
Cane Insect Pests

Cane Borers : Raspberries are attacked by two types of cane borers. The *raspberry cane borer* is a 1/2" long, slender black beetle with an orange band just below the head and has long antennae. The female beetles girdle the tips of young raspberry canes by chewing two rings, about a half inch apart, around the stems about 3 to 6" below the top. An egg is inserted into the cane between the two girdled rings. When the larvae, or grubs, emerge, they feed inside the cane, tunneling downward, and eventually destroying the cane. Soon after the cane tips are girdled, they wilt, blacken, and may fall off.

Management: As soon as the wilted tips are noticed, they should be cut off, several inches below the lowest girdle mark. Remove the infested tips from the field and destroy them. Also eliminate any wild brambles near the field which may be harboring this pest.

The *red necked cane borer* is 1/4" long, slender, black with a "coppery" neck. Unlike the raspberry cane borer, it has short antennae. The red necked cane borer also causes a different sort of damage. The females insert an egg into young canes, usually within 10" of the base of the cane. They do not

girdle the cane, but the presence of the egg, and later the grub, causes a swelling in the cane which can vary in length from 1/2" to nearly 3". These canes become weakened and may break off.

Root and Crown Insect Pests

Raspberry Crown Borer (*Bembica marginata*):

The adult phase of raspberry crown borer is an attractive clear-winged moth which resembles a wasp. These moths lay eggs on the underside of raspberry leaves in late July and August. When the eggs hatch, the young larvae crawl down the cane and into the soil to overwinter. The following spring, they bore into the base of the raspberry canes and feed on the plant tissue. This feeding interrupts the flow of water and nutrients to the cane, causing them to wilt and become weak and spindly. Early symptoms may include browning of the leaf margins on new canes. Eventually, the entire crown may die.

Management: If this insect is noticed in the field, it can be controlled by drenching around the base of the plants with diazinon in the spring before bud break, or with Sniper™ before harvest. Elimination of all wild brambles in the area can also reduce local populations of this pest.

Table 37. Bramble pest management schedule†.

Early spring, prior to bud swell

Pest	Spray Material, Rate/A (pre-harvest interval)	Cultural Practices and Scouting Notes	Comments
Phytophthora root rot	Ridomil Gold EC, 1/4 pt/1000 linear ft. (45) Ridomil Gold GR, 5 lb/1000 linear ft. (45) Aliette 80 WDG, 5 lb (60)	Plant only in well-drained soils. Planting on raised beds also significantly reduces Phytophthora incidence. Cultivars 'Latham' and 'Newburgh' appear to be somewhat resistant.	Apply Ridomil in 3 ft wide band over the row in early fall; repeat in early spring before growth begins. Apply Aliette in sufficient water to thoroughly wet the foliage. Begin foliar sprays in the spring after bud break and continue spraying on a 45-60 day schedule up to a maximum of 4 sprays during the growing season.
Crown borers	Diazinon AG500, 2 qt (7) *Sniper 2E, 4-8pt (4)		Apply Diazinon as heavy drench to base of canes before bud break. Apply Sniper as heavy drench before harvest.

Early spring to bud swell

Anthracnose Spur blight Cane blight	Lime sulfur, 10-20 gal (0) Kocide 101, 4 lb (0) Cabrio EG, 14 oz (0)	Prune out all canes which have fruited, thin remaining canes to only 3 to 4 per foot of row. Plant rows should be no wider than 2 feet. Remove and destroy all prunings and diseased canes.	DO NOT apply after buds are 1/2 inch long or plant damage will result. Cabrio Fungicide is labeled for Anthracnose and spur blight. Only 4 applications allowed per season, NO MORE than 2 sequential applications.
---	--	---	---

Table 37 continued. Bramble pest management schedule[†].

New cane emergence			
Pest	Spray Material, Rate/A (pre-harvest interval)	Cultural Practices and Scouting Notes	Comments
Anthracnose Spur blight	Cabrio EG, 14 oz (0)		Apply when new canes are 6-8 inches tall, repeat when canes are 12-15 inches tall. Cabrio may only have 4 applications per season and no more than 2 sequential applications.
Pre-bloom to initiation of bloom			
Raspberry fruit worm	Pyrellin EC, 1 – 2 pt (0) Sevin XLR Plus, 2 qt (7) Aza-direct, 11.5-42 oz (0)	Keep planting free of weeds.	Apply to foliage when blossom buds separate and again when blossoms just begin to open. Do not spray insecticides during bloom.
Tarnished plant bug	Sevin XLR Plus, 1.5-2 qt (7) Pyrenone Crop Spray 0.5EC, 2-12 oz (0) Aza-direct, 11.5-42 oz (0)	Keep planting free of weeds. See description of sampling procedures in the description of TPB in the text. Adults migrate to fruit when adjacent fields are mowed.	Apply pre-bloom if adults found in planting, but avoid insecticide sprays during bloom. Apply sprays in evening.
Strawberry bud weevil	Pyrenone Crop Spray 0.5EC, 2-12 oz (0) Sevin XLR Plus, 1-2 qt (7) Aza-direct, 12.5-42 oz (0)	Scout planting for live adult weevils or clipped buds, especially at edges near woods and hedgerows.	Spraying late in the day may be more effective than morning sprays.
Cane borers	Pyrellin EC, 1-2 pt (0.5)	Cut off infested tips below girdle marks, remove canes showing swellings.	Cultural practices are the most important control measures. If an outbreak occurs, direct insecticide spray at lower foliage of canes. Keep insecticide off blooms and fruiting shoots.
Japanese beetle	Sevin XLR Plus, 1-2 qt (7) Malathion 57EC, 1.5 pt (1) Pyrenone Crop Spray 0.5EC, 2-12 oz (0) Aza-direct, 12.5-42 oz (0) Surround WP, 12.5-50 (0)	Traps may reduce populations. Place traps at least 50 feet away from planting.	Apply spray only if beetles are present. Check labels for specific restrictions. Surround labeled for suppression of Japanese Beetle only on fruit to be used for processing. Must maintain good film to maximize benefits.
Aphids	Guthion Solupak, 5/8 - 1 lb (14) Malathion 57EC, 3 pt (1) *Sniper 2E, 1 1/4 - 2 pt (14) Pyrenone Crop Spray 0.5EC, 2-12 oz (0) Aza-direct, 11.5-42 oz (0)	Lady bird beetles can devour great numbers of aphids. These beneficial insects should be conserved by using insecticides only when necessary and by using recommended rates. Contact your local Extension Specialist for help locating sources of beneficial insects. Guthion has 48 hr REI for mowing, irrigating, and scouting; and 4 day REI for all other activities.	
Orange Rust	Nova 40W, 2.5 oz(0)		Spray while orange pustules are visible, on a 10-14 day schedule until temps are >75°F.

Pest	Spray Material, Rate/A (pre-harvest interval)	Cultural Practices and Scouting Notes	Comments
Bloom—do not apply insecticides during bloom			
<i>Botrytis</i> fruit rot (gray mold)	Rovral 50WP, 1-2 lb (0) Ronilan DF, 2 lb (9) Elevate 50WDG, 1.5 lb (0)	Space rows at least 8 feet apart, prune canes to a density of 3 to 4 canes per sq. ft. to improve air circulation.	Apply most fungicides at 5% bloom and again at full bloom. Repeat application only if weather is wet. Overuse of these materials may result in the development of resistance in the fungus. Ronilan application limited to no more than 8 lb per season. Elevate allowed by supplemental label (EPA reg. no. 66330-35). Begin applications at 10% bloom and continue as needed through harvest, avoiding 2 consecutive applications.
Fruiting			
Tarnished plant bug	Same as pre-bloom application	See pre-bloom section	See pre-bloom section
Sap beetles	Malathion 57 EC, 1.5 - 2 pt, (1) Pyrethrin Crop Spray 0.5EC, 2-12 oz (0) Aza-direct, 12.5-42 oz (0)	Keep planting as clean as possible of over-ripe fruit	Cythion and malathion labeled for raspberry only, not other bramble fruit.
Two-spotted spider mite	*Capture 2 EC, 6.4 oz (3) Savay 50WP, 4-6 oz (3) Aza-direct, 11.5-42 oz (0) Valero, 1-2 gal (0) JMS Stylet Oil, 3-6 qt (0)	Predatory mites may help. Avoid use of pesticides which will kill natural enemies of mites. Contact your local Extension Specialist for sources of predatory mites.	Capture is a restricted use material and may be applied once pre-bloom and once post-bloom. Savay may only be applied once per season. Pre-test Valero for phytotoxicity to specific varieties. JMS Stylet oil should not be sprayed on wet foliage or when temperatures are below 32½F or above 90½F within 48 hrs.
<i>Botrytis</i> fruit rot	Same as bloom application	See bloom section	See bloom section. Check labels for harvest restrictions.
Post harvest and thereafter			
Phytophthora root rot	Ridomil Gold EC, 1/4 pt/1000 linear ft. (45) Ridomil Gold GR, 5 lb/1000 linear ft. (45) Aliette WDG, 5 lb (60)	Plant only in well-drained soils. Planting on raised beds also significantly reduces Phytophthora incidence. Cultivars Latham and Newburgh appear to be somewhat resistant.	Apply Ridomil in 3 ft wide band over the row in early fall; repeat in early spring before growth begins. Apply Aliette in sufficient water to thoroughly wet the foliage. Begin foliar sprays in the spring after bud break and continue spraying on a 45-60 day schedule up to a maximum of 4 sprays during the growing season.
New cane emergence			
Powdery mildew	Microthiol Special, 6-15 lb (0) Kumulus DF, 6 - 12 lb (0) Cabrio EG, 14 oz (0) Nova 40W, 1.25-2.5 oz (0) JMS Stylet Oil, 3-6 qt (0)		Apply spray at 2-4 week intervals when mildew first appears. Apply each week from first bloom to fruit-set. Repeat as weather requires. Nova applications can start @ budbreak and continue @ 10-14 day intervals.

Table 37 continued. Bramble pest management schedule[†].

Pest	Spray Material, Rate/A (pre-harvest interval)	Cultural Practices and Scouting Notes	Comments
Japanese beetle	Same as under pre-bloom section.		
Two-spotted spider mites	Same as under fruiting section.	Contact your local Extension Specialist for help locating sources for beneficial insects.	

[†]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 pesticide; pesticide applicators license required.**

Table 38. Fall bearing (primocane fruiting) bramble pest management schedule[†].

When canes are approximately 18 inches tall			
Pest	Spray Material, Rate/A (pre-harvest interval)	Cultural Practices and Scouting Notes	Comments
Cane borers		Cut off infested tips below girdle marks, remove canes showing swellings	Scout for presence of adults. Adult cane borer activity can occur from early May through early August.
Japanese beetle	Sevin XLR Plus, 1-2 qt (7) Malathion 57EC, 1.5 pt (1) Pyrenone Crop Spray 0.5EC, 2-12 oz (0) Aza-direct, 12.5-42 oz (0) Surround WP, 12.5-50 lb (0)	Traps may reduce populations. Place traps at least 50 feet away from planting.	Apply spray only if beetles are present. Check labels for specific restrictions.
From petal-fall through the beginning of harvest			
Sap beetles	Malathion 57 EC, 1.5 - 2 pt, (1) Aza-direct 12.5 - 42 oz (0)	Keep planting clean of over-ripe fruit	Malathion labeled for raspberry only, not other bramble fruit.
Tarnished plant bug	Sevin XLR Plus, 1.5-2 qt (7) Pyrenone Crop Spray 0.5EC, 2-12 oz (0) Aza-direct 12.5 - 42 oz (0)	Keep planting free of weeds. Action threshold for nymphs or adults is when 10-20% of canes are infested. Adults migrate to fruit when adjacent fields are mowed.	Apply pre-bloom if adults found in planting, but avoid insecticide spays during bloom. Apply sprays in evening.