Highbush Blueberries

General Information

There are two types of blueberries grown in New England. Highbush blueberries (Vaccinium corymbosum) are discussed here. For information on lowbush blueberries (V. angustifolium, V. myrtilloides), contact David Yarborough at the University of Maine Cooperative Extension in Orono, Maine, Sonia Schloemann at the University of Massachusetts Extension in Amherst, Massachusetts, or William Lord at the New Hampshire Cooperative Extension in Durham, New Hampshire.

New England is considered the northern edge of the climatic zone in which highbush blueberries can be grown. As a result, a number of disease problems associated with cold stress, particularly the canker diseases, are more common here than in other blueberry growing areas. High soil acidity (low pH) and a relatively high organic matter are essential for optimum production. Soils should be well-drained if wet. When these soil conditions are suboptimal, disease increases. Pruning out small twiggy wood and unproductive older canes is generally helpful in controlling fungus diseases on blueberries.

The blueberry has very specific soil requirements, dictated by its unique root structure. The blueberry root system is composed primarily of fine, fibrous roots near the soil surface. These fibrous roots lack root hairs, so the root system has a relatively low absorptive capacity. Blueberry roots are unable to penetrate compacted soils and have limited tolerance to excessively wet or dry soils. The shallow root system is sensitive to both high and low temperature extremes.

The ideal blueberry soil is a well-drained, yet moist sandy loam soil with a pH of 4.5 to 5.2. Soil organic matter levels should be augmented through the use of pre-plant green manuring and the addition of peat moss at planting. In addition, a permanent organic mulch (wood chips, bark, sawdust, pine needles) layer 3 to 4 inches thick is required to protect roots from high temperature injury in summer and cold temperature injury in winter as well as reduce moisture stress.

Fertilizer is generally applied in a split application, reducing the risk of root burn that can accompany a single large application. The first is applied at bloom and the second one month later. Since Nitrogen is generally the only nutrient needed, ammonium sulfate (21% N) or urea (45% N) are used as the principal fertilizers.

Table 24. Recommended optimal soil characteristics for growing blueberries.

Soil Characteristic	Desirable Range*
pH	4.5 - 5.2
Organic matter	4 to 7%
Phosphorus	20 - 30 ppm
Potassium	100-120 ppm
	Base Saturation 3.0-5.0
Magnesium	100-120 ppm
	Base Saturation 2.0-4.0
Calcium	800 - 1000 ppm
	Base Saturation 20-30

*Desirable range will vary with soil type (sand, silt, or clay), soil organic matter, and pH.

Table 25. Amount of sulfur (in lb/100 sq ft)[a] required to lower soil pH for blueberries.

	DESIRED PH VALUE FOR BLUEBERRIES					
	4.5			5.0		
Present soil pH	Sand	Loam	Clay	Sand	Loam	Clay
4.5	0.0	0.0	0.0			
5.0	0.4	1.2	1.4	0.0	0.0	0.0
5.5	0.8	2.4	2.6	0.4	1.2	1.4
6.0	1.2	3.5	3.7	0.8	2.4	2.6
6.5	1.5	4.6	4.8	1.2	3.5	3.7
7.0	1.9	5.8	6.0	1.5	4.6	4.8
7.5	2.3	6.9	7.1	1.9	5.8	6.0

[a] To convert to lb/A, multiply by 435

Table 26. Number of blueberry plants per acre at different spacings.

Feet Between	Spacing Between Rows		
PLANTS IN ROW	8 FEET	10 FEET	12 FEET
4	1,361	1,089	908
5	1,089	870	726
6	908	726	605

Table 27. Critical nutrient values for blueberry tissue analysis.

Element	Deficient	Below Normal	Normal	Above Normal	Excessive
N (%)	1.65	1.70	1.90	2.10	>2.10
P (%)	0.05	0.06	0.10	0.18	>0.18
K (%)	0.35	0.40	0.55	0.65	>0.65
Ca (%)	0.35	0.40	0.60	0.80	>0.80
Mg (%)	0.18	0.20	0.25	0.30	>0.30
Mn (ppm)	45	50	250	500	>500
Fe (ppm)	65	70	200	300	>300
Cu (ppm)	4	5	11	15	>15
B (ppm)	29	30	40	50	>50
Zn (ppm)	14	15	25	30	>30

Source: PennState University

Diseases

Fruit

Mummy Berry (*Monilinia vaccinii-corymbosi*): Mummy berry is increasingly important in some parts of New England, and its severity varies from year to year. It is caused by a fungus which attacks new growth, foliage and fruit, and can cause extensive losses.

The fungus overwinters in mummified fruit on the ground. The mummies form cup or globe-shaped structures called apothecia. Apothecia produce spores that infect young tissue and cause rapid wilting. This is called leaf and twig blight, or bud and twig blight. These symptoms are difficult to distinguish from frost injury. These first infections form more spores, which are spread by rain, wind and bees to blossoms and other young tissue. The fungus infects and invades the developing fruit. The fruit becomes malformed looking like a pumpkin, and turns salmon or grey by midsummer. By fall, these fruit have dropped to the ground where they turn to mummies, ready to produce apothecia the next spring.

Management: Cultural controls can be used to reduce inoculum levels in the spring. In very small plantings, mummies can be raked up and burned. On a larger scale, mummies can be buried by cultivating between rows or by covering with a new layer of mulch at least 2" in thickness. Combining cultivation and an application of 50% urea prills in the spring speeds destruction of the mummies. Urea should not be applied to areas where there is standing water, as this may cause fertilizer burn. Apply urea to drier parts of the field and go back to the wet areas later. The cultivation should be done just as apothecia start to emerge in the spring, which usually coincides with bud-break in the blueberry bushes. Cultivars exhibiting resistance to the shoot blighting phase of the disease include Jersey, Elliott, Bluejay, Duke, Stanley and Darrow. Cultivars which appear to be more susceptible are Bluehaven, Bluegold, Northblue, Sierra, Harrison, and Coville.

Several fungicides are labeled for use against this disease. Labeled materials and state registrations change annually. Check with your Extension Specialist for current recommendations in your state.