Sent to Commercial list

1924

SEPTEMBER, 1924 CIRCULAR, 170

Blueberry Culture

CHARLES S. BECKWITH

A CLUSTER OF RUBELS—NATURAL SIZE
(Photo by Jos. J. White, Inc.)

New Jersey Agricultural Experiment Stations

NEW BRUNSWICK
NEW JERSEY

FOREWORD

Blueberry Culture is peculiarly adapted to conditions in Southern New Jersey. The climate, the soil, and the nearby seashore and city markets are well suited to the needs of this new industry. Twenty-five years from now, it is expected to be one of the important small fruit industries in the state.

FIG. 1. A RUBEL BUSH IN ITS FOURTH SUMMER IN THE FIELD
(Photo by Jos. J. White, Inc.)

Blueberry Culture

CHARLES S. BECKWITH

Specialist in Cranberry Investigations

Blueberry culture has attracted wide interest among fruit growers because of the spectacular new developments in the field. Dr. Frederick V. Coville, of the United States Department of Agriculture, has been the pioneer in this work. He first established the fact that the blueberry is an acid soil plant and, in addition, he has developed the improved hybrid varieties. Miss Elizabeth C. White, a cooperator of Dr. Coville, worked out a method whereby she was able to select the best wild bushes from many thousand growing in various parts of the country, but especially in New Jersey. She has also been active in establishing a commercial plantation in New Jersey. These two workers, together, have started a very interesting and what seems to be a very profitable branch of horticulture.

Plants

The best wild plants were selected primarily on account of the large size of the fruit. About one hundred bushes were located, most of them having berries 5/8 inch in diameter, and two with berries 3/4 inch in diameter. These bushes were reproduced in a cultivated field, and six having the most desirable taste, color and fruiting habits were chosen to establish varieties. The hybrids produced by the United States Department of Agriculture were crosses between selected wild bushes, three hybrids being chosen out of 25,000 as worthy of development.

The selected wild varieties mentioned are Adams, Harding, Dunfee, Sam, Grover and Rubel; and the hybrids, Cabot, Pioneer and Katharine. The above varieties ripen in the order named within each group.

The Wild Blueberry vs. the Cultivated Blueberry in the Market

A package of wild blueberries consists of a mixture of all kinds and sizes of the berries that the picker happens to find in a day's hunt in the woods. There is rarely any uniformity in the degree of ripeness of the fruit or in the packing. As a result, a considerable part of the berries reach the consumer overripe, shrivelled or otherwise unfit for use. Even with additional cleaning, it is difficult to sweeten them satisfactorily because of the lack of uniformity in their natural sweetness and ripeness. However, in spite of all its defects, the blueberry is the most popular wild berry in the market today.

The improved and cultivated blueberry is of unusually high quality and large size, as the parent plants represented either the best of many hundred thousand wild plants, or a selected hybrid resulting from a cross between two extra good wild plants. The propagation of all plants of a variety from a single individual insures a uniformity in taste, in color and to some degree in size. And by taking only ripe berries at each picking, the grower is able to place on the market packages of an even degree of ripeness throughout.

Soil

Soil adapted to blueberry culture as it is carried on in New Jersey should have an acid reaction, some peat, a constant moisture supply and yet be subject to thorough drainage. The more important plantations now in existence have been established by deeply plowing fields having a 2 to 6-inch layer of peat underlaid with sand.

Good blueberry soils are more easily identified if the natural growth is present. The growing wild plants are quite accurate indicators of the quality of the soil and, in locating for blueberry culture, they should always be taken into consideration. The presence of the wild high bush blueberry (*Vaccinium corymbosum*) shows that the soil will grow this plant and when found growing profusely in places

Fig. 2. Breaking New Land for Blueberry Culture
(Photo by Jos. J. White, Inc.)

that can be cleared and cultivated economically, it indicates one of the best blueberry soils. A solid growth of leather leaf (*Chamaedaphne calyculata, L.*) indicates a good blueberry soil, provided there is at least 2 inches of well decayed peat above the sand. In such places, however, the peat is often loose and porous, and very little remains upon drying. Pine land with an undergrowth of sheep laurel (*Kalmia angustifolia, L.*) is satisfactory, although it might need irrigation in a dry season.

Some good blueberry locations have been cleared and farmed for a number of years. They can be recognized by the character of the soil—sand with enough peat mixed in to give it a black appearance. If such a land can be kept supplied with moisture, it is adapted to blueberry culture. Savannah cranberry bogs that are unsuccessful because of

deficient water supply, also would make good blueberry fields. A decided economy would be effected if cleared land could be used, because the clearing of virgin growth is expensive compared with the price of farm land.

Preparation of the Land and Planting

The site is prepared by clearing off all of the vegetation, draining and plowing the soil. Clearing is accomplished by the usual methods available and drainage is secured either by open ditches or tile drains. It is customary to keep the land fallow for one year previous to planting in order to bring the soil into good condition and to control weeds.

The plants as sold are about 8 inches in height and have a well formed root ball. They should be "heeled in," or planted upon receipt in order to prevent undue drying of the roots. They are commonly planted in rows 8 feet apart, with the bushes 4 feet apart in the row.

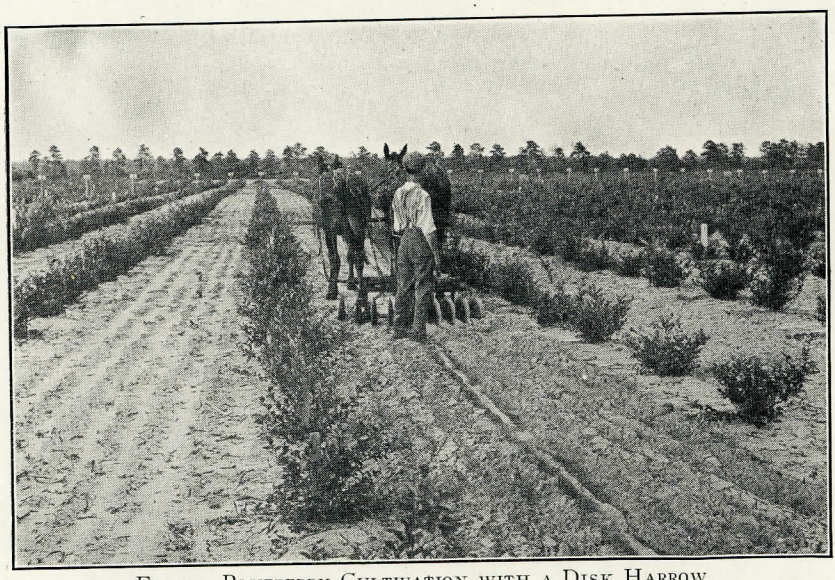

FIG. 3. BLUEBERRY CULTIVATION WITH A DISK HARROW
(From U. S. Dept. Agr., Bul. 974)

This allows for harrow cultivation between the rows but necessitates hand hoeing along the rows to keep out wild growth. Possibly spacing the plants 6 feet apart in the row would allow sufficient space for cross harrowing and eliminate the hand hoeing.

Fertilizer

In 1919 and 1920, the writer had the opportunity to develop a fertilizer mixture suitable for use on blueberry plantations.[1] The yield from fertilized plots was three times that from contiguous untreated plots. It has been found that, after three years of use, the original fertilizer mixture could be simplified without reducing its effectiveness.

[1]Beckwith, C. S. 1920. The effect of fertilizers on blueberries. *In* Soil Sci., v. 10, p. 309-313.

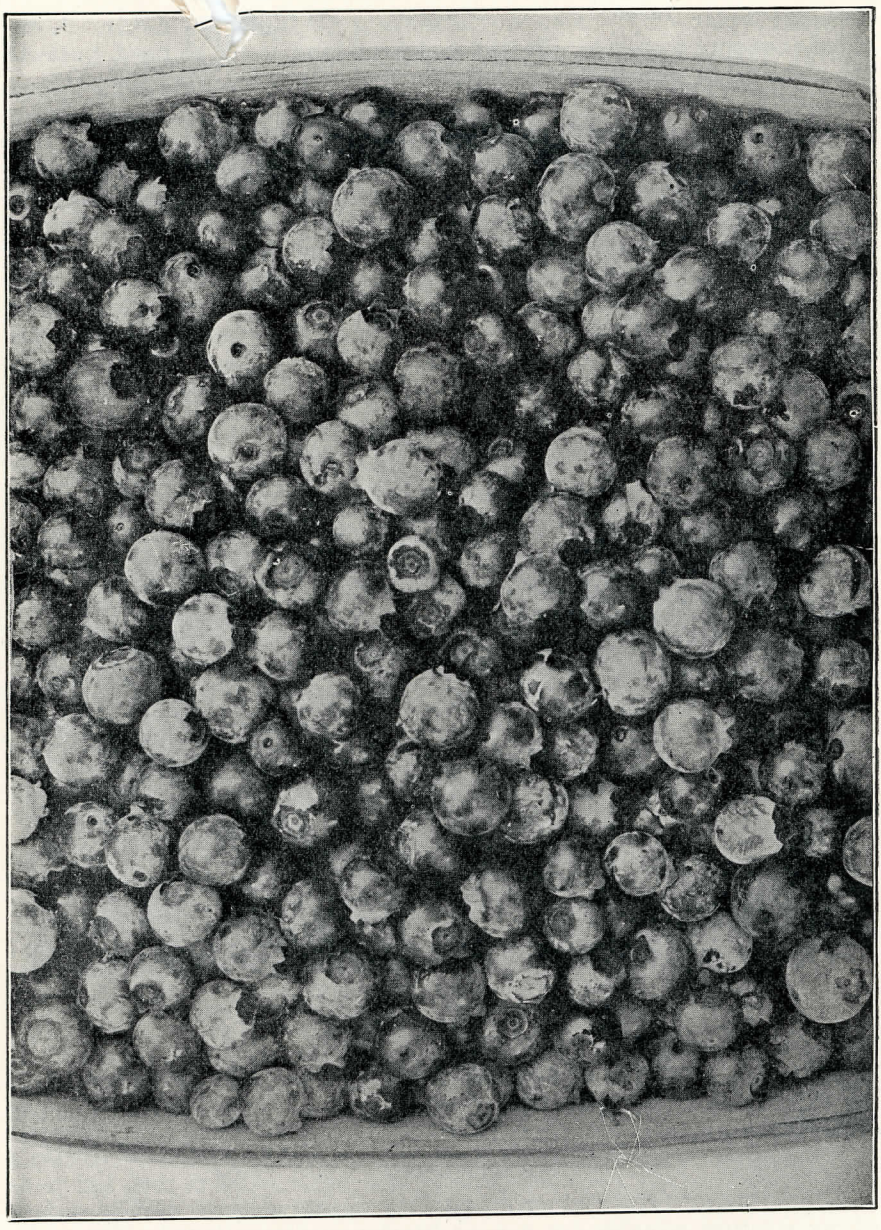

Fig. 4. The Ordinary Wild Blueberry of New Jersey
(From U. S. Dept. Agr., Bul. 974)

As a result, the following fertilizer mixture is recommended for annual use on ordinary blueberry soils at the rate of 400 pounds per acre:

100 pounds Nitrate of Soda
260 pounds Rock Phosphate
40 pounds Sulfate of Potash

FIG. 5. FRUIT OF THE KATHARINE BLUEBERRY, A SELECTED HYBRID
(From U. S. Dept. Agr., Bul. 974)

The rock phosphate, although not quickly available to the plants, becomes slowly available in the acid blueberry soil and the results from its application extend over two years. The first year the mixture is applied, in order to get immediate results, it would be well to use 100 pounds of acid phosphate in addition to the above.

Insects and Diseases

No insect or fungus of commercial importance has become established in any of the blueberry plantations, probably more largely because of the newness of the industry than the immunity of the plant. The care with which this industry is watched by the scientists of the United States Department of Agriculture and others gives assurance that new parasites on the blueberry will be quickly identified and control measures promptly undertaken.

Harvesting

Blueberries are picked as soon as they are fully ripe, as indicated by full color at the stem end of the picked fruit. A little practice will soon show a picker how to distinguish between the ripe and the nearly ripe berries. Usually plantations have to be picked once every 6 to 8 days in order to prevent the fruit from becoming over-ripe. Harvest starts in the early ripening berries about July 1 and ends with the late berries about August 15.

The picking is usually paid for by the quart. Last year the pickers received about 6 cents per quart, and averaged good wages for the season.

Cultivated blueberries are fancy fruit and should be picked and handled as such. Usually the pickers work under constant supervision, thus assuring clean, uniformly ripe berries in the packages. Each quart is covered with a paper wrapper bearing the name of the grower. The buyer knows that each sealed package is as it came from the field.

Berries are sold in the city markets the day following picking. They can be shipped late in the afternoon, arrive on the wholesale market by 11 p. m., and be in the retailer's store by 7 a. m. This schedule is possible throughout the New Jersey blueberry growing district but it has been found that, in an emergency, cultivated blueberries could be held for one or two days at the shipping point without loss.

Yield

Blueberries have not been cultivated long enough to allow an accurate estimate of probable crop. However, small areas have been in bearing for 8 years and the yield per acre is indicated as follows:

1st year	none
2nd year	no commercial crop
3rd year	30 crates
4th year	80 crates
5th year and thereafter	100 crates.

The experience of the past years indicates that cultivated blueberries will replace the wild blueberries on the market at a price 50 per cent higher. That is to say, if a retail store had cultivated blueberries at 45 cents per quart side by side with a crate of wild blueberries at 30 cents per quart, the former would sell faster, and as a result the store would not deal in wild blueberries if it could obtain the other. The average wholesale price of cultivated blueberries at the shipping station since 1916, when the first shipments were made, and including the crop of 1923, has been about $10.00 per 32-quart crate.