



Wild Blueberry

FACT SHEET

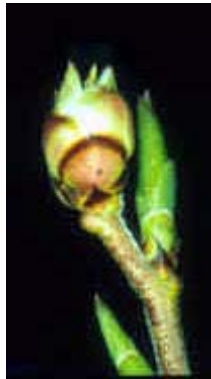


Flower Primordia Development Stage with Temperature Tolerance Using Irrigation Systems for Frost Protection

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1 Tight bud -4°F.



2 Minor scale separation
+7°F.



3 Plump closed +10°F.



4 Inflorescence tip
visible +10°F.



5 All flowers visible but
closed +19°F.



6 Flowers distended,
closed +23°F.



7 Fully open flowers
+28°F.

Temperature Tolerance
given is the lowest safe
Temperature LST in
degrees Fahrenheit (°F)

Frost Protection Using Irrigation Systems

The lowest safe temperature (LST) tolerances, listed on the front page, were determined by Dr. Paul Cappiello who was an Associate Professor of Horticulture at the University of Maine. He put blueberry flower buds in a freezer and lowered the temperature at a rate of 7.2° F per hour; when the tissue at the flower bud surface reached the target temperature, they were removed. Tissue was examined on both the surface and inside for injury from the temperature. The LST value was the lowest temperature that a particular tissue stage could withstand with out any injury to the plant.

The irrigation system must be designed for frost protection. Frost protection requires that the irrigation system is able to maintain a surface film of water on the plant at all times. A higher density of sprinkler heads and a faster rotation of the heads are required for frost protection, compared to a system used only for irrigation. Big gun irrigation systems are not suitable for frost protection. Consult an irrigation specialist or engineer to design the best system for your field.

Temperature sensors are available which range from inexpensive max/min thermometers to digital units that will sound an alarm once the critical temperature is reached. They should be placed in the lowest part of the field at ground level.

When water is applied through the sprinklers, heat is released when the water turns to ice. As long as a film of water surrounds the ice-coated blueberry plants, the temperature of the ice cannot go below 32° F and the plant will be protected from lower temperatures. The system should be started at 2° F higher than the LST unless there is a breeze; then it should be started at least 4° F higher than the LST. Once started, the system should be operated until all of the ice on the blueberry plants has completely melted, otherwise injury to the blueberry plant could occur.

About 90% of the time, lowest spring temperatures occur just before dawn on nights with good radiational cooling (clear skies and no wind).

Dewpoint readings in the evening can give an indication of risk of frost the following morning:

Dewpoints above 50° F--virtually no risk of frost

Dewpoints 45° F to 50° F-- possibility of light frost

Dewpoints less than 45° F--frost is likely

Dewpoints in the 30° F range--expect a frost

Prepared by David E. Yarborough, University of Maine Cooperative Extension, Photos taken by Paul Cappiello, former Associate Professor of Horticulture, The University of Maine, Orono, ME 04469. April 1999. (Revised February 2002)

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