NRCS Conservation Practice Standard: Code 595 ~ Pest Management

IPM Worksheet: Highbush Blueberry

Version: 5/14/08

Soil Nutrient Management and Cultural Practices

Cultural practices are of value in management of nutrients, weeds, diseases, or insects. The goal of a sound fertility program is to supply adequate nutrients with optimum timing for maximum economical crop yield, while avoiding excesses that can degrade water quality or adversely affect crop or soil quality.

1.	Irrigation is supplied to the bushes.	**10**	
2.	A water use plan that minimizes disease development, optimizes water-use efficiency and minimizes erosion and runoff is used. (In most cases, this means the use of a trickle irrigation system.)	**5**	
	OR		
3.	A fertigation system is installed and used for fertilizer delivery	**5**	
4.	Fertilizer recommendations are based on leaf tissue analysis.	**10**	
5.	Half of nitrogen fertilizer (always use the ammonium form) is applied at Half of nitrogen fertilizer (always use the ammonium form) is applied at bloom, and the remaining half is applied one month later (unless a slow release form is used, in which case one May application of the full rate is used).	**5**	
6.	Soil pH levels are monitored using soil analysis every 5 years or less, and amendments applied to adjust pH to within 4.5 - 4.8.	**10**	
7.	Regular pruning is conducted to maintain plant vigor, and to eliminate dead, diseased, and insect-infested wood.	**5**	
8.	Prunings are removed from the field.	**5**	
9.	Mulch strip is maintained within the row.	**10**	
10.	*Mulch is applied at a 3" - 4" depth in the mid-spring where mummyberry is a problem, providing a physical barrier to the development of fungal fruiting bodies and interrupting the disease cycle. **	**5**	
11.	*Mulch material is chosen to avoid tunneling of voles where voles are a problem (e.g. chipped brush instead of sawdust). **	**5**	
12.	In alleyways, a living ground cover is used to reduce soil erosion and soil compaction.	**10**	
13.	*Ground cover species are selected to avoid habitat for Japanese beetle grubs, where they are a problem. **	**5**	

Total practice points for Soil Nutrient Management and Cultural Practices _____

Total possible points for Soil Nutrient Management and Cultural Practices **70**

Pesticides Application and Records

Only pesticides approved and registered for blueberry in the state are used. Records of pesticide applications are maintained, including date, field and block, target pest, crop stage pesticide name and EPA number, formulation, rate and number of acres treated. Pesticide drift is minimized. Re-entry and pre-harvest intervals are adhered to. ***Win-PST analysis is conducted for all pesticides considered for use on the farm****.*

1.	Only pesticides with a LOW or VERY LOW environmental hazard (Win-PST) are used all major pests (includes insects, diseases and weeds).	**20**	
	OR		
	Only pesticides with a LOW or VERY LOW environmental hazard (Win-PST) are used for at least one major pest.	**10**	
2.	Insecticide/fungicide sprayer is calibrated at the start of the season	**10**	
3.	Herbicide sprayer is calibrated at the start of the season.	**10**	

Total practice points for Pesticides Application and Records

Total possible points for Pesticides Application and Records **40**

Disease Management

Diseases include: *Botrytis blossom and twig blight, Fusicoccum and Phomopsis cankers, mummyberry, anthracnose fruit rot, blueberry leaf rust, witches broom, powdery mildew*

1.	Disease resistant cultivars are chosen when planting new sites.	**10**
2.	Disease-free propagation wood is used	**10**
3.	Disease problems are accurately identified and management strategies tailored to actual diseases present in the field in current season (i.e., not as prophylaxis unless history of the problem is well known).	**10**
4.	Detailed records (including maps, if appropriate) are kept to document field history of diseases, weather information, and management strategies used and the results. (Note varietal differences.)	**5**
5.	Mummyberry incidence and severity is documented and mapped (noting varietal differences) by determining number of strikes/bush for primary infection and percent infected fruit for secondary infections (10 complete bushes per acre are examined for strikes, 200 fruit on each of 10 bushes are examined for disease symptoms on fruit.).	**10**
6.	One or more of the following strategies is used to suppress primary infection of mummyberry (where needed):	
	a. apply a thick layer (3-4") of organic mulch beneath bushes to cover fallen fruit in mid-spring.	**5**
	OR	
	b. rake, disk, or cultivate soil beneath bushes in spring prior to budbreak to disrupt mummyberry spores.	**5**
	OR	
	c. apply 200 lbs/A 50% urea prills beneath plants in spring prior to budbreak to `burn' mummyberry spores.	**5**
6.	Use good cultural practices to maintain plant vigor to reduce incidence of Phomopsis (especially avoidance of practices, such as late nitrogen applications, which can lead to winter injury).	**10**
7.	*Insects that vector viral and MLO diseases (e.g. aphids and leafhoppers) are controlled, if appropriate.*	**10**
8.	Prune and destroy diseased wood when scouting. Clean pruning tools in bleach solution between cuts.	**10**

9. *If witch's broom is identified in a field, infected plants are rouged out and alternate hosts (balsam fir) are eliminated within 1200 ft of the blueberry planting. Avoid planting blueberries near Christmas trees that include balsam fir.* **10** _____

Total practice points for Disease Management _____
Total possible points for Disease Management **70**

Insect Management

Insect pests include: *stem gall, scale, cranberry fruitworm, cherry fruitworm, leafrollers, blueberry tip borere, plum curculio, blueberry maggot, Japanese beetle, blueberry stem borer.*

1. Insect problems are accurately identified and management strategies tailored to actual insect pests present in the field in current season (i.e., not as prophylaxis unless history of the problem is well known). **10** _____
2. Detailed records (including maps, if appropriate) are kept to document field history of insect pests, management strategies used and the results. (Make a note of varietal differences.) **5** _____
3. Insecticides are not sprayed when bees are active (during bloom). **10** _____
4. Blueberry maggot fly is monitored using sticky traps w/ lures (10/acre, examined weekly) and spray decisions are made according to the established action threshold of 1 fly/trap/week. **10** _____
5. Cranberry fruitworm is monitored using wing traps w/ lures (10/acre, examined weekly) and spray decisions are made according to peak trap captures. Application is made 7-10 days after peak trap capture **10** _____
6. *Where winter moth is a problem, plants are inspected for eggs in late winter and cover sprays are timed to coincide with hatch.* **10** _____
7. Other insect pests (e.g., leafrollers, gypsy moth, sawfly, Japanese beetle) are monitored by weekly observation of 5 fruit or leaf clusters on 4 shoots on each of 10 bushes per acre and noted on scouting forms. **10** _____

Total practice points for Insect Management _____
Total possible points for Insect Management **55**

Weed Management

Weeds include: *annual broadleaves, annual grasses, perennial broadleaves, perennial grasses, woody perennials.*

1. A weed survey is conducted at least once per season with weed problems noted on field maps. **10** _____
2. Herbicide rate, selection and spot applications are based on the results of the weed survey. **10** _____
3. Herbicides of the same class are not applied in succeeding years in order to avoid herbicide resistance development. **10** _____
4. Herbicides are banded only in the crop row and a seeded groundcover is used in row middles. **10** _____
5. Weeds in and around fields, alleys and roadways are prevented from going to seed. **10** _____

Total practice points for Weed Management _____
Total possible points for Weed Management **50**

Vertebrate Management

1. Bird depredation is managed with the use of netting or a combination of scare devices (visual, audio, and taste). **15** _____

2.	Deer depredation is managed with the use of fencing or repellent products (odor or taste).	10	
3.	Rodent (esp. vole) depredation is managed by first, determining the species present in the field, and using cultural (e.g., mulch that doesn't facilitate tunneling and/or repeated disruption of tunnels) methods, and then following with chemical methods if needed.	10	
	Total practice points for Vertebrate Management		
	Total possible points for Vertebrate Management		35

Education

1.	Manager attends one or more state/regional/national Extension berry training session during the current year.	5	
2.	Manager has a current copy of *Northeast Small Fruit Pest Management Guide.*	5	
3.	Manager has current membership in New England Vegetable and Berry Growers Association.	5	
	Total practice points for Education		
	Total possible points for Education		15

POINT SUMMARY

TOTAL POINTS	
TOTAL POSSIBLE POINTS	335
Percentage	%