REPORT OF THE COAST STATION
AT DARIEN

Work at the Coast Station is being continued with the studies of drainage, irrigation, cover crops, soil management, fertilizer and lime requirements and variety and adaptation tests of truck crops. These studies are for the purpose of obtaining information to be used in truck farming on the delta soils in the freshwater tide area of the Georgia coast.

DRAINAGE: The problem of drainage is of prime importance. Dikes are used to prevent the river water from entering the fields at high tide, and a system of open ditches is used to convey rain and seepage water to the trunks in the dikes, through which it is emptied into the river at low tide. During periods of excessive rains, drainage is inadequate, making it necessary to use pumps for removing water from the cultivated fields.

In January of 1932 drain tile was installed in an 18-acre area. After two years' trial this system has been found to be very satisfactory except for the fact that it does not permit quick disposal of surface water after heavy rains.

IRRIGATION: The same system of drainage can be used for irrigating purposes. By opening the water trunks at low tide, water can be turned into the fields as the tide rises. It has been found that once a plant becomes established and has roots five or six inches long irrigation is not necessary. The mean water-table ranges from 24 inches to 30 inches below the ground level, consequently only the upper 2 or 3 inches of soil dries out enough to greatly retard the development of a growing crop. Often it is necessary, however, to irrigate the land to hasten seed germination, or to add moisture to very young plants, or to add moisture to land to which a crop is to be transplanted.
SOIL MANAGEMENT: By the use of cover crops so that deeper aeration is possible, and through the addition of more humus, it is now possible to prepare good seed-beds for crops on the delta, although cultural methods are more exacting than on upland soils.

COVER CROP TRIALS: Tests have been conducted with both summer and winter cover crops. Velvet beans and cowpeas produce about the same yield of green weight per acre for the summer covers. The Austrian winter pea is decidedly the best winter cover. The delta soils are tight and compact and cover crops have been found not only to help materially in correcting this condition but also to increase crop yields.

LIME REQUIREMENT STUDIES: The tests with lime embrace both rates of application and frequency of application of this material. Resulting data show that one ton of hydrated lime or two tons of ground limestone applied annually, is a satisfactory application for commercial crops on the delta soils.

SUMMER TRUCK CROPS

The work with summer truck crops embraces variety trials and adaptation studies with a wide range of crops. The object of this work is to determine the varieties of the various truck crops that are best adapted to the delta soils, particular consideration being given to varieties of commercial importance. Specific tests embracing fertilizer and lime requirements, and cultural methods, have been in progress with tomatoes and snap beans.

TOMATOES

The following tests were conducted with tomatoes in the spring of 1933:

Variety Trials

Fertilizer Formula Test
Rates of Applying Fertilizer
Rates of Applying Lime
Frequency of Application of Lime
Concentrated Fertilizer Test
Miscellaneous Plant Nutrients
Sources of Potash
Sources of Ammonia
Spacing Test (Row)
Spacing Test (Drill)

About half of the crop from each test had been harvested when rains in July caused plants to drown in low areas, therefore data resulting from these tests were incomplete and for that reason have been discarded. From some of the tests, which are discussed below, the trend of the experiment is indicated.

**TOMATO—FERTILIZER FORMULA TEST:** Data resulting from a four-year test indicates that an 8-4-6 (PNK) formula is a satisfactory fertilizer combination for this crop.

**TOMATO—RATES OF APPLYING FERTILIZER:** The data at hand indicate that an application of 1200 pounds to the acre will give the most profitable returns.

**TOMATO—SOURCES OF AMMONIA:** The indication in this test is that at least a part of the ammonia in a tomato fertilizer should be derived from an organic source. In this test the organic ammonia was derived from cottonseed meal.

**TOMATO—CONCENTRATED FERTILIZER TEST:** No appreciable increases in yield resulted from concentrated fertilizer formulas as compared to standard mixtures.
SNAP BEANS

Due to a reduction in funds for experimental purposes in 1933 only two tests were conducted with snap beans as follows:

Rates of Applying Lime

Frequency of Application of Lime

Plants in both these tests were injured by excessive rains, consequently no complete data were obtained. The highest yields were from areas which received an annual application of from one to one and one-half tons of hydrated lime to the acre.

WINTER TRUCK CROPS

A wide range of varieties of winter truck crops are being planted for the purpose of determining the commercial varieties adapted to delta soils. Detailed experiments were conducted with lettuce and cabbage in 1933 with special attention being given to fertilizer and lime requirements.

CABBAGE

CABBAGE—VARIETY TRIALS: Copenhagen Market and Charleston Wakefield continue to be the best commercial varieties in the test, both producing hard heads of marketable size.

CABBAGE—FERTILIZER FORMULA TEST: During a five-year study with this crop it has been found that 8 to 10 per cent phosphoric acid, 4 per cent ammonia and 6 per cent potash have produced the best results.

CABBAGE—RATES OF APPLYING FERTILIZER: A five-year test indicates that 1200 pounds per acre is the desired rate of application for delta soils.

The following tests were begun with cabbage in the fall of
1932. With only one season’s data, no definite conclusions can be drawn:

Sources of Ammonia
Sources of Potash
Concentrated Fertilizer Test
Miscellaneous Fertilizer Treatments

LETTUCE

Lettuce has been substituted for onions as a winter crop not only because it has shown commercial possibilities but because difficulty was experienced in curing and storing onions without excessive loss from rot.

The tests listed below were begun with lettuce in the fall and winter of 1932-33:

Fertilizer Formula Test
Rates of Applying Fertilizer
Rates of Applying Lime
Frequency of Application of Lime
Concentrated Fertilizer Test
Sources of Ammonia
Sources of Potash
Miscellaneous Plant Nutrients
Planting Dates
All of these tests were planted between October 8 and October 18. The crop was in full head on February 9, 1933 and was damaged by a hard freeze that came on that date.

**LETTUCE—PLANTING DATES:** It has been observed that it is very hazardous to bring this crop into full head previous to March 5 to 10. The reason is that the plant is very much more susceptible to cold injury after the head has formed. To reduce this danger to a minimum no seed should be planted earlier than November 15.

**GENERAL INFORMATION FOR GROWING LETTUCE ON THE DELTA SOILS**

1. Lime should be applied to give a pH reading of at least 6.0.

2. Work land into a good state of tilth.

3. Space rows 44 inches apart.

4. Fertilize at rate of about 800 pounds of an 8-5-8 (PNK) per acre and throw a good bed over the fertilizer.

5. Drag top off bed, leaving it about 5 or 6 inches above the ground level and about 24 inches wide on top. This affords ample room for double rows of plants 14 inches apart.

6. Drop seed in hills 12 inches apart, using 10 to 15 seed to each hill.

7. When plants are 3 inches high thin to 2 plants to each hill.

8. About one week later apply about 400 pounds of the same fertilizer as previously used. Place the fertilizer between the double rows and mix it with the soil by using a small hand cultivator.

9. After this operation, thin to one plant in each hill.
10. Give frequent cultivation with hand cultivator, until about two weeks before harvest, or until it is difficult to handle cultivators between the rows without injuring plants.

VARIETY AND ADAPTATION STUDIES

Variety and adaptation studies with miscellaneous winter and summer truck crops are in progress at the Coast Station for the purpose of determining those varieties best adapted to delta soils. Listed below are the crops included in this study. Under the name of each vegetable listed below, and in the order named, are the varieties that are showing to best advantage:

SUMMER VEGETABLES (Delta Soils)

BEANS (LIMA):
   Henderson Bush
   Jackson Wonder

BEANS (SNAP):
   Stringless Green Pod
   Tennessee Green Pod
   Bountiful

CUCUMBERS:
   White Spine

OKRA:
   White-Velvet

SQUASH:
   Yellow Summer Crookneck

TOMATOES:
   Marglobe
   Livingston Globe
   Ponderosa
   Gulf States Market
WINTER VEGETABLES (Delta Soils)

CARROTS:
- Chantenay
- Oxheart

CAULIFLOWER:
- Early Snowball
- Gilt Edge

CORN (ROASTING EAR):
- Truckers Favorite
- Golden Bantam
- Hastings Early Market

CABBAGE:
- Copenhagen Market
- Charleston Wakefield

ENGLISH PEAS:
- Improved Telephone
- Thomas Laxton

KALE:
- Early Green Curled

LETTUCE:
- Iceberg
- Drumhead White Cabbage
- Big Boston

MUSTARD:
- Tendergreen
- Giant Green Curled
- Florida Broad Leaf

RADISH:
- Early Scarlet Globe

RAPE:
- Dwarf Essex

RUTABAGA:
- Improved American

SPINACH:
- Bloomsdale
- Aragon

TURNIPS:
- Purple Top
- Shogoin (best for summer use)
- White Egg
FRUIT AND NUT CROPS

Included in the fruit and nut plantings are dewberries, raspberries, grapes, strawberries, kumquats, satsumas, round oranges, calamondin oranges, limequats, grapefruit, lemons, tangelos, figs, peaches, plums, apricots, persimmons, tung oil and pecans.

The fruits that appear to be well adapted are figs, lemons, grapefruit, satsumas, kumquats, calamondin oranges, limequats, dewberries, blackberries, strawberries, persimmons, pecans and tung oil.

The fruits that appear to be short-lived on the delta are peaches, plums, apricots and bunch grapes. Also raspberries are poorly adapted.

BULBS: Narcissus, canna and gladiola bulbs grow well on the delta soil and apparently have commercial possibilities.