yourself, while we appreciate the fine work which you are doing in going over the State and telling the people of this State what our Congress is doing, we want you and expect you to be with us in Washington a long time in the future and we want you to get some rest while you are down here. Thank you again for being with us.

RESPONSIBILITIES OF AGRICULTURE AGENCIES TO FLORIDA HORTICULTURE

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The topic "Responsibilities of Agricultural Agencies to Florida Horticulture," is a fascinating one if for no other reason than in discussing it a number of different approaches can be made. One very tempting approach is to state that all agricultural agencies serving horticultural interests of Florida have the responsibility of doing an efficient and effective job in bringing about improved production, management, and marketing practices. With that one could end the discussion. Again these agencies could be evaluated with respect to the quality and importance of services rendered; also, possible duplication and conflict in effort could be considered. I have neither the facts nor the inclination to make the latter approach.

There is a simple approach which seems to fulfill a common need, namely, to outline briefly just what agencies are responsible for what. I am often impressed by the need for such clarification. For example, not infrequently a person states that county and home agents are under the direction of the State Department of Agriculture, whereas they represent the University of Florida Agricultural Extension Service, and, as such, are faculty members of the University of Florida. Again there are those who may assume that workers in certain divisions of the State Department of Agriculture are employees of the University of Florida Agricultural Stations, or of the United States Department of Agriculture. This is a perfectly normal situation when one considers the numerous agencies of government which function in the field of education, research, service and regulatory work affecting agriculture. Thus, it shall be my purpose to outline briefly the functions of the various public agencies serving the horticultural industry of Florida and thereby clarify their identity.

With this objective, the question of classification arises. Should the functions of federal and state agencies be listed by agencies, or should the listing be by functions, namely, education, research, service, and regulatory. I have chosen to make the classification by federal and state agencies and to mention the functions of each without becoming involved in painstaking detail. Under such a procedure some agencies may be omitted through oversight. For this, one apologizes in advance. Some will be omitted intentionally. For example, under federal agencies, I do not intend to discuss the Pure Food and Drug Administration of the Federal Security Agency, even though its responsibilities of a regulatory nature are significant to horticulture. Thus, those agencies with which we have the most direct experience or which have the most direct bearing in the operation of the horticulture industry will be considered.

The amount of discussion to be devoted to any one agency is no indication of that agency's relative importance.

FEDERAL AGENCIES

Among the far-flung units of the United States Department of Agriculture which have made valuable contributions to the horticulture industry is the Agricultural Research Administration. This is the central administrative and coordinating unit for research bureaus of the Department, except for the Bureau of Agricultural Economics. The various bureaus carry on broad programs of basic research of regional or national significance. More specifically, here in Florida we are conscious of the splendid work done on citrus problems at the Subtropical Fruit Field Station at Orlando of the Bureau of Plant Industry, Soils and Agricultural Engineering. In processing, the Winter Haven Laboratory of the Bureau of Agricultural and Industrial
Chemistry has made notable contributions. Again the Administration assigns staff members from time to time to the various departments of the University of Florida Agricultural Experiment Station to carry on cooperating research projects. Fruit and vegetable producers of Florida have a keen interest in the work of the Transportation and Storage Investigations Division, of the Bureau of Plant Industry, Soils, and Agricultural Engineering. Included in this division was the work concerning measures of seasonal changes in citrus fruits which was important information in developing the Citrus Code enacted by the 1949 Legislature. This unit is continually making tests on best methods of refrigerating, shipping, and storing citrus fruits and other horticulture crops. The Bureau of Entomology and Plant Quarantine through its research and quarantine activities is another important bureau of the Agricultural Research Administration of the United States Department of Agriculture in its service to Florida horticulture. Each of these units of the Agricultural Research Administration carry on fundamental research and work on problems regional and national in scope.

Of vital importance to the horticulture industry is the statistical fact-finding job done by the United States Department of Agriculture, Bureau of Agricultural Economics, in its division of Crop and Livestock Estimates with headquarters in Orlando for the State of Florida. This agency, in cooperation with the State Department of Agriculture, the Florida Citrus Commission, and the University of Florida Agricultural Experiment Station, provides crop estimates, current crop condition reports, price data, and annual summaries of production and utilization data which are indispensable in planning individual operations, as well as programs for the industry. Criticism is sometimes made that the original crop estimates vary too far from the final production figures. The fact remains that over the years the crop estimating service of the Bureau of Agricultural Economics has provided the best data on crop estimates. The basic information for such estimates is derived from a sample of growers. Thus, to a considerable extent, the accuracy of such estimates is dependent upon growers submitting the best possible information. This agency is seeking at all times to improve its technique in making crop estimates and as time goes by the relatively small errors of the past should be further reduced.

In addition to the crop estimating and related services of the Bureau of Agricultural Economics, the organization at the Washington and state levels is carrying on research in the field of marketing and utilization of wide interest to the horticulture industry. Studies in demand, consumer preference, freight rates, and marketing practices are a part of the regular research program.

We shall now turn to the Production and Marketing Administration of the United States Department of Agriculture. This agency has a number of branches or units with action or service programs directed to horticulture producers and handlers of horticultural products. Among these is the Market News Service, established in 1915, which distributes current information on commodity movements, distribution, demand factors and prices at the various trading levels from grower to wholesaler. In addition to short-term operations in some of the various vegetable markets in the state, the most widely known is the Marketing News bulletin issued by Mr. Harry Willson, at Lakeland, which gives daily information throughout the citrus marketing season. This type of information provides all producers and handlers with going market prices. The availability of shipments and distribution information assists greatly in keeping an even flow of produce to the various market centers.

Another service rendered by the Production and Marketing Administration is the development and establishment of grades and standards of agricultural products. These grades are used widely by various horticulture groups and provide a common language through which sellers and buyers, widely separated, may deal with confidence. At the same time grades and standards encourage production of high quality products and serve as a basis in settling disputes among buyers, sellers, common carriers, and others. They are also essential in administering a marketing agreement program, such as is in effect for Florida citrus fruits. Closely allied to the service of providing grades and standards is the Federal Inspection Service, which is available
when requested and paid for by the industry using the service. Here in Florida this service is in cooperation with the Inspection Service of the State Department of Agriculture.

One phase of the Production and Marketing Administration little known, particularly among producers, is the work of the division which administers the Perishable Agricultural Commodities Act. This is an act requiring licensing of all dealers and handlers of perishable agricultural commodities and affords protection against unscrupulous buyers and sellers. Infringement of practices prohibited under the Act can be reported by phone at any time, day or night. The agency has been so successful in handling disputes that courts almost universally accept the rulings laid down. Furthermore, with a licensing fee of but $10 the Administration usually turns over to the federal Treasury a surplus in excess of operating expenses.

The Florida Citrus Marketing Agreement Program administered by the Production and Marketing Administration is one of the commonly known and active programs. Local administration is handled by the Growers Administrative Committee assisted by the Shippers Advisory Committee. Throughout each marketing season the industry operates under orders recommended by representatives of the industry, which limit the shipment of certain grades and sizes of fresh citrus fruits. Since this program was put into operation in 1939, there has been a more orderly flow of preferred grades and sizes of oranges, grapefruit and tangerines moving in fresh fruit channels. It seems to me that one of the outstanding features of marketing agreements in the democratic procedure followed in their development and operation. Such agreements are not considered without a request from an important segment of the industry. This request must later be supported by substantial evidence developed at a public hearing. The evidence must show that the carrying out of a marketing agreement program will result in better prices to producers as a result of more orderly marketing. Even though the Secretary of Agriculture considers it feasible to institute a program on the basis of evidence submitted, it is necessary to receive approval of two-thirds of the producers voting in a referendum and to have handlers who handle over 50 per cent of the commodity sign a marketing agreement. In the absence of the latter an order can be issued, but under normal circumstances this is considered so undesirable as to nullify practically its usage.

Another activity of the Production and Marketing Administration is the program of the Federal Crop Insurance Corporation. While the crop insurance program has been in effect in Florida on cotton, tobacco, and multiple crops for some time, only recently has it been given serious consideration by the citrus industry. Since 1945 sporadic attempts have been made to institute it on a trial basis. At the present time, such a program is in effect in Polk County with 294 contracts and about $1,500,000 coverage. Protection covers the hazards of wind, freezes, and hail. In general, vegetable producers have not favored crop insurance on the grounds that a subsidized insurance program might encourage unwarranted production, and that the full cost of insurance should be borne by the industry rather than to add further to the cost of government.

Finally, under the Production and Marketing Administration, fruit and vegetable producers may participate in the Agricultural Conservation Program which has as its purpose to improve soil fertility, promote the economic use and conservation of land and diminish the wasteful use of soil resources. To accomplish these purposes payments or grants or other aids are made to farmers and growers for the treatment of land so as to restore and conserve soil and water resources. Participation in these programs by horticultural producers is not as universal as in field crop and ranch areas since many of the practices for which payment is made have customarily been performed without benefit of assistance.

Closely related to the objectives of the Agricultural Conservation program of the Production and Marketing Administration is the work of the Soil Conservation Service of the United States Department of Agriculture. The basic purpose of this service is to help land owners bring physical adjustments in land treatment that will conserve soil and water resources and thereby establish a permanent and balanced agriculture. In attaining these purposes the Service works with individual farmers or groups of farmers located
in Soil Conservation Districts established under enabling legislation of the State. Technicians in the various counties help the land owner develop a conservation plan for his farm by preparing a land capability inventory and map of the farm. Through technical assistance to individual farms and working with groups of farmers, better conservation practices are sought.

Last but not least among the agencies of the Department of Agriculture serving the horticulture industry is that of the Farm Credit Administration. In providing mortgage credit to farmers through cooperative National Farm Loan Associations, production credit through cooperative Production Credit Associations, and loans to cooperative Marketing Associations for Physical facilities, operating expenses, and warehousing through the Banks for Cooperatives, a permanent system of credit to meet the special needs of agriculture has been provided as a supplement to private credit agencies. Reasonable credit needs can be obtained in depression as well as in prosperity. Closely allied with the Farm Credit Administration is the Farmers Home Administration, which provides credit to producers who are unable to meet credit requirements of the Farm Credit Administration Agencies.

STATE AGENCIES

Let us now turn to state agencies serving the horticulture industry. We shall begin with the State Department of Agriculture headed by the Honorable Nathan Mayo. This department has numerous divisions and units which perform functions of a regulatory and service nature for horticultural producers. Time will permit discussing only those of most direct and far-reaching interest.

The Citrus Inspection Bureau, with headquarters at Winter Haven, has the task of enforcing citrus fruit laws and the regulations of the Florida Citrus Commission. Working in close conjunction with the Citrus Inspection Bureau is the Inspection Service of the United States Department of Agriculture. Without the important service rendered by the Inspection Bureau, the citrus industry would find it impossible to maintain its high standards of quality; nor could the provisions of the Federal Marketing Agreement Program be administered. In brief the Inspection Bureau protects citrus producers by requiring that all fruit dealers be bonded and licensed so that they can meet their commitments, and it affords general industry protection by making certain that fruit does not leave the state in fresh or processed form until it meets all requirements under the citrus laws and the Florida Citrus Commission regulations.

Another division of the State Department of Agriculture which has served horticultural and agricultural interests for many years is the State Marketing Bureau. In addition to marketing specialists who assist producers in their marketing problems, the Bureau provides comprehensive annual reports of statistical data covering the Florida fruit and vegetable industry.

The Division of State Markets has pioneered in a field of developing a marketing system to meet the peculiar needs of certain areas, particularly for vegetable and specialty horticultural products. There are now at least 12 farmers markets which are serving fruit and vegetable areas. Considering the fact that the first market was built in 1934, it is significant to note that there are now over 25 farmers markets in the state, many of which serve producers of other than horticultural products.

Other responsibilities of the State Department of Agriculture to the horticultural industry include the enforcement of laws requiring that fertilizers, seeds, fungicides, and insecticides be properly labelled and come up to standard. The inspection force is constantly sampling pesticides, fertilizers, and seeds to see that true representation is made.

The Florida Citrus Commission, an independent state agency, is widely known among citrus producers for its work in the field of advertising and sales promotion. Supported entirely by growers, through assessment on each box of fruit, the Commission is an outstanding example of an industry seeking and obtaining the police power of the state to accomplish some of its common objectives. It is now carrying on one of the most extensive advertising and promotion programs of any agricultural industry in America. In addition to its primary function, the Commission can use 5 per cent of its income for promoting research of benefit to the citrus industry. Over the years many growers and handlers of citrus products have looked to the Commission to represent them on certain problems industry-wide in scope. In part,
this has required representation in both Washington and Tallahassee. Such activities are not specific functions of the Commission, and the policy more recently has been to leave these activities to such organizations as Florida Citrus Mutual and trade associations.

The Florida State Plant Board, whose administrative membership is appointed by the Governor and is the same membership as the Board of Control, is charged with the general responsibility of protecting against the introduction and spread of injurious plant insects and plant diseases. In carrying out its functions, it concentrates its activities on nursery, grove, quarantine, and apiary inspection, and in examining suspicious material submitted by inspectors from an entomological or pathological standpoint.

It was the State Plant Board which, in eradicating the Mediterranean fruit fly, demonstrated for the first time that a major world insect pest could be eliminated.

Inspection of nurseries is a frequent and never ending task if major plant pests are to be controlled. Likewise with the tremendous increase in air travel and air transport into Florida with flights originating in practically all countries of the world, it is necessary to keep a constant check on plane arrivals as well as on watercraft at the principal ports of entry. The quarantine work is handled cooperatively with the Bureau of Entomology and Plant Quarantine of the United States Department of Agriculture.

Thus, the Florida State Plant Board is our first line of defense in protecting the horticultural industry from the introduction, establishment, and spread of dangerous plant pests.

Finally, I turn to the College of Agriculture of the University of Florida, with its three divisions—resident instruction, the Agricultural Experiment Stations, and the Agricultural Extension Service.

In resident instruction the major function is the training of students in horticultural and agricultural subjects at the undergraduate and graduate levels. The curricula are sufficiently varied to permit students to specialize in a particular field of interest and at the same time afford a broad coverage of agricultural knowledge. In horticulture alone four curricula are offered, namely, fruit production, vegetable production, ornamental horticulture, and floriculture. Work in each of these fields is supported by the departments of soils, agricultural engineering, plant pathology, entomology, agricultural economics, and the basic biological and physical sciences.

The Agricultural Experiment Station is charged with the responsibility of solving the many intricate problems of agriculture. It is the official state agricultural research agency. Its investigations, now represented by over 200 active projects, include the fields of agricultural economics, agricultural engineering, agronomy, animal husbandry and nutrition, dairy science, home economics, horticulture, plant pathology, poultry husbandry, soils and veterinary science. In addition to the main station at Gainesville, there are 8 branch stations and 6 field laboratories to meet definite needs for research on specific problems peculiar to particular areas. Among the field laboratories is the frost warning service at Lakeland, on which the station cooperates with the United States Weather Bureau. Time does not permit even a partial listing of the widespread value to all areas of agriculture of research results coming from the Station through its 64 years of existence.

The Agricultural Extension Service of the University is responsible for carrying the results of research to farm people. Through a corps of county and home agents, aided by a group of specialists from the state office, new knowledge is put to work. To carry out effectively the educational functions assigned it, the Extension Service must plan an adequate program in cooperation with local leadership at the county level. By so doing this agency is responsible in a large degree for sound agricultural development programs throughout the length and breadth of the State.

This combination of teaching, research, and extension, functions of the College of Agriculture here and in other states, and carried on through its resident instruction, experiment stations, and extension service divisions, represents a triumvirate unique to the United States. Its contribution to agricultural progress in this country is widely known and recognized.

From the above listing it is obvious that there are a large number of public agencies serving the horticulture industry. With such an array of agencies the problem of duplication and coordination of effort is ever
JOHNSON: FORECASTING FLORIDA WEATHER

present. While this is an ever present problem, it has been my observation that the agencies operating in Florida enjoy a high level of cooperative relationships. It is up to each agency, as well as the industry, to see to it that all functions continue to be performed efficiently, keeping ever in mind that the end product is more efficient production of high quality products and a marketing system which gets those products to the consumer at the lowest possible cost consistent with satisfying consumer wants.

FORECASTING THE WEATHER FOR FLORIDA AGRICULTURE

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Weather, more than any other one factor governs our lives and the development of any area. Consequently, almost everyone is vitally interested in present weather, past weather, and more so in what type of weather we will have in the future. This interest in future weather results in leaving the professional weather forecaster with more competition than any other professional man or business. I. R. Tannehill, Chief of Synoptic Reports and Forecasting Division of the U. S. Weather Bureau, Washington, D. C., has through very careful surveys come up with these statistics. Out of a population of nearly one hundred and fifty million people in the United States there are 135,358,892 active weather forecasters. He found in this survey that the only groups that are not interested in weather and forecasting, are children under two, the insane, those in prison for life, and those over 99 years of age. Furthermore, everyone of these 135 odd million weather forecasters are certain that his or her weather predictions are much better than those of a professional weather forecaster.

So, this talk, fellow weather forecasters, will for the most part be a discussion of the methods used by the professional meteorologists in predicting weather, especially temperature for peninsular Florida.

Prior to 1935, all weather forecasts for the state of Florida as well as the eastern half of the United States were prepared in Washington, D. C. The December 1934 freeze put an end to that, as the Washington forecaster issued a forecast of slightly higher temperature which was followed by critically low temperature in all winter crop producing areas of Florida. Let us not be too critical of these forecasts until we analyze the situation existing at that time. The only weather reporting stations in the entire state were located along the immediate coast with temperature records taken on top of tall buildings. These stations were Jacksonville, Miami, Key West, Fort Myers, and Tampa. For these stations the forecast of slightly higher temperature verified almost one hundred percent as at these official locations the temperatures were up from 2 to 8° from the previous morning. However, in the interior, readings were from 5 to 15° lower and even more so in low ground locations with resultant heavy crop loss. The production of winter crops had by this time made such progress that forecasting temperatures primarily for the coastal cities had to cease and more consideration be given to agriculture.

The Citrus Industry of central Florida went into action and from their efforts the Federal-State Frost Warning Service was established in July, 1935, with the Florida Agricultural Experiment Stations and the U. S. Weather Bureau cooperating on a 50-50 basis with headquarters at Lakeland, with forecasting and survey service covering only central Florida. By 1937, the entire Peninsular Florida came under this program.

To issue adequate forecasts, temperature distribution under various synoptic conditions needed to be known. To secure this information it was necessary to inaugurate a temperature survey program as part of the forecasting service. Temperature stations were established in groves and truck fields, throughout Peninsular Florida so at the present time we have approximately 400 temperature stations in operation during the winter season. 300 of these are equipped with thermographs, instruments that make a continuous record