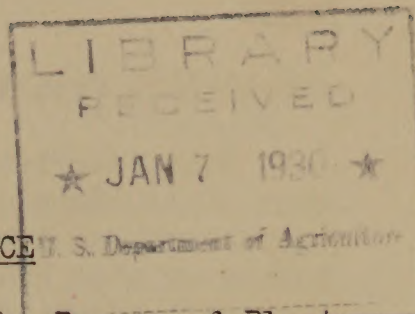


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HIGHLIGHTS OF THE YEAR IN PLANT SCIENCE U. S. Department of Agriculture

A radio talk by Dr. Karl F. Kellerman, Associate Chief of the Bureau of Plant Industry, delivered through Station WRC and 32 other stations associated with the National Broadcasting Company, December 26, 1929.

The record of the year just passing has been of unusual interest to the Bureau of Plant Industry. More than ever before it is apparent that further improvement or even continued maintenance of crop production calls for extensive research of the most thorough character. Rural humorists often say that in the old days when there were no agricultural experts to find new diseases and to point out other troubles, crops grew wonderfully well. There is a bit of truth in that joke, for in those earlier times there was less commerce in raw products and practically none in seed or living plants. Also what commerce there was, was slow. Only the sound products were likely to reach their destination and pests when present probably dried up or died from other hardships in transit.

Now each year sees faster traffic and better conditions for handling and shipping seeds, tubers, bulbs, fruits, etc. and naturally most of the pests and diseases associated with or occurring in these raw products are also kept in perfect condition as they are carried from country to country and from State to State. Unfortunately for these and other reasons too detailed to review here, it is necessary to predict that troubles with pests and diseases will get steadily worse instead of better for a long time to come.

One of the important functions of the Bureau of Plant Industry is to learn what diseases are causing trouble and to develop methods of checking such losses by spraying or other treatments, by new methods of cultivation or rotation, by breeding varieties resistant to a destructive disease, or by eradicating the disease. Nearly 15 years ago the Bureau of Plant Industry began the attempt to eradicate the bacterial canker of citrus trees and fruits in cooperation with the Gulf States. This marks the first expenditure of Federal funds to try to eradicate a plant disease. Today this campaign is practically won. The disease has been reduced almost to the vanishing point and is not known to occur in any region commercially producing citrus fruit. Later the great campaign to reduce the costly wheat rust epidemics in the spring wheat States by eradicating the common barberry bushes, and the campaign to check the white pine blister rust were undertaken, and you may have heard in the Department's hour on December 9 the favorable progress that is being made in these activities.

The latest campaign of this general type is the one begun this year in cooperation with the States of Georgia and Alabama to eradicate the phony disease of peach trees. Approximately 75,000 trees have been found to be diseased and have been destroyed this season and probably as many more will be taken out next year. This disease is especially interesting because for many years it was not recognized as an infectious disease but was supposed to be due to soil or other cultural troubles. It was finally determined to be infectious through an ingenious series of experiments which proved not only that it is infectious but also that only the roots of the peach trees are infected. Fruit, therefore, will not spread the disease but infected nursery stock and perhaps certain insects may do so. Fortunately, the disease does not develop rapidly, so complete

eradication from the entire country should be possible in a few more years.

These service campaigns to eradicate diseases are only one phase of the work of the Bureau of Plant Industry. Improving quality of crops and stabilizing yields without increasing costs of production are the fundamental ideas at the bottom of most of the research activities. Remarkable progress has been made in the development of better varieties of wheat, corn and other cereals, of cotton, of fruits, of sugar cane, etc., as well as in the introduction of new plants or new varieties from other countries likely to be of value to our farmers. With corn, many strains developed in cooperative breeding experiments will yield from 10 to 15 per cent more than the best local varieties now grown in Iowa, Nebraska, Kansas, Virginia and South Carolina. With wheat, the most recent achievement is an important new awnless variety called Newturk that compares favorably with the best standard varieties of the Northwest in yield, quality and winterhardiness with the much desired additional character of awnlessness.

Experiments with Sea Island cotton have been conducted for several years on James Island, near Charleston, South Carolina, to determine the possibility of producing this superior type of long-staple cotton even under boll weevil conditions. The experiments indicate that it may be possible to reestablish the Sea Island industry if communities can be organized to grow the Sea Island cotton exclusively and at a considerable distance from the production of any other cotton. Through this arrangement, the mixing and mongrelizing of seed stocks is avoided and the dangers of weevil injury are greatly decreased. New England manufacturers of long-staple cotton fabrics recently have shown an active interest in the experiments with the Sea Island cotton and are aiding in the effort to resume production of this type of cotton upon a considerable scale in some of the districts of Georgia and Florida that formerly were devoted to its production.

The breeding of raspberries and blackberries has yielded several varieties apparently superior to those in common use and their experimental introduction will occur shortly. New strawberries of excellent quality are being propagated also, and in the breeding of blueberries a blueberry fifteen-sixteenths of an inch in diameter has been produced.

Date growing on a satisfactory commercial basis in the Southwest is an illustration of the possibility of establishing new crops that compete but slightly with the ordinary fruits grown in the United States. Commercial date growing in this country is at present restricted largely to a single variety, the famous Deglet Noor of North Africa, and largely to the region of southern California. Experiments under way, however, have shown that there are varieties with a much wider climatic adaptability which should make it possible to extend commercial date growing into other States.

The Hevea rubber tree of Brazil, the same kind of rubber tree that has been planted extensively in the East Indies and other tropical countries, has made rapid growth in experiments conducted in Florida during the past few seasons and many of the young trees have attained a height of 15 feet or more. No frost injury occurred during the past two winters and some of the trees with slight protection continued to grow even during periods of cold weather. This is a clear indication that the Hevea rubber tree is much more resistant to cold than has been supposed. It therefore seems probable that strains sufficiently hardy to grow in southern Florida can be developed. With protection against drying winds the young Hevea rubber trees have grown as rapidly in Florida as in Haiti or Panama, and also more rapidly than several other kinds of rubber trees included in the Florida experiments.

Recently a new series of rubber plants has been obtained from Madagascar. Most of this material came from the southern part of Madagascar which has a rather temperate mild climate. The plant of chief importance in this collection is called Euphorbia intisy, which may prove to be adapted to desert conditions in the southwestern United States and produces a good quality of rubber that formerly was an article of export from Madagascar.

The experience of this Bureau since its beginning and that of other agricultural institutions as well indicates that the problems eventually of greatest value to agriculture are those dealing with the most fundamental research, even though the results may not be of direct and immediate application to the daily problems of farming. The outstanding example of research of this character at the present time is the work dealing with the remarkable variation of the influence of the length of the period of daylight upon plants of different species and different varieties. It is our conviction that a thorough understanding of this subject will enable us to arrive more accurately and rapidly at satisfactory control of plant growth and accordingly aid in the improvement and stabilization of agricultural production.

In other lines of "pure science" research work continuously proceeds, looking toward the discovery of improved farm practices. Meanwhile, the scientific knowledge developed at the State Agricultural Experiment Stations, and in the U. S. Department of Agriculture is yours to command. Your questions on practical application of plant science always are welcomed by the members of our staff. In wishing you a Happy New Year from the plant scientists of the Department, let me say that nothing will make our New Year more pleasant than the knowledge that the 6,000,000 farmers of America are deriving practical benefit from the results of our work.

