

Diseases

Anthracnose (*Elsinoe veneta*)

Damage

This disease may cause considerable cane damage in some years, especially if weather remains wet into late spring. Infections that occur early in the season are more damaging than those that occur later. Uneven berry ripening may result from infected canes.

Symptoms

The first symptoms are small, purplish, circular patches on the cane. As the patches enlarge, the central portion takes on a greyish colour and becomes sunken and cracked. Margins become raised and purplish. The damaged patches are often so close together that they merge, forming large, irregular areas. Canes can eventually be girdled and die.

Disease Cycle

Anthracnose is caused by a fungus. Spores are produced in the small black bodies which form in the grey patches in the fall. In the spring, splashing rain carries the spores to new shoots, leaves or fruit, where infection takes place.

Monitoring

Watch for sunken grey areas with purple raised margins on canes during late spring. The cane is most commonly infected from 15 to 75 cm (6 to 30 in) above the ground.

Management

Cultural control

Cultural practices usually give adequate control. Avoid thick plantings. Do not apply excessive nitrogen. Prune out canes with symptoms of the disease. Prune out surplus canes during the growing season and old canes after harvest. Burn or bury old canes.

Biological control

None.

Chemical control

Where anthracnose has been a problem, apply:

Bordeaux Mixture (8-8-100) at the late dormant or delayed dormant (green tip) stage. Apply when foliage is dry. Refer to "Bordeaux Mixture" in the "[Pest Management](#)" section of this guide for mixing directions.

Tanos 50 DF (25% famoxadone, 25% cymoxanil) at 840 g/ha (335 g/acre) in sufficient water volume to ensure thorough coverage of the crop. Do not apply more than 3 times per year. At least 12 days must pass

between the first and second applications. At least 24 days must pass between the second and third applications. Do not re-enter fields within 9 days of application. Do not apply within 9 days of harvest; or

Note: Tanos 50 DF contains a Group 11 and a Group 27 fungicide. To delay fungicide resistance do not apply Tanos or other Group 11 or Group 27 fungicides more than twice in succession. Alternate with fungicides from other groups

Ferbam 76 WDG (76% Ferbam) at 3.75 kg/ha (1.5 kg/acre) as a delayed dormant (green-tip) spray. Apply in sufficient water for thorough coverage of all plant parts. Additional applications may be made using 2.0 to 2.5 kg in 1000 L of water when new canes are 25 to 30 cm tall, a third spray just before bloom, and immediately after harvest. Do not apply after berries start to form; or

Note: Ferbam is not acceptable for some markets. Check with your packer before using.

Pristine WG (25.2 % boscalid, 12.8 % pyraclostrobin) at 1.3 to 1.6 kg/ha (0.52 to 0.64 kg/acre) in enough water to obtain good coverage. Apply beginning at early bloom. Spray in rotation with other fungicides on a 7 to 14 day schedule. Use the shorter interval when disease pressure is high. Do not apply more than 4 times per crop per season. Do not apply Pristine or other products containing Group 7 or 11 fungicides more than twice in succession. Do not re-enter treated fields for hand harvesting within 24 hours of application. If mechanical harvesting, application can be made up to the day of harvest

Note: Lime sulphur, applied as a delayed dormant (green tip stage) spray to control redberry mites on blackberries, may help control anthracnose.

Crown Gall (*Agrobacterium tumefaciens*)

Damage

A potentially very serious bacterial disease on blackberries that can be native in the soil or brought into a field with infected planting stock. It is vital that only plants free of crown gall be planted. Varieties vary in their degree of susceptibility to crown gall—Loch Ness appears to be highly susceptible.

Management

See "[Raspberry-Crown Gall](#)" for further information on the disease organism and its control.

Downy Mildew (Dry Berry) (*Peronospora sparsa*)

Damage

The primary damage is a dry berry symptom, which is more prevalent following warm (18 to 22°C), wet weather during fruit development. 'Triple Crown and 'Loch Ness' are susceptible blackberry varieties.

Symptoms

Leaf symptoms are not usually very obvious. Systemic infections appear in spring on new growth as small red spots extending along the veins together with severe leaf distortion. Local leaf infections appear as patches on the upper surface that start as a yellow colour and become burgundy red with a brown border. Infected fruit

becomes dry and shrivelled, hence the name 'dry berry'. Berries may split and appear to be two berries on one stem. Fruit stems become dry and may appear red on one or more sides. The dry berry symptom may also be caused by sunburn, the dry berry mite and various other fungi.

Disease Cycle

The organism is fungus-like, and is related to the water mold group, which includes Phytophthora, a common cause of root rot. The downy mildew organism may survive within the plant from year to year in roots, crowns and canes. It may also be present in infected nursery stock. New stems and emerging leaves are infected as they develop. During cool, wet nights, infected leaves on primocanes and fruiting laterals produce spores which are spread by wind to new leaves, flowers and developing berries. The thick foliage at the base of the plant may create the moist environment required for sporulation. The organism can also infect and survive on rose and wild blackberry. Spores from these plants can infect cultivated blackberry.

Monitoring

Infected leaves on primocanes are the first sites for spore production. Look for systemic infections on the new growth in spring. Spores are produced on the underside of leaves, under the red spots. Initially the spore masses appear white, but they turn grey as they age.

Management

Cultural control

Try to obtain disease free planting stock. Keep roses and wild blackberries away from the crop. Remove suckers early to reduce spore production potential. Control weeds. Remove and destroy old fruiting canes immediately after harvest.

Biological control

None.

Chemical control

None are registered. However, the spring applications of Aliette for root rot will provide some control of downy mildew.

Fruit Rot (*Botrytis cinerea*)

See "[Raspberry-Fruit Rot](#)" for details on the disease organism and the symptoms it causes.

Management

Cultural control

Train canes for an open canopy to promote good air circulation. Avoid excessive nitrogen fertilization. Time overhead irrigation so plants dry as quickly as possible. Cool harvested fruit as quickly as possible.

Biological control

None.

Chemical control

At least three sprays are recommended. Start when the blossoms first open and repeat at 7- to 10-day intervals. Where there are no spray volume per hectare recommendations on the label, apply from 1000 to 1500 L/ha (400 to 600 L/acre). Use the higher rate where the density of foliage and/or plant vigour is high. Rotate sprays from the different chemical groups below to delay development of fungicide resistance.

Apply:

Group M

Maestro 80DF (80% captan) at 2.25 kg/ha (0.9 kg/acre) Do not apply more often than every 7 days. Do not re-enter fields within 72 hours of application unless protective clothing is worn. For hand harvesting, do not apply within 3 days of harvest. For machine harvest, do not apply within 2 days of harvest; or

Captan 80 WDG (80% captan) at 2.0 kg in 1000 L of water/ha (0.9 kg in 400 L/acre). Do not apply more often than every 7 days. Do not re-enter treated fields within 72 hours of application. Do not apply within 2 days of harvest; or

Captan 50 WP (50% captan) at 3.6 kg/1000 L of water/ha (1.44 kg in 400 L/acre). Do not re-enter treated fields within 72 hours of application. Do not apply within 2 days of harvest; or

Group 7

Cantus WDG (70% boscalid) at 560 g/ha (224 g/acre) in enough water to obtain good coverage. Apply beginning at early bloom. Spray in rotation with other fungicides on a 7 to 14 day schedule. Use the shorter interval when disease pressure is high. Do not apply more than 4 times per crop per season. Do not apply Lance, Cantus or other Group 7 fungicides more than twice in succession. Lance or Cantus can be applied up to the day of harvest; or

Sercadis (300 g/L fluxapyroxad) at 250-666 mL/ha (100-266 mL/acre) in enough water to obtain good coverage. Apply beginning at early bloom, prior to onset of disease development. Spray in rotation with fungicides from other groups on a 7 to 14 day schedule. Use the shorter spray interval when disease pressure is high. Do not apply more than 3 times per crop season. Can be applied up until the day of harvest; or

Note: Sercadis will only provide suppression of Botrytis

Group 7/9

Luna Tranquility (125 g/L fluopyram, 375 g/L pyrimethanil) at 1200 ml/ha (486 ml/acre) in a minimum of 500 L/ha (202 L/acre) of water. Begin applications in early bloom or when conditions are conducive to Botrytis and repeat as required at 7 to 10 day intervals. Do not apply more than twice per crop per season for Botrytis. Can be applied up until the day of harvest; or

Group 7/11

Pristine WG (25.2 % boscalid, 12.8 % pyraclostrobin) at 1.3 to 1.6 kg/ha (0.52 to 0.64 kg/acre) in enough water to obtain good coverage. Apply beginning at early bloom. Spray in rotation with other fungicides on a 7 to 14 day schedule. Use the shorter interval when disease pressure is high. Do not apply more than 4 times per crop per season. Do not apply Pristine or other products containing Group 7 or 11 fungicides more than twice in succession. Do not re-enter treated fields for hand harvesting within 24 hours of application. If mechanical harvesting, application can be made up to the day of harvest; or

Group 9/12

Switch 62.5 WG (37.5% cyprodinil, 25% fludioxinil) at 775 to 975 g/ha (310 to 390 g/acre) in enough water to obtain good coverage (500 to 1000 L/ha (200 to 400 L/acre)). Apply when conditions are favourable for disease development. Do not apply Switch more than twice in succession. Alternate with fungicides from other groups. Do not apply within 1 day of harvest; or

Group 9/12

Tanos 50 DF (25% famoxadone, 25% cymoxanil) at 840 g/ha (335 g/acre) in sufficient water volume to ensure thorough coverage of the crop. Do not apply more than 3 times per year. At least 12 days must pass between the first and second applications. At least 24 days must pass between the second and third applications. Do not re-enter fields within 9 days of application. Do not apply within 9 days of harvest;

Group 17

Elevate 50 WDG (50% fenhexamid) at 1.7 kg/ha (0.7 kg/acre) in enough water (up to 1000 L/ha) to obtain good coverage. Apply up to 4 times per season beginning at early bloom. Do not make more than two consecutive applications of Elevate. It should be alternated with fungicides from other groups to prevent development of resistance. Do not apply within 1 day of harvest; or

BioFungicides

Serenade Opti (QST 713 strain-Bacillus subtilis) at 1.7.0 to 3.3 kg/ha (0.68 to 1.32 kg/acre). Begin applications at the first sign of disease or when conditions favour disease development. Repeat as necessary on a 7-10 day interval. Serenade may be applied up to and including the day of harvest

Serenade Max no longer produced

Leaf and Cane Spot (Septoria rubi)**Symptoms**

The symptoms and life cycle of this disease are almost identical to anthracnose, but are caused by a different fungus. The lesions caused by Septoria are circular, while those of anthracnose are usually irregular in shape.

Disease Cycle

Spore-producing structures are produced on old leaves and infected canes. They are released in the spring during rainy periods and cause new infections on leaves and canes.

Monitoring

Watch for development of spots on leaves and canes in the spring. Examine canes during the winter to estimate disease levels. Look for black pinpoint size structures within whitish spots surrounded by a reddish-brown border.

Management

Cultural control

Canes grown with alternate year fruiting programs are not usually affected by leaf and cane spot if canes are trained up as they grow. Remove old canes after harvest. Train canes early (after harvest) or wait until late spring.

Keep weeds controlled to ensure good air movement around canes.

Biological control

None.

Chemical control

Delayed dormant (green-tip) stage:

Lime sulphur, applied as a spray to control redberry mites on blackberries, may help control leaf and cane blights.

Apply when first blossom buds separate:

Captan and Maestro as applied for fruit rot control will also suppress Septoria. Apply before heavy rains start in the fall (early October):

Bordeaux Mixture (8-8-100) Apply when foliage is dry. Refer to "Bordeaux Mixture" in the "[Pest Management](#)" section in this guide for mixing directions.

Sercadis (300 g/L fluxapyroxad) at 250-666 mL/ha (100-266 mL/acre) in enough water to obtain good coverage. Apply prior to onset of disease development. Spray in rotation with fungicides from other groups on a 7 to 14 day schedule. Use the shorter spray interval when disease pressure is high. Do not apply more than 3 times per crop season. Can be applied up until the day of harvest.

Nematodes

Nematodes are microscopic worms invisible to the naked eye. When present in great number, they greatly reduce the vigour of caneberries by feeding upon the plant roots.

Management

Refer to "[Nematodes](#)" in the raspberry and the "General Berry Pests" sections of this guide, for more information.

Root Rot

Damage

Root rot is not a major problem in blackberry. See "[Raspberry - Root Rot](#)" for further details on the disease.

Management

Cultural control

Obtain plants only from plantings free of root rot and set them out in fertile well-drained soils. Plant on raised beds to reduce damage. Control nematodes as their activity increases root rot losses. Avoid applying high levels of nitrogen to plants infected with root rot. The nitrogen encourages excess leaf and shoot growth, and the damaged roots will not be able to supply enough water to the plants. Subsoil between the rows in October to improve drainage.

Biological control

None.

Chemical control

Where control is necessary, apply:

Foliar application:

Aliette WDG (80% fosetyl-Al) at 5.5 kg/ha (2.2 kg/acre) in a minimum of 200-1000 L/ha of water (80-400 L/acre). For spring applications, apply the first spray after bud break at 7 cm new growth and again 3–4 weeks later. For fall applications apply when conditions favour disease development (high soil moisture and cool temperatures) and then repeat if necessary 3–4 weeks later. Make the last fall application at least 30 days before leaf drop. Do not make more than 4 applications per year - 2 in the spring and 2 in the fall. Aliette is systemic. The product moves down from the leaves to the roots. Do not apply within 60 days of harvest.

Drench:

Torrent 400SC (400 g/L cyazofamid) at 0.25 L/ha in 1000 L/ha of water (101 ml/acre in 405 L/acre of water) as a soil drench. One application can be made in the fall and one application can be made in the spring. Do not use a surfactant with this drench. Do not apply within 90 days of harvest, or

Orondis (100 g/L Oxathiopiprolin) at 1.3 to 2.8 L/ha (0.5 to 1.1 L/acre). Directly apply to soil with a banded drench application at a minimum of 200 L/ha, continue on a 7-14 days interval. Follow by sprinkler or drip irrigation within 24 hours to adequately distribute the product to the root zone. Use 1-2 applications at 7-14 days apart in spring and 1-2 applications at 7-14 days apart during fall. Do not make more than 4 applications per year. Do not apply within 1 day of harvest.

Spur Blight (*Didymella applanata*)

For information and control of this disease, see "[Raspberry - Spur Blight](#)".