Kansas Insect Newsletter

For Agribusinesses, Applicators, Consultants and Extension Personnel

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Yellow Collared Scape Moth

Those of you that have spent time outside this fall may have noticed "firefly" looking moths feeding on goldenrod and chrysanthemum flowers. This is the yellow collared scape moth (*Cisseps fulvicollis*), which is very common this time of year. Adults are black in color except for the prothorax, which is orange. The forewings are brown to black in color, and the hindwings have a large translucent spot near the distal area. The larvae are white to pale-yellow in color, hairy, with tufts of extended hairs located along the body. The head is yellow, orange, to brown in color with distinct black spots. Larvae feed on grasses and lichens. In general, adults are present from May through October (or until the first frost) and feed on flowers during the day and night. Adults are attracted to outdoor lighting.

Time To Be Thinking About The Use Of Dormant Oils

The use of dormant oils is a pest management tactic designed to deal with insect and mite pests that survive the winter in an overwintering life-stage, which may include eggs or mature females. Instead of waiting until spring to initiate "control" measures, applying dormant oils may be helpful in reducing costs associated with pesticide (in this case, insecticides and miticides) use later in the season. The advantages of applying dormant oils include a wide range of activity against most species of mites and scales—even the eggs; minimal potential for resistance developing in insect and/or mite pest populations; less directly and indirectly harmful to beneficial insects and predatory mites compared to pesticides with long-residual activity; and relatively non-toxic to humans and other mammals. The disadvantages of dormant oils include potential phytotoxicity during the growing season and minimal residual activity or less persistence.

Dormant oils, which are typically derived from paraffinic crude oil, are the heaviest of the petroleum-based oil sprays and have a low unsulfonated residue (UR). The unsulfonated residue is an assessment of the phytotoxic compounds remaining after distillation and refining. A high UR (>92%) indicates a highly refined product with less potential for phytotoxicity. Dormant oils generally have a UR value <92%.

Dormant oil applications are primarily directed at killing overwintering pests including mites and scales, before they become active in the spring, and are capable of causing plant injury. Applications are made during winter so as to minimize phytotoxicity to ornamental plants. A 2% to 4% rate is generally recommended in late fall to early spring. Dormant oils have contact activity and either suffocates; by blocking the breathing pores (spiracles), or directly penetrates and disrupts cell membranes of exposed insect and mite pests. However, dormant oils have minimal residual activity once residues dissipate, so thorough coverage is essential.

Dormant oils are applied to all plant parts, which means that the overwintering stage of the insect or mite pest must be located on the plant. However, not all insect and mite pests overwinter on plants. For example, dormant oil applications are not effective against the two-spotted spider mite (*Tetranychus urticae*) because this mite overwinters as a female in plant debris, mulch, or other non-plant protected places. In contrast, the spruce spider mite (*Oligonychus ununguis*) overwinters as an egg on plants, primarily evergreens such as arborvitae, hemlock, juniper, and pine, which means that this mite species is susceptible to dormant oil sprays.

Dormant oils are effective in killing the overwintering stages of scales, especially first and second instars or nymphs (=crawlers). For example, euonymus scale (*Unaspis euonymi*) overwinters as second instar nymphs or mature females; both life stages are susceptible to dormant oil applications. However, certain scales that overwinter as eggs such as oystershell scale (*Lepidosaphes ulmi*) and pine needle scale (*Chionaspis pinifoliae*) are more tolerant of dormant oil applications. The reason why is that the eggs are generally stacked or piled on top of each other, and the dormant oil may not penetrate and contact the bottom layer. As a result, additional insecticide applications are typically required after egg hatch.

An issue when using dormant oils is the potential for plant injury or phytotoxicity. Some plants, such as arborvitae, beech, redbud, and certain maples (Japanese, red, sugar, and amur), may be harmed by dormant oil sprays. Furthermore, the needles of Colorado blue spruce may be discolored or change from blue to green as a result of a dormant oil application. Phytotoxicity is usually a problem when higher rates (e.g., >4%) are used and/or when applications are performed in early fall before dormancy or in late spring at bud-break. Problems associated with phytotoxicity are less likely to occur when applications are made in early November through February—when most plants are completely dormant. In order to avoid phytotoxicity it is important to make sure the spray solution is continually agitated. Also, never apply dormant oils when there is a possibility of freezing (≤32ºF). Dormant oils should be applied to deciduous plants when the ambient air temperature will stay above freezing for at least 24 hours. Evergreens, in general, are more susceptible to damage than deciduous plants, so it is best to apply dormant oils when temperatures remain above 40ºF over a 24-hour period. Furthermore, dormant oils should never be applied to plants that are stressed since stressed plants are more susceptible to phytotoxicity. Lack of moisture, extreme temperatures, sudden drastic changes in the ambient air temperatures after spraying, prolonged windy conditions, or disease or insect infestations may predispose plants to phytotoxicity.

There is a general "dogma" that insect and mite pest populations cannot develop resistance to dormant oils. However, this is not true; remember, insect and mite pests don't read many entomology or "bug" books! As such, for example, a Christmas tree plantation of Scots pines was sprayed with dormant oils for more than 10 years in succession to "control" pine needle scale. Eventually, the scale population became more and more difficult to "control." Why? Well, it was determined that the scale covers actually increased in thickness, which made it hard for the dormant oil to penetrate the outer covering and kill the eggs.

Preventative dormant oil applications may avoid dealing with abundant insect and/or mite pest populations later on during the season. As such, the input from insecticide and/or miticide applications may be reduced, which preserves the natural enemies of mites and scales, including predators and parasitoids that naturally regulate populations of these pests.

Raymond Cloyd

Report from the Kansas State University Insect Diagnostic Laboratory:

The following samples were submitted to the Insect Diagnostic Laboratory from October 8th to October 21st.

October 22 2010 – Grant County – Woolly pine scale
October 22 2010 – Jackson County – Hackberry psyllids
October 25 2010 – Sumner County – Bed bugs
October 26 2010 – Riley County – Boxelder bug nymphs
October 26 2010 – Geary County – Bed bugs
October 26 2010 – Riley County – Wheel bugs on grassland
October 28 2010 – Wyandotte County – Possible grass-carrier wasp pupae
October 28 2010 – Edwards County – Red-shouldered bugs around home
October 28 2010 – Osborne County – Maize weevil in home
October 28 2010 – Labette County – Book lice in home

If there are any questions regarding these samples or about the identification of any arthropod please contact the Insect Diagnostician at (785) 532-4739 or GotBugs@ksu.edu.

Holly Davis

Sincerely,

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