

## Site Selection

Selection of the orchard planting site is the most important decision an apple grower will face in maintaining the profitability and sustainability of the operation. Somewhat poor soils can be amended or drained, but a truly bad site, especially if waterlogged or frost prone, will plague the grower until the orchard eventually is abandoned or pulled out.

Annual minimum temperatures. Apple production can be limited by the absolute minimum temperatures experienced at a particular site due to damage to or death of trees after experiencing cold damage. This explains the lack of orchards in northeastern and high elevation parts of the state. Areas that regularly experience  $-25^{\circ}\text{F}$  are risky for orchard production. Cold sites should be planted to hardy varieties grafted onto hardy rootstocks including the Budagovsky series, MM.11, and seedling stock in extreme cases.

Annual growing degree days. Apples require a certain amount of acquired heat units from bloom to harvest to ripen a crop reliably. Areas with less than 135 frost-free days and annual accumulation of growing degree days (base  $50^{\circ}\text{F}$ ) below 2000 should consider shorter-season varieties, with no apple ripening after Liberty or Empire.

- x Slope orientation. Within a given area, a south facing slope receives more sun, thereby warming faster in the spring, while a north facing slope will be colder, warming up late in the spring. Accumulated heat units will be very different on the two slopes, which will translate into changes in orchard performance. For example, an early-blossoming variety may be avoided on a south slope that receives spring frosts to avoid having too much tender tissue subject to damaging weather.

Of all the decisions you make in establishing an orchard, the most important are choosing the variety and the rootstock. The growing degree days (base  $50^{\circ}\text{F}$ ) and the number of frost-free days are

# Soil Preparation

Soil preparation should be done at least by the summer before planting. This is the time to do a soil test to determine the needs of your soil and to provide time to correct any deficiencies and improve soil fertility. Correcting the soil pH is one of the most effective nutrient management practices to improve fertility in an apple orchard. Try to maintain the soil pH in the range of 6.0 for the subsoil to 6.5 for the topsoil because the pH influences the availability of the various elements to the plant. For example, as the soil pH becomes acidic (pH <5.5), the phosphorous in the soil becomes unavailable to the plant. It does not matter if there is an adequate amount of phosphorous in the soil; the roots are unable to uptake it, or some elements become toxic at high or low pH. Correcting the soil pH needs to be done before planting because once the trees are in place, it is very difficult to change it. In regions with acidic soils, lime, preferably dolomitic for apple orchards, is usually used to raise the pH.

Addition of organic matter

Maintenance of good tilth

Crop rotation

Erosion control

Addition of nutrients when needed

Specific orchard site preparation plans are included in the [New England Tree Fruit Management guide](#), available from the Cooperative Extension Service of each New England state. Further information on orchard site preparation can be found in the [Penn State Tree Fruit Production Guide](#).