

## **Wild Blueberries: Battling Pests and Weeds with David Yarborough**

A research project began at U. of M. in 2004 and has just finished three (two year) cycles. For more complete information and to access fact sheets go to [www.wildblueberries.maine.edu/factsheets.html#organic](http://www.wildblueberries.maine.edu/factsheets.html#organic)

Sour top berries yield better in second year but can't be cross pollinated with low sweet. Low sweet more productive.

As weeds are a big issue in organics, it's generally better to start with a well developed and generally weed free conventional field and use the best organic methods identified to maintain field during the three year transition.

Commercial wild blueberries (WB) are found in Maine, Quebec, and Atlantic Canada, where land is acidic and well drained. They tend to have greater diversity of clones and flavour and 10x phytochemical as high bush.

The biggest obstacle in organic WB is getting rid of competition. Having a second non-fruiting year does help keep pests down. Burning is expensive but provides good sanitation (insects, weeds and disease) Mowing is less expensive and maintains the organic pad, but allows pests to overwinter. 2/3 of the WB biomass is underground in rhizomes. Removing stems right to ground level (mow or burn) encourages new growth.

Weeds - WB aren't tolerant to shading. Taller weeds must be limited for this and to avoid mashing fruit during harvest. Best practice - mow above blueberries 3 x in the season (late June, July and August) to reduce shading and seeding. Ex. White birch 1st cut did little to discourage, 2nd considerably discourage, 3rd pushed them back. This needed to be repeated in second and third year. Willow was not controlled completely by even three cuts.

Mulch - on bare spots prevents erosion and promotes filling in of blueberries, retains moisture and reduces extreme heat which burns up organic pad. Berry size tended to increase with mulch layer and moisture retention. Bark is the best and breaks down slowest but expensive. Wood chips second best but should be less than loonie in size (larger dries out). Cedar third. Sawdust tends to dry out.

Fertilizer - WB leaf tissues should show 1.6 Nitrate, 0.125 Phosphorous, and 24 ppm of Boron. Tests are down at tip die back of leaves. You have to be careful not to overfertilize and promote weed growth.

The following were compared for affect on yield : DAP @ 400 lbs/acre, Fish hydrolysate (2-4-2) @ 33.6 kg/ha. FH did as well as DAP for stem growth and yield (5000-9000lbs/a). Both were applied only when plants were deficient.

Pests - Scouting with a net (10 sweeps) important for flea beetle, spanworm. If spanworm defoliates leaves in the sprout year, leaves may grow back in the same year but not produce fruit the following. BT/Entrust effective.

Thrips - spot burning works well.

Scout blueberry maggot using sticky pheromone traps around the perimeter of the field. Some growers harvest after the maggot infested berries fall to ground, but this leaves them in the litter for the following year. Field isolation is better because the fruit flies hatching in a sprout field the following

summer have nowhere to lay eggs. Winnow piles should also be destroyed. Burning periodically helps destroy the maggot if the leaf litter is ignited. Flies take 10-14 days to mature. This is the period to apply spray if needed. GF 120 (molasses with spinosad/entrust) or Mycotrol/BotaniGard work fairly well but must be reapplied after rain. It takes about a week to see a big drop in numbers.

Flies will tend to only be in the outer edge of field, so spraying only needs to be done here. 1 meter high netting at edge of field can be effective in a small area if the screen is consistently kept up. Baited spheres were not a good control.

Disease- Monolinia Blight: Primary infection reduces plant health. The following were compared for effectiveness: Sonata, Serenade, Compost Tea, mulch, Neem. Only mulch worked really well but is impractical for extensive use. Serenade maximum allowable rate in the U.S. is 3.3kg/h. It was tried at 8kg/ha and gave some control but still not as effective as conventional controls like Topas. It took 2 applications to have some degree of effectiveness.

Leaf spot/drop disease- burning is the most effective control to date for organic.

Pollination - Bees are essential. Adding 5 hives/acre raised yield from 1000-5000/a. Encouraging natural pollinators in the edge of fields (esp if small) is good. Sweat bees are NP found dug into ground in fields. Organic systems encourage natural pollinators because of less toxic pesticide use.

Bumblebees work in more adverse conditions but if weather is good the sheer #s of honeybees will do more pollinating.

Harvest - rake gently, not pulling, keep cool, no moisture on berries, use low boxes partly full rather than buckets. Machine raked berries look okay at first but don't have same shelf life.

When the project started in 2004 the following were being compared:

Sulfur at 0 vs 1000lbs (@100/lbs to bring pH down .1 unit for a goal of pH 4.0)

mow vs burn

ProHolly 4-6-4 vs and it's interaction weeds

Cutting weeds 3 x per season. On larger fields you could use a bush hog. If the tracks are not in the same place twice, the plants will bounce back from the travel on them.

Burning - Grass reduction from 50% to 20%

Sulfur - Grass reduction from 45-25% by 3rd year.

Fertilizer - 40lbs/a ProHolly increased weeds.

Sulfur increased aluminum, iron, copper and magnesium.

Burning increased yield

Sulfur increased yield

Fertilizer did not increase yield on its own

Combined burning and sulfur increased yield threefold.

Organic yields were still well below conventional (1800-2000 lbs/acre) 10-15 acres may be the largest feasible size for organic.

Burning methods: oil gives hardest burn but very expensive, propane lighter but should work, straw at 1T/a in the fall and left work in and burned in spring.

Taste test of berries from field where sulfur was applied to reduce pH to 4.0: Tasters could tell the difference but preferred the berries from sulfured field. They thought other berries had a tarter taste.

Chemical differences: colour and acidity and pH were the same. Nutrients: More calcium and potassium, slightly less magnesium, and significantly more manganese (good for bones and teeth) but nowhere near toxic levels.