



## POP Apple Scouting Guide

### APPLE PLANT DISEASES

#### APPLE SCAB



- Fungal disease from *Venturia inaequalis*
- First signs are dull velvety olive green lesions appearing on underside of leaves
- Often begins in springtime and last through into summer when fungal spores from leaf litter travel on wind and infect nearby trees at any point of season
- Fruit lesions are distinct, almost circular, rough-surfaced, olive-green or brown spots up to ¾ inch in diameter.
- Heavily infected fruits are often misshapen, crack and drop prematurely.
- Fruit may show signs postharvest
- Overwinters on fallen infected leaves

#### BLACK ROT



- Fungal disease from *Botryosphaeria obtusa*
- Results in leaf spot, fruit rot, and cankers
- First signs are small, purple spots on upper surfaces of leaves and enlarging into circles
- Infected leaves develop “frog-eye” leafspot - circular lesions with purplish or reddish outer borders and light tan interiors
- Fruit rot usually appears at the calyx end, but can originate at any wound. There is usually one spot per fruit,
- In fruit, rotten tissue appears brown and black with concentric rings, eventually completely decays, dries, and shrivels
- Fungus overwinters in fruiting bodies on dead bark, dead twigs, and mummified fruit.



#### BITTER ROT



- Fungal disease from *Colletotrichum gloeosporioides* and *C. acutatum*.
- Affects apples, pears, causes anthracnose in other produce and ripe rot on grapes
- Only affects fruit, penetrates intact skin
- Mature fruit affected in July and August
- Starts as small lights brown spot that grows quickly in high temps and humidity
- Sunken lesions spore, rain spreads fungus
- Cutting into lesion reveals a brown cone
- Overwinter in mummies, cracks in bark, cankers, and jagged ends of broken limbs

#### CEDAR APPLE RUST



- Fungal disease from *Gymnosporangium*
- Bright orange, slightly raised lesions on leaves begin as pale yellow spots
- Orange spore “horns” form in the center of maturing leaf spots
- Fruit spots appear on calyx, do not extend deep down into the fruit, cause deformation
- Overwinters in galls on Juniperous hosts that spore showy orange tails in spring





### APPLE PLANT DISEASES

#### SOOTY BLOTCH AND FLYSPECK



- Fungal infection by *Gloeodes pomigena* and *Zygothiala jamaicensis* respectively
- Cloudy blotches with indefinite borders, and small, black, shiny dots in groups
- A surface disease only, may be rubbed off
- Favored by long periods of high temps, frequent rain, and high humidity
- Requires surface water to infect
- Both fungus often appears with together
- Overwinters on twigs of many plants



#### FIRE BLIGHT



- Bacterial disease from *Erwinia amylovora*
- Leaves begin to die at terminal end of new wood, gradually spreading further
- End of branches bend over
- Leaves first appear green-grey then turn brown, appearing 'scorched'
- Sticky honey-colored drops of bacterial ooze seep from branches, fruit, leaves
- Can kill tree if not treated
- Overwinters in living tissue at the base of spurs or shoots killed the previous season.



#### POWDERY MILDEW



- Fungal infection from *Sphaerotheca pannosa*
- First appears as round, whitish spots 2-4 weeks after fruit set, which enlarge
- As pit hardens, fruit beneath fungus turns pink. Skin becomes hard, brown & cracked
- Fungus distorts leaves
- Overwinters in twigs and fallen leaves

#### BITTER PIT



- Non-pathological condition induced by calcium deficiency
- Sunken dark spots appear on the fruit
- About .5 cm in diameter
- Corky flesh when cut open



**APPLE PEST AND INSECT DAMAGE**

**FLATHEADED APPLE TREE BORER**



- Adult beetles are ½ inch bullet shaped with a flattened, dark green-bronze body.
- Larvae are cream-colored, with a large flattened front thorax & black mouthparts.
- Adults overwinter in tree, emerge in early May and lay eggs on bark into July
- Larva chew directly through the egg into cambium and tunnel an upward spiral
- Full-grown larvae tunnel into heartwood and overwinter in protected galleries.
- Indications: darkened, sunken, greasy looking bark, girdled or disfigured trunk, callus rolls and gnarled scars, 3/16 inch, D-shaped exit holes, and white, frothy sap oozes from cracks

**ROUND HEADED APPLE TREE BORER**



- Beetles are light brown with two white stripes, emerge mid-June leaving a circular exit hole and lay eggs through August.
- Females lay eggs in slits at the base of stems.
- Larvae feed beneath bark of the stem for the first year, then on inner bark and sapwood for two to three years creating large tunnels
- Larva overwinter and pupate in heartwood. .
- Evidence: reddish-brown sawdust near tunnel, sunken dark bark and oozing sap
- Larvae overwinter inside the trunk through 3-4 seasons, adults emerge in spring
- Borer-infested trees grow slowly, have sparse foliage, and death may result

**CODLING MOTH**



- Greyish adult with light grey and copper stripes
- Females lay eggs on fruit or leaves in summer, larvae attack the fruit immediately upon hatching
- Larva ruins fruit burrowing for 3 weeks.
- Overwinters in cocoon under loose bark, soil, or leaf litter at base of tree.
- Adult moth emerges in spring.
- Crumbly brown frass is sometimes found at the hole where the larva exited, usually near the blossom end.



**ORIENTAL FRUIT MOTH**



- Eggs appear as white flat ovals on the undersides of the leaves
- 1st generation larvae bore into growing shoots, causing terminal wilt and die back of new growth in spring, flagging
- Some 2nd, and most 3rd and 4th generation larvae attack fruit leaving a hole found in the side of the fruit with brown goo and powdery substance nearby
- Overwinters as a fully grown larva protected within a silk cocoon located in tree crevices or in orchard ground cover.



APPLE PEST AND INSECT DAMAGE

JAPANESE BEETLE



- 7/16" metallic green beetles with copper-wing coverings
- Eat leaves, leaving only the skeleton
- Can cause damage on the fruit
- Adults emerge and feed on plants beginning in June (life cycle 30-45 days)
- Beetles overwinter in the grub stage in soil
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EUROPEAN RED MITE



- Red or Orange mite with 6-8 legs, depending on life stage
- Eat leaves, which become speckled and bronzed when large populations exist, affecting fruit size and next year's bud set.
- Overwintering eggs are round, bright red, have a small stalk, are laid in groups in cracks, crevices, and around bud scales.
- Summer eggs are pale and translucent
- Hot, dry weather favors development



OBLIQUE BANDED LEAFROLLER



- Native to North America
- Eggs: greenish yellow masses on leaves
- Larvae: yellowish green body with a black head and thoracic shield
- Pupae: dark brown, about a cm in length; usually found in rolled leaves of the tree
- Three feeding periods throughout the year; insects feed on buds, floral parts, and developing fruit



WOOLY APPLE APHID



- Woolly apple aphids are dark purple surrounded by white, cottony, thread-like secretions
- Sucking insect pest that weakens the tree by feeding on limbs and roots
- Colony appears as a cottony mass clustered on wounds and pruning scars and branches
- Droplets of sticky, sugary honeydew on the bark with black sooty mold
- Cankers may be present in infested areas





APPLE PEST AND INSECT DAMAGE

PLUM CURCULIO



- ¼" long dark brown weevil with white patches and four humps on its back
- Appear in orchards during bloom
- Adults make crescent-moon shaped punctures on the fruit to lay eggs and feed
- Pearly white eggs laid in cavity of crescent flap hatch in 7 days and feed on buds, petals and blossoms
- Can cause deformed fruit and premature drop
- Overwinters in nearby brush and soil

STINK BUGS



- Stink bugs feed on the fruit of the tree
- Their piercing mouthparts cause sunken dimpled areas on the fruit or catfacing
- Under these 'dimples,' the flesh is brown and pithy to the core of the fruit
- Eggs are light yellow-red and elliptical with spines forming fine lines on the underside of leaves
- Group of adults overwinter in buildings and protected natural environments



EUROPEAN APPLE SAWFLY



- Wasp-like insects 5/16" in length
- Adults emerge in early bloom
- Eggs are laid on the calyx end of developing fruit
- First larvae tunnels under the skin of fruit resulting in a ribbon-like scar
- Older larva bore into seed core of the fruit
- Injuries on fruit may appear with brownish frass at the entry



TARNISHED PLANT BUG



- Tarnished plant bug adults are ¼" long, oval, green to dark brown flecked with white, yellow, red and black markings
- Piercing-sucking mouthparts
- Feeding causes deep punctures in the fruit which appear as tiny funnel shaped holes
- Causes dimpling to fruit, damages swelling fruit and leaf buds, and causes buds to dry
- Blossoms may never open or be deformed





**APPLE PEST AND INSECT DAMAGE**

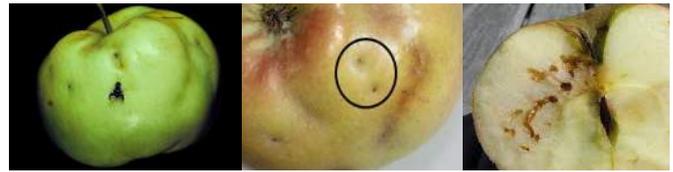
**EASTERN TENT CATERPILLAR**



- Pest caterpillar native to North America
- Can cause defoliation of trees, appear with silken nests in trees
- Eggs hatch in early March
- Caterpillars stay in nest during hot days and rainy weather and come out to feed in early morning and evening



**APPLE MAGGOT**



- The adult fly is black, about the size of a house fly, with three or four white stripes across the body with a prominent white spot in the middle of the back.
- Adult female lays eggs inside fruit producing tiny dimples or spot on skin
- Pale cream colored larvae feed on fruit
- When mature, maggot tunnels out to pupate and overwinter underground
- Adult apple maggots emerge from soil around July 1



**ROSY APPLE APHID**



- Pale cream colored larvae feed on fruit.
- The body of this aphid has a waxy coating and usually a slight purplish or rosy tinge
- Eggs laid on bark turn from bright yellow to green to black, hatch and feed on buds They then suck the sap from leaf stems and newly formed fruits.
- Causes leaves to severely curl, defoliation, decreased vigor, fruit dwarfing, misshaping, and staining.



**TUFTED APPLE BUDMOTH**



- Moth camouflaged, tufted scales on wings
- Light brown to gray larva with brown head, dark shield, and dark stripe down the back
- Deposit mass of eggs on upper leaf surface
- First feeds on leaf midrib. 3rd instar rolls leaves, ties leaves and fruit together, and shelters in fruit clusters.
- Damage: tiny holes, irregular scarring, galling of surface, or rot around the stem.
- Occasionally feed within the seed cavity.
- Overwinters on orchard floor

