

Irrigating Coastal Blueberries

While mature blueberry plants can be somewhat drought tolerant, they are a very shallow rooted plant and for optimum production frequent, small irrigations are necessary. The bare-root or container-grown young plant with its limited rooting volume, though can be quite sensitive to drought. Even when surrounding soil is wet after a rain, the newly-planted bush can experience drought stress.

Blueberry plants are especially sensitive to water quality and water should be tested prior to planting. The most significant water quality hazards are high pH, salinity, chloride, boron and sodium. Water for blueberries should have an electrical conductivity (EC or salinity) of less than 1.5 deciSiemens per meter (same as mmhos per cm), chloride and sodium of less than 100 ppm, boron less than 1 ppm and a pH of less than 6. If salinity build-up is a potential problem, irrigation should be scheduled in smaller, more frequent applications. Alkaline irrigation water will eventually raise the soil pH to a level harmful to blueberries. If high pH waters are a problem, continuous injections of acid are recommended to maintain pH at acceptable levels.

Depending on the location along the coast, a mature, lone blueberry bush can use up to 5 to 7 gallons of water a day. In most cases, blueberry irrigation systems should be designed to provide a peak demand of 7 gallons per plant per day. The root systems are shallow and there is not a lot of soil moisture storage available to them. This means that the grower, depending on the weather, needs to be ready to irrigate to plant demand. A typical well output of 5 gpm per acre should be sufficient to meet this demand. In a mature blueberry patch, capacity is needed for approximately 5,000 gallons per acre per day to meet plant demand.

Younger plants need less water according to size, with 3-4 foot plants having a peak demand of about 3 gallons of water per day and new plantings from 0.25-0.5 gallons per day. The newly planted bush has a very small rooting volume and the plants are very susceptible to water stress.

Because the root system is very shallow, blueberries experience drought sooner than deeper-rooted species. It's not only the total amount of water that is applied that is important, but the coverage pattern so that the bush can maximize the wetted volume in the rooting zone. Frequency of application must be appropriate to ensure that adequate water is actually available to the plant's root system. Use of moisture sensing devices, such as tensiometers can help in scheduling irrigations.

Because of their shallow root systems, blueberries need to be irrigated as much as twice a week in dry conditions. In the fall and winter, dry, windy conditions called "Sundowners" or "Santa Anas" along the coast may necessitate more frequent irrigations. Frequent irrigations are required with more sandy conditions. Incorporation of large amounts of organic matter at planting can improve water holding capacity of sandy soils.

Over irrigation is a problem too. Wet conditions can lead to waterlogging and the potential for the fungal root pathogen, *Phytophthora cinnamomi*. In high rainfall years, ponding water can be a problem, as well, and in poorly drained soils, plants should be planted on raised beds or berms.

All forms of irrigation have been used successfully to grow blueberries. Micro irrigation methods, such as drip tape, drip emitters and spray emitters have the advantage of putting the water more closely to where the plant's roots are and keeping the foliage and fruit dry. The latter property allows for more easily growing disease free plants. Permanent and solid-set sprinklers are more expensive and costly to operate, but reach a greater soil volume and can provide frost protection. They also wet a larger area of soil where blueberry rooting is not occurring and weeds become more of a problem.

In coarse or sandy soils, drip tape will work if there is a double line on either side of the plants. It should be laid under the mulch to ensure better coverage of the root system. It is preferable in coarse soils to use spray emitters to get better coverage. Spray or fan emitters are also more durable than drip tape and emitters and are less prone to clogging. To reduce clogging of all micro systems, a good filter should be used.

Drip emitters and tape are well suited to young plants since they make it easier to wet just the rooting area of the small plants. If they are used on more mature plants, the wetted area should cover 50% of the bed. On sandy soils, this means that there should be at least two lines of tape or several emitters per plant. Drip tape has the smallest initial cost, but the shortest useful life. If using spray emitters, one emitter per two plants in the row can be used. Spray emitters can provide some small frost protection, as well.