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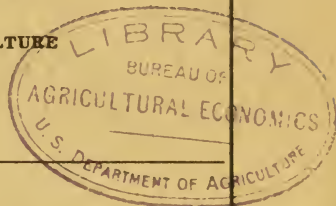
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**VIRGIN ISLANDS AGRICULTURAL EXPERIMENT STATION
ST. CROIX, VIRGIN ISLANDS, U. S. A.**

Under the supervision of the
UNITED STATES DEPARTMENT OF AGRICULTURE

BULLETIN No. 6



GARDENING IN THE VIRGIN ISLANDS

BY

JOHN B. THOMPSON, Director



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**VIRGIN ISLANDS AGRICULTURAL EXPERIMENT STATION,
ST. CROIX**

[Under the supervision of the Office of Experiment Stations, United States Department of
Agriculture]

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Every homestead should have its vegetable garden. The returns from a garden plat are probably greater than from any other similar-sized area on the plantation. The garden should enable the grower to raise sufficient vegetables to supply his family, and also be the means of lowering living expenses. The purpose of this bulletin is to encourage the more general growing of vegetables in the Virgin Islands, and to give suggestions regarding varieties and methods of cultivation best adapted to the local conditions.

LOCATION OF THE GARDEN

Provided that the ground is fenced to keep out fowls and other stray animals, the garden should be made near the dwelling so that it can be easily protected against thieves and watched for insect invasion and disease. So located, it can be cared for in spare moments much more readily than a garden which is situated at some distance from the house. The land should have good, natural drainage, and should be shielded to some extent from the prevailing winds. When protection is not afforded by buildings or hedge, temporary windbreaks, consisting of pigeon peas or elephant grass (fig. 1), which can be grown in a few months, should be planted around the east side of the plat.

SIZE

The size of the garden depends on the number of persons to be supplied with vegetables, and whether or not a profitable disposition can be made of any surplus products. Another important con-

sideration is whether the garden is to be cultivated by hand or with an animal-drawn implement. The rows will naturally have to be farther apart, requiring more land, where horse cultivation is used than where hand cultivation is given (fig. 2). There is considerable advantage in having long rows, and hence the garden should be rectangular, with rows running north and south. In general, it may be said that one-fourth to one-half an acre should be large enough to furnish the average family with vegetables, and 1 acre to supply a surplus for sale or for use as stock feed.

MAINTAINING FERTILITY

To get best results, the garden soil should be kept fertile. Farm-yard manure is one of the best fertilizers and should be scattered over the soil every few years; or such leguminous crops as beans or peas should be worked into the soil to improve its tilth. Com-



FIG. 1.—Elephant grass as temporary windbreak

mercial fertilizers are good stimulants for the immediate crop, but they are not suitable for maintaining fertility. It is well to rotate the crops so that nonlegumes will follow legumes. Jack beans make excellent green manure and may be planted on any unoccupied land and forked or plowed under.

GENERAL LAYOUT FOR PLANTING

Having provided a temporary windbreak for the vegetables, as has already been suggested, it would be well to plant fruit trees and shrubs to establish a permanent windbreak. Flat land should have drainage furrows to carry off surplus water. Such tall-growing vegetables as corn, pole beans, and tannias should be planted next to the windbreak, and these in turn should be followed by smaller vegetables. Space should be left on one side of the garden for seed beds (fig. 3). Boxes 6 inches deep can be used for the purpose,

provided they are filled with good soil in which fine barnyard manure has been incorporated.

CULTIVATION

The object of cultivation is threefold. First, it helps to conserve moisture. During dry weather the moisture rises rapidly from the lower levels to the surface of the earth, where it is quickly dried up by the wind and the sun. The surface soil should not be allowed to settle into a crust but should be kept in fine tilth to retard the evaporation of moisture from it. The second object of cultivating is to aerate the soil. Conversion of fertilizing material in the soil into plant food is aided by the action of air. The third and probably the most important object of cultivating is to destroy weeds and grass which compete with the vegetables for plant food and moisture



FIG. 2.—Garden plats for horse cultivation

in the soil. The garden should be gone over after every rain with a cultivator, a rake, or a hoe.

IMPLEMENTS

The number of implements used for working the average garden is small. If the garden is large and is to be worked by horse power, the land should be broken and disked with regular farm implements, including an animal-drawn cultivator. The small implements include hoes, rakes, shovels, digging forks, trowels, sprinkling cans, garden lines, sprayers, and dusters (fig. 4). A wheel hoe, having a combination of attachments, can be used to advantage regardless of the size of the garden, and a wheelbarrow also should form a part of the equipment.

SEED

Good seed is one of the most important items in gardening. Even the best of care given the garden will not make up for poor seed. Seed should be saved from the best varieties only, dried well, and

stored in bottles or jars which are well stoppered. When there are signs of "running out," new seed should be purchased. Many reliable seed firms issue catalogs from which seed may be selected. The station can not recommend any particular firm, but will gladly give a list of firms.

SEED TESTING

Seed is likely to deteriorate rapidly in the Tropics, and the gardener should therefore test his seed before planting. This is true especially of seed which has been carried over several months. Onion seed loses its vitality after a very short time, whereas beans and okra

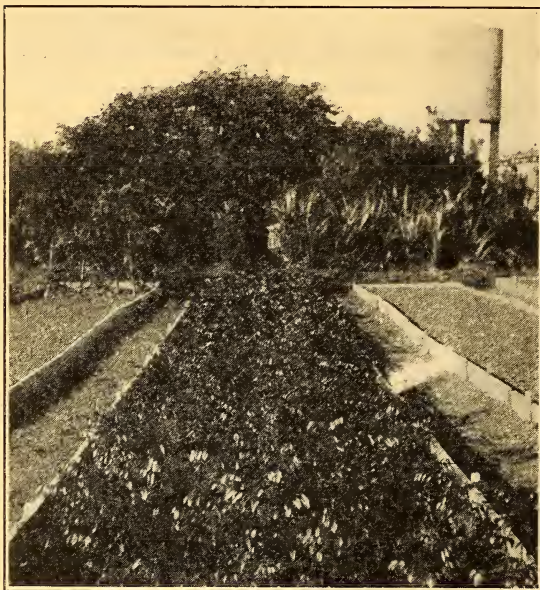


FIG. 3.—Properly constructed seed beds

seed retain their viability for several months. However, in any case, the seed should be tested. One method of testing is to place a small quantity of seed between two pieces of blotting paper, and another method is to plant a given number of seeds in a shallow box filled with fine soil. In both methods the seed should be kept moist. After a few days a count should be made of the young plants which have come up. The percentage of germination can then be determined. Seed of low germination

should be discarded or allowance made for it in planting. Plants from poorly germinating seed are not so vigorous as are those from fresh, viable seed.

DIRECTIONS FOR SOWING

Seed often fails to germinate because it has not been properly planted. In preparing the land for planting it is essential that the soil be well pulverized. The soil particles of rough, cloddy ground can not come in close contact with the seed. Sown in such soil, the seed is bound to germinate poorly. Land which is too wet becomes hard and can not be penetrated by the tender sprouts. Planting too deep may also be a cause of failure of the seed to germinate. Heavy rains immediately following planting often cause the land to crust, making it difficult for the plants to come through. It is obvious that to get the best results the land should be well prepared, and be neither too wet nor too dry. As a rule, small seeds, such

as those of the cabbage, turnip, and carrot, should be planted one-half inch deep, whereas large seeds, such as those of melons, beans, and corn, may be planted 1 to 2 inches deep. After planting the soil should be pressed over the seed with the foot or the back of a hoe. The garden should be gone over with a rake as soon after a rain as it is dry enough to break the crust and permit the seedlings to come up.

SEED-BED CONSTRUCTION

Seed beds, or plant beds, as they are sometimes called, are constructed for the purpose of growing such plants as tomatoes, peppers, onions, and cabbage, that are to be transplanted later to the garden plats. These beds may be made any width most convenient for planting and weeding. Four to five feet is satisfactory for general conditions. Spaces of about 18 inches should be left between beds for walks and drainage. A frame made of 6-inch boards should be staked up around each bed to hold the soil together and to prevent washing. Having placed the frames, dig up the ground inside, removing all trash and stones. Fill the frames to within $1\frac{1}{2}$ inches of the top with any good soil. Scatter finely pulverized manure over the surface and work in well. Rake to a smooth, level surface, and the seed may be planted at any time. For sowing the seed, mark off rows across the beds about half an inch deep and 6 to 8 inches apart. After sowing the seed, water the beds thoroughly in order to hasten germination. Waterings can be made thereafter as often as may be necessary to keep the plants in growing condition. The late afternoon is the best time of day to do the watering. The beds should be kept carefully weeded at all times.



FIG. 4.—Knapsack sprayer and duster

TRANSPLANTING

Transferring plants from the seed bed to garden plats is a process requiring considerable care. The best time to transplant is late in the evening, or while the ground is still moist following rain. A small quantity of water should be applied to each plant if the soil is drying out, and some of the leaves should be removed to lessen transpiration and wilting. Unless the plants are transplanted with a ball of earth adhering to the roots, the soil should be pressed well

about the roots with a trowel or a dibber. The roots should not be permitted to dry out while they are being transferred from the plant bed to the garden, but should be thoroughly watered several hours in advance of transplanting. If the sun is still high in the heavens, the plants should be kept covered with a wet sack until they are set in the ground. Shading may sometimes be used to advantage.

DISEASES AND INSECT PESTS AND METHODS OF CONTROLLING THEM

Nearly all vegetables are attacked by some insect pest or fungus disease, or by both, resulting in serious damage to the crop, and perhaps destruction, unless control measures are resorted to. The principal insects attacking vegetables in the Virgin Islands are fully described in a bulletin issued by the station.¹ The injurious insects may be classed under two general heads, biting insects and sucking insects, each of which must be treated differently. Biting insects must be killed by applying poison to the foliage of the plants so as to be eaten with the plant. Sucking insects are killed by insecticides coming in contact with their bodies. Poison for biting insects may be applied in either liquid or powdered form. Paris green and arsenate of lead are the two principal insecticides for these pests. The gardener must obtain a permit from the police department before purchasing any poison, however.

INSECTICIDES FOR BITING INSECTS

SPRAYING MIXTURES

ARSENATE OF LEAD

Arsenate of lead is not readily washed off by the rains and it can be used without any danger of burning the foliage. The formula is as follows:

Arsenate of lead-----	2 pounds.
Unslaked lime-----	3 pounds.
Water-----	50 gallons.

The arsenate of lead is mixed with enough water to form a paste; the lime is slaked and stirred into the lead mixture, and the whole, diluted with water to make 50 gallons.

PARIS GREEN

Paris green-----	4 ounces.
Lime (unslaked)-----	2 pounds.
Water-----	50 gallons.

Prepare as for arsenate of lead spray.

DUSTING MIXTURES

Paris green and arsenate of lead in a powdered form may also be dusted on the plants. They may be used as follows:

Paris green-----	1 part.
Lime (air-slaked)-----	8 parts.
Or	
Arsenate of lead and air-slaked lime	
in equal parts.	

¹ Virgin Islands Agr. Expt. Sta. Bul. 4, "Truck-Crop Insect Pests in the Virgin Islands and Methods of Combating Them," available copies of which may be had upon application to the director, who will also give any available information concerning the effectiveness of proprietary insecticides upon request.

The mixtures may be applied by dusting through coarsely woven sacks, or through tin shakers, which can be purchased at low cost and are especially made for the purpose.

INSECTICIDES FOR SUCKING INSECTS

Among the most promising contact insecticides for sucking insects are nicotine sulphate (1 part to 800 parts water, or 1 teaspoonful to a gallon) and kerosene emulsion. Nicotine sulphate is not for sale in the islands, but local druggists doubtless would keep it in stock where the demands sufficient to justify its purchase.

Kerosene emulsion may be used for sucking insects and for scales. Unless it is properly made, however, it is likely to injure the plants. The directions for making should be carefully followed:

Kerosene -----	2 gallons.
Water -----	1 gallon.
Laundry soap -----	½ pound.

Dissolve the soap in boiling water. While the solution is still hot, remove it from the fire and add the kerosene slowly, stirring vigorously while so doing until the mixture is completely emulsified. The stock solution should be diluted 1 part to 12 to 15 parts water before using. Aphides feed on the underside of the leaf, and the underside must therefore be sprayed to kill the pest.

POISONED BAITS

Cutworms and crickets are often very destructive in gardens. The cutworms cut off the plants at the surface of the ground, making replanting necessary. They may be effectively held in check by means of poisoned baits. A good bait can be made by adding a pint of cheap molasses to a mixture of bran (5 pounds) and Paris green (one-fourth pound). Bits of this mixture should be scattered near the plants in the evening.

Where crickets are troublesome, leaves of plants on which they feed should be dipped in a strong arsenical mixture and strewn about. A good solution for the leaves can be made by mixing Paris green (4 ounces) with water (12 gallons). This method of control is ineffectual where ripe tomatoes are attacked because the crickets prefer the tomatoes to the bait.

FUMIGATION FOR WEEVILS

Weevils are often very destructive to stored peas, beans, and corn. The insects can be destroyed by fumigating the seed with carbon bisulphide, which can be purchased at drug stores. The seed should be placed in an air-tight box or drum and on the seed a shallow dish containing the carbon bisulphide. The gas is heavier than air and will penetrate downward through the seeds, killing all inclosed insects. It should be used at the rate of 4 to 8 pounds to each 1,000 cubic feet fumigated. Fumigation should continue for 24 hours, if possible. The fumes of carbon bisulphide are exceedingly inflammable, hence lighted lamps and cigars or fire in any form should be kept away.

BORDEAUX MIXTURE FOR FUNGUS DISEASES

Every gardener should know how to prepare Bordeaux mixture, which is probably more commonly used than any other for plant-

disease control. In the majority of instances, the 4:4:50 formula will prove satisfactory and will not injure the vegetables.

Copper sulphate (bluestone) - 4 pounds.
 Lime (unslaked, lump) ----- 4 pounds.
 Water ----- 50 gallons.

Dissolve the bluestone in water in a wooden or enameled container,² and slake the lime in a separate receptacle. The two solutions should be mixed together by pouring them at the same time into a barrel half filled with water. Stir the solution constantly, and dilute further by adding enough water to make 50 gallons. Either Paris green or arsenate of lead may be used with the Bordeaux mixture as an insecticide in the same proportions as in the formula already given. The solution should be tested for excess copper by dipping a bright knife blade into it for a few minutes. If the blade reddens, more lime should be added to the solution; otherwise, the mixture may burn the plant.

CULTURAL DIRECTIONS

The vegetables described in the following pages have been tried at the station and found adapted to island conditions. The gardener may wish to experiment with new varieties, but his main crops should consist of the varieties mentioned.

GARDEN CROPS

BEANS

From the standpoint of food, beans are among the most important vegetables grown. All varieties are usually classed either as bush or pole, according to their habit of growth. The pole bean should be provided with some sort of support, such as brush, poles, or trellises set up along the row. To prevent the supports from blowing over, the tops of several poles on adjacent rows may be tied together to brace each other. The pole beans are considered more certain as croppers than the bush kinds. The bush beans should be planted about an inch apart in rows $2\frac{1}{2}$ to 3 feet apart. The pole varieties should be planted 3 to $3\frac{1}{2}$ feet apart each way. Cultivation should not be given while the foliage is wet, because it is likely to injure the plants.

The varieties Earliest Red Valentine and Refugee are both excellent bush beans. Of the two, the latter stands dry weather the better. Of the pole "snap beans," McCaslan and Old Homestead, or Kentucky Wonder, are well-tried sorts. The Florida butter bean and the small white Lima (Carolina Sieva) are two of the best of this type.

BEETS

The webworm renders the beet crop uncertain until after January 1, and even then it is likely to be attacked. Injury may be checked by dusting the plants with a Paris green or arsenate of lead mixture. The seed should be thinly scattered in rows $2\frac{1}{2}$ feet apart, and the land should be rich to make the roots grow rapidly; otherwise, they

² Copper sulphate corrodes metal containers.

will become hard and stringy. When the plants are 3 or 4 inches high they can be thinned to 4 or 5 inches apart in the row. The leaves of the young plant make excellent greens. The varieties Crosby's Egyptian, Early Blood Turnip, and Eclipse are all good.

CABBAGE

Cabbage seed should be sown in seed beds and when the young plants are about 4 inches high they should be transplanted in rows $2\frac{1}{2}$ feet apart, and spaced 18 to 20 inches apart in the row. Cabbage is commonly attacked by the cabbage worm, which is the larva of the Southern cabbage butterfly. Arsenical dusts and sprays are among the best remedies for them. A piece of soap dissolved in the mixture will act as a spreader. The varieties Late Flat Dutch, All Season, Early Jersey Wakefield, and All Head Early have given good results at the station.

CARROTS

Carrots grow best in a deep, well-worked soil. Hard, beating rains may make it difficult for the seed to germinate. Having once come up, the crop is almost certain to be a success. Carrots should be planted and thinned like beets. It is best to leave them in the ground and dig them as they are needed. They do not keep long after being removed from the ground. The varieties Chantenay and Ox-heart are recommended for general planting.

CELERY

Celery is a cool-weather plant and therefore can not be grown here on a large scale. It may be grown on small plats, however, under partial shade during the cooler months of the year. The celery seed should be sown in boxes, and the young plants, when about two inches high, should be transplanted to larger quarters to make stocky growth. Later they can be again transplanted to a suitable location and given plenty of water. The full-grown stems can be blanched by setting up boards on each side of the row of plants, or by wrapping waterproof paper around each plant. The varieties Giant Pascal and Golden Self-Blanching are two good sorts.

CORN

Several varieties of sweet or sugar corn have been tried at the station, but all have failed as the result of attack by insects, especially the corn earworm and the corn leafhopper. The variety known as Truckers' Favorite, although not strictly a sweet corn, is used extensively for table purposes. It gave promising results at the station and is deemed worthy of trial by gardeners generally. Corn should be planted in hills 3 feet apart in rows $3\frac{1}{2}$ feet apart.

CUCUMBERS

The area to be planted with cucumbers should be marked off into hills 4 feet apart each way. A forkful of well-rotted manure should be placed in each hill and thoroughly mixed with the soil. Six to

eight seeds should be sown in each hill, and when the plants are well established they should be thinned to three to the hill. Melon worms and aphides are the two most destructive pests of cucumber in these islands, and there are also fungus diseases to be guarded against. The 4:4:50 Bordeaux mixture into which is stirred arsenate of lead (2 pounds) will be found effective against both the melon worm and disease. Either nicotine sulphate or kerosene emulsion should be used to combat aphides. Both nicotine sulphate and arsenate of lead in Bordeaux mixture have been successfully used at the station, the insects being killed with one spraying. Arsenate of lead dust can be used to control the melon worm alone. Early Fortune is the best all-around variety tested.

EGGPLANT

The eggplant is easily grown in the Virgin Islands, and is seldom attacked by either insect pests or disease. The seed should be planted in seed beds, and the resulting strong plants transplanted 2 feet apart in rows $2\frac{1}{2}$ feet apart. If the land is kept clear of weeds and grass, the plants will continue to bear for five or six weeks. The varieties Black Beauty and New York Spineless yield almost certain crops.

ENDIVE

Endive makes an excellent salad and is used to garnish dishes, flavor soups, and the like. It should be planted thinly in drills 18 inches apart. When nearly grown the leaves should be tied up about the plant to blanch the "heart" and make it tender and palatable. Although this vegetable is practically unknown in these islands, it is well worthy of trial in every garden. The variety Early Green Curled is recommended for general planting.

KOHL-RABI

Kohl-rabi has a mild, delicate, cabbage-like flavor. The enlarged fleshy stems are eaten before the skin toughens. The crop may be grown from seed-bed plants, or the seed may be sown where the crop is to stand. The plants should be sprayed or dusted as directed for cabbage. Early White Vienna is one of the best-known varieties.

LETTUCE

Lettuce is one of the most appreciated vegetables of the home garden. The seed should be sown in boxes and kept moist but not too wet. When the leaves have spread the young plants can be transplanted to beds, and spaced 6 to 8 inches apart, depending upon the variety. In dry weather the ground should be kept moistened to keep the crop growing rapidly, so that the leaves will be crisp. Of 18 varieties tried at the station, Mignonette alone heads. It makes a rather compact head, is very tender, and has a sweet flavor. Other varieties having good qualities include Big Boston, Black-Seeded Simpson, and one received under the name Florida Header.

MUSKMELONS

Muskmelons require the same cultural treatment as cucumbers. The varieties Emerald Gem and Rocky Ford have been grown successfully at the station.

OKRA

Okra can be successfully grown by anyone. Three or four seeds should be dropped in hills $3\frac{1}{2}$ feet apart each way and the resulting plants thinned to one to the hill. The plat should be kept clear of weeds, so that harvesting may be continued for many weeks.

ONIONS

A rich soil should be selected and worked down to fine tilth for the production of good onions. The seed bed should be heavily fertilized, from 6 to 10 tons of fine manure per acre being thoroughly incorporated with the soil. Good results may be had from planting the seed where the crop is to stand, but it is better to grow the plants in seed beds and transplant the seedlings when they are 4 or 5 inches high. If the crop is to be hand cultivated the rows should be marked off 18 inches apart and the plants set 6 or 7 inches apart in the row. The surface of the land should be kept loose at all times. When most of the tops have dried the onions should be pulled and allowed to cure in the sun for a day or two. They should then be stored in a dry, airy room. If the plants are attacked by blight, spray with Bordeaux mixture. To make the solution spread readily on the plants add to it resin (1 pound) and washing soda (one-half pound) which have been boiled for one and one-half hours in one-half gallon of water. This quantity should be used in about 30 gallons of Bordeaux mixture.

PARSLEY

A small plat of parsley is a useful addition to the garden. The large, green leaves are used to garnish dishes of meat and flavor soups. They should be harvested as they are needed.

PEAS

The ordinary garden pea can be grown successfully in the Virgin Islands during the cooler months of the year. Pea seed should be scattered an inch apart in rows $2\frac{1}{2}$ or 3 feet apart. The dwarf varieties are recommended for general planting, because of the difficulty in getting brush to support the tall-growing kinds. The crop should be given the same cultivation as for bush beans. The varieties Alaska, John L., and Thomas Laxton have given good results at the station.

PEPPERS

The seed of the pepper should be sown thinly in the seed bed, and when the plants are about 4 inches high they can be transplanted and given the same cultivation as the eggplant. Peppers of all

varieties do well here, and are not likely to be attacked by disease and insect pests. The varieties Ruby King, Pimento, and Chinese Giant are representative of the sweet sorts. Of the hot types, Long Cayenne and Red Chili are recommended for use.

RADISHES

The radish requires a rich soil for best growth. It must be kept growing rapidly to produce a mild flavor. The seed should be sown thinly in rows 18 inches apart. If successive sowings are made through the cooler months of the year the table can be kept continually supplied. Among the best varieties tried at the station are Long White Icicle, Early Long Scarlet, and Scarlet Button.

SALSIFY

Salsify, or oyster plant, so called because of the remarkable similarity of its flavor to that of the oyster, is practically unknown in the Virgin Islands. The root is the edible part of the plant, makes a delicious ingredient for soup, and can be cooked in a number of other ways. To obtain straight, well-formed roots the crop should be planted in deeply worked soil. The seed should be sown in drills and the plants spaced about 2 or 3 inches apart. Mammoth Sandwich Island is one of the best varieties for table use.

SQUASHES

Squash should be planted in hills in soil that is well prepared and fertilized with manure. The bush variety is planted in hills 4 feet apart each way, and the vine variety in hills 8 or 10 feet apart. Both the melon worm and the aphid are very destructive to squash, but can be controlled by the treatments recommended for pests of cucumber. Most varieties of squash would doubtless do well here. The White Bush Scalloped or Patty Pan variety is recommended as a heavy yielder and for its good quality. Of the running varieties, Warty Hubbard is a long keeper and is excellent for pies.

SPINACH

To those who like greens, nothing is better than spinach. The seed should be sown in drills 18 to 20 inches apart. The outer leaves should be removed while they are still tender, so that the plant can continue growth for the production of more crops later. The variety Aragon, and New Zealand spinach, although of different type, are both excellent. The seed of the latter should be soaked for a day in tepid water before planting.

TOMATOES

The tomato thrives on all the soils of the Virgin Islands. Two or three dozen plants should be ample to keep the average family supplied with an abundance of fruits through two or three months. Some varieties begin bearing earlier than others, and for this reason it would be well to plant more than one variety so as to extend the

ripening season over as long a period as possible. The seed should be sown thinly in the seed bed for the production of stocky plants. If the small plants are set in pots or boxes filled with good soil, they will become strong enough to transplant to the garden without disturbing the roots. The plants should be set 4 by 4 feet. They may be allowed to trail along the ground, or be pruned to one stem and tied to stakes (fig. 5). Tomatoes are likely to be attacked by blight and should be sprayed with Bordeaux every week or 10 days, beginning with the plants in the seed bed. The disease can be checked if it is taken in the early stages. Bordeaux mixture to which arsenate of lead is added should be sprayed on the plants when insects are troublesome. The varieties Chalk's Early Jewel, June Pink, Stone, Brimmer, and Ponderosa are all worthy of trial. Golden Beauty is a prolific yellow variety.

TURNIPS

Turnip seed should be sown and given the same cultivation as the beet. Good soil is required to produce tender roots. The varieties Extra Early Milan, Early Red or Purple Top, Extra Early White Egg, and Yellow Globe have been found worthy of trial.

WATERMELONS

Watermelons do best in a soil containing plenty of humus; that is, decaying organic matter. They should be planted in hills 10 to 12 feet apart each way. A large forkful of manure should be placed in each hill, because it provides one of the best fertilizers for the watermelon. About eight seeds should be dropped in each hill. When the young plants are well established they can be thinned to three in the hill. The land should be kept clear of weeds throughout the growing season, and all imperfect fruits should be pulled from the vines, since they rob the better fruits of nourishment. Fungus diseases and insect pests of the watermelon are treated as are those of the cucumber, except the bug known as *Phthia picta*, which splits the vines and causes considerable damage. This pest may be killed by placing on each hill a ripe tomato into which corrosive sublimate has been injected. The bait has proved very effective at the station. The varieties Florida Favorite and Tom Watson have been tried and found excellent.



FIG. 5.—Tomatoes pruned and staked

VARIOUS ROOT CROPS

YAMS

No island garden is considered complete unless it contains a few rows of yams. Considering its food value, the yam is not planted so extensively as it should be. To obtain the best results, the yam should be cut into pieces weighing about 4 ounces and planted $3\frac{1}{2}$ feet apart in deep furrows in which manure has been well mixed with the soil. The soil should be banked up around the rows with a plow and hoes; if possible, the banks should be mulched with coarse pen litter. The vines may be allowed to trail around over the banks, but they make better growth if they are provided with poles or some other kind of support on which to climb. They are ready to harvest in about nine months after planting. Seal Top and Potato are the two best varieties of yams tested at the station.

TANNIAS

The cultural directions for tannias are practically the same as for the yam. They do best on moist land, but if that is not available the ground should be heavily mulched. No support is needed as for yams. Crab Island is a popular local variety.

SWEET POTATOES

The land should be banked for the sweet-potato crop, but mulched with little or no manure, as it will cause too much vine growth at the expense of the roots. Either vine cuttings or slips may be planted. Slips may be grown by planting medium-sized potatoes in seed beds and pulling the slips when the plants are about 6 inches high. The only attention then needed is to keep the banks free from weeds and grass. The varieties Black Rock and Bigwig are the best general-purpose sweet potatoes grown at the station.

DASHEEN AND TARO

Other root crops well worth trying are the dasheen and the taro. Cultural directions are similar to those required for tannias.

OTHER VALUABLE CROPS FOR THE GARDEN

The quick-growing herbaceous fruits such as the papaya and the banana should be allotted space in every garden. They take up very little room, and their slight shading scarcely affects the other vegetables growing near by. The gardener will be fully compensated for the extra effort he puts on these crops.

PAPAYA

A dozen papaya trees, 1 male and 11 females, should furnish enough fruit to supply the average family. The plants grow from seed, begin bearing in less than a year, and continue to bear for two or three years. New plantings should be made at least every two

years to insure a continuous supply of fruits. Twice as many seedlings should be started as there are trees desired, to allow for removing the extra male trees which are likely to grow. All males, except 1 to every 11 females, should be removed as soon as their sex is determined. The males can be determined by their flowers, which are borne on pendulous racemes. In raising papayas, consideration should be given the pleasing taste of the fruits and also the digestive properties of the substance "papain" which the juice contains. Only the seed of the best-flavored varieties should be used for propagation.

BANANAS

Bananas are propagated by means of suckers which are removed from the rootstock of the parent. These suckers grow readily when transplanted. If the ground is naturally dry the plants should be mulched and watered until they are well established. Usually the plants produce fruit a year after setting. Upon the removal of the bunch of fruit the old plant should be cut down to permit a sucker to grow in its place, and insure a yearly supply of fruit.

CHAYOTE

The chayote is related to the cucumber and the squash. The fruits vary considerably in size, shape, color, and degree of prickliness. The vine is a rampant grower and requires a strong support, such as a fence or trellis on which to climb. The whole fruit should be set in well-manured hills, with the large end sloping downward and the small end barely covered. If the plants are attacked by disease and insect pests they should be sprayed as is directed for cucumbers. Although the chayote is considered a perennial, it dies down at the station after bearing a full crop. It is worthy of a place in every garden, and the cooked fruit has a most delicate squash-like flavor.

ROSELLE

The roselle, also known as sorrel, belongs to the same family as the hibiscus. Its calyxes are considered excellent substitutes for cranberries and are used for making jellies, jams, marmalades, and an acid drink. The seeds are sown in seed beds and the young plants are transplanted to the garden when they are about 6 inches high. The plants should be set $3\frac{1}{2}$ feet apart each way, if the land is good. The crop should be given an occasional cultivation.

MISCELLANEOUS INFORMATION

The following information will be of use to local gardeners:

1 acre equals	43,560 square feet equals approximately	208 $\frac{3}{4}$ feet square.
$\frac{1}{2}$ acre equals	21,780 square feet equals approximately	147 $\frac{1}{2}$ feet square.
$\frac{1}{3}$ acre equals	14,520 square feet equals approximately	120 $\frac{1}{2}$ feet square.
$\frac{1}{4}$ acre equals	10,890 square feet equals approximately	104 $\frac{1}{4}$ feet square.
$\frac{1}{8}$ acre equals	5,445 square feet equals approximately	73 $\frac{3}{4}$ feet square.

If it is desired to measure off one-third of an acre from a plat 132 feet long, for instance, reference to the above table will show that

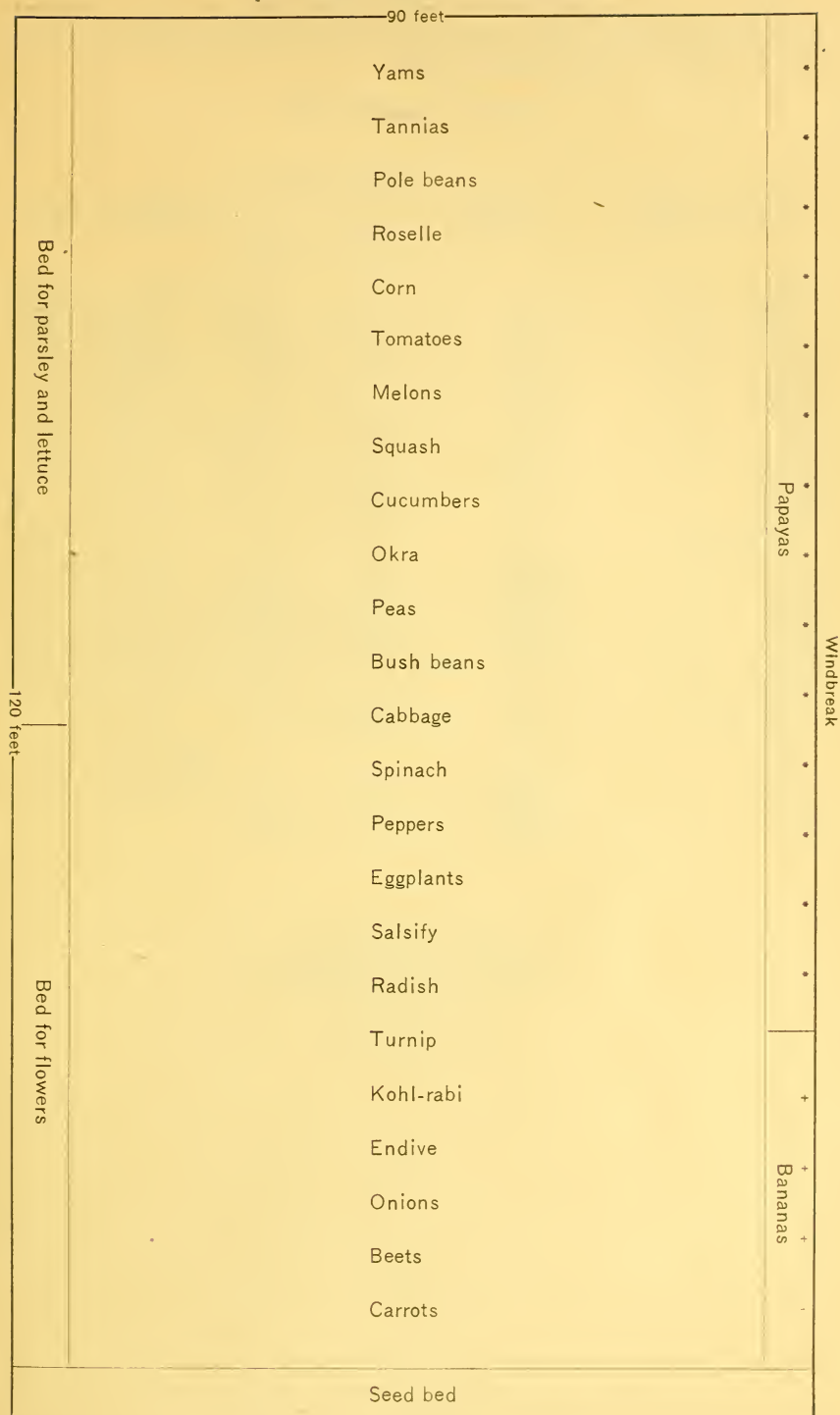
one-third of an acre is 14,520 square feet, which sum divided by 132 will give 110 as the necessary width.

1 acre equals 160 square rods equals 4,840 square yards equals 43,560 square feet equals 6,272,640 square inches.

To find the number of hills or plants required per acre, multiply the distance in feet between the rows by the distance in feet between the hills or plants, and divide 43,560 by this number. The result will be the correct number. Thus, if the rows are 3 feet apart and the plants are $2\frac{1}{2}$ feet apart in the row, the area will be $3 \times 2\frac{1}{2}$ or $7\frac{1}{2}$ square feet, which divided into 43,560 will give 5,808 as the number of plants on the area.

The following diagram is submitted as a suggested plan for laying out a one-fourth-acre garden for wheel-hoe cultivation. The distances between crops can be learned from the text. For some crops, as yams, corn, beans, and the like, two rows can be planted, if desired.

Plan for one-fourth-acre garden
[For hand or wheel-hoe cultivation]



The following table gives the quantity of seed for a row 100 feet long, distances for plants between rows and between plants in rows, and the depth of planting the seed.

Gardeners' planting table

Kind of vegetable	Seed required for 100 feet of row	Distance between rows		Distance between plants in row	Depth of planting
		Hand cultivation	Animal cultivation		
Beans:		<i>Feet</i>	<i>Feet</i>	<i>Feet</i>	<i>Inches</i>
Bush.....	1 pint.....	1½ to 2	2½ to 3	¾ to 1	1 to 2
Pole.....	½ pint.....	3 to 3½	3 to 3½	3 to 3½	1 to 2
Butter.....	do.....	3 to 3½	3 to 3½	3 to 3½	1 to 2
Beet.....	2 ounces.....	1½ to 2	2½ to 3	¾ to 1	1 to 1½
Carrot.....	1 ounce.....	1½ to 2	2½ to 3	¾ to 1	½ to 1
Cabbage.....	¼ ounce.....	2 to 2½	2½ to 3	1½ to 1½	½
Chayote.....	8 fruits.....	8	8	8	Shallow.
Celery.....	¼ ounce.....	2 to 2½	3 to 4	½ to ¾	1
Corn.....	¼ pint.....	2½ to 3	3 to 3½	3 to 3½	1 to 2
Cucumber.....	½ ounce.....	4	4	4	1 to 2
Endive.....	1 ounce.....	1½ to 2	2½	¾ to 1	½ to 1
Eggplant.....	¼ ounce.....	2 to 2½	2½ to 3	1½ to 2½	½ to 1
Kohl-rabi.....	do.....	1½ to 2	2½ to 3	1½ to 3	½
Lettuce.....	½ ounce.....	1½ to 1½	2½	1½ to 3	½
Melons:					
Muskmelon.....	do.....	4 to 6	4 to 6	4 to 6	1 to 2
Watermelon.....	1 ounce.....	¾ to 1	¾ to 1	8 to 10	1 to 2
Okra.....	2 ounces.....	3	3 to 3½	2½ to 3	2
Onion.....	1 ounce.....	1½ to 2	2 to 2½	2½ to 3	½ to 1
Parsley.....	¼ ounce.....	1½ to 2	2 to 2½	¾ to 1	¼
Pepper.....	½ ounce.....	2 to 2½	2½ to 3	2 to 2½	½
Peas.....	2 pints.....	2½ to 3	3 to 3½	¾ to 1	2 to 3
Radish.....	1 ounce.....	1½ to 2	2½ to 3	1½ to 1½	½
Roselle.....	2 ounces.....	3 to 3½	3 to 4	1 plant in hill.	½ to 1
Spinach:					
Ordinary.....	1 ounce.....	1½ to 2	2½ to 3	1½ to 3	½ to 1
New Zealand.....	do.....	2 to 2½	3	1½ to 2	1
Salsify.....	do.....	1½ to 2	2½ to 3	1½ to 1½	½ to 1
Squash:					
Bush.....	½ ounce.....	4	4	3 plants in hill.	½ to 1
Running.....	do.....	¾ to 1	¾ to 1	2 plants in hill.	½ to 1
Tomato.....	½ ounce.....	4	4	1 plant in hill.	½ inch.
Turnip.....	½ ounce.....	1½ to 2	2 to 2½	1½ to 1½	½
Tannia.....	24 pieces.....	3 to 4	3 to 4	4	4
Yam.....	33 pieces.....	3	3 to 4	3	4

In the table below is given the botanical name of the commonly grown vegetables, the length of time required for germination, and the length of time required for the plants to mature.

Botanical names, times of germination, and maturity of common vegetables

Common and botanical name	Length of time re- quired for germination	Length of time re- quired for maturity
	Days	Weeks
Beans, bush (<i>Phaseolus vulgaris</i>)	8 to 10	8 to 12
Beans, pole (<i>Phaseolus vulgaris</i>)	8 to 10	10 to 12
Beet (<i>Beta vulgaris</i>)	7 to 10	10 to 12
Carrot (<i>Daucus carota</i>)	12 to 18	20 to 24
Cabbage (<i>Brassica oleracea capitata</i>)	5 to 10	10 to 14
Celery (<i>Apium graveolus</i>)	10 to 20	20 to 24
Corn (<i>Zea mays</i>)	5 to 8	10 to 15
Cucumber (<i>Cucumis sativus</i>)	6 to 10	12 to 16
Endive (<i>Cichorium endivia</i>)	5 to 10	15 to 18
Eggplant (<i>Solanum melongena</i>)	9 to 14	15 to 20
Kohl-rabi (<i>Brassica oleracea caulio-rapa</i>)	5 to 10	12 to 15
Lettuce (<i>Lactuca sativa</i>)	6 to 10	12 to 15
Melon, musk (<i>Cucumis melo</i>)	8 to 10	14 to 18
Melon, water (<i>Citrullus vulgaris</i>)	8 to 10	16 to 20
Okra (<i>Hibiscus esculentus</i>)	6 to 8	10 to 12
Onion (<i>Allium cepa</i>)	10 to 14	24 to 28
Parsley (<i>Petroselinum hortense</i>)	18 to 24	12 to 14
Pepper (<i>Capsicum annum</i>)	9 to 14	15 to 18
Peas (<i>Pisum sativum</i>)	6 to 10	14 to 16
Radish (<i>Raphanus sativus</i>)	3 to 6	6 to 8
Roselle (<i>Hibiscus sabdariffa</i>)	8 to 10	18 to 20
Spinach, common (<i>Spinacia oleracea</i>)	6 to 10	10 to 14
Spinach, New Zealand (<i>Tetragonia expansa</i>)	14 to 28	18 to 28
Saisify (<i>Tragopogon porrifolius</i>)	8 to 12	16 to 28
Squash, bush (<i>Cucurbita pepo</i>)	8 to 10	8 to 12
Squash, running (<i>Cucurbita maxima</i>)	8 to 10	12 to 14
Tomato (<i>Lycopersicum esculentum</i>)	6 to 10	15 to 20
Turnip (<i>Brassica rapa</i>)	4 to 8	10 to 12

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