to some extent for some time to come unless the market strenuously objects to the quality of the fruits after the volume of the variety has become noticeable.

Homestead is a wilt-resistant variety released in 1952 after it had been tested for three years under the designation STEP 89. It was bred by Dr. C. F. Andrus, of the Southeastern Vegetable Breeding Laboratory, who recognizes that it is not a fixed type but thinks that the variation from plant to plant may possibly prove advantageous. Most of the plants are semi-determinate with stem and leaf characters resembling those of Rutgers, but the variation in any given seed lot at present may be considerable. Most of the plants are prolific, and the fruits in general resemble Rutgers in size, shape, and appearance. In some cases, however, the fruits have averaged much rougher than those of Rutgers grown under the same conditions, and some plants produce fruits of uniformly pale-green color. Reactions of sand-land growers who have tried Homestead range from very favorable to unsatisfactory, with the majority expressing doubt. In our trials Homestead has never been outstanding, but neither has it been poor. Thus, it is evident that not enough time has elapsed to permit accurate evaluation of this variety; for the present it appears advisable for growers operating on sandy land to try Homestead on only limited acreages. Homestead is obviously more susceptible than Rutgers and Grothen's Globe to gray leaf spot, early blight, black spot, and leafmold.

Manalucie, a variety with combined resistances, was released this year by the Gulf Coast Experiment Station. It is resistant to Fusarium wilt, gray leaf spot, early blight, and leafmold. Its vine grows about nine inches taller than desirable but the stems are large and strong, so the vine habit is semi-erect for unstaked culture. The fruits are late but are large, with depth, firmness, fleshiness, and slow-ripening quality. This stock has yielded well in our trials and in preliminary trials by growers, especially in the Ft. Pierce area. It appears resistant to cold, blossom-end rot, and crease stem. Evidence to date indicates that the new features of Manalucie may be very important to our tomato growers; but there has not yet been time to determine how the large, heavy fruits will stand modern methods of handling, so the utility of the variety remains to be finally evaluated by growers during the next few months.

Queens is a new variety developed by Dr. L. G. Schermerhorn of the New Jersey Experiment Station, the originator of the Rutgers variety. Queens is the result of a cross of Rutgers x Valiant. Its vine growth is indeterminate and the internodes are long, the plant resembling very much the old variety Livingston Globe, which was a favorite with growers 15 years ago. It is especially well adapted to staking and it is assumed that it will perform well on ground culture. Under favorable conditions it is extremely prolific, with production of high quality fruit surpassing that of all other commercial varieties in tests during the past season. Fruits are deep with smooth and full shoulders and skin texture equal to Rutgers. Average fruit size is satisfactory. Maturity is several days earlier than Rutgers and Jefferson. It should be noted that this variety carries no resistance to any of the diseases common to tomatoes, therefore plantings should be restricted to soils known to be free of Fusarium wilt. While general horticultural characters of this variety indicate that it would be ideal for fall planting, results during the fall season have been disappointing, due probably to the inability of the variety to recover from adverse weather conditions. These observations on Queens are based on tests of a single season, and our present recommendations are that it be considered for only limited trials by growers.

FLORIDA NINETY STRAWBERRY AFTER ONE YEAR IN COMMERCIAL PRODUCTION

A. N. Brooks
Plant Pathologist
Strawberry Laboratory, Florida Agricultural Experiment Station
Lakeland

Florida Ninety, a new strawberry variety developed at the Strawberry Laboratory and released by the Experiment Station in March 1952 has had one winter of commercial fruit production and two summers of commercial

plant production. After a brief account of the origin of the variety and description of its plant and fruit characteristics, a summary of results obtained by strawberry growers using this variety will be given.

Florida Ninety, originated in March 1948, came from a *Missionary* seed which was the result of open-pollination in a field containing many untested hybrid lines. Thus, the pollen parent of this new variety is unknown, but must be one of these hybrids. *Florida Ninety* was one of 1075 clones thus produced during the spring and summer of 1948 and subsequently tested for fruit and plant characteristics during the fruiting season 1948-49. Of the above number only 120 clones were saved for further testing. In this new line-up, the new variety was No. 90 and became so well known as No. 90 both by strawberry growers and later by produce houses in the northern markets which handled experimental lots of the fruit shipped through regular commercial channels, that the name *Florida Ninety* was decided upon.

Plants of this variety are quite vigorous in growth with an extensive root system. Foliage is sufficiently resistant to leaf spots in most localities so that fungicidal sprays are unnecessary. The blossoms are protected by the foliage from injury by light frosts and the fruit is produced on short stems and are thus hidden in the foliage. A field of Florida Ninety is never "white with bloom" nor is there much fruit apparent. The fruit, which is quite uniform in size, is large, tapered but not conical, more like the snout of a crocodile. The color is bright red, both outside and inside and does not get dull or dark after the fruit is picked. The flavor is excellent. When the plants are properly fertilized the fruit is good for shipping to northern markets, for sale on local markets in Florida and for use by processors.

In all experimental work Florida Ninety significantly outyielded Missionary, in the Plant City area, on the Florida east coast and west coast. The highest yield obtained for *Florida Ninety* in this experimental work was 8,000 quarts per acre against a top yield of 4800 quarts per acre for *Missionary,* the present commercial variety.

In April 1952 and again during the fall of the same year plants were made available to commercial strawberry growers and to home gardeners. Some growers were quite successful in producing many runner plants by late October from the plants set in April, the increase being as high as 400 to 1. These runner plants thus produced were set out in the fall to produce fruit during the 1952-53 season.

Although plants were distributed to all parts of Florida, from Homestead to Pensacola, to eleven other states and to Puerto Rico, the following account deals mostly with results obtained in central Florida. No reports either favorable or otherwise have been received from other areas receiving plants.

Plant Production

In experimental work where plants which had fruited had to be returned to nursery beds during April of each year to produce runner plants for fall setting and fruit production, the rate of increase averaged about 50 to 1 by the middle of October. Many growers have done much better than this, 400 to 1 being highest reported. At the Strawberry Laboratory 2,200 plants were set out in February and made 71,500 plants by the first week in July. These plants were sold to growers who set them out and made an estimated 1,400,000 plants by the latter part of October. Thus for each plant set in February there were 635 plants produced for fall setting in October. The greatest increase in plants is between February and June; again between September 15 and October 15th. From July to September there is not much increase in number of plants.

Fruit Production

Whereas 8000 quarts per acre was highest yield experimentally, several growers made higher yields commercially. In three different fields, 2 to 6 acres in size, where plants were set at the rate of 25,000 plants per acre, total yields of fruit for the season approximated 10,000 quarts per acre. Single pickings yielded more than 1000 quarts per acre. The chief difficulty was in securing enough pickers to keep up with the crop. Children picked as high as 200 quarts per day which at the rate of 7 cents gave each individual picker a daily wage of $14.00.

Time of setting plants influenced time of fruiting. Earlier fruit was produced by later set plants. Earliest fruit, last week in December, was produced by plants set October 15th. Plants set September 15 were significantly later in producing fruit. Florida Ninety and Missionary plants bloomed at the

same time in many fields but the time from open blossom to maturity was 5 to 7 days longer for Florida Ninety. Under certain conditions Missionary has produced fruit starting early in December. It is doubtful if Florida Ninety will ever produce fruit that early. However, yields from the new variety do not fluctuate so widely during the season as do those from Missionary. Furthermore, Florida Ninety will yield fruit for a much longer time.

Marketing of Fruit

With Florida Ninety the problem is not one of what to do with the small fruit, rather it is just the opposite. Fruit may be too large. However, before the new variety was released the Strawberry Laboratory had produced and shipped to northern markets through regular commercial channels 7000 pints of fruit. Each crate was boldly marked, "Experimental No. 90." No complaints were received and many markets asked for more of the same kind of fruit as it was selling at a premium over Missionary. This success on the market was due primarily to two factors: (1) Production of quality fruit through proper fertilization and (2) Expert packing.

The fertilizer program followed was: Monthly applications, each 300-400 pounds per acre, of commercial fertilizer analyzing 4-8-8, from October to March. These light applications kept the fruit from becoming overly large and the ratio of potash to nitrogen produced firm fruit of good color and flavor.

The fruit was firmly packed in oblong pints, each capped off with no less than nine berries. To accomplish this it was often necessary to place the larger fruit under the cap.

Last winter there were some complaints from northern markets because of some extremely large fruit being shipped, six berries to a cap and a total of only 14 berries per pint. Such large fruit bruised easily and resulted in loss to the receiver.

Many growers found that there is a local market in Florida for good strawberries, not only with the tourists but also with Floridians. In time, good fruit may replace the cull fruit being offered for sale locally in Florida.

When prices on the market dropped to a point where it was no longer profitable to sell fruit for shipping, the processors in Plant City were glad to get Florida Ninety fruit because it makes an excellent frozen product which keeps its bright red color and good flavor.

Diseases

In central Florida practically no fungicidal sprays are used on strawberry plants. Fungous diseases of plants are of minor importance. During the fruiting season, December through March, the plants are quite free of leaf spots. However, in the Starke-Lawtey area during last April a widespread infection of common leaf spot was seen on plants of Florida Ninety.

Insects

Florida Ninety showed a marked resistance to injury by red spider. Most growers who had Florida Ninety plants had Missionary plants adjacent in the fields. The injury to Missionary plants was severe, sometimes to the point of almost killing plants, whereas the adjacent Florida Ninety plants did not show injury although spider were present on the foliage.

As to other important strawberry insects, no resistance was displayed by the new variety.

Nematodes

Probably nematodes will be the most important group of pests to control in maintaining a supply of Florida Ninety plants. During the past summer in nursery fields, plants were found infested with one or more of the following nematodes:

1—Bud nematode, *Aphelenchoides besseyi.*

2—Root knot nematode, *Meloidegyne sp.*

3—Sting nematode, *Belonolaimus gracilis.*

4—Awl nematode, *Dolichodorus heterocephalus.*

By careful selection of plants and use of soil fumigation these nematodes can be kept under control.

Future of Florida Ninety

Some growers like Florida Ninety, some do not. Hence, the line will be carried on by those who do, and how long the variety will remain highly productive will depend mostly upon how long the plants are kept free of virus infection, which has been the cause of the decline of Missionary.