parasites seem able to migrate through the soil quite extensively and, in feeding, undoubtedly go from plant to plant. The similarity between their feeding habits and that of aphids excites the imagination.

I would like to say in closing that these external root parasites, about which we know so little, and of which the sting nematode and the stubby root nematode are examples, constitute a vast and almost wholly unexplored field in plant pathology and a field that is of enormous importance to the agriculture of the South.

THE VEGETABLE DEAL IN THE MUCK LANDS OF PALM BEACH COUNTY

H. L. Speer

Belle Glade

My subject, “The Vegetable Deal in the Muck Lands of Palm Beach County” is rather large, so in order to cover it in a comprehensive way without over-running my allotted time, I have decided to divide my comments into three different sections.

1. Early Days:

First, in order that the subject may be better understood, I want to discuss the conditions that existed in the early days of development of Custard Apple lands on the islands and around the South East side of Lake Okeechobee.

When the first settlers, who were primarily fishermen, trappers, and plume hunters, started planting garden plots around their camp sites, and vegetables grew so luxuriantly that they could hardly believe what they were seeing, the phenomenal success obtained encouraged some of them to clear plots large enough to try small commercial plantings.

String beans, peppers and egg plant, english peas, tomatoes, and lima beans all did well and could be packed and carried out to market along the East Coast. The first vegetables grown were carried down the North New River Canal to Fort Lauderdale by boat and a few years later the Palm Beach Canal was opened up and could be used for water transportation. These early growers produced their small plots of vegetables only during mid-winter and as a rule obtained high prices, which encouraged them to clear larger plots. Only Custard Apple land, close to the lake was used and the cost of clearing was as much as $100.00 per acre at around $1.50 per day for labor, so fields necessarily remained small.

The farmers had no water control and frequently planted strips that were long and narrow along the lake shore as the water went down enough to leave the soil in farming condition. They had only light weight and very inadequate equipment for preparing land and most of their crops were planted with hand planters a few days after the moonvines, which covered every foot of cleared land, were cut and rolled up like rolling up a carpet.

In the early twenties a few Fordson tractors, No. 3 Oliver plows, and light weight discs were brought in and by staying on the job it was possible to turn an acre and a half a day with such an outfit.

The Florida East Coast Railroad was completed into the area in 1925 and this of course started rapid expansion of farm sizes and resulted in many more farms being opened up.

High water continued to prevent fall crops but Refugee beans and Little Marvel peas were planted during the mid-winter months and tomatoes and lima beans were added as major crops in the spring.

High prices, ($5.00 average for beans in the winter of 1926-27), low costs, and good yields made small farms profitable. Incomes of $1000.00 per acre were not too unusual and many families made a good living on less than ten acres of land. After the railroad came in a large part of the vegetables grown went out as express shipments. Several buyers confined their entire business to express orders, many of these orders for no more than five hampers, others running as high as fifty. Frequently the Canal Point Express Agent handled from 2500 to 3000 packages a day.

During the winter of 1927 the Everglades Experiment Station discovered the value of copper sulphate in getting crops to grow on saw grass muck, which up to this time had not been used at all. The use of copper sulphate made saw grass lands quite productive for certain crops including Irish potatoes and
cabbage. The need for manganese, and to a more limited extent, zinc, was demonstrated in the next few years, and the size of farms really began to increase and other new crops came into the picture. In a short time celery, escarole, radishes, and Chinese cabbage were being planted in considerable quantities. The quality was often rather poor and yields disappointing, however, corrected fertilizer formulas soon remedied these conditions and resulted in satisfactory yields and quality.

New and better varieties of vegetables such as the Bountiful Bean, Giant Stringless Bean, Golden Acre Cabbage, Florida Giant Pepper, and Marglobe Tomatoes were introduced. Crawler tractors with wide tread tracks and slat mole board plows made it possible to do a much better job of plowing and lot more of it per day. Hand dusters took the place of the old gunny sack from which sulphur had been dusted on beans by hand. Knapsack sprayers had to be depended on for disease control.

Shortly after this a successful disc plow was brought in, power dusters and sprayers and multiple row cultivators were introduced and these made it possible for a farmer to increase the size of his operation materially and at the same time reduce the size of his crew, with the exception of pickers.

The scarcity of pickers and the high cost of both picking and packing offset most savings the farmers were able to make in the cost of production and this fact in connection with lower prices due to increased acreage both in the muck lands and in competing areas prevented the farmer benefiting to any great extent by the savings effected. This resulted in a tendency to plant more acres in order to try to make more money. The acreage in cultivation continued to increase until the high prices of World War II began to effect the situation and many farmers made further large increases in acreage. During World War II scientific research paid off in a big way for the farmer in the production of new and very superior insecticides and fungicides. DDT proved to be not only the world's best mosquito and insect control for the armed forces but the most effective insecticide in the control of certain groups of injurious insects that has ever been available to the farmers. Other insecticides that were effective against other groups were made available. The chlorinated hydrocarbons, organic phosphates, and Thiocyanates, made it possible to control such insects as cut worms, corn ear worms, aphids and wire worms, so that marketable grades of vegetables could be produced under conditions that were not possible in the past.

A very effective group of fungicides also were made available to the farmers. The chlorinated quinones, chlorophenates, the carbamates and organic mercury compounds have made it possible to save enormous acreages of crops that in the past would have been a total loss. Such fungus diseases as early and late blight of celery, blight of potatoes, leaf spot of pepper and perhaps helminthosporium on corn can now be controlled where the best materials a few years ago were not effective.

The total acreage planted in beans for the season 1939-40 for fall, mid-winter and spring plantings was reported by the Bureau of Agricultural Economics as 27,800 acres; in 1941-42 season the total acreage was reported as 34,000; in 42-43, 43,600. It reacher a peak in 43-44 of 64,000 acres, a large percentage of which went to canneries.

Following that high production year the acreages have been tapering off rather rapidly and at present competition with frozen beans and increased competition with areas on the East Coast where growers have greatly improved their water control methods and production methods, there is a noticeable tendency to reduce bean acreage still further. The amount of migrant labor available at present is very much reduced due to defense program activities and high wage rates paid on such jobs.

These facts are discouraging many farmers who formerly planted large acreages of beans and it appears that until we have varieties suited to the use of mechanical pickers, which may be only a short while, beans will continue to lose in popularity.

2. Current Situation:

Since the beginning of operations in the muck lands, the keynote has been Progress. Nothing stays the same very long. Progress has been rapid, with hardly any two years the same. Our farmers have had to stay on their toes to keep pace and those who could not do this have fallen by the wayside. Many others have proven capable of meeting the situation and keeping a few jumps ahead and have de-
developed into the most capable and best-informed group of farmers I know of any place in the world. They are big business men in most anybody's language, several individuals operating from two to three thousand acres, specializing in the production of a variety of products such as six to eight hundred acres of beans, three to four hundred acres of sweet corn, two to three hundred acres of celery, one or two hundred acres of potatoes, one to three hundred head of beef cattle, operating a farm shop, a packing house, and a brokerage business. The express orders of the middle twenties have been a thing of the past for many years and most sales are now made at auction in car load lots. No shipments of small quantities are now made direct to the retailer but many wholesalers buy mixed cars that are assembled and loaded by local buyers and packers.

Two of the more recent mechanical developments have been eight and ten row harvesting machines on which the packing crew ride and deliver the product—such as sweet corn, escarole or lettuce, graded and packed, to the truck that goes direct to the precooler. And the celery harvester on which the celery is washed and packed and sent direct to the precooler. These machines not only require a smaller number of workers but save a lot of time and leave all waste and culls in the field.

Although still the most important crop, beans are not planted to the extent they were a few years ago. The top year was 1943-44 with 64,000 acres and in the intervening years the acreage has dropped to a much smaller figure. Last year, 1950-51, the fall crop was almost wiped out by a hurricane on October 19 and most of the acreage replanted was killed by an early frost on November 26 and 27 so that the total acreage for harvest was only approximately 23,000, the smallest bean crop on the muck lands since the early thirties.

This trend appears permanent and a further drop is expected during the next two or three years.

Sweet corn has shown a spectacular rise in importance with the introduction of hybrid varieties that are adapted to our climate and day length, some of the larger varieties producing from 225 to 250 crates per acre. The first acreage of any importance was in 1947-48 when 500 acres were planted and the crop for the season of 1950-51 rose to approximately twelve thousand acres.

Celery is among the crops best suited to the saw grass or peaty muck areas and will remain one of the most important items on the list, as the heavy production—as much as 750 crates per acre—puts it in the big money class when prices are satisfactory.

Cabbage, escarole, chicory, romaine, Chinese cabbage and radishes are an important group and add up to some five or six thousand acres each season.

Potatoes have been in the big money group in the past, but due to several causes the acreage has been reduced materially and unless conditions are changed decidedly the acreage is not apt to increase much. Pepper and eggplant are important small acreage crops on the Custard Apple land of the islands and close to the lake, but are not grown at all on saw grass land.

Two crops that were once of considerable importance have almost dropped out of the picture. Garden peas are almost entirely out and lima beans are showing a rapid decline. Two others have shown a marked increase in the amount planted in recent years. Field peas (black eyes and crowders) are popular spring crops and field corn for cattle feed is planted both fall and spring and the acreage is increasing rapidly.

3. The Future:

King Bean will probably show a further drop in acreage and importance, most growers being anxious to avoid the high priced labor necessary for picking. Sweet corn is taking over a lot of the Custard Apple land formerly planted to beans, and both field corn and cattle do better on Custard Apple land and will have a tendency to limit the production of beans in the future. Sweet corn will hold its present popularity and will probably be planted at about the present rate, some 12,000 acres per year. Celery and potatoes do best on new saw grass muck and although any amount desired is available no material increase is indicated. Celery, with the other “wet pack” vegetables, cabbage, escarole, chicory, radishes, Chinese cabbage and sweet corn will account for a major part of the car loadings in the future and indications are that the muck lands of Palm Beach County will dominate the market in production of these items.

There are no indications of any material
change in acreage for peppers and egg plant and no prospects of any return to importance of either garden peas or tomatoes. Frozen and canned peas will keep fresh peas off our list of winter crops and competing areas do not leave a profitable period open for tomatoes. There is at present no evidence on which to forecast a significant change in total acreage planted to vegetables and the annual car loadings should remain near the same number although the acreage and car loadings of wet pack and leafy vegetables may increase some as corn and cattle grazing lands take over some of the land that has in the past been winter bean land.

The results should be a better balanced economy, less dependence on migrant labor and a more dependable income for the farm family.

INJURIES IN SHIPPING AND HANDLING TOMATOES

R. K. Showalter and L. H. Halsey
Florida Agricultural Experiment Station
Gainesville

AND

L. P. McColloch
U. S. Department of Agriculture
Beltsville, Maryland

A 4-year study of the physical damage of Florida tomatoes by containers has been made. Incidental information was obtained also on commercial handling and shipping practices. The study constituted one phase of the Southern regional Research and Marketing Act project on tomato marketing. Rail shipment of wrapped tomatoes place-packed in lugs was the standard practice until the recent development of a large industry for ripening mature-green tomatoes and repacking them in consumer-unit packages.

SHIPPING RIPE TOMATOES

Tests were made in 1948 to determine whether pink and ripe tomatoes could be prepackaged at the shipping point and delivered in sound condition by truck to New York City, thus eliminating the repacking operation. The tomatoes became overripe or decayed before they could be distributed in regular commercial retail channels. Pink tomatoes were also shipped in small crates of various types with excelsior pads separating the layers of fruit, but bruising was extensive and acceptance by wholesale buyers was poor. Prepackaged tomatoes are successfully shipped moderate to long distances by truck from ripening rooms when delivery can be made directly to retail stores without the usual delay, but the tomatoes are usually packaged before they reach the firm-ripe stage.

BULK CONTAINERS FOR MATURE-GREEN TOMATOES

The adoption of modern repacking practices has brought certain changes in transportation methods. Over half of the tomatoes shipped from Florida are now transported by truck. The flexible loading regulations, together with the shorter transit period, stimulated interest in shipping tomatoes by truck in bulk containers of approximately 60-pound net capacity rather than in the conventional 30-pound lug. Receivers were interested in a more economical container and in one that could be returned to the shipping point for re-use, if possible. As a result, a number of types of containers came into use in shipping Florida tomatoes. In cooperation with the U. S. Bureau of Plant Industry, Soils, and Agricultural Engineering, shipping tests with mature-green tomatoes to Northern markets were initiated in 1948; in these tests lug boxes were compared with other types of shipping containers. Little difference was found between lugs and open-top field boxes in extent of transit and handling injuries. There was less injury in the top of the load (1 and 2 percent) than in the bottom (7 and 9 percent).

In 1949 detailed studies were made of 6 truck shipments of tomatoes from Fort Pierce, Ruskin and Homestead to Baltimore, Washington and Pittsburgh markets. The jumble-packed wirebound (TAB) box with a ventilated paper-board liner was compared with the jumble-packed unlined field box and the place-packed lug. Test lots consisted of one tier of each container across the truck. Thus, if one type of box was loaded 7 across and 5 high, there would be 35 boxes of that type.