

# Hints on **BLUEBERRY** **GROWING**



**Michigan State University**

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## Hints on Blueberry Growing

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### INTRODUCTION

#### Purpose of the Folder

This folder is meant to help people who wish to grow cultivated highbush blueberries either in home gardens or commercial plantations. Although both high and lowbush types grow wild in Michigan, only the highbush has been successful under cultivation. Promising hybrids from highbush-lowbush crosses are now under test in Northern Michigan. Some have lowbush plant traits with large attractive berries like those of the highbush blueberry. Certain of these hybrids will be released in future years if tests continue to be favorable.

#### Facts for Prospective Commercial Growers

**The blueberry is a highly specialized crop.** It has exacting soil and climatic needs. Its cultural requirements—use of fertilizers, pruning, tillage—differ somewhat from other fruits. Further, it needs insect and disease control measures for profitable commercial production.

**The initial costs of establishing a planting are high.** Cleared blueberry land costs \$100.00 or more an acre. Necessary equipment—truck, tractor, tractor tools, small tools—cost at least \$5,000.00. Cost of plants needed for an acre ranges from \$200.00 to \$350.00 or even higher for new varieties.

**The first full crop occurs 6 to 8 years after planting.** No crop is picked the first 2 years. In the third year 400 to 800 pounds to an acre (about ½ pint to a bush) are produced and in the fourth, 1400 to 2000 pounds to an acre (1 to 2 pints to a bush). Full crops of 2 to 3 tons to an acre (4 to 6 pints to a bush) can occur as early as the sixth year and should be expected by the eighth year. In some cases plantings yield much larger crops.

## LOCATING THE PLANTING

### Its Range in Michigan

The climate in Michigan as far north as lower Saginaw Bay is suitable for the highbush blueberry. Near Lake Michigan it can be favorable as far north as Traverse City. The highbush blueberry is not adapted to most northern areas because: (1) it needs an average growing season of 160 days; and (2) it is badly injured or killed by winter temperatures 20 to 25 degrees below zero.

Most of the blueberry production is near Lake Michigan in the southwestern part of the State in Van Buren, Allegan, Ottawa, Muskegon and Berrien counties.

### Its Site Needs are Peculiar

The blueberry grows best on sites where most other crops fail. Some of the finest blueberry land was thought to be nearly worthless several years ago. Wild highbush blueberries or wild spirea are good indicator plants of the right conditions for cultivated blueberries.

### The Type of Soil Is Very Important

Soils with loose textures, such as sand or peat are suggested for blueberries. Mixtures of sand and peat are best. Heavier soils are suitable if they are acid and high in organic matter. The best soil types for highbush blueberry growing in Michigan are classified as Newton, Saugatuck, Au Gres, Kinross, and certain acid peats.<sup>1</sup>

**Choose very acid soils** ranging from pH 4.0 to 5.1. Consult your county agricultural agent, and have the soil tested. Avoid those soils testing higher than pH 5.1 for large commercial plantations.

**Constant but moderate soil moisture** is needed by the blueberry. The best soils are those where the water table stays within 14 to 22 inches below the surface. Good surface drainage, however, is very important since blueberry roots need plenty of aeration. Water staying on the surface for more than a day during any part of the growing season is harmful to roots.

<sup>1</sup>Consult Special Bulletin 402, *Soils of Michigan*, for a description of these soils. It contains also a full-color map showing their general location in Michigan.

A **high content of organic matter** is desired in blueberry soils. Other factors being equal, yields of blueberries are largest where organic matter is highest.

### Air Drainage to Avoid Frost Damage

The best sites are large open areas where air can move freely. Avoid "pockets" or narrow valleys where cold air tends to settle. Areas surrounded either with hills or dense stands of trees have poor air movement. Good air circulation reduces the chances for spring frost damage. Fungus diseases, such as mummy berry, are less likely to build up where there is good air movement. Open areas also are cooler, less humid, and more pleasant for working during hot weather at harvest time.

## CHOOSE THE RIGHT VARIETIES

About 50 varieties of the highbush blueberry have been introduced to growers, since it first was cultivated. Few of these are adapted to Michigan conditions. Select two or three varieties, ripening in succession, from the list below (listed in order of ripening season, early to late). These have grown well in Michigan and seem to be the best varieties for the State.

**Earliblue**—Released in 1952, to date it is the best very early variety tested in Michigan. The bush is vigorous and productive. Berries are large, medium blue, firm, and of good flavor.

**Blueray**—Released in 1955, this variety is suggested for trial only on a small basis. The bush is vigorous and productive with large, firm, medium blue berries of good flavor.

**Bluecrop**—Released in 1952, this variety produces large and attractive berries. Leaf area of the bush is relatively small, but vigor has been satisfactory to date.

**Berkley**—This variety is vigorous and productive with large, light blue attractive berries. The flavor is very mild and berries drop easily from the bush. It is less cold hardy than most varieties. Its branches and shoots are badly winter-killed in some years, especially on inland sites not moderated by Lake Michigan.

**Rubel**—An older variety, Rubel is being replaced by Jersey which ripens 2 or 3 days later. It does not grow as well as Jersey on sandy soils which are low in organic matter but grows well on good blueberry soils. Berries are firm and ship well, and they are among the best for processing.

**Jersey**—This is the leading variety in Michigan. It has no outstanding weaknesses.

**Coville**—This variety is vigorous and productive and has good-sized berries. It ripens too late except for the southern part of Michigan's blueberry belt.

## PREPARING THE SOIL

**Newly-cleared land is best**, since it usually contains more organic matter than older land. Thoroughly work the soil for at least two years preceding planting to subdue weeds and grasses.

**Add lime if the soil tests below pH 4.0.** Use pulverized dolomitic (high magnesium) limestone. Apply in commercial plantations at a rate of 1 to 4 tons to an acre, depending on soil acidity and texture.

**Add sulfur to garden soils testing above pH 5.1**, to acidify small areas for home plantings. This is not practical for large commercial plantings except for dressing up spots which are slightly above pH 5.1. Apply sulfur at the following rates on each 100 square feet of land:

**Sandy Soils**—One pound of sulfur for a range in pH of 5.2 to 6.0; 2 pounds where the pH is above 6.0.

**Loamy or Clayey Soils**—Double these rates. Test the soil 1 year after applying sulfur. Treat with sulfur again if the soil pH still is too high.

**Try growing blueberries in tubs in gardens** where soils test above pH 5.1.<sup>2</sup> Halves of 50-gallon oil drums are suitable. Burn out residue of oil, paint, tar, or similar materials that might be injurious to plants. Drill four 2-inch drainage holes in the bottom of each tub. Set the tubs in holes in sunny open areas of the

<sup>2</sup>For a detailed report, see "Johnston, Stanley. A New Method of Growing Blueberries in the Home Garden," Michigan Agr. Expt. Sta. Quarterly Bulletin 36:226-229, 1953.

garden. Leave an inch of the top rim extending above ground level. Fill the tubs with soil having a high level of organic matter and a pH of 4.0 to 5.1. If more convenient, use 2 parts of acid peat mixed with 1 part of garden soil instead. Set one plant in each tub. Sprinkle an ounce (2 tablespoons) of complete fertilizer (10-10-10 or 12-12-12) on the soil surface of each tub 2 weeks after planting.

Water the soil often enough to keep it fairly moist. Mulch with a 2-inch layer of oak leaves, acid peat moss, or old sawdust.

## PROPER PLANTING STOCK IS IMPORTANT

### Buy Inspected Plants from Reputable Sources

Buy only inspected blueberry plants which carry a State Certificate of Inspection. Buy plants either from commercial growers or reputable nurseries. Choose only standard varieties suggested in this folder or in later publications. Avoid others, especially older varieties. Most of those varieties not listed in the section **CHOOSE THE RIGHT VARIETIES** have been tested and have not performed well under Michigan conditions.

### Use 2- or 3-Year-Old Plants

Set 2-year-old plants if you can get them. Three-year-old stock is good, but usually costs more. Avoid plants older than 3 years for commercial planting. They often are culls which were too weak to sell as younger plants.

### Plant in Early Spring

Set blueberry plants in the spring as soon as the soil can be worked. Blueberries are sometimes planted in the fall (November) where the climate is moderated by Lake Michigan. Many sites are too wet in early spring, and fall planting is better in such cases. Space them 4 feet apart in rows with 10 feet between rows. Set plants 2 inches deeper than they grew in the nursery.

Mix a shovel full of acid peat with the soil in each planting hole when setting in sandy soils low in organic matter.

Remove fruit buds, either before or soon after setting the plants.

## No Cross-Pollination Needed

Cultivated blueberries are self-fertile, so they need no cross-pollination. If you want a long harvest season, however, plant 2 or 3 varieties ripening in succession.

## SOIL CULTURE

### Cultivation

Most blueberry roots are close to the soil surface. Cultivate no deeper than 2 to 3 inches and only often enough to keep weeds in check.

In bearing plantations, sow an annual cover crop after harvest. In young non-bearing plantations sow the cover crop earlier—about August 1st. Use a mixture of 2 parts oats and 1 part buckwheat. Sow at a rate of 1½ bushels to an acre.

### Mulching

In most commercial blueberry plantations, using mulches is not practical. Mulching materials such as weathered sawdust, corncobs, straw, leaves, wood shavings, and similar materials are suitable for home gardens. Maintain the mulch at depths of 6 to 8 inches. Don't use fresh unweathered materials, especially fresh sawdust, since they can injure the plants. If you use mulches, double the amount of nitrogen fertilizer normally applied, until the mulch is well decomposed.

### Fertilizer

#### Avoid Nitrates and Chlorides

Fertilizers containing nitrates and chlorides are sometimes toxic to blueberry plants. Apply mixed fertilizers, made especially for use on blueberries. These have sulfate of potash as the source of potassium, and urea or ammonium sulfate as the source of nitrogen. On mineral soils use a 1-1-1 fertilizer ratio (11-11-11 in 1957); organic (muck or peat) soils use a 1-2-3 ratio (5-10-15 in 1957). In home gardens use either ammonium sulfate or urea if you cannot get special mixed blueberry fertilizer.

#### When and How to Apply

On newly set plants apply fertilizer about 2 weeks after planting. Sprinkle it by hand thinly around each

plant, keeping it 12 to 18 inches from the crown. Starter solutions have not been found to be beneficial on the blueberry.

After the first year apply fertilizer in late March or early April, just before the buds break. Apply it either by hand or with machinery, but spread it evenly to avoid injury to roots. If you use powdery fertilizers, be sure the plants are dry so it won't damage the buds.

#### Fertilizer Rates

On newly-set plants place an ounce of mixed fertilizer (about 2 level tablespoons) around each plant.

In the second through the seventh year, put 1 ounce more fertilizer per year on each plant (Table I). In the second year, use 2 ounces on each plant; the third year, 3 ounces; and finally, 7 ounces in the seventh year.

In the eighth and later years, on mineral soils, put on enough complete fertilizer to furnish 60 to 100 pounds of actual nitrogen per acre. This is 550 to 900 pounds of 11-11-11 fertilizer, if broadcast, and 8 to 13 ounces to a bush, if spread by hand. On organic

TABLE 1.—Fertilizer rates for Michigan blueberries (based on special blueberry mixtures—11-11-11 on mineral soils and 5-10-15 on organic soils).

Age of Plantation* (years)	Amount of Fertilizer to Use	
	Per Plant (ounces)	Per Acre** (pounds)
Newly-set	1	68
2	2	136
3	3	204
4	4	272
5	5	340
6	6	408
7	7	476
8 and older (mineral soils)	8 to 13	550 to 900
8 and older (organic soils)	8 to 10	550 to 700

\*Refers to the number of years since the plants were set in the field—not the nursery age of the plants.

\*\*This assumes a spacing of 4 feet in the rows and 10 feet between rows, thus 1089 plants to an acre.

soils (muck or peat) use enough complete fertilizer to furnish 25 to 35 pounds of actual nitrogen per acre. This is 550 to 700 pounds of 5-10-15 fertilizer, or 8 to 10 ounces per bush.

Blueberry plantations on **mineral soils low in organic matter** often have sandy spots where plant growth and yields are low. Use ammonium sulfate to "touch up" weak spots. Apply 1 ounce to each weak plant in the second year. In later years apply 1 to 2 ounces to a plant if needed. Stop or lower the use of supplemental ammonium sulfate after good vigor and yields are attained.

## PRUNE FOR LARGER BERRIES AND EARLIER RIPENING

The blueberry needs no pruning until the third year after planting. In the third year remove only the small spindly, and twiggy growth near the base of the plant. This tends to promote a more upright bush and keeps the fruit away from the ground.

Prune each year after the third year. Remove:

- (1) Dead and injured branches.
- (2) Fruiting branches close to the ground.
- (3) Spindly, bushy twigs on mature branches.
- (4) Old stems or parts low in vigor.

Blueberry bushes which are pruned moderately each year produce larger berries but smaller yields than unpruned bushes. The heavier the pruning, the bigger the berries and the smaller the yield. Pruning also tends to make the fruit ripen faster. In seasons of drought, the berries on unpruned bushes are often very small.

Prune any time during the dormant season, after most of the leaves have dropped in the fall. Pruning can be continued as late as blossom time in the spring, if need be.

A pair of lopping shears is the only tool you need to prune blueberries.

Wear heavy leather mittens when pruning blueberries in midwinter. Thin spindly twigs are brittle at that time and break off easily when you rub your mittened hands along the branches.

## HARVEST ONCE EACH WEEK

The fruit of cultivated blueberries is borne in clusters made up of 5 to 10 berries. The berries in a cluster ripen in succession usually over a period of several weeks. Pick once each week to remove berries as they ripen. From 3 to 5 pickings are needed to harvest all the fruit, depending on the variety and season.

The harvest of early varieties starts in early July in southwestern Michigan. Late varieties extend to mid-September and later in some years. Peak production of the chief variety, Jersey, comes during the first week in August.

Pick only those berries which are fully ripe. Berries with a reddish tinge are not yet ripe. Be sure all of the ripe fruit is removed so there will be no overripe berries at the next picking.

Handle blueberries carefully and as little as possible, since they are easily bruised. Careful handling also protects the delicate powdery bloom which covers the berries and adds to their beauty.

In picking use both hands. Roll (don't squeeze) the berries between thumb and forefinger as you pull them gently from the cluster.

About half of the Michigan blueberry crop is sold fresh and half is processed. For fresh market use, cultivated blueberries are usually packed in pint veneer boxes. The boxes are heaped with berries of uniform size and covered with a cellophane sheet. This sheet is fitted snugly around the box and held with a rubberband or a paper adhesive tape. The boxes are then packed for market in 12-pint flats.

## WEED CONTROL

An automatic rotary hoe, used regularly, does a good job of keeping weeds down in blueberry plantations. Certain chemicals for controlling weeds in blueberries are being tested in Michigan. Research work along this line is still in the experimental stage. No recommendations can be made on the use of herbicides in Michigan blueberry plantations at this time.

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## DISEASE AND INSECT CONTROL

Several diseases and insects affect the blueberry, and their control is essential. Spray materials and recommendations may change from year to year. See the latest edition of the Michigan State University Spraying Calendar, Extension Bulletin 154, for the up-to-date pest control program on blueberries.

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