HORTICULTURE

SWEET POTATOES

The work in progress with sweet potatoes includes:
1. Variety Test.
2. Sources of Phosphoric Acid.
3. Sources of Nitrogen.
4. Sources of Potash.
5. Top Dressing Test with Nitrogen.
6. Top Dressing Test with Potash.
8. Controlled Plant Nutrient Study.

Sweet Potato—Variety Test: A sweet potato study including 49 varieties is being conducted cooperatively with the Office of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture. In this test there is no indication of a variety superior to Porto Rico for table use. There are, however, indications that some may be better for starch production than Triumph, which is now in general use for that purpose. In a sweet potato seedling test one selection (L-126) seems to be especially well adapted as a table variety. It is productive, well-shaped, attractive in appearance, and high in vitamins. Seed stock is being increased for further observation and study.

Sweet Potato—Sources of Phosphoric Acid: Since yields from the various sources of phosphoric acid do not vary widely, the plant food cost of the phosphate is perhaps the determining factor in selecting the carrier to be used in sweet potato fertilizer. The amounts of each carrier used in this test, and also corresponding yields, are shown in Table 41. The nitrogen and potash in all instances are derived from the same sources so that the phosphate carriers are the only plant nutrient variables in the test. Some of the carriers are so low in phosphoric acid that it is necessary to compute the plant food requirements in pounds per acre rather than on a ton basis.

Sweet Potato—Sources of Nitrogen: In this test all fertilizer is applied in a single application, previous to planting. Because of less leaching of organic sources during a long growing season, such carriers as cottonseed meal and tankage are producing higher yields than mineral sources, as will be observed in Table 42. However, work with ratios of mineral and organic carriers indicates that a combination of the two (Table 46) will give slightly increased yields, with a reduction in the cost of nitrogen. Peanut meal and uramon also are included in the test and are showing to good advantage.
TABLE 41.
SWEET POTATO—SOURCES OF PHOSPHORIC ACID
Average Yield for Years 1935 to 1942, Inclusive
Fertilizer: 800 Pounds per Acre, 3.29% Nitrogen, 8% Phosphoric Acid from Sources as Indicated, and 6% Potash (equivalent to the old formula of 8% Phosphoric Acid, 4% Ammonia, and 6% Potash)
 Variety: Porto Rico                  Average Date Planted: April 14
Average Number of Growing Days: 193

<table>
<thead>
<tr>
<th>Source of Phosphate</th>
<th>Amt. Used per Acre (Lbs.)</th>
<th>Phosphoric Acid Content ( % )</th>
<th>Yield in Bushels per Acre</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>No. 1's</td>
<td>No. 2's</td>
</tr>
<tr>
<td>Soft Phosphate**</td>
<td>1066</td>
<td>6</td>
<td>179.82</td>
</tr>
<tr>
<td>Ammoniated Superphosphate</td>
<td>427</td>
<td>15</td>
<td>179.63</td>
</tr>
<tr>
<td>Triple Superphosphate</td>
<td>137</td>
<td>46.8</td>
<td>175.67</td>
</tr>
<tr>
<td>Basic Slag</td>
<td>800</td>
<td>8</td>
<td>173.67</td>
</tr>
<tr>
<td>Superphosphate</td>
<td>400</td>
<td>16</td>
<td>170.81</td>
</tr>
<tr>
<td>Dicalcium Phosphate</td>
<td>160</td>
<td>40</td>
<td>167.27</td>
</tr>
</tbody>
</table>

* Since the analysis of different batches of materials may vary from time to time, the percentages of "available" phosphoric acid used in this table are approximate for all sources except soft phosphate and basic slag. In these last named materials the figures representing the phosphate content are arbitrary, because manufacturers or distributors furnished only data on the total phosphoric acid contained.

** So far as these tests are concerned, the terms soft phosphate and colloidal phosphate may be used interchangeably.

TABLE 42.
SWEET POTATO—SOURCES OF NITROGEN
Average Yield for Years 1933 to 1942, Inclusive
Fertilizer: 800 Pounds per Acre, 3.29% Nitrogen from Sources as Indicated, 8% Phosphoric Acid, and 6% Potash (equivalent to the old formula of 8% Phosphoric Acid, 4% Ammonia, and 6% Potash)
 Variety: Porto Rico                  Average Date Planted: April 17
Average Number of Growing Days: 198

<table>
<thead>
<tr>
<th>Source of Nitrogen</th>
<th>Yield in Bushels per Acre</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. 1's</td>
</tr>
<tr>
<td>Cottonseed Meal</td>
<td>160.07</td>
</tr>
<tr>
<td>Tankage</td>
<td>159.20</td>
</tr>
<tr>
<td>Sulphate of Ammonia</td>
<td>154.09</td>
</tr>
<tr>
<td>Nitrate of Soda</td>
<td>153.56</td>
</tr>
<tr>
<td>Calnitro</td>
<td>149.68</td>
</tr>
<tr>
<td>Cyanamid</td>
<td>137.27</td>
</tr>
</tbody>
</table>
Sweet Potato—Sources of Potash: Since there is only a slight difference in production of No. 1 potatoes from the two high yielding sources, it therefore appears that the unit cost of potash is the determining factor in selecting the potash carrier to be used in sweet potato fertilizer. In view of the fact, however, that kainit has almost disappeared as a commercial product, muriate is considered the best available source of potash for this crop.

TABLE 43.

SWEET POTATO—SOURCES OF POTASH
Average Yields Over a Twelve-Year Period
Fertilizer: 800 Pounds per Acre, 3.29% Nitrogen, 8% Phosphoric Acid, and 6% Potash (equivalent to the old formula of 8% Phosphoric Acid, 4% Ammonia, and 6% Potash). The potash is derived from sources as indicated.

Variety: Porto Rico

<table>
<thead>
<tr>
<th>Source of Potash</th>
<th>Yield in Bushels per Acre</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. 1’s</td>
</tr>
<tr>
<td>Kainit</td>
<td>167.16</td>
</tr>
<tr>
<td>Muriate of Potash</td>
<td>164.50</td>
</tr>
<tr>
<td>Manure Salts*</td>
<td>155.52</td>
</tr>
<tr>
<td>Sulphate of Potash</td>
<td>154.79</td>
</tr>
<tr>
<td>Sulphate of Potash</td>
<td></td>
</tr>
<tr>
<td>Magnesia</td>
<td>150.67</td>
</tr>
</tbody>
</table>

* Eleven-year average.

Sweet Potato—Top Dressing Test with Nitrogen: Data in Table 44 indicate that for bulk production, nitrate of soda may be used as a top dresser to good advantage, although for table production its use does not seem to be advisable.

TABLE 44.

SWEET POTATO—TOP DRESSING TEST WITH NITROGEN
Average Yield for Years 1936 to 1942, Inclusive
Fertilizer: 800 Pounds per Acre, 3.29% Nitrogen, 8% Phosphoric Acid, and 6% Potash, (equivalent to the old formula of 8% Phosphoric Acid, 4% Ammonia, and 6% Potash). Applied before planting.

Variety: Porto Rico

<table>
<thead>
<tr>
<th>Top Dressing*</th>
<th>Yield in Bushels per Acre</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. 1’s</td>
</tr>
<tr>
<td>Check (no top dressing)</td>
<td>190.44</td>
</tr>
<tr>
<td>100 lbs. Nitrate of Soda</td>
<td>185.52</td>
</tr>
<tr>
<td>200 lbs. Nitrate of Soda</td>
<td>194.33</td>
</tr>
</tbody>
</table>

* Top dressing applied at first cultivation.
Sweet Potato—Top Dressing Test with Potash: Yield responses from the different rates of potash top dressings indicate that for both table use and bulk production at least 50 pounds per acre may be profitably applied, although increases in yield result from as much as 200 pounds per acre (Table 45).

**TABLE 45.**

**SWEET POTATO—TOP DRESSING TEST WITH POTASH**  
Average Yield for Years 1933 to 1942, Inclusive  
Fertilizer: 800 Pounds per Acre, 3.29% Nitrogen, 8% Phosphoric Acid, and 6% Potash (equivalent to the old formula of 8% Phosphoric Acid, 4% Ammonia, and 6% Potash). Applied before planting.  
Variety: Porto Rico  
Average Date Planted: April 13  
Average Number of Growing Days: 200

<table>
<thead>
<tr>
<th>Top Dressing*</th>
<th>Yield in Bushels per Acre</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. 1's</td>
</tr>
<tr>
<td>Check (no top dressing)</td>
<td>194.29</td>
</tr>
<tr>
<td>50 lbs. Muriate of Potash</td>
<td>204.83</td>
</tr>
<tr>
<td>100 lbs. Muriate of Potash</td>
<td>266.40</td>
</tr>
<tr>
<td>200 lbs. Muriate of Potash</td>
<td>209.30</td>
</tr>
</tbody>
</table>

* Top dressing applied at first cultivation.

Sweet Potato—Ratios of Mineral and Organic Nitrogen: Data resulting from this test show that the most economical source of nitrogen for sweet potato production consists of a combination of mineral and organic carriers.

**TABLE 46.**

**SWEET POTATO— RATIOS OF MINERAL AND ORGANIC NITROGEN**  
Average Yield for Years 1933 to 1942, Inclusive  
Fertilizer: 800 Pounds per Acre, 3.29% Nitrogen from Sources as Indicated, 8% Phosphoric Acid, and 6% Potash (equivalent to the old formula of 8% Phosphoric Acid, 4% Ammonia, and 6% Potash). Applied before planting.  
Variety: Porto Rico  
Average Date Planted: April 10  
Average Number of Growing Days: 206

<table>
<thead>
<tr>
<th>Ratio of Nitrogen</th>
<th>Yield in Bushels per Acre</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. 1's</td>
</tr>
<tr>
<td>1/3 Nitrate of Soda and 2/3 Cottonseed Meal</td>
<td>202.70</td>
</tr>
<tr>
<td>Cottonseed Meal</td>
<td>199.73</td>
</tr>
<tr>
<td>1/4 Nitrate of Soda, 1/4 Tankage, 1/4 Cottonseed Meal, and 1/4 Sulphate of Ammonia</td>
<td>190.25</td>
</tr>
<tr>
<td>2/3 Nitrate of Soda and 1/3 Cottonseed Meal</td>
<td>189.59</td>
</tr>
<tr>
<td>Nitrate of Soda</td>
<td>188.92</td>
</tr>
</tbody>
</table>
Sweet Potato—Controlled Plant Nutrient Study: During the four-year period over which this study has been in progress, results do not consistently indicate that the secondary plant food elements, chlorine and magnesium, are essential in fertilizer applied to productive upland soils of this area. There are, however, reductions in yield where either calcium or sulphur is omitted.

Sweet Potato—Cooperative Projects: A study of starch and table varieties, together with a large number of recently introduced seedlings, conducted jointly with the Office of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture, is being continued. Also other phases of production included in this study are the effects of both cultural practices and fertilization on yield, starch content, per cent of moisture, and keeping quality in storage.

TOMATOES

A study of the plant nutrient and cultural requirements of tomatoes has been in progress for several years and is reported in detail in the Twenty-Second Annual Report of this Station. Therefore only the following brief summary of this work will be given here.

Variety trials, extending over a long period of years, indicate that Marglobe and Rutgers are best adapted to the Coastal Plain of Georgia.

Data resulting from dates of planting show that in order to have tomatoes ready for the early market and when there is the least competition with other commercial producing areas, seed must be planted in hotbeds about mid-January and transplanted to the open field about the 15th to 20th of March in the central Coastal Plain. Likewise it is shown that the heaviest yields result from early plantings.

From row and drill spacings it was learned that when planted on the average upland soils of this area, tomatoes produce most efficiently when allowed 10 to 12 square feet per plant. Some of the most desirable spacing distances are 3 x 3½ ft., 3 x 4 ft., and 2½ x 4½ ft., although on highly productive soils wider spacing may be preferable.

A study of plant nutrient requirements gives evidence that tomatoes need a fertilizer high in nitrogen, phosphorus, and potash. Apparently the best combination for tomatoes on the upland soils of this area should contain 6 per cent nitrogen, 8 per cent phosphoric acid, and 8 per cent potash. The rate of application should not be less than 1000 pounds per acre and on the better soils 2000 pounds will give profitable returns. About 500 pounds should be used before planting and the remaining portion at the first and second cultivations. A study of sources of plant nutrients indicates that the most economical carrier of phosphate is ammoniated superphosphate; that for nitrogen one-third should come from an organic such as cottonseed meal and two-thirds from mineral sources such as nitrate of soda, sulphate of ammonia or calcitro; and that muriate is the best source of potash. Top dressing tests likewise indicate that 150 to 200 pounds of a 10-0-10 will give increased returns. Yields also were boosted by using animal manure, although care should be exercised in using this source of plant food to prevent the introduction of
diseases. Further study with secondary plant food elements shows a sharp reduction in yield where calcium and magnesium are omitted in the fertilizer but no reduction from combinations not containing chlorine and sulphur.

**TOMATO PLANT DISEASE INVESTIGATIONS**

_The Influence of Plant Age Upon Early Blight Infection_

Tests have been continued on the relation of age of tomato seedlings to infection by the _early blight_ fungus. Plantings were made at ten-day intervals, beginning March 10 and continuing until four plantings were completed. Each lot was harvested three times at one-week intervals, the first being made when the plants reached normal shipping size of about ten inches tall. Due to slow germination and delayed growth, plants in the second and third harvests were of the same size as the first. The plants were packed in bundles, stored for 48 hours, then transplanted to the field. After a period of 10 to 14 days, disease readings were made. In all cases, _early blight_ infection increased with the age of the plants, irrespective of the date of planting.

These findings have an immediate commercial application in southern Georgia, particularly in cases where growers produce plants for both the early and the late sections of the North. Plant fields should be seeded early for the Atlantic Seaboard areas and from two to three weeks later for the mid-west sections. In this way plants of good quality can be made ready for a given area at the time when they are needed.

**Plant Wilting and Stem Canker Development**

Under normal conditions of pulling and packing tomato plants, a limited degree of wilting is unavoidable. In some cases, however, the lapse of time between pulling and final packing is great enough to cause considerable damage. Even though plants that have wilted excessively may freshen after being packed, they do not always recuperate as readily after transplanting as plants not so treated.

In order to study the influence of wilting on the susceptibility of tomato plants to _early blight_ infection, a number of tests were run in which one lot was packed immediately after pulling, another after six hours, another after 12 hours, and the final lot after 24 hours. Each lot was stored for 48 hours, then transplanted to the field. After growth periods of from 10 to 14 days, disease readings were made. In all cases, infection increased as the time of wilting was increased. From these results it is apparent that wilting during harvest and packing should be held to a minimum.

**The Value of Plant Nutrients in Packing Moss for Feeding Tomato Plants During Shipping**

This work was continued with the same materials and under essentially the same conditions as reported in 1941. The principal change was in the use of duplicate sets of plants for each treatment, one being plants that had received heavy applications of nitrates and the other plants that were lacking in both nitrates and phosphates. The plants were weighed, packed in the different nutrient-treated moss lots, stored for 48 hours, then transplanted to the field. After 14 days, the different lots were pulled, washed, and weighed.
There were no differences in disease incidence among the various lots. There were no significant differences in green weights on the lots that were made up with plants that had received heavy applications of nitrates prior to harvest. In the case of the plants that were low in both nitrates and phosphates, all nutrient* additions caused significant increases in green weights over that of the untreated check. While these results are not conclusive, they indicate that nutrient feeding in the packing moss may be advantageous where tomato plants show a definite deficiency of the elements—nitrogen, phosphorus, and potash—in the field.

Length of Storage Periods in Relation to Tomato Plant Recovery After Transplanting

During the course of the above nutrient work, some series were stored for 2 days while duplicate series were held for 4 days. Green weights were made of the various lots before storage and again after a growth period of 14 days in the field. In every instance, and irrespective of the nutrients used, the rate of growth for the 4-day storage was significantly less than that for the 2-day period. These results are of particular importance to both the grower and the buyer of tomato plants since they suggest the necessity of allowing the least possible loss of time between harvesting and resetting the plants.

The Relation of Tomato Plant Maturity to Earliness of Fruiting

A wide diversity of opinion has existed for some time between both growers and buyers as to the value of tomato seedlings that have begun blossoming before they are harvested. Due to the period of prolonged dry weather which existed during much of the 1942 growing season, many fields of plants were forced into early bloom, thus affording an opportunity to study this question. Plants of the same variety were selected at random, one group from a field showing a high percentage of blossoms and another from a vigorously growing adjoining field that showed no blossoms. The plants were packed, stored for 48 hours, then transplanted to the field and allowed to grow until the first fruits were about one inch in diameter. Total counts were then made of all fruits on the different lots of plants.

The results of this test indicate that the plants showing blossoms at the time of harvest had significantly less early fruit than plants not showing blossoms at harvest time. Examination of these lots in the field immediately after transplanting showed that most of the blossoms that were open at harvest time were either broken off during storage and transplanting or fell off soon after being set in the field. Apparently, there is a distinct disadvantage in using old, woody plants.

* | 4 parts superphosphate | 2 pounds to 50 gallons water
  No. 1 | 1 part caainitro
          | 1 part nitrate of potash
No. 2 | 20 oz. ammo-phos
          | 10 oz. nitrate of potash
          | 50 gallons water
The Influence of Plant Grade on Early Fruiting

One of the most difficult phases of harvesting and packing tomato plants is the matter of getting plants of uniform size. Lack of uniformity is of considerable concern to the average buyer because transplanting machines are adjusted to set to a certain depth. If the plants are not reasonably uniform in size, the machines will set them either too deeply or not deep enough, resulting in uneven stands and less than maximum yields. In order to study the influence of plant size on earliness of yields, a test was run in which plants were graded into lots of small (up to 5/32 inch in diameter), U. S. No. 1 (5/32 to 9/32 inch in diameter), and those larger than U. S. No. 1. These were set in the field and allowed to set fruit, after which fruit counts were made.

Results of this test indicate that tomato plants with stems of 5/32 inch and less yield much later than the larger plants. It is possible that this delayed fruiting may be overcome during a normal harvest season, but earliness is of material value to the canner, consequently small plants should be avoided. Further studies will be made along this line in order to justify such future changes as may become desirable in the present standards for government grades.

WATERMELONS

The work in progress with watermelons consists primarily of varietal adaptation, a study of sources of nitrogen, phosphorus and potash, ratios of mineral and organic nitrogen, top-dressing tests, and the effect of secondary plant nutrients on yield.

Variety trials indicate that in wilt-free soils Cuban Queen, Watson, and Stone Mountain are among the best commercial melons for this area, although in wilt-infested soils only wilt-resistant varieties should be used. Some of the better varieties possessing wilt resistance are Hawksburg, Blacklee, and Leesburg.

Data resulting from a study of the various plant nutrient carriers indicate that ammoniated superphosphate is the best source of phosphoric acid, that nitrogen should be derived about equally from mineral and organic sources, and that potash should be derived from muriate.

Top-dressing tests suggest that a combination of 100 pounds of nitrate of soda and 50 pounds of muriate of potash per acre, applied about the time the first melons are set, increases yields without detracting from the quality of the melons. This top dressing was used in supplementing 800 pounds per acre of a 4-8-6 formula.

The study of controlled plant nutrients to determine the effect of secondary plant food elements on watermelon production will be continued until more complete data are obtained.

A New Wilt Resistant Watermelon: (In cooperation with the Georgia Experiment Station.) Wilt resistant strain S87 was offered to the farmers and the seed trade this year under the name, "Georgia Wilt Resistant". Seed has been placed with a considerable number of farmers, seed houses, etc., in Georgia and other states, some planning to plant as much as 10 acres. This
melon, which has proved quite resistant—but not immune—to wilt, is a short blocky melon similar in type to Stone Mountain except that it has large gray seeds. It originated from a cross between Cuban Queen and one of the early strains of Iowa Belle. The rind is tough enough for shipping and the eating quality fully equal to that of Stone Mountain or Cuban Queen.

Strain X32 continues to show more resistance to both wilt and anthracnose than other strains. While satisfactory uniformity in all characters has not yet been secured, some selections are outstanding in sweetness. Work is centering a good deal on the selection of a wilt resistant melon of medium to small size that could be handled on the market and in the kitchen much as cantaloupes are handled.

LIMA BEANS

Since data obtained from work with lima beans, covering a period of approximately ten years, are reported in detail in the Twenty-Second Annual Report of this Station, only a summary of the results of this work will be given in this report.

Variety trials show that Henderson Bush is the most desirable variety for this area. It should be remembered, however, that Fordhook, although less productive and more difficult to produce, is in greater demand on northern markets and should be grown when the crop is to be marketed in northern consuming areas.

Satisfactory commercial yields have been obtained only from early spring plantings of Fordhooks, while Henderson Bush will produce satisfactory yields from plantings extending from March to August.

Yields from rates of seeding Fordhooks indicate that the highest returns may be expected from 40 to 50 pounds per acre.

From a study of fertilizer requirements it appears that this crop should receive from 800 to 1200 pounds per acre of a 6-8-8 formula; that phosphoric acid should be derived either from superphosphate or ammoniated superphosphate; that part of the nitrogen should come from a mineral and part from an organic source, some of the best carriers being calnitro, sulphate of ammonia, uramom, tankage, and cottonseed meal; and that muriate is the most desirable potash carrier. The study further indicates that additional yield increases may be expected from a top dressing consisting of a combination of 100 pounds of nitrate of soda and 50 pounds of muriate of potash, applied during the early blooming period. Animal manures also are important sources of plant food and can be used to advantage as the sole source, or for supplementing commercial fertilizer.

A study of the effect of secondary plant nutrients on bean yields suggests that the presence of chlorine and sulphur in bean fertilizer will increase production, while under the conditions of this test calcium and magnesium do not seem to be essential.

CABBAGE

Data resulting from a study of cabbage culture and plant nutrient requirements are incomplete, although from the present trends the following tentative cultural practices are suggested.
Copenhagen Market, Marion Market, Round Dutch, and Golden Acre are among the best early round varieties for this area.

Plantings should be timed so that the fall crop will mature in advance of the severe cold of winter, and that the spring crop will not begin head formation until after the danger of cold has passed. In order to meet these requirements the fall crop should be planted early in September, and the spring crop in late December or early January.

Plants should be spaced about 16 inches in the drill and the rows 3 feet apart.

Work with fertilizers shows the most economical returns resulting from 1200 to 1600 pounds per acre of an 8-8-8 formula. The fertilizer should be applied in split applications, one-third before planting, an additional one-third about one month after planting, and the remaining amount when head formation begins. The heavy rains of winter usually cause severe leaching of nitrogen from readily soluble nitrogen carriers, and for that reason it is advisable to derive the nitrogen to be used in the fertilizer, for the winter crop, largely from organic sources or sources that are less susceptible to leaching. The fertilizer study further shows that ammoniated superphosphate is the best source of phosphoric acid, that muriate is the best source of potash, and that further increases in yield result from top dressings of both nitrogen and potash. Apparently 200 pounds of a 10-0-10 top dresser would provide the additional plant food needed. Likewise, the resulting data show that animal manure, when used alone or in combination with commercial fertilizer, is an excellent source of plant food for this crop.

**OTHER TRUCK CROPS**

**Beans—Bush and Pole:** Giant Stringless Green Pod and Tendergreen are the most desirable round podded snap beans for this area. The former is more productive and perhaps preferable as a market bean, while the latter is a better canning bean.

Of the pole beans generally planted, the rust-resistant strain of Kentucky Wonder seems to be the best variety for this area.

**Root Rot of Snap Beans:** (In cooperation with the Georgia Experiment Station.) Study of the organisms that attack the roots and stems and are largely responsible for the short bearing life of snap beans in Georgia is being continued. To date these studies indicate that the root-knot nematode, *Sclerotium rolfsii*, *Macrohomina phaseoli*, and *Rhizoctonia solani* are the most important. In the breeding plot at Tifton *Macrohomina* is responsible for more than 50 per cent of the mortalities each year, while at Experiment *Sclerotium rolfsii* is more important.

In the breeding work a large number of individual plant selections were made in 1942. Twenty-five of the most promising of these are being grown in isolated plots this year, to minimize natural crossing, in order to develop pure seed stocks.

**Asparagus:** For several years Martha Washington has been the most productive variety in test and apparently is better adapted to the Coastal Plain.
Beets: For home and market gardens Improved Blood Turnip and Crosby's Egyptian are well adapted.

Carrots: Chantenay seems to be the most desirable variety for the Coastal Plain.

Roasting Ear Corn: Because of superior quality, Golden-Cross Bantam is the best sweet corn that can be successfully grown in the southern part of the State. For best results, however, it should be planted on fertile soil. Other sweet varieties that have shown to good advantage in the test are Sur-crop, Honey June, Long Island Beauty, and Country Gentleman. Some of the field corns used most extensively for roasting ear purposes are Oklahoma Silvermine, Trucker's Favorite, and White Pearl.

Cantaloupes: Mildew Resistant No. 45 is the best variety that has been included in cantaloupe variety trials at this Station. Compared with Hale's Best, it is superior in quality, more resistant to leaf diseases, is a better shipping melon, is of as good appearance, equally as productive, and matures only three or four days later.

Cucumbers: A. & C. is the most desirable variety of cucumber yet grown at this Station. It is longer, more symmetrical, darker green, more uniformly colored, and retains its color longer than other varieties that have been under observation.

Eggplants: Florida Highbush is well adapted and apparently is the best variety for the Coastal Plain of Georgia.

English Peas: Because of susceptibility to cold injury and to insect and disease attack, the English pea is one of the most hazardous truck crops for the Coastal Plain of Georgia. It should, however, be included in all home gardens. In order to reduce cold injury, plantings should be timed so that the crop will mature either before or after the severe cold of mid-winter. Thomas Laxton is one of the most dependable mid-season varieties, while Improved Telephone and Willet Wonder are good late varieties.

Lettuce: On the abandoned rice lands of the tidewater area of Georgia, lettuce has become an established commercial crop, while in the interior of the lower Coastal Plain it is well enough adapted to be included in home gardens. Better results are obtained, however, if it is planted in extremely fertile soil and given slight protection from cold.

Okra: Perkins Mammoth Long Pod and Dwarf Long Pod Green are popular market and canning varieties, while White Velvet is used extensively in the home garden. Clemson Spineless is a promising variety of recent introduction.

Onions: Practically all varieties of onions grow well in the Coastal Plain area, although because of desired early maturity, the commercial crop consists almost exclusively of Bermuda. It should be kept in mind, however, that this is not a storage onion and that it should be marketed immediately after harvest.

Pepper: California Wonder, World Beater, Ruby Giant, and Large Belle
are high-yielding varieties that are grown extensively for home use and for the fresh market, while Pimiento is less productive but preferable for canning.

**Squash:** Yellow Summer Crookneck and Early Prolific Straight Neck are the best early yellow squash for this area. Attention is called to the fact, however, that the latter is more attractive and remains edible over a longer period of time.

**Turnips:** Purple Top Globe seems to be the best variety for southern Georgia. Other desirable varieties are Shogoin and White Egg.

**Mustard:** Tendergreen is a smooth leaved, vigorous variety of excellent quality, well adapted to this area, and should be more extensively grown.

**FRUIT CROPS**

**Peach Variety Test:** Eighty per cent of the 73 varieties originally included in the test was fruiting at the end of a ten-year period. However, only about half this number was in heavy production. Data obtained from peaches in test here indicate that this fruit is well adapted for home orchard use as far south as the lower central Coastal Plain. To prevent severe nematode injury, and thereby prolong the life of trees, plantings should be made only on the heavier soil types; and on these soils cultural practices known to be effective in reducing the nematode population should be practiced at least one year in advance of the time the trees are to be set. Also, to protect trees from scale and the fruit from worms and rot, a definite spray schedule should be followed.

Through judicious selection it is possible to obtain a collection of varieties that will provide fresh fruit from the latter part of May until early September. No other fresh fruit is available over so long a period nor is of as great value for home orchard use in this area. The varieties listed below are well adapted for home orchard use. All are of good eating quality, while several are well adapted for canning, and the maturity dates are such that fresh fruit may be had continuously from early June until late August. The varieties listed in order of maturity are: Mayflower, Uneeda, Greensboro, Burbank's New July Elberta, Georgia Belle, Fertile Hale, October Elberta, Katie, Salway, and Bananza.

**Plums:** All plum varieties that have been planted in the trial grounds have died at an early age as a result of susceptibility to wilt. It therefore appears that the culture of this fruit in the central and lower Coastal Plain will not be successful until satisfactory wilt resistant varieties or strains have been developed.

**Pecans:** Annual yield records are available over a 19-year period for the oldest varieties in test. The resulting data indicate that highly productive varieties such as Bradley, Tesche, Success, Moneymaker, Moore, and Mahan are attractive from the standpoint of yield but that all have one or more severe defects such as susceptibility to scab, alternate bearing, poor filling, low per cent kernel, poor quality, or are unsatisfactory for cracking. The result is that in many instances they are less profitable than the moderately prolific varieties such as Stuart, Farley, Desirable, and Brooks which possess a high
degree of resistance to scab and are more inclined to produce annual crops of well-filled nuts.

Schley is one of the most popular commercial varieties but because of high susceptibility to scab, it is no longer profitable to the grower, unless a definite spray schedule is followed for controlling this disease.

**Pears:** Chinese Sand and Pineapple are high producing, blight resistant varieties but are of such low quality that they have no value for eating as a fresh fruit. They are, however, excellent when canned, preserved or otherwise processed. Baldwin is a blight resistant variety of recent introduction that is of excellent quality as an eating pear. It is propagated commercially and should be included in all home orchard plantings.

**Grapes (Bunch Type):** The better known varieties of bunch grapes such as Niagara, Concord, and Delaware are short-lived in the Coastal Plain area and in order to have continuous annual crops, plantings must be renewed at about 5-year intervals.

**Grapes (Muscadine Type):** Muscadines are well adapted to this area although there is a wide range in productivity and in quality in the 26 varieties now fruiting in the trial grounds. Hunt, Irene, Thomas, and Suppernong, in the order named, are the most productive varieties. For table use, however, Dulcet and Yuga are decidedly more desirable, having a higher sugar content and better quality.

**Strawberries:** Strawberries are well adapted for home orchards and local markets, and the scarcity of fruit at the time they are ripe gives them a place of particular importance. Missionary and Klondike appear to be the best varieties for this area.

**Figs:** Because of susceptibility to cold injury, fig plantings are only moderately successful and this is particularly true when extended beyond the central Coastal Plain area. Also because of extreme susceptibility to nematode injury, the trees do not survive as a cultivated crop. They grow best when planted near buildings, along fence rows, in open yards or in chicken runs, where nematode development is retarded and where the root system is not disturbed by cultivation.

**Jujubes:** The Jujube is a Chinese fruit well adapted to this area, produces regular crops, and is not attacked by insects or diseases. The fruit is not desirable for eating fresh, but is excellent when preserved, crystallized or made into fruit butter or pickles. The most desirable variety is designated as S. P. I. 38249.

**Blueberries:** The southern or Rabbiteye blueberry is native to this area and is well adapted as a cultivated crop. It thrives in low, moist soils commonly known as marginal or gallberry land but will not survive in excessively wet or waterlogged locations unless given drainage. The northern or New Jersey type lacks vigor here and is not adapted this far south. Yield records from 15 native selections, over a 16-year period, show an average of 17 quarts per tree over the entire bearing period for the most productive selection, while the maximum yield for a single year has been 48 quarts per plant. From the better native selections now available and from the possibilities of superior
varieties being developed through a breeding program now in progress, the blueberry seems to hold definite promise of becoming a valuable commercial crop in southern Georgia.

**Blackberries:** Because of the abundance and high quality of native blackberries there seems to be no reason for cultivating this fruit in this area, particularly since the cultivated varieties are not superior in quality.

**Dewberries:** This fruit is well adapted for home orchard use and is mature early in the season when fresh fruit is scarce. Therefore its use would be a valuable supplement to the fruit diet of residents of this area. The most desirable varieties are Younghberry, Boisenberry, and Nectarberry.

**Apples:** This fruit is not well adapted to the southern portion of Georgia, but will grow sufficiently well in the central and upper Coastal Plain to be included in home orchards. Varieties such as Red June, Horse, Delicious, and Transcendent will furnish an adequate supply of fruit for cooking and preserving.

**Citrus:** The Satsuma orange, grafted on Trifoliata stock, is sufficiently hardy to be included in home orchards as far north as the Tifton area. It is slightly susceptible to cold injury in the Station trial grounds but there has never been a complete crop failure as a result of cold. Myers lemon, Eustis limequat, and grapefruit have sufficient cold resistance (where budded on Trifoliata) to be included in home orchards in the extreme southern portion of Georgia.

**Tung:** Tung trees in the trial grounds are 19 years old and have been fruiting 16 years. During that time there have been 8 normal crop yields, 6 partial crops, and 2 complete failures. The highest yield occurred in 1940, when the trees averaged 140 pounds each, while the average annual yield over the entire bearing period is now 42 pounds per tree. Using this yield and the spacings at which the trees are planted in the trial grounds as a basis for predicting income, nuts from a 19-year-old grove, selling at the present price level, should show a gross return of about $45 per acre, while if sold at the prevailing pre-war price level, the returns would be only about $15 per acre. The principal handicap to tung culture in South Georgia appears to be late frost injury which occurs after growth is initiated in spring. Until better adapted varieties are available, it is doubtful if commercial tung culture would prove remunerative in this area.

**Chestnuts:** Blight resistant chestnuts appear to be well adapted here. They are vigorous, free of blight, and produce annual crops, but the fruit is of poor quality.

**Persimmons:** The Japanese persimmon is an attractive, edible fruit that is available when fresh fruit is scarce; consequently it should be included in all home orchards in the lower Coastal Plain.

**Other Fruits:** Fruits still surviving but which show poor adaptability are walnuts and quince.

Fruits that have failed to survive in the trial grounds are apricots, cherries, prunes, hazlenuts, and raspberries.