

Commercial Blueberry Production

Management Highlights

- Target pH: 5.2
- If soil pH is 5.5 or greater, consider another site or apply 1/3 cup elemental S and a ¼ teaspoon per planting hole 3-6 month prior to planting to lower soil pH.
- Split N applications to improve N-use efficiency by the plant.

Yield Goals

Yield of blueberries is influenced by many factors beyond soil test results and fertilizer application. Cultivar selection, weather conditions, soil type and water-holding capacity, weed, insect and disease pressure and crop management practices are just a few. *For that reason, the University of Delaware does not use yield goals in determining nutrient recommendations for blueberries at the present time. Instead, recommended rates are designed to produce maximum economic yields of high market quality in a good to average year.* Growers should use these nutrient recommendations along with field history data, knowledge of specific crop requirements, management plans, and conditions from the current growing season to develop an appropriate fertilizer program for the crop.

Soil pH, Soil Acidification and Liming

Blueberries are acid-loving plants. The target pH for blueberries on most Delaware soils is 5.2. If soil pH is 5.5 or higher, consider another site or acidify the soil using elemental sulfur. Recommendations for acidifying soil based on current and target pH are given in *Soil Acidification -- Chapter 3, Section 3.4.5*. When soil acidification is required due to high soil pH, apply ¼ teaspoon

chelated iron to the planting hole to prevent iron deficiency in the plant

If soil pH is less than 5.2, liming is recommended. The lime recommendation for a specific field is calculated from the soil pH and buffer pH measurements using the steps outlined in *Calculating the Lime Requirement -- Chapter 3, Section 3.4*. Avoid overliming in order to prevent deficiency of micronutrients such as iron.

In most cases, the lime requirement can be met by either calcitic or dolomitic limestone.

Dolomitic limestone is recommended if:

- soil test Mg is less than 50 FIVs, or
- soil test Mg is between 50 and 100 FIVs *and less than soil test Ca.*

Calcitic limestone is recommended if:

- soil test Mg is greater than 100 FIVs, or
- soil test Mg is between 50 and 100 FIVs *and greater than soil test Ca.*

Nitrogen Management

Recommendations for nitrogen (N) rate, application method and application timing for blueberries are dependent upon the establishment and size of the plant. *Newly planted blueberries and plants less than 4 feet high* should be fertilized individually in three applications -- one each in March, May and June. When soil test phosphorus and potassium are *Low or Medium (50 FIVs or less)*, apply 1-2 oz of a complete fertilizer such as 10-10-10 or 12-4-8 per application to supply needed N as well as P and K. When soil test P and K are *Optimum or higher (51 FIVs or higher)*, apply 1oz of ammonium sulfate (21-0-0) per plant per application. Fertilizer should spread over an area 18 inches in diameter. At least 4 inches of water as rainfall or irrigation should be received between applications.

Commercial Fruit and Orchard Crops

Blueberry bushes 4 feet high or taller can either be fertilized as individual plants or on an area basis. Plants should receive 0.8 oz N/plant or 30 lbs N/ac in the early spring just before buds begin to swell and again after harvest. This rate is the equivalent of 4 oz per plant or 140 lbs/ac of ammonium sulfate or 6 oz per plant or 225 lbs/ac of 12-4-8. The selection of N source should depend the need for P and K as indicated by the soil test and economics. Nitrate sources of N such as calcium nitrate and ammonium nitrate should *not* be used on blueberries.

Phosphorus Management

Yield-limiting phosphorus (P) deficiency is rarely a concern on Delaware soils. Long-term applications of fertilizers and manures have resulted in P accumulations on many soils that are capable of supplying crop needs for several years with no further additions.

To determine whether P fertilization is necessary for a specific field, conduct a routine soil test. University of Delaware P recommendations for blueberries are dependent upon the soil test P value. A summary of P recommendations for commercial blueberries is given in Table 1 below. To convert application rates to *oz/plant basis*, divide the rates by 605.

When applied as a complete fertilizer, P can be applied along with the N. When using a separate material, apply P in the early spring just before buds start to swell.

Table 1. Phosphorus fertilizer recommendations for commercial blueberries.

P Index Value		
0 - 25	26 - 50	51-100
----- lbs P ₂ O ₅ / ac -----		
24	12	0

Potassium Management

The need for potassium (K) fertilization of blueberries is best determined by the use of a routine soil test. University of Delaware K recommendations for blueberries are dependent upon the soil test K value. A summary of K recommendations for commercial blueberries is given in Table 2 below. To convert application rates to *oz/plant basis*, divide the rates by 605.

When applied as a complete fertilizer, K can be applied along with the N. When using a separate material, apply K in the early spring just before buds start to swell.

Table 2. Potassium fertilizer recommendations for commercial blueberries.

K Index Value		
0 - 25	26 - 100	101+
----- lbs K ₂ O / ac -----		
24	12	0

Calcium and Magnesium Management

Calcium (Ca) and magnesium (Mg) needs of blueberries are usually met through routine liming. *Magnesium application is recommended if the soil test Mg value is less than 38 FIVs.* If liming has been recommended, use dolomitic limestone to raise soil pH and increase soil Mg. If, however, liming is not necessary but Mg fertilization is still indicated, apply soluble Mg as Mg sulfate or Mg chloride to increase soil Mg. Appropriate application rates are given below in Table 3.

Table 3. Application rates for soluble Mg as a function of Mg fertility index value.

Mg Index Value									
0	5	10	15	20	25	30	35	40	
----- lbs soluble Mg / ac -----									
80	70	60	50	50	30	20	10	0	

Micronutrient Management

An adequate supply of micronutrients is essential for proper growth of blueberries. Micronutrient deficiencies may occur in blueberries grown on Delaware soils. Suspected deficiency should be confirmed by tissue analysis. In most cases, confirmed deficiency can be corrected in the current or following season by foliar sprays. Contact your county Cooperative Extension agent for application rates and times.

Other Nutrients

No other nutrients are known to be limiting to commercial blueberry production in Delaware.

Additional Information

See Soil Test Notes 1 and 12 (Appendix 7) for additional information concerning nutrient management in commercial blueberry production.