

Table 30. Highbush blueberry pest management schedule[†].

Dormant and Delayed Dormant			
Pest	Spray Material, Rate/A (pre-harvest interval)	Cultural Practices and Scouting Notes	Comments
Scale Insects	Superior oil, 3% (0) SunSpray Ultra-fine Oil, 3% (0)	Prune out old, weakened canes.	Treat from March 1 to first bloom using 250 to 300 gallons of spray (at 300 to 400 psi) per acre. Apply oil only when no danger of freezing temperatures within 24 hours.
Blueberry Blossom (aka Cranberry) weevil	No insecticides labeled against this pest.	Disking between rows and raking /hoeing under plants helpful.	Eradication of wild blueberries in the vicinity of the blueberry planting is advised.
Mummy Berry	Indar 75 WSP, 2 oz (30)** Bravo Ultrex, 2.7-3.6 lb (42) Abound F, 6.2-15.4 oz (0) Cabrio EG, 14 oz (0) **Individual New England States may have Section 18 Emergency Exemption labels for early season fungicides to control Mummyberry. Check with your state's Extension Specialist.	Before mummy cups appear (about March 20), disk between rows and rake, sweep, and hoe under plants. As first mummy cups appear, apply 200 lbs of 50% Urea prills. Cultivation and Urea application are most effective when both are used.	* Indar is labeled for this use under a Section 18 Emergency Exemption on a state by state basis. Check with your state's officials on the current status of this label. Abound should be used with <u>extreme caution</u> to avoid phytotoxicity to apples. See label for futher information. Cabrio is labeled for mummyberry suppression only. Only 4 applications allowed per season, NO MORE than 2 sequential applications.
Phomopsis twig blight	Lime Sulfur, 5 gal (0)	Prune out affected canes.	Use Lime Sulfur only once in Spring. May be used again in autumn where Phomopsis is a problem.
Fusicoccum canker	Ziram 76DF, 1.5 lb (**)	Weymouth, Berkeley, Coville, and Jersey cultivars are particularly susceptible to Phomopsis twig blight. Avoid practices such as late season fertilization that make bushes more vulnerable to winter injury. Winter-injured bushes are more susceptible to Phomopsis and Fusicoccum infections.	Do not use Lime Sulfur within 14 days of an oil spray or when temperatures are above 75½F. ** Apply Ziram at loose bud scale stage, followed 7 days later. Do not apply later than 3 weeks after full bloom.
Phytophthora root rot	Ridomil Gold EC (45)* <u>New Plantings</u> , 3.6 pt broadcast at or before time of planting (repeat once) <u>Established Plantings</u> , 1/4 pt/ 1000 ft of row, (repeat once) Ridomil Gold WSP (45)* <u>New Plantings</u> , 4 lb broadcast at or before time of planting (repeat once) <u>Established Plantings</u> , 1/4 lb/ 1000 ft of row, (repeat once) Aliette WDG, 5 lb (0.5)	<ul style="list-style-type: none"> Do not plant blueberries on wet soils. If wet site is unavoidable, install drainage tile and plant blueberries on raised beds. Phytophthora damage symptoms may mimic nutritional deficiency symptoms. <p>Ridomil Gold: Apply only as an emergency use, not as a routine or preventative treatment.</p> <p>Apply in spring before growth begins in established plantings. In new plantings, apply at or just after planting.</p> <p>*In new plantings, do not exceed 3.6 gallons/A within 12 months of harvest or illegal residues may result. Read the label.</p> <p>Alliette: Apply as a 5 ft. band. Do not tank mix Alliete with copper compounds or apply to foliage with copper residues or phytotoxicity may occur. See label for other restrictions</p>	

Pre-bloom

Pest	Spray Material, Rate/A (pre-harvest interval)	Cultural Practices and Scouting Notes	Comments
Blueberry Blossom (aka Cranberry) weevil	No insecticides labeled against this pest.	Disking between rows and raking /hoeing under plants helpful.	Eradication of wild blueberries in the vicinity of the blueberry planting is advised.

Early to mid-bloom

Mummy berry	Indar 75WSP, 2 oz (30)***	This treatment will cover for all three diseases (plus Phomopsis for Ziram). Rotate among these fungicides to avoid resistance development.	
Botrytis blight	Bravo Ultrex, 2.7-3.6 lb(42)		
Anthracnose	Abound F, (6.2-15.4 oz (0) Rovral 4F, 1-2 pt (0) Ziram 76DF, 3 lb (***) Captan 50WP, 5 lb (0) Captec 4L, 2.5 qt (0)	For mummyberry, this spray is designed to prevent flower infections. It is necessary only if primary infections (shoot blight) were not adequately controlled earlier. Bravo Ultrex is only labeled for suppression of mummy berry.	
	** Indar is labeled for this use under a Section 18 Emergency Exemption on a state by state basis. Check with your state's officials on the current status of this label.	Abound should be used with extreme caution to avoid phytotoxicity to apples. See label for futher information.	
		Rovral is only labeled for control of Botrytis. Additional applications can be made at 14 day intervals. Do not make more than 4 applications per year.	
		***Apply Ziram at loose bud scale stage followed 7 days later. Do not apply later than 3 weeks after full bloom.	
		Captan has a 0 day phi, but the REI of 24 hrs requires that PPE be worn during this period. See label or section on Worker Protection Standards for details.	
		DO NOT combine (tank mix) diazinon and captan formulations together because berries and leaves will be injured.	

Petal Fall (remove honey bees before spraying)

Cherry fruitworm	Guthion Solupak 50W, 1-1.5 lb (7)	Disking between rows and raking and hoeing under plants is helpful for fruit-worm management.	Fruitworms are active for about five weeks and they cannot be controlled with only one post-pollination spray.
Cranberry fruitworm	Asana XL, 4.8-9.6 oz (14) Imidan 70W, 1 1/3 lb (3) *Lannate 90, 0.5 - 1 lb (3) Malathion 57 EC, 1.6 pt (1) Sevin 50WP, 3-4 lb (7) Pyrenone Crop Spray 0.5EC, 2-12 oz (0) Biobit 1.6 FC 1-2 pt (0) DiPel 1.9 ES-NT 1-2.5 pt (0) Confirm 2F, 16 oz (14)	In small plantings remove and destroy infested fruit (which can be identified because it turns prematurely blue)	Guthion has 48 hr REI for mowing, irrigating, and scouting; and 4 day REI for all other activities. Asana XL - do not apply more than 38.4 oz of product per acre per season. Lannate restricted use; do not apply more than 3.6 ai per acre or make more than 4 applications. Biobit , DiPel and Confirm are bacterial biological insecticides containing <i>Bacillus thuringiensis</i> and must be ingested to be effective. Apply when newly hatched larvae (1st or 2nd instar) begin feeding. Larvae cease feeding in hours and die in 2-5 days.

Table 30 continued. Highbush blueberry pest management schedule[†].

Petal Fall (remove honey bees before spraying)			
Pest	Spray Material, Rate/A (pre-harvest interval)	Cultural Practices and Scouting Notes	Comments
Botrytis	Aliette WDG, 5 lb (0.5)	For Botrytis - Repeat at 7-10 day intervals during bloom if long rainy periods predicted.	
Anthracnose	Cabrio EG, 14 oz (0)		
Alternaria Fruit Rot	Indar 75 WSP, 2 oz (30)**	For Anthracnose - Occurs only sporadically and especially during seasons with frequent rain and warm temperatures. Spray for control in such seasons if a history of this disease has been noted recently.	
Fusicoccum Canker	Abound F, 6.2-15.4 (0)		
Phomopsis Canker	Captec 4L, 2.5 qt (0)		
Phomopsis Twig Blight	** Indar is labeled for this use under a Section 18 Emergency Exemption on a state by state basis. Check with your state's officials on the current status of this label.	Abound should be used with extreme caution to avoid phytotoxicity to apples. See label for futher information. Captan has a 0 day phi, but the REI of 24 hrs requires that PPE be worn during this period.	Check all labels for further restriction on these materials.
First cover (about 10 days after Petal Fall; some berries begin to color)			
Anthracnose	Aliette WDG, 5 lb (12 hrs) Cabrio EG, 14 oz (0) Captec 4L, 2.5 qt (0) Captan 50WP, 5 lb (0)		See comments above.
Cherry fruitworm	Same as petal fall		Apply 7 to 12 days after petal fall
Cranberry fruitworm			
Blueberry Maggot	Malathion 25WP, 4 lb (1) Guthion Solupak, 1-1.5 lb (7) Imidan 70 W, 1 1/3 lb (3) Pyrenone Crop Spray 0.5EC, 2-12 oz (0)	Use sticky traps (red spheres or yellow rectangles; See source listing in appendix) to monitor population and activity. Apply insecticide when one fly is captured. Check traps twice each week .	Apply sprays when berries begin to turn blue or when flies begin to lay eggs, usually late June. Repeat every 10 days through harvest. Be aware of pre-harvest intervals and other restrictions with repeated sprays. Gution has 48 hr REI for mowing, irrigating, and scouting; and 4 day REI for all other activities Second and additional covers - (10 days from previous cover, repeat as needed).
Second and additional covers (10 days from previous cover, repeat as needed)			
Blueberry maggot	Same as first cover above		See comments above for Blueberry maggot
Japanese Beetle and other scarab beetles	Sevin 50WP, 3 lb (0) Imidan 70W 1.3 lbs (3)	Remove webbed twigs and webworm caterpillars. Remove beetles.	The use of Sevin may result in the build up of aphids due to the elimination of natural predators.
Anthracnose	Aliette WDG, 5 lb (12 hrs) Cabrio EG, 14 oz (0) Captan 50WP, 5 lb (0)		See Captan comments in Petal Fall Section.

Post-harvest

Pest	Spray Material, Rate/A (pre-harvest interval)	Cultural Practices and Scouting Notes	Comments
Sharp-nosed leafhopper	*Lannate LV, 1.5 pt (3) Asana XL, 4.8-9.6 oz (14) Malathion 57 EC, 2.8-3.2 pt (1) Sevin 50W, 2-4 lb (0)	Rogue out plants affected with blueberry stunt. Monitor insects with yellow sticky traps and control when found.	Each of these sprays will control sharp-nosed leafhopper, the only known carrier of the blueberry stunt mycoplasma.
Blueberry bud mite	Thiodan 3EC, 2 qt (**) Phaser 3EC, 2 qt (**)		Apply immediately after harvest is complete and repeat according to label instructions. ** Do not apply Thiodan or Phaser after buds are well formed; do not apply more than 2 times per year; do not exceed 3.0 lbs active ingredient per acre per year.
Phomopsis twig blight	Lime Sulfur, 5 gal (0)		Apply in late October or when 2/3 of leaves drop on Weymouth and Berkeley.

[†]Where brand names for chemicals are used, it is for the reader's information. No endorsement is implied, nor is discrimination intended against products with similar ingredients. Please consult pesticide product labels for rates, application instructions and safety precautions. Users of these products assume all associated risks.

* Restricted use material; pesticide applicator license required.

Weed Management

The primary goal of weed management is to optimize yields by minimizing competition between the weeds and the crop. Weeds reduce yields by competing with the crop for water, light, and nutrients. Weeds also harbor insects and diseases and encourage vertebrate pests. Timely cultivation, wise use of herbicides, and never permitting weeds to go to seed are integral parts of a good weed management system. Many of the weeds found in these fields are difficult-to-control perennial weeds that are not common in annual crop culture. New plantings usually have fewer perennial weed problems than older plantings. Annual and biennial weeds can also exist in these fields. Fields should be scouted at least twice a year (spring and fall) to determine specific weed problems. The selection of a weed management tool should be based on specific weeds present in each field. Several herbicides are labeled for use in this crop. A list of herbicides and their recommended uses is presented in Table 31 below.

Herbicides can be broadcast or applied as a directed spray to the base of the crop. With a band

treatment, only 1 to 2 feet on either side of the row is treated. The areas between the crop row is usually maintained with a mowed cover of sod, clover, weeds, or a combination of these. This cover is used primarily for erosion control and to improve trafficability in the field. With banding, less herbicide is needed in each acre. For example, a 3 foot band (1.5 feet on either side of the row) where rows are spaced 9 feet apart will require only one third the amount of herbicide normally required for a broadcast treatment.

Cultivation and mulching are sometimes used as weed management tools. All cultivations should be timely and shallow to minimize crop root injury, to minimize loss of soil moisture, and to avoid repositioning new weed seeds to the soil surface. Mulches that are free of weed seeds and placed thickly enough can be very effective at reducing or eliminating most annual weeds from the crop row. They are seldom effective on perennial weeds. If mulches are used in combination with herbicides, use the lowest recommended herbicide rate to avoid crop injury.