The Experiment Station and the Citrus Industry

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Of all the agricultural industries in Florida today, none is so much in need of exact knowledge as is the citrus industry. The very fact that it is the greatest agricultural industry in the state and that it is facing the problem of profitable disposition of its products, has brought keenly to attention the need of more complete and dependable information upon all phases of citrus production and handling. The production of quality fruit, the control of insect pests and diseases, economical and efficient use of plant foods, cultural methods, competitive production and transportation and distribution of the product are all vital factors affecting the financial returns.

Although frankly admitting that the Experiment Station is not doing as much for the citrus industry as its importance would seem to demand, the Station has, nevertheless, contributed much to the upbuilding of the industry in past years and is today actively engaged on many important citrus projects.

Because a valuable practice, once established, becomes of general use and its origin is soon forgotten, it may not be out of place to review some of the past work of the Station which has benefited the citrus grower.

Before doing so, however, I would like to digress for a moment to tell you of what the Experiment Station consists at the present time.

We have, not one experiment station, but an experiment station system, if you please, and all of it is a division of the College of Agriculture of the University of Florida. All work of the branch experiment stations and field laboratories is planned and directed by the Director and departmental heads in the “mother station” at Gainesville, so that the work of all is planned and co-ordinated with a view to securing the maximum results with the least expenditure of money and effort.

This map shows the main station at Gainesville and the three branch experiment stations at Quincy, Lake Alfred and Belle Glade, the three latter being devoted, respectively, to tobacco, citrus and peat land studies and experiments.

The map also shows the seven field laboratories located at the following points for the study of the problems indicated:

Monticello—Pecan Insects and Diseases.
Hastings—Irish Potato Diseases.
Cocoa—Citrus Wilt.
Sanford—Celery Insects.
Plant City—Strawberry Diseases.
Homestead—Tomato Diseases.
Bradenton—Tomato Diseases and Poultry Parasites.

The work of the field laboratories at Sanford, Homestead and Bradenton is, in part, in co-operation with the United States Department of Agriculture.

Reverting now to some of the Station’s past accomplishments:

The successful control of citrus white fly is based to a large extent on the work done at the Station in earlier days. It was the Experiment Station that devised the methods of growing white fly fungi (Aschersonia) in pure cultures, so that any grower could quickly and cheaply disseminate these beneficial fungi through his grove. The methods of reducing damage by thrips, both by nicotine sprays and destruction of weeds which are host plants are also traceable to the Station, as are numerous improvements in methods of controlling scale-insects.

The Station has, for years, shown the importance of careful handling of the fruit as a means of reducing losses from blue mold, it has shown that stem-end rot can be greatly reduced by keeping the trees free from dead wood and scale-insects, that anthracnose can be checked by spraying with ammoniacal solution of copper carbonate and that melanose control can be effected by use of Bordeaux-oil sprays on young fruit. It has pointed the way to eliminating losses from footrot, by determining the practical immunity of sour stock and has thereby indicated the proper selection of stocks for different locations.

Nutritional studies have shown that a lower amount of potash can be safely used for citrus than was commonly supposed, and that the application of limestone on sandy soils is injurious to citrus trees. Much information of practical value has been adduced as to the comparative value of fertilizer elements from various sources.

The Experiment Station was the first to bring out the fact that the only possible hope of controlling citrus canker lay in complete destruction of all infected trees. This was the foundation laid for the State Plant Board’s subsequent success in dealing with this scourge.

More recently, the Station workers have shown that much can be accomplished in control of the citrus aphis by proper grove management and the Station has introduced enemies of the citrus aphis which bid fair to materially augment the natural control of the pest.

In reciting these achievements, we have no desire to claim that the Experiment Station is entitled to exclusive credit for what has been done, nor are we disparaging the accomplishments of other workers in these fields; we are merely trying to point out that the Station has done its full part.

Along other lines, the Station has also benefited the citrus grower. For example, most people have forgotten that the present use of the velvet bean as a great soil-enriching crop was due to the work of the Florida Experiment Station with this plant. The Station recognized it as
a valuable legume and cover crop and then
developed quick-maturing strains, several
of which are grown all over the Southern
States today.

More recently, the Station, in co-opera-
tion with the United States Department
of Agriculture, has introduced and shown
the value of Crotalaria as a soil builder
for citrus groves.

It is also interesting to note, in pass-
ing, that since its establishment in 1888,
the Experiment Station has published a
total of 192 bulletins. Of these, thirty-
eight have dealt exclusively or primarily
with citrus matters. These citrus bulle-
tins total 1237 pages and 343,744 copies
of them have been issued*. The total
amount of printed matter in these editions
amounted to not less than 11,251,000
pages.

The above does not include press bulle-
tins nor the thousands of pages of press
and magazine articles on citrus subjects
contributed by members of the Station
staff. Certainly, it cannot be said that
the Experiment Station has not furnished
literature for the citrus industry.

The Experiment Station workers have
no inclination to rest content with what
has been done, for the work now actively
under way will, we believe, bring results
of even greater value for the future.

Of more than 120 major research
projects now being pursued, some thirty-
three are directly connected with or have
a vital bearing on the citrus industry.
These are found in the fields of Horticul-
ture, Chemistry, Entomology, Plant Path-
ology, Agronomy, Agricultural Econom-
ics, Home Economics and even Animal
Husbandry.

This paper would fall short of its pur-
pose if it did not convey to you some spe-
cific conception of what the Experiment
Station is doing and trying to do for the
citrus industry, but lack of time makes
it necessary to cover this part of our dis-
cussion by merely reciting the principal
subjects now under investigation. They
are as follows:

Cover crop and green manure studies
in citrus groves.

Soil and nutrition studies with refer-
ence to dieback of citrus.

Determination of the effect of varying
amounts of potash on the composition of
oranges and grapefruit.

Determination of the fertilizer require-
ments of Satsuma oranges.

Determination of the effect of various
potash carriers on the growth of citrus
trees and composition of the fruit.

Determination of the effect of various
phosphoric acid carriers on the growth of
citrus trees and the composition of the
fruit.

Composition of citrus crops as influ-
enced by fertilization and soil types.

Determination of the effect of green
manures on composition of the soil.

Determination of the effect of the
cause of poor crop growth due to liming
sandy soils.

The green citrus aphis.

Florida flower thrips on citrus.

Study of plant bugs attacking citrus.

*—Some of earlier editions estimated from
statements appearing in annual reports.
Introduction and study of beneficial insects—such as Delphastus, the white fly-eating ladybeetle, etc.

Testing of various citrus hybrids.
Tests of different stocks for the Satsuma orange.

Grapefruit refuse as a dairy feed.

Fundamental physiology of citrus fruit production.

Citrus diseases, including gumming*, melanose, stem-end rot, citrus canker*, anthracnose of citrus fruits, citrus scab, citrus wilt, and scaly bark.

Entomogenous fungi attacking the citrus aphis.

A study to determine the cost of picking, hauling and packing of Florida citrus fruits in approximately 100 packing houses operated by both marketing associations and private organizations.

A study of the cost of transportation of Florida citrus fruits, with comparative costs from other states and foreign countries.

Study of the factors affecting the jellying of kumquats.

Tests of introduced and new varieties and hybrids of citrus and near-citrus.

Variety tests of various citrus varieties on different root-stocks.**

Progeny and bud selection investigations**.

Propagation experiments with various citrus plants.

Citrus fruit trials on peat lands of the Everglades.

These investigations, though covering a wide variety of subjects, are still not adequate to meet the needs of the citrus industry. Many promising lines of investigation are open to the Station workers, but they cannot be pursued more rapidly than available appropriations permit.

Mr. Newell: The representatives and leaders of other agricultural industries in the state have gone to Tallahassee, presented their needs, and in a considerable measure, at least, gotten what they went after. They have gotten a provision made in appropriation bills whereby the Experiment Station should serve their industries. However, the citrus growers have not been doing that. They are not making it possible for the Experiment Station to serve them. If that condition continues, it will necessarily mean that in the future, the Experiment Station will have to do less for the citrus grower, and more for the other agencies of the state. Do not criticize the Station for what it is doing, unless you do something for it.

You have in this county a Citrus Experiment Station, and I want to take this opportunity of expressing our appreciation of the large number of people who went to the station, and their patience in our efforts to point out some of the work being done there. It's a matter of encouragement to all of us to have you

*—In co-operation with State Plant Board.

**—In co-operation with Bureau of Plant Industry, U. S. Department of Agriculture.
visit our work, and we were mightily gratified at the number of people who came there this afternoon. But in this county you have that little Citrus Experiment Station with a state appropriation this year of $15,500 for office expenses. California for her Citrus Experiment Station has $100,000 a year, and yet the Florida citrus industry, in the acreage, at least, is today the equal or superior of California. There isn't a citrus grower here that would admit that California citrus fruit growing is any more important than citrus fruit growing in Florida. Maybe this explains in part why we hear so many comparisons between the citrus industry of California and the citrus industry of Florida. Those comparisons invariably are very complimentary to California, and not to Florida.

In the future, the Citrus Experiment Station as a whole, and the agencies which co-operate with it, various branches of the United States Department of Agriculture, and various others, activities, and the extent to which they serve you, is going to be dependent, very largely, upon the extent to which you support them.