 33% of the Burley crop has been topped. Tobacco [illegible] in Tennessee, but uneven growth [illegible] progress.

Potatoes in Aroostook County, Maine are growing slowly and substantial rains will be needed to aid [illegible] before harvest. In Idaho, 20% of the fields were turning color, much behind last year's 40%.

White mold is causing concern to peanut growers in several States. The crop continues in mostly good condition in most areas.

Temperature and Precipitation Data for the Week Ending Midnight, l.s.t., Aug. 17, 1975

States and Stations	Temperature °F Average	Temperature °F Departure	Precipitation Inches Total	Precipitation Inches Departure
ALA.Birmingham	80	0	1.3	+ .3
Mobile.	83	+ 1	.5	-1 0
Montgomery.	83	+ 2	T	.7
ALASKA, Anchorage.	---	---	---	---
Barrow.	---	---	---	---
Fair banks	60	+ 4	.3	.2
Juneau	55	0	4	.7
Kodiak.	---	---	---	---
Nome	54	4	.2	- .6
ARIZ.Flagstaff	63	- 1	.5	- .1
Phoenix	90	+ 1	T	.3
Tucson.	84	0	T	.6
Winslow	74	- 2	3	.1
Yuma	91	- 2	0	.1
ARK.Fort Smith	80	- 2	2.8	+2 2
Little Rock	81	0	.5	1
CALIF.Bakersfield	85	+ 3	0	0
Eureka.	54	- 3	.4	.3
Fresno.	76	- 2	0	0
Los Angeles	71	- 3	0	0
Red Bluff	77	- 3	2	+ .2
San Diego	69	3	0	0
San Francisco.	61	2	T	0
Stockton	73	2	0	0
COLO. Denver	68	4	1.7	● 1.4
Grand Junction.	74	2	.1	.2
Pueblo.	74	1	1.8	+1.3
CONN.Bridgeport	76	+ 3	.4	.5
Hartford	74	3	.1	.6
D. C. Washington.	81	+ 3	1.1	0
FLA.Apalachicola.	82	0	4	-1 4
Dayto na Beach	81	0	3	- 1 2
Ft. Myers	84	1	9	.8
Jacksonvil le.	80	1	2,0	.2
Key West	85	0	.4	.5
Lakeland.	82	0	5.1	+3.5
Miami	83	0	1.9	+ .4
Orlando	82	0	6	.9
Tallahassee	82	1	.9	.6
Tampa	83	0	.8	1.0
W. Palm Beach.	81	- 1	.5	-1.0
GA. Atlanta	79	+ 1	T	.8
Augusta	81	1	.6	- .4
Macon	81	0	.2	- .6
Savannah	82	+ 1	1.0	- .4
HAWAII.Hilo	76	0	1.5	- .1
Honolulu	80	- 1	T	- .2
Kahului				
Lihue	78	- 1	.4	- .1
IDAHO. Boise	73	0	.1	0
Lewiston	75	+ 3	T	- .1
Pocatello	69	- 1	T	- .1
ILL.Cairo	80	0	3.0	+2.2
Chicago	76	+ 2	.3	- .4
Moline	75	+ 1	.7	0
Peoria	75	+ 1	2.3	+1.7
Rock ford.	74	- 2	.6	- .2
Springfield	78	+ 3	4	- .2
IND.Evansville.	78	1	2.3	+1.6
Ft Wayne	73	1	1.5	+1.2
Indianapolis.	77	+ 3	.4	- .8
South Bend.	74	2	.5	- .7
10wA.Burlington	74	1	1.9	+2.1
Des Moines.	77	+ 9	.5	- .3
Dubuque	72	1	2	- .7
Sioux city.	73	- 1	1.3	- .6
KANS.Concordia.	79	1	1.4	+1.7
Dodge City.	80	1	.1	- .5
Goodland.	72	3	.3	- .2
Topeka	80	2	.0	0
Wichita	80	1	.2	- .5
KY. Lexington.	79	3	.2	- .5
Louisville	80	4	.6	- .9

States and Stations	Temperature °F Average	Temperature °F Departure	Precipitation Inches Total	Precipitation Inches Departure
La.Baton Rouge.	82	0	.5	- .5
Lake Charles	83	1	.4	- .7
New Orleans	82	0	1.0	- .1
Shreveport.	82	2	0	- .6
MAINE.Caribou	68	+ 5	.2	- .6
Portland	70	+ 3	.2	- .4
MD. Baltimore.	79	4	1.3	+ .3
MASS.Boston	75	3	.1	- .7
Chatham	70	-	0	---
MICH.Alpena	68	3	T	- .6
Detroit	73	2	.5	- .3
Flint	71	2	.2	- .6
Grand Rapids	71	0	.1	- .4
Houghton Lake	67	+ 1	.3	- .2
Lansing	69	1	.6	0
Marquette	69	3	.2	- .5
Muskegon.	71	1	T	- .5
S. ste. Marie	66	2	.2	- .5
MINN.Duluth	63	2	1	- .8
Internatl Falls	63	1	4	- .4
Minneapolis	71	0	.1	- .6
Rochester	70	0	.2	- .6
St. Cloud	67	2	.1	- .8
MISS.Jackson.	82	+ 1	1.0	+1.2
Meridian.	82	+ 1	.7	- .8
MO. Colombia	77	0	1.1	+1.4
Kansas City	80	2	.5	- .3
St. Louis	81	- 3	.6	+1 o
Springfield	78	0	9	+ .3
MONT.Billings	84	7	3	- 1
Glasgow	89	1	1	- .3
Great Falls	84	4	T	- .2
Havre	85	- 4	.2	- 0
Helena.	2	5	.8	- .6
Kalispell	6	+ 3	.2	- .1
Miles city.	66	8	.6	+ .3
Missoula	66	2	.1	- .1
NEBR. Grand Island	71	5	.5	- .4
Lincoln	77	0	.0	+ .3
Norfolk	73	2	.7	- .1
N. Platte.	71	3	.3	- .2
Omaha	78	+ 3	.8	- .4
Valentine	70	4	.2	- .4
NEV.Ely	65	1	T	- .1
Las Vegas	87	1	o	- .1
Reno.	68	1	T	- .1
Winnemucca	73	5	T	- .1
N. H. Concord	70	2	T	- .6
N.J.Atlantic City	75	1	.5	+ .3
Trenton	76	+ 2	.7	- .3
N.MEX.Albuquerque	75	2	.7	- .4
Roswell	77	2	.7	+ .3
N. T. Albany	71	1	.1	- .5
Binghamton.	66	o	.7	- .9
Buffalo	72	3	.6	+ .8
New York.	76	+ 1	.8	- .3
Rochester	69	1	.3	- .4
Syracuse.	70	0	.1	- .7
N .C. Asheville	74	+ 1	.3	+ .2
Charlotte	80	+ 2	.9	- 0
Greensboro.	81	+ 4	.8	- .2
Hatteras.	81	+ 3	.4	+1.1
Raleigh	80	+ 3	.1	+1.0
Wilmington	84	+ 4	T	- 1.5
N .DAK.Bismarck.	64	- 6	.2	- .3
Fargo	67	+ 9	.2	- .5
Williston	61	+ 9	T	- .4
OHIO. Akron-Canton	74	+ 3	.8	+ .2
Cincinnati	78	+ 3	1.1	1+ .5
Cleveland	73	+ 2	.9	+ .2
Columbus	77	+ 4	1.2	+ .6
Dayton.	75	+ 1	1.5	+ .9
Toledo.	72	+ 1	.8	+ .1

States and Stations	Temperature °F Average	Temperature °F Departure	Precipitation Inches Total	Precipitation Inches Departure
Youngstown.	72	+ 2	2.2	+1.5
OKLA.Okla. City	79	- 3	.5	- .1
Tulsa	83	+ 1	2, 1	+1.5
OREG.Astoria	61	+ 1	.1	- .2
Sums	68	+ 1	.1	0
Medford	71	0	.4	● .3
Pendleton	75	+ 3	T	1
Portland.	68	+ 1	.3	+ .1
Salem	66	0	.5	+ .4
PA.Allentown.	73	+ 1	1.2	+ .2
Erie.	71	+ 3	.6	- .1
Harrisburg.	76	+ 2	.7	0
Philadelphia.	77	+ 2	1.2	+ .3
Pittsburgh	74	+ 3	2 3	+1.6
Scranton.	72	+ 1	.2	- .5
R. I. Providence	74	+ 3	T	- .9
S.C. Charleston	81	+ 1	T	-1.5
Columbia.	81	0	T	-1.3
Greenville.	80	+ 2	.1	- .8
S.D. Aberdeen	69	- 3	6	+ .1
Huron	70	- 3	.5	0
Rapid City	66	- 7	.3	- .1
Sioux Falls	70	- 3	1.6	+1.0
T2sw.Chattanooga.	78	0	.4	.3
Knoxville	79	+ 1	.3	.4
Memphis	83	+ 2	4	.4
Nashville	80	+ 1	4	.3
TSX.Abilene	82	- 2	1.2	.8
Amarillo.	75	- 3	2.8	+2.1
Austin.	84	- 1	o	- .5
Beaumont	85	0	T	-1.3
Brownsville	83	- 1	.1	.4
Corpus Christi	64	- 1	0	.7
Del Rio	84	- 3	T	.2
El Paso	80	- 1	3	0
Fort Worth.	2s	+ 1	.1	.4
Galveston	85	+ 2	1.5	.5
Houston	82	- 2	.1	- .9
Lubbock	79	0	.5	1
Midland	80	- 2	1.4	1 0
San Angelo.	81	- 4	.1	2
San Antonio	83	- 2	T	5
Victoria.	85	0	T	- .7
Waco.	86	0	0	.4
Wichita Falls	83	- 3	.8	.4
UTAH.Blanding	68	- 3	.1	.3
Salt Lake City.	76	+ 1	T	.2
VT. Burlington	71	+ 3	.2	.6
VA.Lynchburg	77	+ 2	2.8	1.9
Norfolk	82	+ 5	.2	-1.2
Richmond.	81	+ 4	1.0	.2
Roanoke	77	+ 2	1.5	.5
WASS.Colville	---	---	---	---
Omak	70	+ 0	.1	0
Quillayute	59	- 0	.8	.2
Seattle-Tacoma.	67	+ 3	.2	0
Spokane	6s	- 1	.1	0
Walla Walla	75	+ 1	0	.1
Yakima.	71	+ 2	.1	0
W.Va.Beckley	72	+ 3	2.5	1.7
Charleston.	74	0	3 5	2.7
Huntington.	80	+ 6	3.3	2.5
Parkersburg	77	+ 3	2.0	1.2
WIS.Green Bay	69	+ 1	1.3	.7
La CT osse	71	- 1	T	.7
Madison	71	+ 1	.5	.1
Milwaukee	72	+ 2	.3	.3
WYO.Casper.	66	- 5	.1	0
Cheyenne	63	- 5	.3	.1
Lander.	64	- 6	.1	0
Sheridan.	64	- 6	.2	0
P. R. San Ju. n.	82	+ 1	55	1.1

Basedon 1941-70 Normals

There was an error in the July monthly table for Des Moines, Iowa It should have read T for precipitation, departure '3 3 This error appeared in the August 12. Volume 62 No 32 . . precipit. tion 4, departure '2.9

The Weekly Weather and Crop Bulletin is published by the National Weather Service, NOAA, and statistical Reporting Service, USDA. Standard copy for the Bulletin is prepared by Dr. Richard E. Felch, agricultural climatologist, Lyle M. Denny, Orus W. Byrd, meteorologists, DeLon Brown, agricultural statistician, and Susan E. Atkins, editor.

STATE SUMMARIES OF WEATHER AND AGRICULTURE

These summaries provide brief descriptions of crop and weather conditions important on a national scale. More detailed data are available in Weather and Crop Bulletins published each Monday by SRS State offices in cooperation with the National Weather Service, NOAA.

ALABAMA: Scattered showers and thundershowers throughout with most numerous amounts concentrated over north. Greatest 24-hour rainfall total 2.35 in. at Louisville. Temperatures warmer than past several weeks with weekly average 1° above normal.

Shower activity decreased, making working conditions favorable in most areas. Soil moistures adequate. Corn condition good to excellent. 75% dented, same as 1974. Cotton condition fair to good 94% setting bolls, 100% 1974. Insect control underway. Soybean condition good with 84% blooming and 61% setting pods. Peanut condition still good, but diseases are still present. Hay harvesting in full swing as weather permits. Pasture condition remains good.

ALASKA: Tanana Valley west half warm and relatively dry, east half wet with near normal temperatures. Kenai Peninsula near normal temperatures coasts, above normal inland. Kodiak Rainfall was twice the seasonal normal, temperatures were below normal.

Hay harvest continued at a slow pace with the frequent rainshowers. Hay quality from many fields have been reduced. Grain fields are mostly in the dough stage of development with several all turning color. Harvest of grain is expected to begin shortly in the Fairbanks area but later in remainder of Railbelt. Ground moisture supply continued adequate.

ARIZONA: Temperatures near normal most regions, about 5° below normal Grand Canyon area, spotty thundershowers ... week. Virtually no rain after 13th.

Cotton mostly fair to good condition. Grain sorghum planting complete. Early plantings ready for harvest. Safflower harvest complete. Cochise County sugar beets good condition. Alfalfa hay seasonal progress. Land preparations fall plantings central, southwest, south east. Fall cantaloups satisfactory. Yuma ... Shipments white grapefruit Maricopa County. Fruit sizing well south-west. Few mites, or wind burn on dry trees. Ranges fair to good condition high regions, fair lower elevations. Rain needed soon southeast. Cattle mostly fair, stock water getting short.

ARKANSAS: Temperatures near normal. Departures ranged from -3 to +2°. Extremes: 101° at Gilbert to 61° at Gilbert. Precipitation was widespread with highest over north half. Greatest amounts were 3.75 in. at Fayetteville and 3.74 in. at Evening Shade. Over 1.00 in. at most stations.

Scattered shower activity improved soil moisture supply. Soil moisture mostly adequate. All crops in good condition. Fieldwork 5 days suitable. Cotton continuing heavily, most fields past peak, few open bolls. Rice crop maturing rapidly, harvest started on early varieties. Early soybeans blooming, setting pods. 12 ... beans blooming ... 5 ... vegetative growth. Corn silage being harvested. Corn for grain near maturity. Early grain sorghum being harvested. Pastures supplying adequate forage, need rain in ... region.

CALIFORNIA: Mostly scattered thundershowers 1st ... on north and central, otherwise fair. Slight cooling during week. Highs in central valley over 100° beginning week. Coastal highs 50's north to 70's south. Averages slightly below normal coastal, slightly above northeast and near normal other areas.

Small grain harvest nearly completed. Rice good progress, heading out. Cotton blooming, setting bolls, late. Sugarbeet digging continues. Dry bean maturing rapidly, thrashing begun. Alfalfa cutting continues. Some armyworm damage. Alfalfa seed harvest gaining, yield down. Safflower harvest gaining. Pear, Gravenstein apple harvests underway north coast. Carolyn, Jungerman pt. ache= being harvested. Prune, almond harvests started Woodland, other areas this week. Late fresh market nectarines, plums being harvested. Some ... husk fly problems walnuts. Thompson, Cardinal, Exotic, Queen varieties grapes being picked, quality good. Wine grapes remain week behind. Valencia harvest continues slow, quality declining. Navel crop varies by area, scale showing up. Cool weather holding back lemon color. Poor avocado set Santa Barbara. Broccoli and cauliflower, carrots and lettuce light Salinas. Cantaloups full swing westside. Celery moderate central coast, honeydews continue San Joaquin Valley. Onions and potatoes good growth, early potato harvest begin next week Shasta Valley. Canning tomatoes progressing San Joaquin, beginning Sacramento. Watermelon continues central San Joaquin. Livestock remains good, supplemental feeding starting. Water supplies ... critical.

COLORADO: Temperatures slightly below normal. Highs 80's to 90's. Cold front 12th and 13th lowered temperatures 10 to 25°. High temperature was 100° at La Junta. Showers and thunderstorms mountains and in east. Heaviest totals 2.05 in. at Ft. Collins. Precipitation averaged over 1.00 in. east.

Corn average height 75 in., tasseled 95%, 96% average, 98% 1974, silked 84%, 93% 1974. Dry beans flowered, 9%, 83% 1974. Sorghum headed 50%, 47% 1974. Sugarbeets late with good growth, some hail damaged. All row crops good condition. Second cutting alfalfa 57% complete. Ranges and pastures improved, but remain dry southeast, mostly good elsewhere. Livestock good condition.

FLORIDA: Typical summertime weather near normal temperatures. Highs in low 90's. Scattered afternoon thundershowers entire State, amounts averaging 1.00 to 3.00 in.

Soil moisture adequate to surplus. Flooding continues Panhandle. Crop condition variable, considerable damage in Panhandle. Other areas mostly good. Field corn harvest continues. Peanut hard hit by white mold. Flue-cured tobacco harvest complete. Hay ... interrupted by showers. Soybeans damaged Panhandle, good ... elsewhere. Sugarcane good condition. Pastures mostly good condition. Cattle and calves good condition, citrus groves condition excellent. General rains continue some areas excessive moisture. Abundance ... new crop fruit progressing well. ... preparation active for September plantings of snap beans, cabbage, sweet corn, cucumbers, squash. Planting celery, eggplant, pepper, tomatoes underway. Early planting progressing well ... .

GEORGIA: Showery weather over north ended midweek and only isolated afternoon thundershowers thereafter. West central, east central, and south-

east averaged over 1.00 in., northern third averaged near 0.75 in. central was the dry spot with only 0.25 in. or less. Isolated thundershowers over weekend.

Soil moisture mostly adequate to surplus. Fieldwork very active, 4 days suitable. Corn mostly good to excellent. Silage harvest active. Peanuts mostly good, white mold a major concern. Cotton fair to mostly good, high insect populations, insecticide applications continued active. Soybeans mostly good to excellent, insects becoming a problem. Tobacco 95% harvested, average 96%, 1974 94%. Watermelons 97% harvested Pastures, cattle, hogs good. Haying very active. Pecans fair to good, spraying active.

HAWAII: Beneficial rains fell in sections of Hawaii and Kauai. No relief in the dry Hamakua Coast of Hawaii.

Growing conditions favorable for crop growth. Spraying frequent to curb insect infestation. Vegetable supplies adequate. Melon production light. Banana supplies remain moderate to heavy. Papaya harvesting fluctuating. Pineapple late crop up in [illegible] harvest. Sugar harvesting steady.

IDAHO: Temperatures near normal early week, below normal end of week. Scattered showers later part of week.

Harvesting operations highlighted week activity. Winter wheat 25% harvested, 60% 1974. Potato crop 20% fields turning color, 10% 1974, with 15% vines dying. Spring wheat harvest starting, 30% harvested 1974. Barley 25% harvested, 35% 1974. Range and livestock good condition

ILLINOIS: Temperatures 1° below normal west, 1 to 2° [illegible] elsewhere. Precipitation 0.33 to 0.75 in. north, showers up to 3.00 in. south. Corn mostly good to excellent condition dough 88%, 45% 1974, 61% average: dent 53%, 5% 1974, average 19%. Soybeans mostly good to excellent setting pods 92%, 4(V 1974, average 62% 1 O? turning yellow, 0% 1974 ave, age 1%. Alfalfa hay mostly fair to good 3d crop 28% cut, 22% 1974, average 13%. Winter wheat plowing complete 46% 1974, average 14%. Pasture mostly fair to good. Soil moisture 12% short, 53% adequate, 5% surplus. Fieldwork: 5 days suitable.

INDIANA: Humid, hot week with numerous showers. Rainfall averaged from 1.10 in. southeast to 1.80 in. northwest. Temperatures ranged from 54 to 95°. [illegible] humid [illegible]. Minimum temperatures and humidity well above normal.

Fieldwork averaged 5 days. Topsoil and subsoil moisture mostly adequate. Corn 95% silked, 1974 [illegible] Corn [illegible] in dough or beyond, 30% [illegible] and [illegible] mature. [illegible] beans 80% setting pods, 1974 75%. Wheat land 30% plowed, 1974 25%, average [illegible]. Apples 20% picked. Peaches 50% picked. Alfalfa hay, 90% cut second, [illegible]. Pastures poor to mostly fair.

IOWA: Temperatures 2° above normal, except [illegible] 1, normal southeast, [illegible] 1° below normal northwest, [illegible] [illegible] a [illegible] since June, [illegible] band [illegible] northwest to southeast across State. Many amounts over 1.00 in. few amounts 3.00 in. [illegible] southeast [illegible] continued [illegible].

Scattered [illegible] beneficial to soybeans and [illegible] corn. Severe weather, resulted in hail and wind damage. Some corn green chopped, cutting [illegible]. Corn [illegible] in dough [illegible], 54% 1974, 62% average, 30% in dent stage, 15% 1974, 20% average [illegible] growing condition mostly fair. Rains will aid filling of soybeans, [illegible] 92% setting pods, 78%

1974, 81% average, 8% leaves turning, well ahead of 1974 and average, growing condition fair to good. Third cutting alfalfa 11% harvested and considered short. Second cut red clover hay 70% harvested. Pastures poor, but expected to green up with rains. Topsoil moisture 85% short, 15% adequate. Subsoil moisture 86% short, 14% adequate. Fieldwork averaged 5.6 days suitable.

KANSAS: Temperatures averaged near normal. Beneficial to substantial rains occurred over most of the dry areas of the north and east on 13th. Scattered showers and thunderstorms many areas last half of week. Southwest and south central still dry with generally less than 0.50 in. rain.

Good rains northwest, north central and eastern third improved soybean and sorghum prospects. Corn 75% in dough stage, same as 1974 70% average: 30% in dent, 35% 1974 and average. Sorghum 55% headed, same as average, 45% 1974. Soybeans setting pods 60%, 50% 1974, 55% average. Alfalfa third cutting, 55%, same as 1974, 60% average.

KENTUCKY: Warm and humid weather with daily scattered thundershowers prevailed throughout. Temperatures averaged slightly above normal. Rainfall averaged 0.75 in. with isolated amounts around 2.75 in.

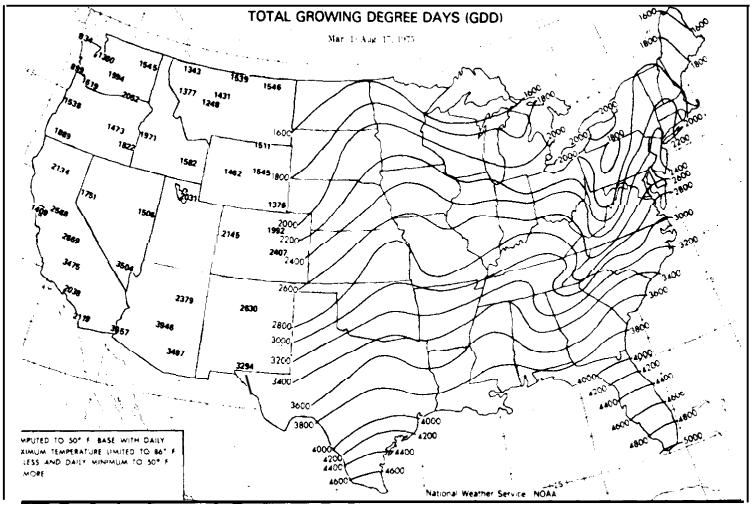
Farmers busy clipping pastures, haying, spraying and topping tobacco and getting reach inery ready for harvest. Over 5 days favorable fieldwork despite showers. Soil moisture mostly adequate, some shortages central counties. Corn 68% dough or dent, same as 1974 and slightly ahead of average. Soybeans improving, 56% podding, 45% 1974, 46% average. Tobacco greening and growing again. Burley 33% topped, compared 53% 1974, 60% average. Dark types half topped. Burley cutting expecting to start next week. Third cutting alfalfa 58% finished. Pastures improved.

LOUISIANA: Temperatures 2° below normal north, near normal South. Scattered thundershowers southeast, measurable rain 2 to 5 days. Isolated thundershowers elsewhere. Temperature extremes 98° Alexandria 12th through 15th, 67° Island 11th. Greatest 1-day rainfall 2.05 in., Dequincy 13th.

Soil moisture surplus southeast, adequate elsewhere. Fieldwork possible 4.1 days. Main activities cultivating late soybeans, rice and sweetpotato harvest, insect control, and haying. Soybeans fair to good: insecticide and fungicide application increased; early beans setting pods; late beans blooming. Cotton fair, 95% setting bolls, insect control increased. Weevils and tobacco budworm more numerous. Rice mostly good, 34% harvested, 54% 1974, 24% average, yields good: later rice heading. Corn good, light market. Sorghum mostly fair: insecticide application increased. Sugarcane good, growing rapidly; [illegible] station [illegible] to heavy. Fallow plowing where possible. Sweetpotatoes fair to good, 15% harvested. Hay harvest in full swing. Pastures average. Cattle mostly good.

MARYLAND AND DELAWARE: Temperatures averaged normal. Highs, in upper 80's and lows upper 60s. Precipitation [illegible] thundershowers occurred midperiod.

Corn rated good to excellent 60% in dough stage, and 31% in dent stage, 65% 26% 1974. Soybeans [illegible], 65% bloomed 31% podded, 73% 27% 1974. Tobacco harvest 15% complete some [illegible] late and poor [illegible] cutting alfalfa 3% complete. Second cutting clover and [illegible] mixtures 85% complete [illegible] 90% harvested watermelons 75%, [illegible], 60% Green tomato harvest complete, red



MICHIGAN: Temperatures normal south and Upper Peninsula, 2° above elsewhere. Scattered showers light to moderate.

Corn 70% dough, 15% 1974. Soybeans 70% setting pods, equals 1974. Dry beans 80% setting pods. Pinto bean harvest active. Potato digging 30% Saginaw Bay. Oats 75% harvested, 60% 1974. Pasture feed supplies below average. Second cutting alfalfa hay 75% done. Peach harvest speeding up, Red Havens peak. Summer apples 40%, cantaloup in southwest. Sweetcorn 30%, cucumbers 60% harvested. One-third tomatoes picked. Fieldwork: 5.4 days favorable. Soil moisture short in Upper Peninsula, short to adequate elsewhere.

MINNESOTA: Cooler with scattered light showers. Temperatures 1 to 2° below normal east to 3° below west. Extremes: 100 and 37°. Rainfall averaged 0.40 in. central and southwest, 0.20 in. elsewhere. Frost and freezing temperatures Roseau area morning of 18th.

Dry weather continued to diminish row crop prospects. Lack of rain has prompted some farmers to commence cutting corn for silage. Pastures dormant furnishing only limited amount feed. Small grain harvest proceeding rapidly. Rye and winter wheat harvest essentially completed. Oats 75% combined, average 62%, barley 77% combined, average 60%, other spring wheat 46% combined, average 35%. Corn 94% dough, average 23%, one-third poor condition balance fair to good. Soybeans 95% setting pods or beyond, average 86%, 29% poor condition balance fair to good. Flax 17% combined, average 19%.

days suitable. Cotton 93% setting bolls, 93% 1974. Soybeans 74% blooming, 70% 1974, 68% average; 45% podding, 37% 1974, 45% average. Corn 94% tasseled, 94% 1974. Rice 31% and sorghum 74% headed. Watermelons 88%, hay crop 53%, sweetpotatoes 19%, corn silage 30%, and sorghum silage 21% harvested. Cotton mostly fair condition. Soybeans mostly good condition.

MISSOURI: Temperatures averaged 2° above normal, ranging from normal west central plains to 3° above normal northwest. Precipitation increased over State, ranging from 0.75 in. east Ozarks to 1.25 in. west.

Dry conditions prevail with soil moisture short except Bootheel area. Corn 75% in dough stage, 61% 1974, 67% average, condition mostly poor to fair. Soybean condition mostly fair, 68% setting pods, 40% 1974, 50% average. Grain sorghum 80% headed, 66% 1974, 77% average. Cotton mostly fair to good condition.

MONTANA: Temperatures warm early week with cooling by 17th. Temperatures averaged a little above normal west to 3° below normal south central. Highest maximums mostly 80's and lower 90's. Precipitation above normal most areas, with substantial central rains.

Winter wheat 30% harvested, delayed by rains and green spots some areas. Spring wheat 5% harvested, 20% ripe, 60% turning, 15% headed but still green. Barley 5% harvested, 20% ripe, 50% turning, 25% headed but still green. Second cutting alfalfa 25% complete, wild hay 7% complete.

Grasshopper damage to crops and ranges mostly light to moderate, some heavy damage south cent ral Stock water and range feed supplies genera 11 y ade- quate Ranges norma 1 to above normal

NEBRASKA First day o f per iod t emperatures abov e normal , otherwise , cool t emperatures prev a i 1 ed Topsoil moisture supplies 58% short , 42% ade - quate Subso i 1 moisture supplies 74% short , 26% adequate, A year ago topso i 1 64% short, subso i 1 83% short I rr igated corn condit ion most 1 y good to excellent Dry 1 and corn cond 1 t ion fai r to good Corn 70% i n the dough st age. Sorghum cond 11 ion f a i r to good over 90% headed, 75% 1974 Soybean condi t ion mos t 1 y good , over 80% podded , 70% 1974 Alfa 1 fa hay mostly fair , over 40% t h rd cut t , ng harvested Sugarbeets and dry beans con t inue to look good Pasture and range feed supplies 67% short and 33% adequate

NE VADA Tempera tures near normal. Lightning from thunderstorms north started numerous brush f ires South remained hot and dusty Ext remes 107° Loganda 1 e , 34° Batt · e Mountai °. Smal 1 grai n harvest well a long north Garlic harvest near ing completion Second cut tinga 1- ! a i f a well a long Northern Va 11 e), s Livestock most 1 y good condi t ion

NEW ENGLAND Ra in fa 1 1 i ght . scattered thunder- showers. Warm wear her a l l week.

Harvest early apples, peaches , p lures underway in New England. A roost ook, Me. Pot a to crop growing s 1<)* 1 v Finaly ields depend substantial ra l n before harvest S ilage corn better than nor- mal Second and thi rd cut t 1 ng hay act 1 ve

NEW JERSEY Tempera t ures averaged 2° above n, ormal Extremes 5 2° a t Canoe Brook on 12th and 92° at Bridgeton on 14th Week 1 y ra l n fa l 1 aver- aged O 45 in. north, 1.24 in central and 1 36 in. south, Heaviest 24-hour tot a 1 was 3.02 1 n. at Gl ass boro on 15th to 16th Estimated soi 1 mois t ure, in percent of field capacity a>, eraged 63% north , 69% cent ra l and 67% south

So i 1 mois t ure adequate with a few areas 1 n need of rain Small grai n harvest v i rt ual 1 y complete Ha \ mak ing progressed wel 1. Vegetab 1 e and I r ish [,<, t ato harvest i n fu 11 sw. ng Harvest o f summer \ ar iet y app i es nearing completion Peach harvest about 50% comp 1 et e Blueberry ha r \ est i rtually v complete.

NEW MEXICO Thundershower+ somewhere almost daily . t h greatest rain fa 1 1 totals northern mount it ins. Tempera tures a \; eraged near t o about 3° coo 1 er t han normal

Mo 1st ure short , ranges fai r, 1 i vestock good. Cot ton fai r, bolls setting, sma 11 percentage open- ing two weeks l a t e A l fa l fa fai r to good start 3d cut north, wel l advanced 4th cut south Grain sorghum most 1 v good, wel l ad \ anced heading. Ini- t ial greenbug con r ro : s i neffective in 3 counties Corn good , near completion t asse 1 ing, some a reas 1 n dough stage Land p reparation for wint e r wheat

NEW YORK Temperat ures 1 t (> 3° above normal ex - cept St Lawrence Va l l e \ at 7° above Spot t grain- fa 11 a \ eraged about 0 50 1 n be low normal most areas but Buffalo and Binghamton had 1.00 1 n above

Second cut t ing a l fa l fa 75% comp 1 et e , 3d cut t ing 10% Oats near 1 y 50% harves ted Wheat harves c nea r 1 y complete Corn Co, 3d t(exce 11 ent c<, nd i t ion some in den t stage Pastures fa i r cond i t ion Kraut Cabbage harvest uncle r wa \ Sw eet c o r n and snap bean harvest con t inues Lar I \ Mc i n t osh har- vest underway Grapes i" good condi t ion , ahead Of normal matur i ty

NORTH CAROLINA Near normal temperatures for week, but below normal preci p i tat ion . Tempera- tures began be l ow normal but by m i d week were we ll above e norm. a l and co n t inued into weekend. Precip- I tat ion was 1 i ght but scattered thunder showers late on 17th brought needed ra 1 ns t<> much of State

Days sui table f i e ld work 5.0. So i l s became d r ier, 16% very short , 19% short , and 35% adequate. Gen- eral rains need Statewi de Overall cond i t ion Of crops unchanged Flue-cured and burley tobacco fai r to good F l u c- cured harvest 54% complete , 1974 55%, average 48% Cotton improved, most ly good Corn, hay and I r ish potatoes s lightly down, fa i r t (, most 1 y good Peanuts , soybeans. sweet potatoes , and apples mos t l y good Limited sweetpotato digging Pastures need rain , most ly fai r to good

NORTH D AKOTA Temperatures near normal Ext remes 94° a t Wat ford C , t), , 49° a t Pembina Precipi ta- t ion below normal . Most prec ipitation for week 0.76 in. at Bowman Weekend "ear normal da \ , t i me tempera t ures and cool nights wi t h scat tered showers

Harvesting small grai ns progressed wel l u l th 2% h a r d spri ng wheat harvested, 31% 1971 27% normal Durum was 13% comb i t ted , equa 11 y 1974 and normal Oats 3% and 3% barl e! comb i ned Rye and w inter wheat near ing completion. Scat tered ● houf?rs gave i t t i ere i le f to row crops and sma 1 I grai ns L i \ estock genera 11> good condi t ion wi t h pas tures n<, eding rain

OHIO Above norma l t emperatures earl \. week t h en cooling in nort hem areas 15th and 16th Temper- at ure ext remes 95 and 59°. Showers and thunder- , t orms t h roughout week Great est rain fa 11 =x, th- east 3.62 in

Harv es t comp let ed Pot atoes 25% , 25' 1974 and norma l , a l f a l fa hay 3d cut t ing 20% , 10% 1974 and "<, rmal, c lo \ er - t imothy 2d cut i ng, 85%, 80% 1974 and 70% norma l Corn 80%, i n dough stage, 50% 1974 and 55% normal ; 20% dented, but not hard, 15% 1971 and norma l Soybeans 50% pods set, 25% 1974 and 40° normal Fa 11 p lowing i or wheat 25%, 20% 1974 and 30% normal Tobacco 25% topped 35% 1974 and normal Mo i sture supplies 19% short , 70% adequate i 1% surp l us . Over 4 day s favorable <, r fieldwork

OKLAHOMA Temperatures ave raged f rom 2° below normal to 2° abov e normal Preci p i tation a \ eraged from 0 i i n south cent ral to 2.16 1 n northeast Weekend very warm wit h ra i n most a r e a %

F ield crop condi t ions mostl y good to fai r Rai n f all needed f or wheat seedbed preparati on , 22% complete Surf ace soil mo i sture 43% short , 49% adeq uate 8% surpl us Subsoil mo i sture 32% short , 68% adequate Corn 70% dented, 10% mat u r-e, 46% 1974 20° average. Sorghums 86% headed , 53% dough stage 7% mature 8% 1974. Cot ton acreage 100% <qua red , 54% set t ing bolls 77% 1 9 7 4 , Pea- nuts good , 63% spi ked, 70% 1974. Soybeans v i rt ual- 1 y compl et ed f lowering Stage 39% podding , 34% 197.- A l fa l fa 3d cut t ing 77% compl et e , seed pro- spects mus t l y fai r due to heavy ra l ns. Range and pasture condi t ions mostly good , cent 1 nued to de- .1 ines t a t e wide

OREGON : Temperatures near normal. Maximums 80 and 90 interior , 60 s and low 70's along coast. Min i mums in 40 and 50. Precipi tat ion W(S t 0.01 1 n. or less . No prec i p i tat 1011 east .

Fa 11 grain harvest 75% complete , yields good . Second and t h i rd cut t ing hay con t inuing . Mint

hops good. Grass seed harvest nearly finished. Bartlett pear harvest about to begin, good crop. Cherry harvest almost completed. Peaches being picked. Walnuts, filberts good. Evergreen blackberries being picked. Cauliflower, sweet corn, broccoli, beets, green beans, cucumbers being harvested. Most potatoes good except in Klamath County where scattered freeze damage occurred, [illegible]. Lower, middle elevation ranges dry. Higher [illegible] in good condition. Cattle and calves in good shape. Feed, range water adequate. Fire danger increasing.

PENNSYLVANIA: Warm and very humid most of week. Weekly temperatures averaged 2 to 4° above normal south and west, near normal [illegible]. Extremes: 91 and 49°. Showers and thundershowers throughout week produced 0.50 in. rainfall north to more than 2.50 in. parts southwest and south central. Elsewhere mostly 0.75 to 1.25 in.

Crop prospects improved by rain. Major activities combining oats and baling straw, harvesting early potatoes, apples, peaches, pears, plums, tomatoes, sweet corn, tobacco and fall plowing. Preparations for silo filling underway. Oats 75% combined, tobacco 5% cut, potatoes 20% dug. Corn for grain 46% silked, 42% dough, 3% dented. [illegible] corn [illegible] harvested. Alfalfa hay 2nd cut 8[illegible] complete, 3rd cut 21[illegible], [illegible] 2nd cut 51%. Fall plowing 12% complete. Pastures providing average to below average feed. Grape crop looking good. Apples sizing well, harvest of early varieties underway. Peach harvest in full swing. Cabbage harvest underway in Kingtown Valley area. Quality and quantity of sweet corn and tomatoes for fresh market good.

PUERTO RICO: Island average rainfall 2.29 in. Highest weekly total 6.17 in. at Pico Del Este-Luquillo. Highest 24-hour total 3.70 in. at [illegible] airport. Temperatures averaged 81 on coast and 75° interior. Extremes 93 and 58°. [illegible]

SOUTH CAROLINA: Cooler than normal early, rising to above normal [illegible] week when some of the hottest weather of summer occurred. Rainfall mostly below normal. Showers locally, widely scattered showers [illegible] of week. Heaviest thundershowers mostly in south.

Growing crops are in need of rain [illegible], crops are in good condition. Tobacco 88% harvested, 90% 1974, 8[illegible] average. Cotton fair to good condition, infestation of bollworms and weevils heavy, 95% setting bolls, 6% open bolls. Soybeans good condition, [illegible] blooming, 39% setting pods. Corn condition good, 55% mature stage. Peaches 96% harvested, 97% 1974, 93% average.

SOUTH DAKOTA: Temperatures averaged 1 to 7° below normal. Extremes 97° Gregory and White Lake [illegible], 38° Rapid City [illegible]. Precipitation ranged from 0.[illegible] in. west to 1.18 in. east. Precipitation departure from normal since beginning of season [illegible] 1.58 in. below normal north [illegible] to 3.[illegible] in. above normal.

[illegible] ripe, 17% harvested, 1974 [illegible], normal 42%. Corn 33% in dough stage, 1974 19%, normal 41%. Soybeans 93% podded, slightly ahead of 1974 and normal. Sorghum 67% headed, 1974 64%, normal 72%. Cutting corn for silage has started. Discing stubble and fall plowing are under way. Livestock in good condition. Pastures are generally adequate but grass is getting tough as it matures. Stock water supplies are generally adequate except central and northeast where supplies are short.

TENNESSEE: Temperatures averaged 2° above normal middle and west and normal in east. Thundershowers throughout 15th and 16th, but amounts were light.

Short soil moisture supplies over 50% of State. Fieldwork: 5.0 days suitable. Cotton setting bolls 88%, 1974 77%, average 86%. Boll weevil infestation worst in years. Soybeans good to excellent; blooming 79%, 1974 66%, average 79%; setting pods 38%, 1974 21%, average 38%. Corn 42% dented, 33% dough stage, 19% silking, ahead of 1974, behind average. Early corn hurt badly. Late corn mostly good. Tobacco harvest starting, uneven growth will slow harvest.

TEXAS: Scattered shower activity most areas. Totals heaviest northwest. Several locations Panhandle, excess 2.00 in. Temperatures 4° below normal High Plains, Trans-Pecos, near normal elsewhere.

Corn harvest lagging behind 1974's schedule while harvest sorghum, peanuts, rice on schedule. Sorghum yields disappointing Coastal Bend, south central. Harvest sunflowers complete southern areas. Cotton: Harvest delayed Coastal Bend, Lower Rio Grande wet weather, resumed end of week. Blacklands, south central, rapidly approaching maturity, harvest under way soon. Heavy insect damage noted Blacklands to High Plains; control measures necessary most localities. Sorghum harvest rapidly nearing completion southern areas. Blacklands, east harvest making excellent progress. Yields many localities lower than expected. High, Low Plains insect problems unusually heavy, but crop making satisfactory progress. Major crops percent harvested: Cotton 4, 1974 6, average 5; corn 12, 1974 28, average 21; sorghum 43, 1974 46, average 43; peanuts 5, 1974 3, average 9; rice 53, 1974 63, average 56. High Plains: Potatoes, onions still harvested. Carrots, tomatoes, peppers, cabbage good condition. Cucumber yields good. Trans-Pecos: Cantaloup, onion harvest continues. North: Okra, tomato, cantaloup, watermelon, pea, cucumber harvests continue. Wet weather caused insects, disease. East: Harvest of peas, watermelons, tomatoes, cucumbers continues. Sweetpotatoes requiring irrigation. San Antonio-Winter Garden: Carrot, cabbage planting, some fields up, doing well. Some areas heavy grub infestation. Planting fall cucumbers begun. Lower Rio Grande Valley: Peppers, tomatoes planted prior wet weather doing well. Peach harvest complete except few late varieties. Yellow aphids, web worms in pecans around Rolling Plains. Citrus benefited recent rainfall.

Livestock weathered summer months excellent condition. Dry weather causing pastures turn brown grazing still abundant. Ranchers culling herds to save grazing for fall. Hornflies, ticks, mosquitoes, screwworms continue cause problems. Fall sheep, goat shearing steady progress.

UTAH: Scattered shower and thunderstorm activity midweek. Accumulated amounts of moisture generally light to moderate. Average temperatures generally near normal, ranging from 3° below normal to 6° above.

Winter wheat 50%; spring wheat 18%, barley 25%;

and oats 14% harvested. Second crop alfalfa hay 65% harvested, meadow hay 80%. Late spring planted crops good condition, but need a late frost to mature. Livestock in good condition. Range feed plentiful but dry. Fire warnings posted.

VIRGINIA: Hot, humid showers, thunderstorms with rain averaging 0.60 in. Temperature averaged normal. Extremes: 95 and 52°.

Fieldwork: 5.2 days suitable. Topsoil moisture: 58% adequate, 40% short, 2% surplus. Corn silage harvest increasing. Field crops good to excellent condition. Soybean insect scouting programs organized, some spraying necessary. Tobacco harvest progress: Flue-cured 27%, 1974 24%. Fire-cured 6%, 1974 S%. Burley, sun-cured less than 3% harvested. Peanuts received chemicals for disease, insect, weed controls. Hay quality good. pasture, hay condition still gnod to excellent. Grazing supplemented with hay still needed in southwest. Cabbage harvest ❑ tarted. Potato, tomato harvest continues.

WASHINGTON: West: Temperatures near normal. Below normal precipitation.

Raspberry picking almost complete. Blueberry, blackberry harvest continued. Cucumber, broccoli, bush bean and vegetable harvest progressing. cauliflower harvest under way. Haying continued. East: Temperatures near normal. No precipitation.

Peach harvest continued. Third cutting alfalfa hay begun. Potato, sweet corn, tomato and melon harvests continuing. Wheat harvest continued full swing. Lentil, dry psa harvest progressing. Grass seed harvest complete, yields below normal.

WEST VIRGINIA: Temperatures above normal. Precipitation above normal with most in northwest and north central.

Favorable workdays 3,8. Soil moisture 31% short, 55% adequate and 14% surplus. Main activities: Haying, clipping pastures and cutting weeds and brush. Second cutting of hay 44% complete. Oats 85% and wheat 95% harveeted. Corn in fair to good condition with 18% pre-silked, 44% silked and 3S% dough stage. Much needed rain helped pastures and hay. Livestock generally in good condition.

WYOMING: Another very dry, cool week. Temperatures all areas below seasonal norm. Precipitation very spotty, mostly below normal.

Small grain harvest continued. Percent harvested: Winter wheat 88%, barley 41%, spring wheat 34%, oats 21%. Second cutting alfalfa 42% cut, other hay 70%. Row crop prospects mostly good. Corn 81% tasseled, 57% silked. Dry beans 97% in bloom, 66% setting pods, cutting expected to begin about September 1st. Potatoes 93% in bloom. Soil moisture supplies short several areas. Major activities: Combining, haying, irrigating, care of livestock.

WISCONSIN: Warm temperatures prevailed on 11th and 12th, also partly cloudy skies. Some showers and thunderstorms on 11th, more widespread across north on 12th. Cooler on 13th through 17th. Highs 70's and low 60's. Scattered rain 15th and 16th generally light.

Oat harvest made rapid progress, SO% combined, 1974 50S, normal 65%. Many farmers finished combining, now baling straw. Corn crop 35% dough stage, 1974 20%, normal 25%. Still under severe moisture stress on light soils. Early corn on heavier soils ❑ uch ahead of 1974. Weather favorable for development of European corn borer and rootworms. Second crop hay 70S harvested, 1974 65%, normal 60%. Soybeans need rain for pod set. Pastures have little feed value left. Sweetcorn yields lowered by lack of rain. Ear size and shape deteriorating. Snap beans improved by showers. Commercial cherry harvest near completion. Tobacco being topped. Late planted tobacco needs rain. Soil ❑ oisture 93% short, 7% adequate,

WORLD AGRICULTURE WEATHER SUMMARY

HIGHLIGHTS: Drought and record high temperatures in July and early August spread throughout most of western Europe and crops deteriorated. Generous rains boosted crop prospects in much of European USSR, but a large part of the New Lands received little rain and crops continued to decline. In northern parts of European USSR and west Siberia cool weather and some frost in August threatened crops and delayed growth. Increased shower activity in mid-August tended to ease drought in both East and West Europe and in the USSR.

Summer monsoons in Asia are performing well but causing some flooding. Late July and early August rains brightened the production outlook in Canada's Maritime and Prairie Provinces.

WEATHER: Record heat accompanied by drought tormented crops in western Europe, where, except for brief periods of normal conditions, this summer's weather has been more like that in the Mediterranean region than in the North Sea and Baltic areas. Sweden even reported temperatures in the 100. Temperatures moderated in mid-August, however, and rainfall increased.

Eastern Europe experienced more moderate weather--a favorable turn from earlier floods in the Danube Basin and drought in parts of the USSR. Drought persisted, however, in the USSR dry southern Urals and Turgay Plateau of Kazakhstan. Some crops in the southern and eastern Ukraine aren't expected to mature for grain or oilseeds and are being grazed or cut for silage.

In North America rains in late July and early August relieved hot, dry conditions for crops in Canada Maritime and Prairie Provinces. Mexico picked up valuable rains, especially in the previously dry northeast. Scattered rains also eased the prolonged drought in the Caribbean and Central America, although dry spots remain, especially in Honduras, Nicaragua, and Guatemala.

Rain was widespread in Japan the first week of August after several weeks of dry weather, and Typhoon Phyllis added still more at midmonth. North and northeast China and Inner Mongolia got heavy rains in late July and early August at the expense of flooding. Some flooding also occurred in South China. Monsoon rains continued to aid summer crops in Pakistan, India, Bangladesh, and most southeast Asian countries.

Africa's "summer wet" countries received adequate rain for the most part, especially West Africa. Nouakchott in Mauritania had its first substantial rain in 5 years.

July was relatively dry in Argentina and Brazil except for torrential rains in northeast Brazil, where floods damaged crops. Substantial rains fell in mid-August in southern Brazil, Uruguay, and northern Argentina. Central and southern Chile also received beneficial rains. Precipitation was good in coastal areas of Australia but sparce in much of the inland wheat-producing areas of the southeast.

GRAIN: Early seeded-early maturing grains in western Europe weathered the dry, hot summer without severe losses. On the other hand, this unusual weather reduced production prospects for corn and late seeded small grains. In the USSR good rains since late July west of the Volga were too late to save some corn and small grains in the southeastern Ukraine and Volga regions. But rains helped spring wheat in northern and eastern Kazakhstan and west Siberia. Elsewhere in Eastern Europe midsummer weather was generally favorable.

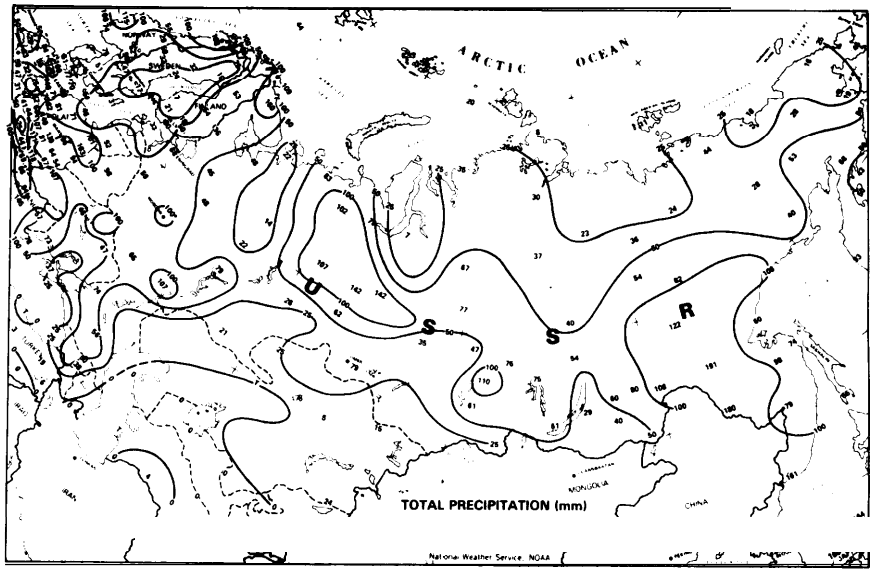
Rainfall improved in much of Central America but dry spots remain and corn and pastures are erratic in Honduras, Guatemala, and Nicaragua. In Canada, the Prairie Provinces continued to receive moisture at the right times and small grain prospects there are good. Moisture conditions are also good for corn and rice in Asia with some monsoon flooding as usual. From June 1 through August 6, areas that produce 84 percent of India's summer cereal grains received normal or above normal precipitation compared to 43 percent in 1974. Flooding in China, however, could be more severe.

Winter wheat is doing well in western and parts of eastern Australia, but infrequent rains caused problems for southern parts of the eastern belt. Except for some freeze losses Paraná winter wheat in Brazil has had mostly favorable weather. Good weather also favored winter wheat in Uruguay and Argentina, but in these areas more wheat is dormant than usual. Brazil lost some corn and rice in the northeast, where up to 20 inches of rain fell in a few days in early July.

Conditions are generally favorable for seeding winter grains in the USSR.

OILSEEDS: July-August rains gave sunflowers a big boost in the USSR, but some acreage was still lost. Drought hurt oilseed crops in much of Western Europe. In Nigeria extensive replanting of peanuts followed insect damage, rainfall was generous but good yields will depend on rains continuing well into October and that would be unusual. Oilseeds are generally doing nicely in North America and India but could have been hurt by some flooding in China.

OTHER: In Brazil the July 17-19 freeze damaged sugarcane, pastures, vegetables, bananas, and coffee in the south, while floods damaged tobacco, manioc, rice, corn, beans, and cotton in the northeast. Heavy summer rains increased incidence of coffee berry disease in Kenya. Prolonged drought in much of western Europe caused milk production, pastures, sugarbeets, fruits and vegetables to deteriorate, however, rainfall picked up in mid-August. Potato and onion yields are expected to decline. Summer rains in Cuba improved sugarcane and other crop prospects. A USSR weather and crop report indicated good cotton growing conditions in central Asia. Thunderstorms in Spain Leon Province on August 3 caused severe crop damage that could include the loss of more than half of Spain hop crop.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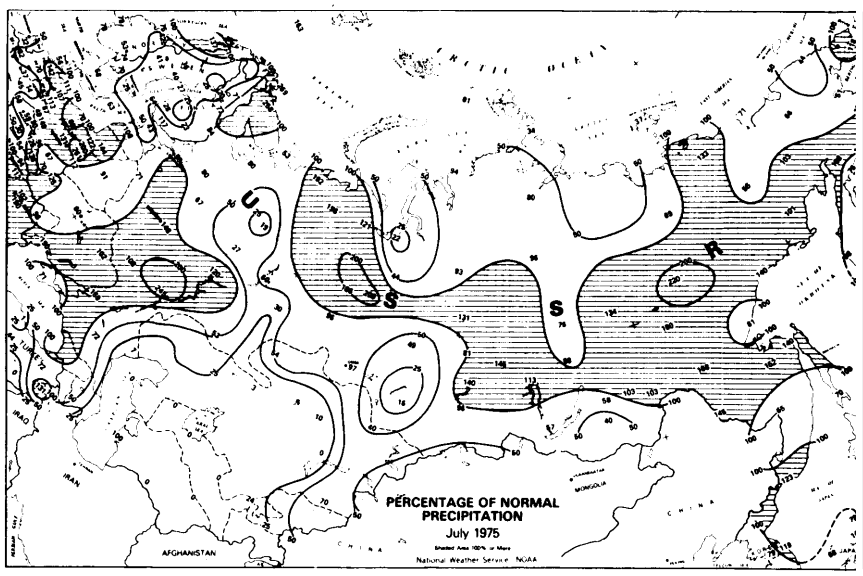
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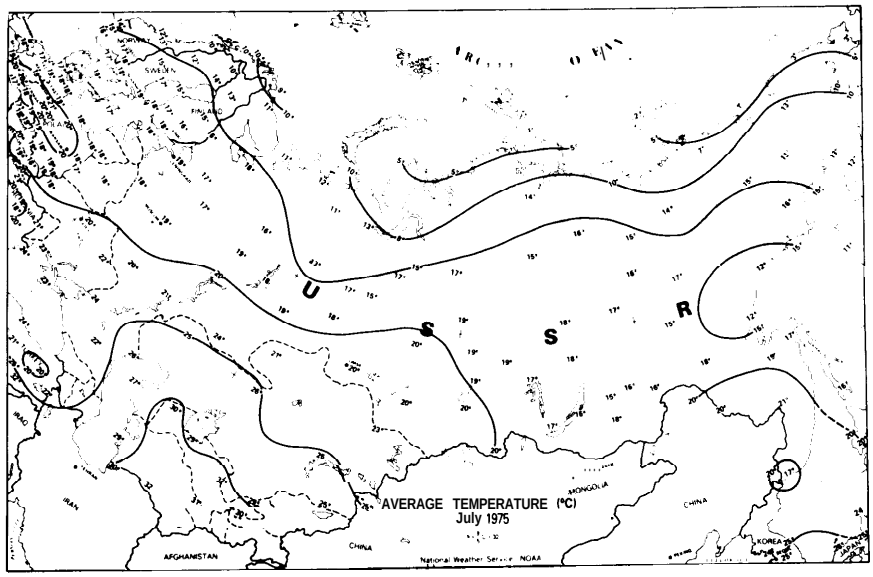
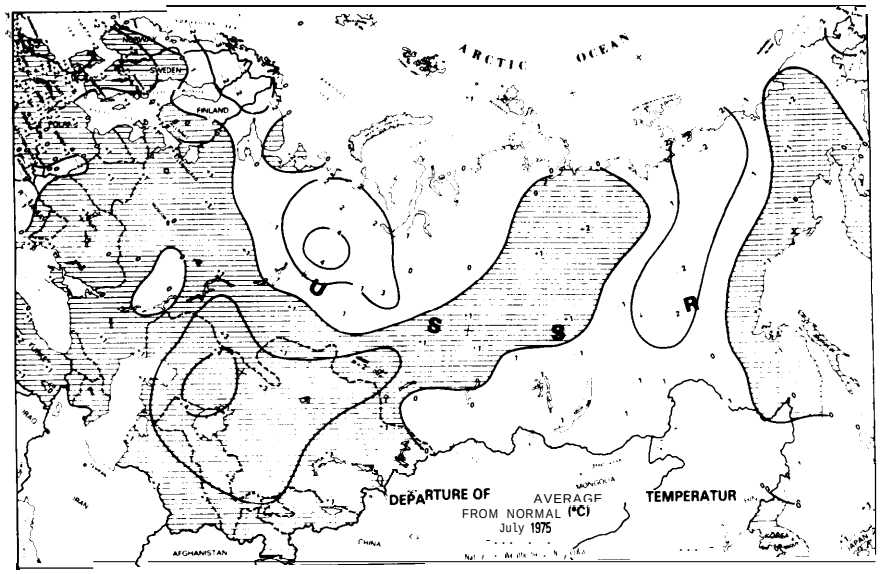
PERCENTAGE OF NORMAL
PRECIPITATION
July 1975
National Weather Service, NOAA
AFGHANISTAN


U S S R
AVERAGE TEMPERATURE (°C)
July 1975
AFGHANISTAN
CHINA
MONGOLIA
KOREA
National Weather Service NOAA


ARCTIC OCEAN
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DEPARTURE OF AVERAGE TEMPERATUR
FROM NORMAL (°C)
July 1975
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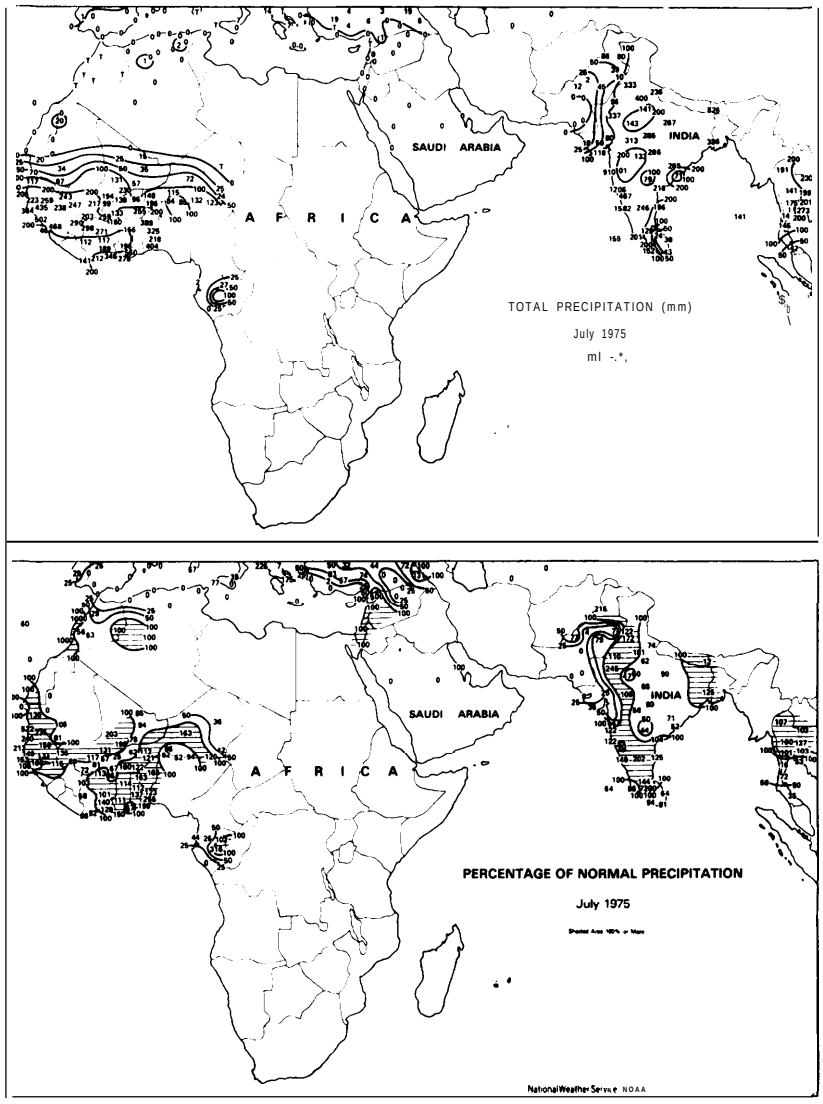
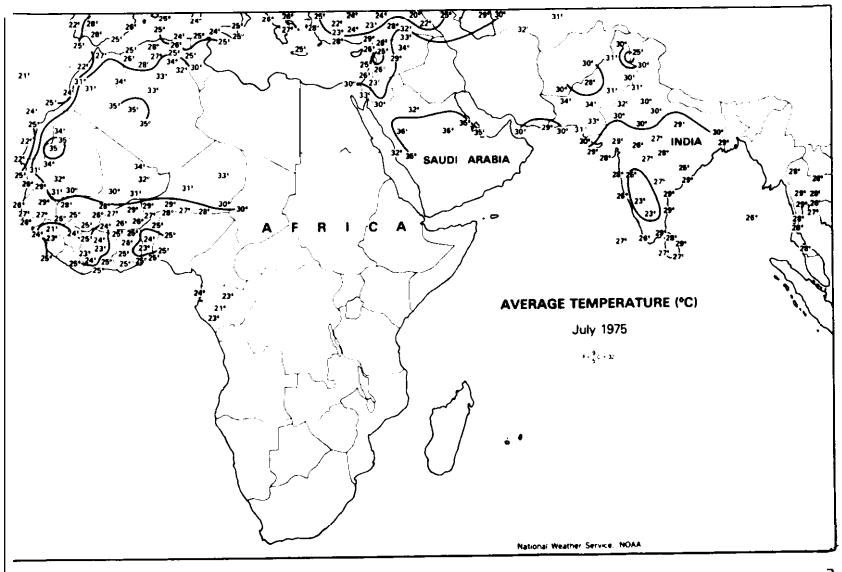
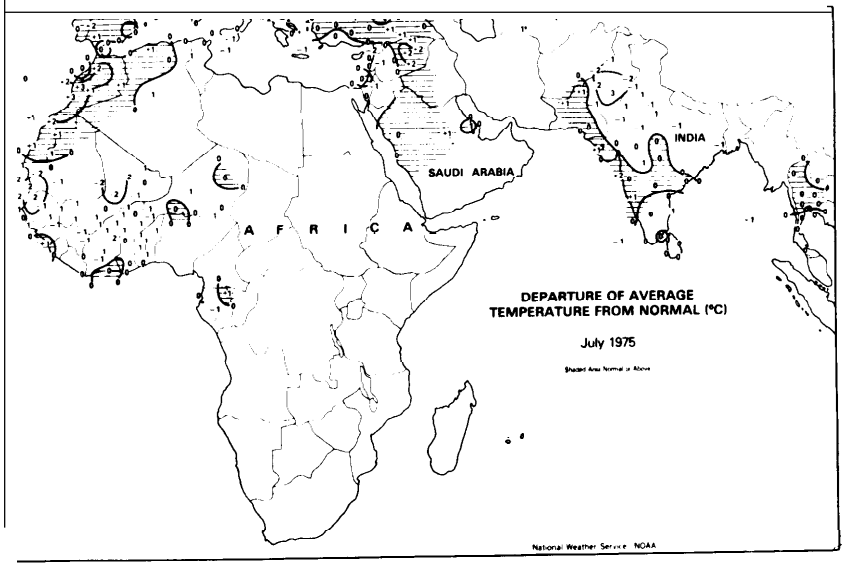
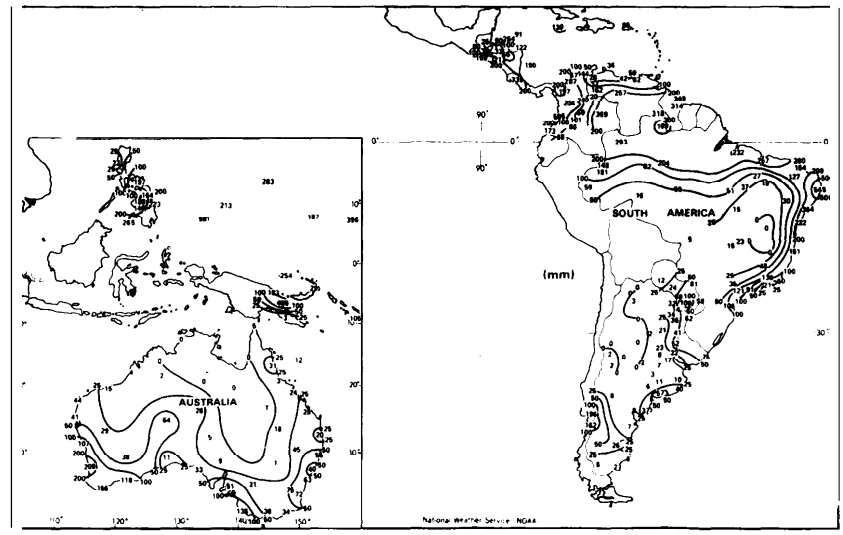
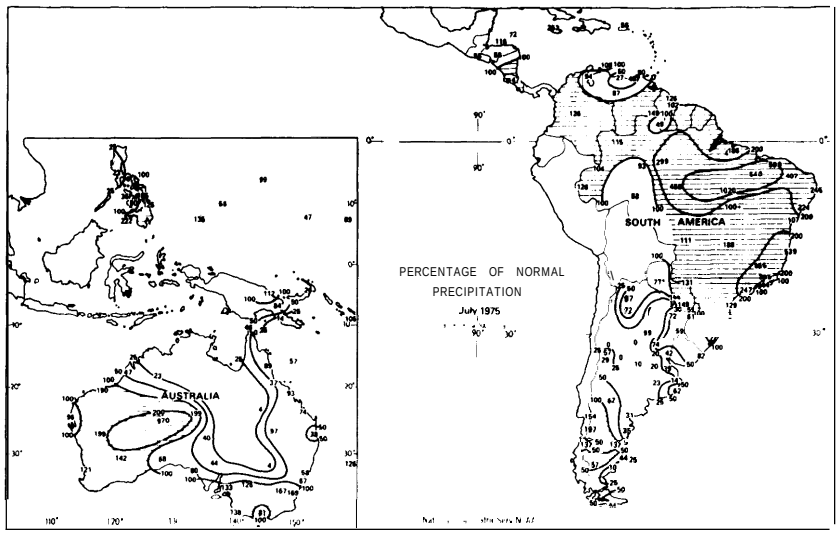
CHINA
MONGOLIA

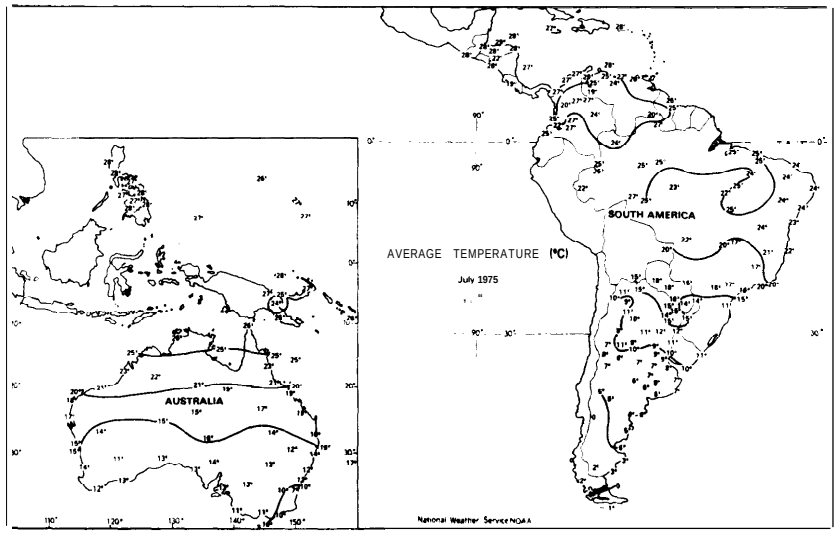

SAUDI ARABIA
INDIA
A F R I C A
TOTAL PRECIPITATION (mm)
July 1975
SAUDI ARABIA
INDIA
A F R I C A
PERCENTAGE OF NORMAL PRECIPITATION
July 1975
National Weather Service NOAA

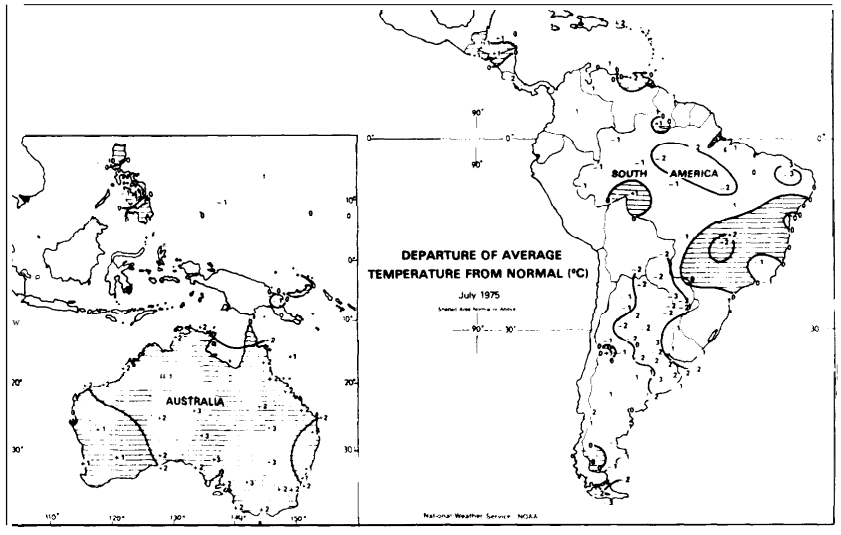

SAUDI ARABIA
INDIA
A F R I C A
AVERAGE TEMPERATURE (°C)
July 1975
National Weather Service NOAA


INDIA
SAUDI ARABIA
A F R I C A
DEPARTURE OF AVERAGE
TEMPERATURE FROM NORMAL (°C)
July 1975
National Weather Service NOAA


SOUTH AMERICA
(mm)
AUSTRALIA


SOUTH AMERICA
PERCENTAGE OF NORMAL
PRECIPITATION
July 1975
AUSTRALIA


AVERAGE TEMPERATURE (°C)
July 1975
SOUTH AMERICA
AUSTRALIA
National Weather Service NOAA


DEPARTURE OF AVERAGE
TEMPERATURE FROM NORMAL (°C)
July 1975
SOUTH AMERICA
AUSTRALIA

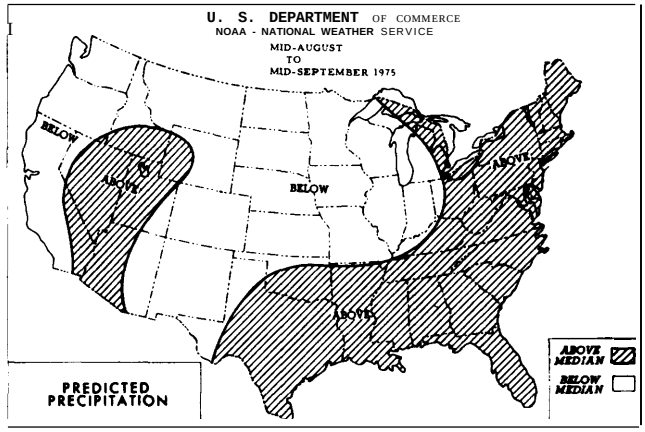
AVERAGE MONTHLY WEATHER OUTLOOK

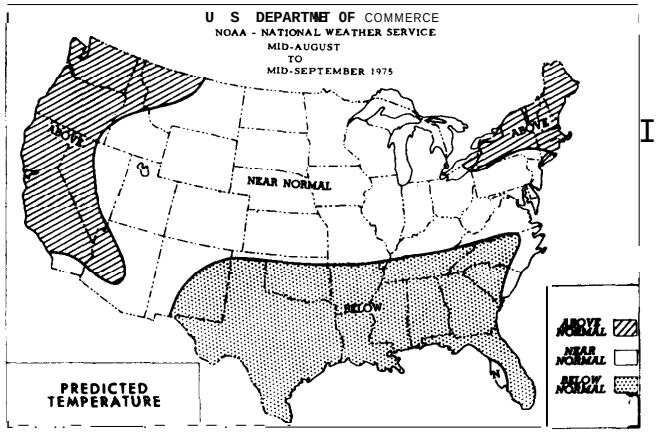
AGRICULTURAL IMPLICATIONS Continued above normal precipitation and below normal temperatures in the Southeast come at a time when cotton needs lots of warm, sunny weather to produce a good quality crop. Insect control is more difficult in wet weather.

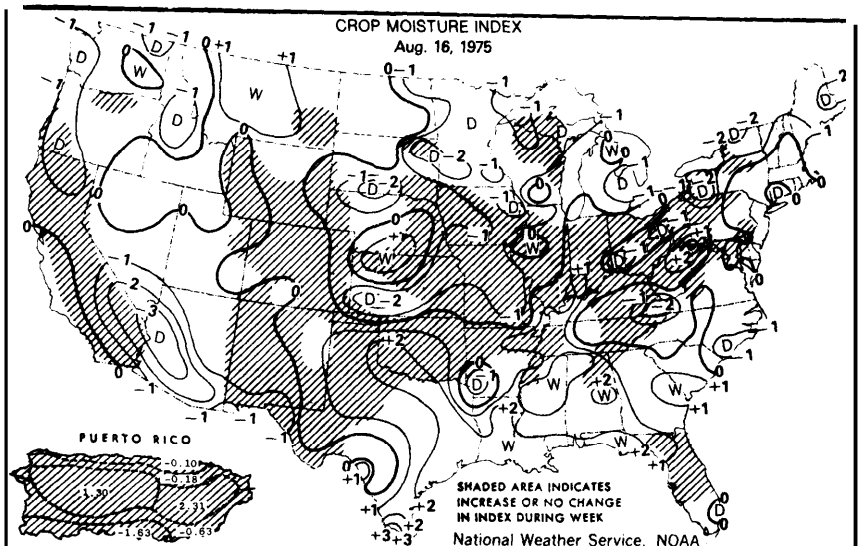
In corn and soybean areas, below normal precipitation will deter formation of dry matter in crops and result in lighter weights in areas where soil moisture is already short. In areas where soil moisture is ample and corn and beans are ahead of normal, crops will likely survive a dry period better, especially with the predicted normal temperatures.

In New England above normal precipitation and temperatures will help Maine potatoes.

Pastures in the Great Plains will deteriorate further with the predicted below normal rainfall.







The map above gives a general picture of how wet or dry the nation was last week. The lines show the crop-moisture situation according to the index computed from values of temperature and precipitation by areas. Previous weekly computations of soil moisture account for the effect of prior weather.

Shaded areas are those where precipitation increased the index last week or where soils did not dry. Unshaded areas dried last week. The centers of wet or dry areas are marked: W for wet; D for dry. Use the legend to interpret.

Local variations caused by isolated rain or by soil differences are not shown. Any interpretation must consider the type of Agriculture and the stage of crop development.

SHADED AREAS: INDEX DECREASED

ABOVE 3.0	SOME DRYING BUT STILL Excessively WET
2.0 to 3.0	MORE DRY WEATHER NEEDED, WORK DELAYED
1.0 to 2.0	FAVORABLE, EXCEPT STILL TOO WET IN SPOTS
0 to 1.0	FAVORABLE FOR NORMAL GROWTH AND FIELDWORK
0 to -1.0	TOPSOIL MOISTURE SHORT, GERMINATION SLOW
-1.0 to -2.0	ABNORMALLY DRY, PROSPECTS DETERIORATING
-2.0 to -3.0	TOO DRY, YIELD PROSPECTS REDUCED
-3.0 to -4.0	POTENTIAL YIELDS SEVERELY CUT BY DROUGHT
BELOW -4.0	EXTREMELY DRY, MOST CROPS RUINED

SHADED AREA: INDEX INCREASED OR DID NOT CHANGE

ABOVE 2.0	EXCESSIVELY WET SOME FIELDS FLOODED
2.0 to 1.0	TOO WET, SOME STANDING WATER
1.0 to 0	PROSPECTS ABOVE NORMAL, SOME FIELDS TOO WET
0 to -1.0	MOISTURE ADEQUATE FOR PRESENT NEEDS
-1.0 to -2.0	PROSPECTS IMPROVED BUT RAIN STILL NEEDED
-2.0 to -3.0	SOME IMPROVEMENT BUT STILL TOO DRY
-3.0 to -4.0	DROUGHT EASED BUT STILL SERIOUS
BELOW -4.0	DROUGHT CONTINUES RAIN URGENTLY NEEDED

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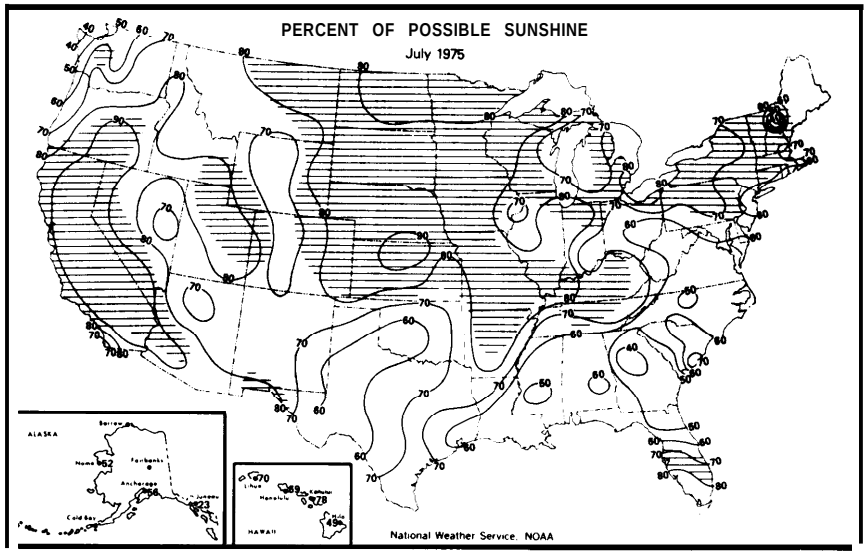

[The following paper was requested from AID by OTA:]

AGRICULTURAL INFORMATION SYSTEM OF AID

The Agency for International Development (AID) does not operate an Agricultural Information System in the context which concerns the Office of Technology Assessment (OTA) and the Congress. As we understand this latter interest, it relates primarily to information systems which provide data and assessments to the Executive Branch of the U.S. Government and to the Congress on prospective and actual harvest yields and food supply availabilities in foreign countries, particularly for those in which the food production level can have a significant impact on the worldwide demand for or the supply of a particular crop or crops.

Food and nutrition problems in AID-assisted developing countries have the highest priority in AID program policy, reflecting both our judgment of developmental priorities and the predominant emphasis accorded this program area in the Foreign Assistance Act. AID accordingly gives major attention to the status of agriculture and to general food and nutrition matters in the countries in which it has programs, making available to its own field personnel and to host country authorities and institutions a broad array of advice and guidance on food production, storage and distribution, AID could be said to operate agricultural information systems of two kinds. We study and analyze the food and nutrition status in cooperating countries, in the process of making programming decisions on the amount and nature of assistance that is desirable and possible for the agricultural sector. This involves the preparation of sector assessments and analyses which, along with comparable studies by the I.B.R.D., probably constitute the most exhaustive and reliable sources of information on agriculture in developing countries. Secondly, we develop and compile relevant technological data for use by ourselves and our contractors/grantees in providing advice and assistance for agricultural improvement in LDC's.

However, AID does not make any independent effort to accumulate information on anticipated or actual crop yields in cooperating countries. We use data made available by host country governments, international organizations, and the U.S. Department of Agriculture as the basis for our judgments as to the relative importance of assistance to individual LDC's or to the developing countries generally on the production, storage and marketing of a specific crop or of food products generally. We are concerned with production information as it affects planning for assistance in the agricultural sector. This requires that in individual countries we have some judgment as to the adequacy of national food production data and that we concern ourselves with the availability to host government of timely and accurate food production and other statistics as they may be required for policy formulation and program management.

In this regard, we have been engaged in extensive technical cooperation with the Ministry of Agriculture in almost every country with which we have had a bilateral assistance program. AID agriculture program planners and project designers in the natural course of their interaction with host country agricultural authorities have identified crop reporting, agriculture census methods, and other improved agricultural statistics as areas for technical assistance activity when they seemed important to achievement of overall agricultural program goals and objectives. A substantial but undeterminable number of LDC personnel have come to the U.S. during the last twenty years from many of the cooperating countries for orientation on the crop reporting function or for training in the techniques used in operating a crop reporting system or an agricultural census.[1]

Further, the training in agricultural sciences provided to thousands of LDC personnel who have attended U.S. universities under AID agricultural projects has in many cases included some coverage of crop reporting systems and techniques.

AID has not given special policy emphasis to technical assistance for the establishment or strengthening of crop reporting systems. The judgment as to the priority of this specific aspect of agricultural development has been left to the assessment of those engaged in the analysis of agriculture sector situations and the design of programs and projects. The significance of adequate crop reporting systems in other countries for policy development and program formu-

1 In fiscal year 1975, approximately 130 AID-financed trainees from LDCs were assigned for varying periods to the Department of Agriculture% Statistical Reporting Service for study of crop reporting systems.

lation by the U.S. Government, the governments of other food exporting countries, and international organizations, as discussed in the OTA documents, has not to date influenced AID's policy or programming. While the latter must be responsive to domestic considerations in many ways, the fundamental determinant of program content has been and remains the host country situation and its development objectives and requirements. We could increase the policy priority of crop reporting in our technical assistance programs, but the actual planning and implementation of training and technical advice for the improvement of LDC crop reporting systems would depend in each country upon the interest of the local government.

AID personnel have been involved peripherally in and have made contributions to the international crop reporting system of the Department of Agriculture, which depends upon reports received from Agricultural Attaches in U.S. Embassies abroad. Agricultural Attaches often have used their contacts with AID direct-hire and contract agricultural technicians, frequently dispersed over the host country, to supplement and reinforce their own observations as to progress with planting, the effect of rainfall and other climatic conditions on germination and growth of crops, and estimates of probable yields as harvest approaches. This has not been a systematically organized cooperation but has been found both natural and convenient for Agricultural Attaches in many instances, depending upon the desire of the particular individual to make use in this way of personnel in the country under the AID program.

AID further has contributed in recent years to the possible improvement of international crop reporting quality and timeliness by its technical assistance to cooperating countries in the utilization of data made available by U.S. remote sensing satellites. Many LDC's have requested ERTS data for agriculture-related purposes. These in some cases have significance for more accurate and more timely crop reporting, providing, for example, improved knowledge of acreage planted in the aggregate and to specific crops, early knowledge of disease outbreaks, and indications of crop maturation and yield. AID has assisted developing countries to prepare for exploitation of ERTS data, providing technical training and consulting advice to help integrate the information from this source into the countries' own systems for assembling information to support agricultural planning and program management.

In summary, AID: (a) has made many technical assistance efforts over the years to improve LDC crop reporting information systems; (b) stands ready to continue such assistance; and (c) could increase the attention given to this aspect of agricultural development assistance where warranted by country analysis of priorities necessary to raise agricultural production. AID does assemble substantial amounts of information on LDC agricultural situations and conducts an extensive system to collect and disseminate technological information for assistance to cooperating countries.

The hearing is adjourned.

[Whereupon, at 4:45 p.m., the hearing was adjourned, subject to call of the Chair.]

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