Avoid Spray Drift Damage to Ginseng

Jan Schooley—Ginseng and Medicinal Herbs

Windy weather in the spring always brings with it the risk of herbicide drift. If you apply herbicides be aware of the crops around you and take appropriate precautions. Drift from some herbicides may cause necrotic areas on the leaves, loss of chlorophyll and sometimes plant death. Herbicides that contain growth regulator products can be especially damaging to ginseng. Ginseng does not have an aerial growing point. The leaves that emerge in the spring are the only foliage that the plant will have for the entire season. If those leaves are damaged an entire season’s root growth will be lost. Drift damage in a ginseng garden may not have a pattern that resembles drift onto a crop in an open field. Air currents tend to roll under the shade structure and damage can occur in waves or spots well into the garden. Figure 1 shows leaf damage due to growth regulator herbicides on ginseng. Spray drift is not the only source of this type of damage. Foliar fertilizer material that contains cytokinins, such as some seaweed products, will have a similar affect. Cytokinins affect the elongation of the midrib and veins in the leaves and if ginseng leaves are still unfolding they are especially sensitive. Figure 2 shows damage to ginseng leaves from application of foliar fertilizer containing cytokinins.

Figure 1—Growth regulator herbicide injury on ginseng

Figure 2—Damage from cytokinins in foliar seaweed fertilizer on ginseng
Managing Mullein Bug in Apple Orchards  

Kathryn Carter  Pome Fruit IPM Specialist

Mullein bug numbers are extremely high in some apple orchards in Ontario this year. Mullein bugs (Campylomma verbasci) overwinter as an egg inserted into the tree bark. Egg hatch begins at the pink to king bloom stage of Red Delicious and continues until petal fall. During warm weather, egg hatch usually occurs synchronously. The current heat wave may make spray timings easier with this compressed development.

Mullein bug (MB) nymphs (Figure 1) feed on developing flowers and young fruitlets, causing reddish pimples on the fruit. This damage eventually turns brown and becomes corky (Figure 2). Severe blemishes and malformation of the fruit caused by MB decrease the marketability of the fruit. MB are only considered a pest for the 4 weeks before and after bloom. After calyx, MB becomes an important predator feeding on mites and aphids throughout the summer.

Monitoring MB populations is very important at this time of year. Mullein bugs are monitored by tapping the limbs of 25 trees (Figure 3), and recording the number of nymphs present.

Nymphs can be distinguished from other common orchard pests (e.g. aphids, leafhoppers) using a hand lens. MB have pink eyes, aphids always have 2 cornicles (or tail pipes) on their rear (Figure 4), while leafhoppers (Figure 5) have longer and narrower bodies. For more detailed information see http://www.gov.on.ca/OMAF/english/crops/facts/mullein.htm#description

Insecticides for MB are recommended if 7-9 nymphs are found in 25 taps. Admire is the preferred product in IPM programs due to its low impact on beneficial insects. Some growers have reported that Admire did not work as effectively as hoped. Other choices include Diazinon, but it is harsh on beneficial insects. A petal fall application of Assail (another neonicitinoid) to manage other pests may also have some efficacy against MB (although Assail is not registered for MB).
The Gnarled Leaves of Spring
Neil Carter, Tender Fruit and Grape IPM Specialist

Each spring, I receive numerous calls describing gnarled leaves on either peaches or grapes. Pictures emailed to me are even better of course, but usually at this time of year the diagnosis is fairly straightforward.

Peach leaf curl (Figure 1) is showing up now in many orchards, but there is nothing that can be done about the unsightly leaves at this time. Infections by peach leaf curl occurred in young tissue in spring as buds first began to swell. The infected leaves later curl into distorted clumps and turn reddish. Conditions which favour slow plant growth also favour leaf curl infections, so cool wet springs like this one were ideal for infections. One well-timed fungicide application can often control peach leaf curl. A fall spray of Ferbam or Bravo after nearly all the leaves are off the trees is the preferred timing although a spring application can be effective if conditions are good. The weather should favour rapid drying and the temperature in the shade should be above freezing for this spray. Copper is also registered for control of peach leaf curl and may be the preferred choice if bacterial spot is also a problem.

On grapes, two pests can cause the spring gnarled leaves. Grape phylloxera (Figure 2) feeding causes galls to form on grape leaves. These galls may turn red and/or be so prevalent that the leaves fail to expand properly. The tiny insects (phylloxera are a type of plant sucking insect) may be controlled by a well-timed application of Thiodan (endosulfan) but be aware that some grape varieties most preferred by this pest such as Baco Noir are also sensitive to Thiodan. When galls are first noticed, they should be sliced open with a razor daily until the eggs have started to hatch. Only then, when the tiny crawlers are active and moving are they susceptible to an insecticide application. Later in the season the generations of active crawlers are non-synchronous, and insecticides have little effect on the overall infestation.

Grape erineum mite can also cause distortion on grape leaves (Figure 3). These tiny mites are active now and can be found on the underside of grape leaves within the white, hairy patches where the mites live (Figure 4). Usually, little damage results from grape erineum mite, but an early extensive infestation, especially on young vines can produce serious stress on the vine. Sulphur helps control grape erineum mite and its regular use in a rotational disease management strategy usually minimizes the effects of erineum mite.
Apple growers know the cultivar Mutsu (or Crispin) is highly susceptible to the disease Blister Spot. The disease is caused by a bacterium *Pseudomonas syringae pv. papulans* that is present in most orchards. Other cultivars like Golden Delicious, Red Delicious, Jonagold and Cortland are also susceptible to this disease, especially when grown near infected Mutsu trees.

The bacteria overwinter in buds, leaf scars and diseased fruit on the orchard floor from the previous season. Infected buds may appear healthy, but the bacteria multiply during the spring and are rain splashed throughout the orchard. Bacteria can survive and multiply on leaves, wood and weeds in the orchard without causing any disease symptoms. During late spring or early summer, a brief shower can splash bacteria onto the fruit to infect through the fruit pores or lenticels. Fruit are most susceptible from 2-6 weeks after petal fall. Symptoms may not appear until 2-3 months later, but at this time, bacteria can no longer infect the fruit. Initial infections appear as small water-soaked raised blisters associated with the lenticels. The first spots are often near the calyx of fruit from the sun-facing side of the tree. Lesions become purplish black, only expanding to 4-5 mm in diameter, and rarely penetrate the flesh (Figure 1). Lesions do not develop into fruit decay, but several (to 100+) blister spots can occur on a single fruit reducing the quality significantly.

Two products are registered to control Blister spot in Ontario, Aliette WDG and Copper 53W.
- **Aliette WDG** is applied at petal fall, followed by 2 more applications at 7-day intervals. No more than 3 applications of Aliette are allowed per season. Research in New York and Ohio during the mid 1990’s indicate that Aliette will suppress the severity of Blister spot infections under heavy disease pressure. Earlier applications may provide better control; however, the economics of 3 applications may not be justified if only suppression results. Early application at petal fall appears to be the most important.
- **Copper 53W** should be applied not earlier than 10 days after petal fall to reduce injury. Hydrated lime should also be mixed with the copper as a safener. Do not mix Aliette with copper.

For more information consult OMAF Fruit Production Recommendations 2004-2005, Publication 360, page p. 94.
Pear Blossom Blast

Neil Carter, Tender Fruit and Grape IPM Specialist

Pear blossom blast is a disease favoured by cool wet spring weather (unlike fireblight which prefers warm wet weather). Pear blossom blast is a bacterial disease caused by *Pseudomonas syringae*, which is found on the surface of many plants. Cold temperatures or frost around bloom can increase the incidence of blossom blast. The relationship between this bacteria and infection during cold periods is complicated by the fact that the bacteria themselves can act as ice crystal formation sites, causing freeze damage at higher temperatures than would ordinarily be the case. The bacteria may also produce proteins that act as ice nucleation sites increasing frost damage where the bacteria can colonize and infect the tree.

Early symptoms of pear blossom blast can include blackening of the calyx end of developing fruit, blackening of blossom clusters while cluster leaves appear normal, or death of clusters including blossoms and leaves. Twig tips may turn brown black and die, and bark cankers begin as brown, irregular patches (Figure 1) where outer bark later sloughs off. Unlike fireblight, blossom blast seldom extends more than 5 cm from a spur and no bacterial ooze is produced.

Blossom blast infection periods and symptoms generally appear earlier than fireblight would. Hence, streptomycin applications targeted at fireblight will most likely be too late to help reduce blossom blast. Similarly, copper sprays targeted for fireblight would also be too late for blossom blast control. Avoiding frost damage is usually cited as one method to reduce pear blossom blast infections but is not always a very practical solution. However, pruning and destroying any affected tissue does help in lowering the inoculation potential for the future. When in doubt, have infected tissues examined by a qualified lab (like the Pest Diagnostic Clinic in Guelph) or an experienced plant pathologist. Accurate disease identification is the important first step before management measures can be implemented.

Figure 1. Pear blossom blast bark canker.

Planting in Dry Soil and Planting Depth

Elaine Roddy—Vegetable Crop Specialist

Plants in Dry Soils

For the first time in a number of years, we are actually having to deal with dry soil conditions during planting. Here are a few tips to keep in mind when planting into drying soils.

1. Reduce the number of trips across the field and keep tillage shallow. More tillage means more exposure to drying elements. Research from Ohio suggests that you can loose up to 1” of water every time you work the ground. Conserving organic matter and residue will also help hold on to moisture as the season progresses.

2. Seriously consider packing the ground (either post-tillage or post-planting.) This will help seal in moisture. It also improves the capillary action of the soil, helping to draw moisture upwards from deeper levels. Packing also makes the moist zone surrounding the seed more even, encouraging uniform germination.

3. Contemplate increasing the downward pressure on the press wheels to ensure good soil-to-seed contact. Having said that, too much pressure, or improper alignment can cause wheels to “pop” the seed out of the furrow.

Planting Depths

The cardinal rule of planting is “Shallow as Possible, Deep as Necessary”. Always plant into moisture. However, seeds placed too deep will be slow to emerge, and stand losses may occur due to leafing out under ground. Insect feeding and root rots are usually more problematic on deeply seeded plants. Seeds placed unnecessarily shallow may be more susceptible to herbicide injury as well as drought stress. The ideal seeding depths are as follows:

- **Peas**: 1-1.5” (no deeper than 2”)
- **Sweet Corn**: 1.5-2” (no deeper than 3”)
- **Beans**: 1.5-2” (no deeper than 3”)
- **Beans**: 1” (no deeper than 1.5”)
- **Vine Crops**: 1” (no deeper than 1.5”)

Figure 1. Pear blossom blast bark canker.