



# BLUEBERRY IPM

## Growth Stages



Bud Break



Pink Tip



Bloom



Green Berry



Ripe Berry

Botrytis infection of green berry. Infection starts on dead flower which has remained attached during wet weather.

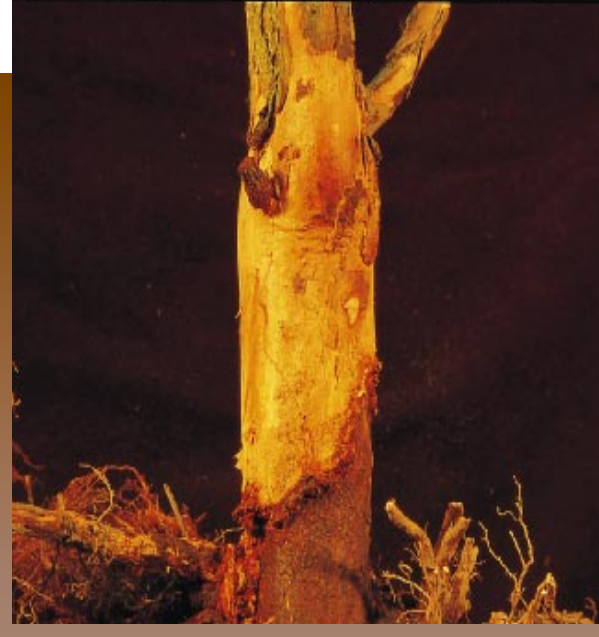


Crown gall.

## Root/Crown/Soil Disorders



Mummy berry. Mummies producing cups which shoot primary spores into the air to infect opening buds.



Girdling of crown caused by field mice.



Phytophthora root rot.



Mummy berry. Mummies that have dropped to the ground to overwinter.



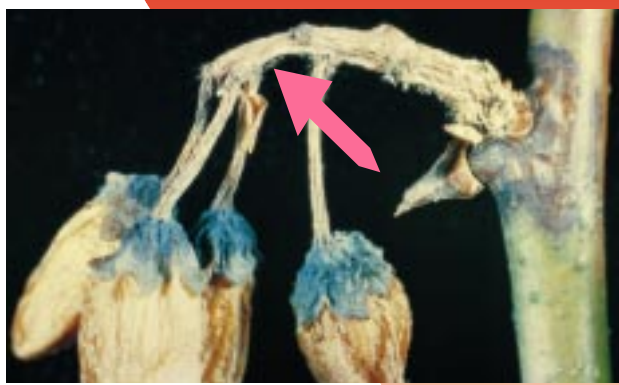
Weevil—adult and grub. Grubs feed on, and girdle roots. Photo courtesy of D. Raworth, PARC



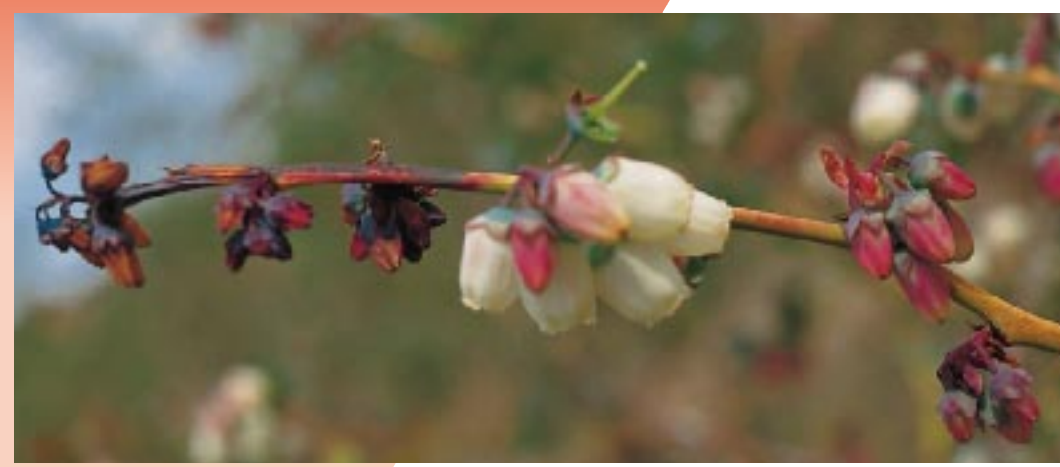
Actual size

Actual size

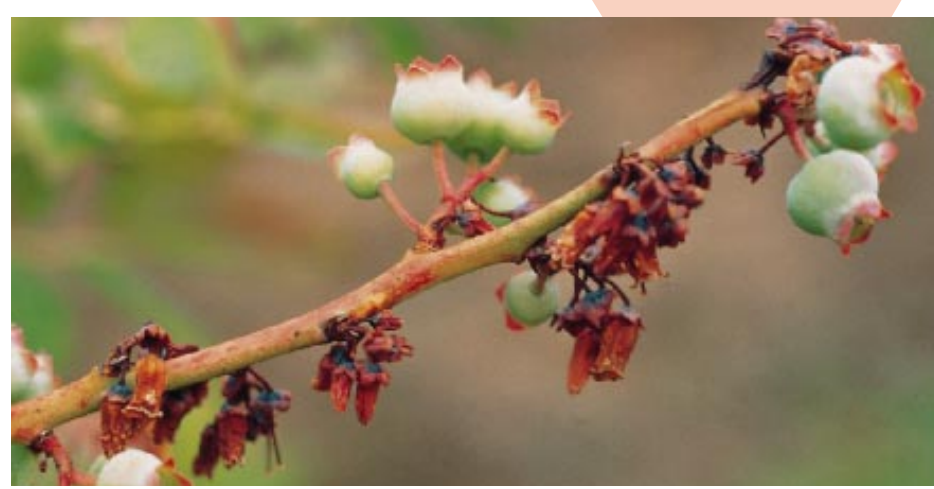
## Flower Disorders



Mummy berry. Infected flower buds producing secondary spores (arrow) that will infect open flowers.



Bacterial blight infection of new buds (*Pseudomonas* sp.). May be associated with frost injury.

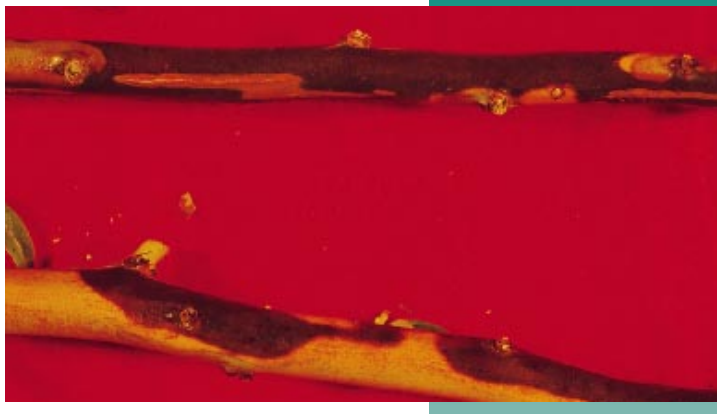


Blossom blighting from blueberry scorch virus. Blueberry shock ilarvirus can cause similar symptoms. Photo courtesy of Dr. R. Martin, USDA, Corvallis, OR

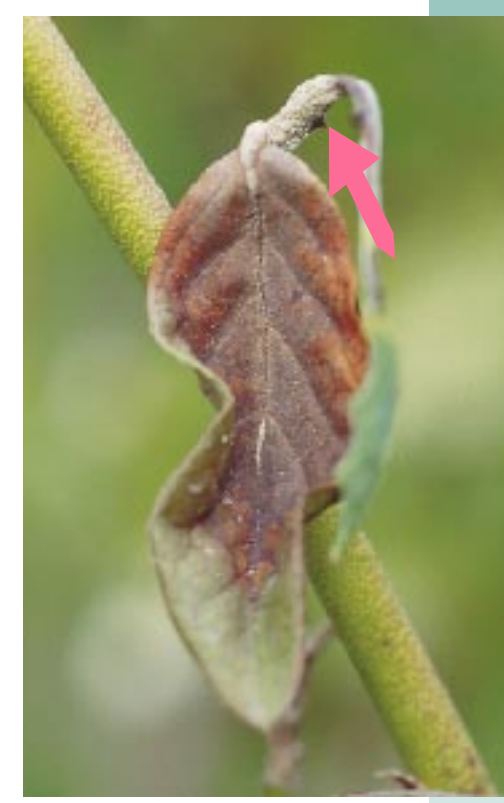


Leafroller caterpillar. Found in rolled leaves. Photo courtesy of S. Fitzpatrick, PARC

Actual size



Bacterial blight (*Pseudomonas* sp.) infection on one year old wood.



Mummy berry infected leaf. The fungus is producing secondary spores (arrow) that will infect open flowers.

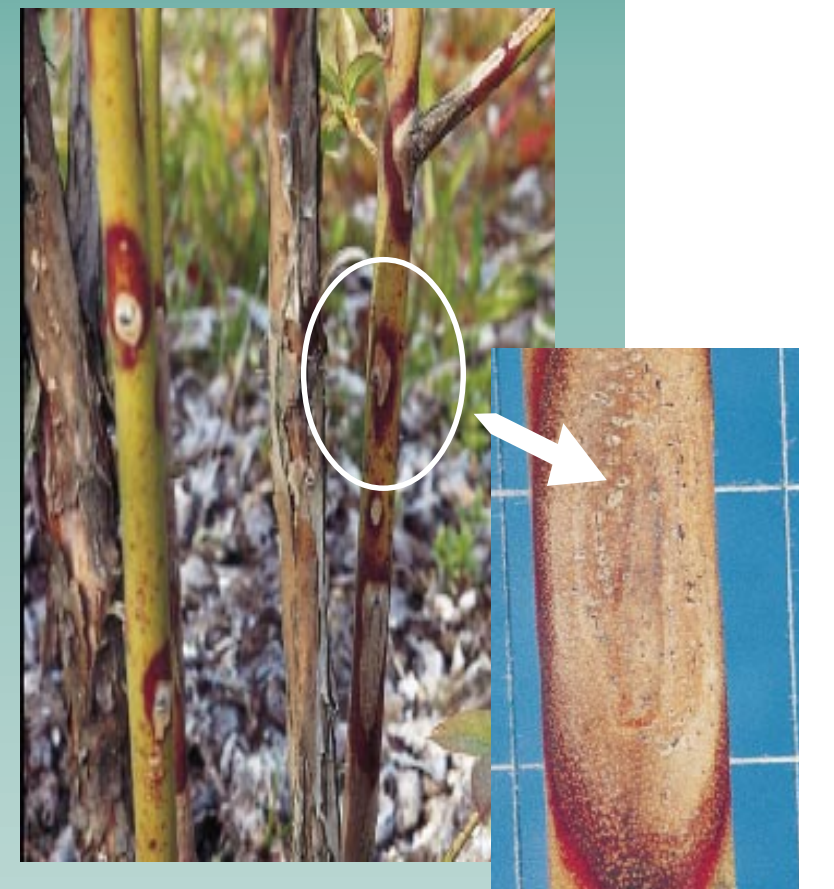
## Stem/Foliar Disorders



Flagging symptom which appears when the cane is girdled. May be caused by Godronia canker, crown gall, weevil damage, bacterial blight or mechanical damage.



Spanworm caterpillars. Feed inside bud, flower and fruit clusters. Photo courtesy of S. Fitzpatrick, PARC



Godronia canker, with typical infections at leaf scars.

Close-up of Godronia canker showing small black pustules which contain numerous spores.



Lecanium scale insects on twig.

## Fruit Disorders



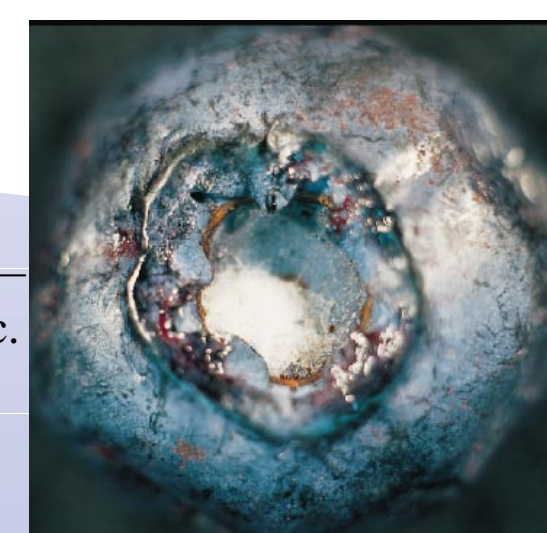
Mummy berry. Infected fruit.



Alternaria fruit rot. Fruit surface has a fuzzy, greenish-black mould.



Anthracnose fruit rot. Close-up of orange spore masses. Photo courtesy of Dr. P. Bristow, WSU, Puyallup, WA



Calyx contaminant—spider egg sac. Photo courtesy of S. Fitzpatrick, PARC

## Fruit Contaminants



Snail.

## Natural Beneficials



Ladybird beetle—eggs. Photo courtesy of D. Raworth, PARC



Syrphid larva. Feeds on aphids, usually July and August.



Swollen shiny aphids contain developing parasites.



Ladybird beetle—larva. Feeds on aphids. Actual size to [red bar]



Ladybird beetle—adult. Feeds on aphids. Photo courtesy of D. Raworth, PARC

Actual size



Ground beetle. Feeds on weevil grubs, leatherjackets, and slugs. Photo courtesy of D. Raworth, PARC