

Crop Profile for Raspberries in New Hampshire

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General Production Information



Commercial raspberry production in New Hampshire is limited to approximately 80 acres. While that acreage is small, the impact they have on the overall profitability of small, multi-enterprise farms is large. Average production per acre is 5000 pints. Approximately 80% of the crop is sold U-Pick for an average price of \$2.75 per pint. The remainder is sold wholesale or roadside stand where retail prices approach \$4.00 per pint.

Site selection and soil management are critical issues growers must address with raspberries. Protection from excessive wind, enough elevation to limit frost risk, and soil that is well drained are all requirements. Proper soil preparation includes installation of soil drainage systems where required, subsoiling or chisel plowing, and cover cropping.

Red raspberries, both summer fruiting and fall fruiting, dominate NH plantings. While there is interest in purple and black raspberries and blackberries, cold winter temperatures restrict planting of these to extremely favorable sites in extreme southern NH only. Of the summer fruiting types, Boyne and Killarney dominate the cultivar picture. Other cultivars grown include Latham and Taylor among others, but issues including winter hardiness and fruit quality limit their use. A new cultivar, Lauren, is being planted as a potential replacement for Boyne, offering improved fruit size and color.

Fall fruiting red raspberries are set in rows 10 to 11 feet apart. Newly set plants grow vigorously, sending up many suckers that are trained into a hedgerow. Raspberry cane management represents the largest single labor commitment with this crop. The raspberry plant produces canes that are biennial. New shoots (called primocanes) emerge in early spring and grow vigorously during their first summer. Those canes overwinter and in their second summer flower, fruit, then die. Cane management begins with removal of those spent canes in late fall. In spring, overwintered primocanes (now called floricanes) are thinned to 5 or 6 per linear foot of row and tipped. Most growers use a support trellis to assist in cane management and reduce breakage under crop load or snow stress. A T-trellis or some variant is generally employed, with individual canes either attached to outside support wires or simply positioned inside.

Row middles are generally seeded to slow growing grasses such as dwarf hard fescue, although there is some use of mulch and clean cultivation.

Heritage is the most widely grown fall fruiting cultivar throughout most of the northeast, but in New Hampshire, it is grown only in the extreme southern part of the state as the growing season in most of NH is too short. There is considerable interest in shorter season cultivars including Autumn Britten, Polanar, Redwing, and others. The canes of fall fruiting raspberries are biennial. New shoots (primocanes) emerge in early spring, grow vigorously, and flower and fruit in late summer and fall. Those canes overwinter, and in their second summer, flower, fruit, then die. Most fall fruiting types are managed for the fall crop only. All canes in a planting are mowed off in late winter or very early spring each year. This provides the grower with a raspberry crop outside the normal summer fruiting period and requires significantly less labor.

The most common pests of raspberry in NH, ranked in relative order of their importance are:

1. Phytophthora root rot
2. Botrytis fruit rot
3. Weeds (especially perennial grasses)
4. Tarnished Plant Bug
5. Viruses
6. Two-spotted spider mite
7. Japanese Beetle
8. Minor pests including cane borers, clipper beetle, spur blight, and others

Insect Pests

The tarnished plant bug (*Lygus lineolaris*) is a serious pest of raspberry and fall fruiting raspberry in particular in New Hampshire. Both adults and nymphs feed on flowers and developing fruits. The result of feeding injury is deformed fruits that sport undeveloped fruit segments and are unmarketable. Control measures include weed management in and around the planting. Sites adjacent to alfalfa in particular are avoided. Most growers sample fields for tarnished plant bug populations, paying particular attention to the nymphs. Insecticide applications are usually required to control this pest. The only insecticide listed for use in the New England Small Fruit Pest Management Guide is carbaryl (Sevin).

Two-spotted spider mites (*Tetranychus urticae*) can impact raspberry production when infestations are high. Feeding on the undersides of leaves causes a loss of chlorophyll and bronzing. Populations in a given field are rarely uniform - hot spots of peak population are often easily identified. Unfortunately, there are currently no registered miticides for raspberry. The release of commercially available predatory mites is becoming a popular option although its effectiveness is not yet known. In addition, growers avoid over fertilization with nitrogen which encourages mite population buildups and the use of pesticides such as benomyl which depress mite predator populations.

Japanese Beetle is a major pest problem in some plantings. Growers use materials such as methoxychlor and malathion for pest reduction. In addition, Japanese Beetle traps are often placed on the farm periphery to draw adults away from the raspberry planting.

Diseases

Phytophthora root rot is the single most important pest of raspberry in NH. This fungal disease is a particular problem in soils that are poorly or somewhat poorly drained. Management of this disease includes several key elements:

- proper site selection (sandy loam soils preferred)
- soil drainage improvement (tiling, diversions)
- raised bed cultural systems
- frequent subsoiling or chisel plowing to break impervious soil layers
- crop rotations
- the use of tissue culture nursery stock

Gray Mold (*Botrytis cinerea*) can cause epidemic losses of fruit to rot, especially in seasons with wet weather during the harvest period. Control of this disease starts with plant population control. Weeds excessive cane numbers and row width reduce air circulation and drying, increasing disease risk. Fungicide use during the blossom period is the normal approach growers take, using 2 or 3 sprays at bloom to control rot during harvest. Benomyl (Benlate) is one option but it cannot be used on most NH acreage due to a label restriction that eliminates use on fields used for U-Pick sales. There are few, if any, other options

Viruses have historically been a major problem for raspberry growers, often limiting planting life to less than 10 years. While virus is still an important issue, the use of virus-indexed planting stock, coupled with improved management of insect vectors and wild sources have reduced the risk these diseases pose to relatively minor levels.

Weeds

Weeds collectively represent a significant pest problem for New Hampshire raspberries, especially young planting. Especially tough perennial grasses including quackgrass can be effectively eliminated pre-plant through the use of glyphosate coupled with an aggressive cover-cropping program.

Several pre-emergence herbicides are available for annual grass and broadleaf weed control in the transplant year including napropamide (Devrinol), oryzalin (Surflan), and simazine. For post-emergence control of grasses, fluazifop (Fusilade) and sethoxydim (Poast) are used. Emerged perennial and annual weeds can be treated selectively using a weed wiper or shielded sprayer using sulfosate (Touchdown).

Tissue culture propagules are often recommended rather than the traditional cane stock for new plantings. The use of this stock offers growers greater freedom from diseases and improved plant vigor in the first couple of years; however, these plants are sensitive to pre-emergence herbicides in particular in the planting year, so none are recommended when tissue culture propagules are used.

As an alternative, many growers mulch with an organic material such as wood chips or bark. While this does help control weed population, it delays harvest and delays hardening off of plant tissue in the fall, increasing the risk of early winter cold temperature damage to plants.

Once plants are established, growers may use napropamide (Devrinol), oryzalin (Surflan), norflurazon (Solicam), simazine or terbacil (Sinbar) pre-emergence. Dichlobenil is also available but is not recommended widely due to concerns about reduced shoot emergence in spring and off-target movement. Paraquat, sethoxydim (Poast) and glyphosate (Roundup) are all registered for post-emergence use.

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2. Pritts, Marvin and David Handley, Editors. **Bramble Production Guide**. NRAES-35, Cornell University.
3. Schloemann, Sonia, Editor. 1998 *New England Small Fruit Pest Management Guide, 1998-1999*. This grower guide is published every 2 years jointly by the Cooperative Extension programs of Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont

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