



## Department of Horticulture

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Purdue University Cooperative Extension Service • West Lafayette, IN

# FERTILIZING BLUEBERRIES

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Blueberry plants require specialized soils and sites for best growth and plant development. They require very acid soil, preferably between pH 4.5 and 5.1. A pH somewhat higher than 5.1 is acceptable if other optimum cultural practices are followed. A stable water table 14 to 22 inches below the surface is also desirable. Good surface soil drainage is essential, however, since blueberry roots require adequate aeration. Water standing over the plant roots for even short periods during any season of the year can be injurious.

High organic matter content in the soil is very desirable, and sand-peat mixtures are ideal. Heavier soils are suitable where pH is within the desired range and organic matter is adequate. Increasingly, commercial plantings are being made on higher sites with less desirable soil characteristics in order to minimize frost problems. Irrigation and increased organic matter content of the soil in which the plants are set are important elements for success. Where the conditions of pH and organic matter content cannot be met easily, the commercial planting of blueberries is not likely to succeed.

In correcting either soil pH or organic matter content, the ideal time to start is at least a year and preferably two years before the plants are set. This extra time allows thorough soil preparation, soil pH correction, and production of cover crops or incorporation of compost to help increase organic matter content. Also, at this time, soils low in phosphorus or potassium should have appropriate (as indicated by soil test) applications of these elements plowed down. Correcting soil pH and increasing organic matter content are discussed in the following sections.

### pH Correction

Never guess about pH correction. Always have the soil analyzed for pH and for phosphorous and potassium to be sure that correction is needed before making any application.

Soils with pH higher than 5.1 can have pH corrected by applications of sulfur or aluminum sulfate. In all situations, the soil amendments must be thoroughly mixed throughout the upper soil layer to be effective. Where the pH is substantially higher than 5.1, correction is difficult and expensive, and commercial production of blueberries is discouraged. In soils where the parent material is calcareous (contains lime), long-term pH correction is futile. At the other extreme, some soils are extremely acid (have very low pH). In these soils, pH below 4.0 can be corrected with applications of dolomitic lime as indicated by a soil test.

In home garden situations, pH can best be lowered by the addition of elemental sulfur. For each 100 square feet to be treated, sandy soils will require about 3/4 pound of sulfur for each full pH point above 4.5; loams will require 1-1/2 to 2 pounds; and clay soils will require 3 or more pounds. The acidification process is slow, so treatment at least six months before planting is suggested. The pH should be rechecked before planting. After planting the blueberries, the use of ammonium sulfate as a nitrogen source will help to maintain the lower pH.

### Increasing Organic Matter

Soil organic matter can be increased several ways. One can grow green manure crops and plow these down into the soil along with suitable fertilizers to encourage breakdown of the organic matter.

It is desirable to mix 1 to 1-1/2 gallons of sphagnum peat into the soil in the hole at planting time. This method will provide the most immediate response.

### Individual Fertilizer Elements

**Nitrogen** is the element to which blueberries are most responsive; in many situations, it is the only element needed. For mature plants, the application should consist of 60-80 pounds of actual nitrogen per acre

before growth starts each spring. Nitrogen should not be in the nitrate form, since nitrates occasionally have been shown to be toxic to blueberry plants. Ammonium sulfate or urea is preferred, and ammonium sulfate will help lower soil pH.

**Phosphorus** is seldom needed in blueberry plantings. When a complete fertilizer is used, no additional phosphorus applications are necessary. Ideally, any needed phosphorus should be applied before setting the plants and should be thoroughly worked into the soil.

**Potassium**, when necessary, is usually applied as a part of the complete fertilizer. When additional applications are required, 50-75 pounds of potash, as potassium sulfate, should be applied per acre. Muriate of potash (KCl) is not recommended because excess chlorides are toxic to blueberries.

**Calcium** deficiencies can be corrected by an application of finely divided limestone or calcium sulfate. Use of dolomitic limestone, if it is available, is advised unless soil magnesium is already high. Remember that the pH will be affected by the lime applied. If no pH correction is required, calcium sulfate may be used, and it will not change pH appreciably.

**Magnesium** deficiencies can be treated with magnesium sulfate or magnesium oxide either applied alone or as part of a complete fertilizer.

**Micronutrients** are seldom a problem as long as the pH is maintained within the desirable range. When the pH is too high, several micronutrients become unavailable. The most notable is iron, and the most practical treatment is to lower the soil pH. For home plantings, chelated iron may be temporarily helpful.

## Fertilizer Rates and Application

On young plantings, fertilizer should be applied to the individual plants. On older plantings, the fertilizer may be applied either by hand to the individual plants or broadcast with an applicator. Care should be taken to apply the fertilizer only when the foliage is dry, so that fertilizer particles do not damage the foliage. Preferably, fertilizers should be applied in the early spring before foliage is present and should be spread evenly to avoid root injury.

On newly set plants, the fertilizer should be applied about a month after planting, and about an ounce of a 20 percent nitrogen fertilizer should be spread around each plant. Care should be taken to keep fertilizers away from the stem of the plant. In succeeding years, the rate of application should be increased gradually until a rate of approximately 5 ounces per plant of a 20 percent nitrogen material is used. Rates should be adjusted based on cropping and plant growth.

## Complete Fertilizers

In some northern Indiana areas, special blueberry fertilizers can sometimes be obtained. The analysis most available is 16-8-8 (N-P<sub>2</sub>O<sub>5</sub>-K<sub>2</sub>O), and some formulations are available with 4% added magnesium. These fertilizers are formulated with the special needs of the blueberry in mind and may be especially useful.

## Mulches

Mulches usually benefit growing blueberries by helping to maintain more uniform soil moisture and soil temperature. Only well-decomposed organic material should be used, since fresh materials may injure the plants. Suitable mulches for home gardens include old sawdust, leaves, wood shavings, and similar materials. Care must be taken to apply extra nitrogen to encourage decomposition of organic mulch material. Because of cost and availability, mulches are not usually used in commercial plantings.

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For more information on the subject discussed in this publication, consult your local office of the Purdue University Cooperative Extension Service.

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