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Cottony Maple Scale

Cottony maple scale, *Pulvinaria innumerabilis*, is very common this year in northeastern Illinois. This insect occurs in the northern half of Illinois, as far south as Danville and Lincoln. Cottony maple scale occurs most commonly on silver maple, but is also common on other maples including box elder. It is also common on black walnut, honey locust, linden, black locust, red mulberry, and white ash. It is occasionally found on many other tree species. On silver maple, upper branches are mostly defoliated by high infestations and branches are occasionally killed. Cottony maple scale usually does not cause serious injury to other trees.

Cottony maple scale is a lecanium-type scale, being very similar in appearance to European fruit lecanium for most of the year. Mature female scales are brown, roundish, and about one-quarter inch in diameter. They look like tiny army helmets or turtle shells on the branches. At this time of year, they become much more obvious with each mated female producing a white egg mass that is larger than she is. These egg masses with the attached female look like popcorn on the twigs.

The eggs hatch into reddish-brown crawlers in mid-July. They sit for a couple of days on top of the egg mass,

appearing like a dusting of paprika. The crawlers are visible on the egg masses of the accompanying photo. The crawlers then move to the leaf undersides along the veins to feed, remaining there until early fall. Males and females mature on the leaves, and tiny winged males emerge to mate with the females. These mated females are about one-eighth inch in diameter and move back to the stems for the winter. In the spring, the mated females grow rapidly and then lay their eggs.

These insects feed on the sap of the tree, tapping into the phloem with their long, needle-like mouthparts. Insects, like other animals, need large amounts of nitrogen, but plant sap contains very little nitrogen. Cottony maple scale, other soft scales, aphids, leafhoppers, treehoppers, and other related insects have the ability to selectively remove the nitrogen, some of the water, and a little of the carbohydrates (sugars) from the sap before it goes through their digestive system. The bulk of the concentrated sap bypasses most of the digestive system to the anus, where it is excreted. In order to obtain the amount of nitrogen that they need, these insects imbibe huge quantities of sap, with most of it being excreted as a thin, syrupy liquid called honeydew.

The honeydew associated with heavily attacked trees will coat the leaves, stems, and branches and also drip to the

ground, coating sidewalks, vehicles, lawn furniture, and other objects under the trees. These surfaces appear wet and shiny and are sticky from the honeydew. Occasionally, we get calls from clientele wondering why they can feel it raining under their tree, but not beyond the canopy. This is due to soft scales, aphids, or other sucking insect defecating on them. A black sooty mold grows on the honeydew. Black bark on branches and blackish areas on leaves are signs that sucking insects are attacking the plant or the tree above it. Soft scales and other sucking insects are probably more commonly controlled to eliminate honeydew and sooty mold than direct damage by these insects to the plant.
--Phil Nixon

Twicestabbed Lady Beetle

Cottony maple scale is a native insect, and it has a native predator. The adult twicestabbed lady beetle is one-eighth inch in diameter and black with two red spots on the back. It overwinters under loose bark as an adult beetle, emerging in the spring to feed on the overwintered cottony maple scales through the spring. Eggs are laid and larvae appear in late spring at about the same time as the cottony maple scale egg masses are being produced, at about this time of year. The larvae are covered with whitish, waxy filaments, appearing very similar to the cottony maple scale egg masses. Fully grown larvae are oval and about one-quarter inch long. They can be distinguished from the cottony maple scale egg masses because they move, albeit very slowly. Cottony maple scale egg masses have the old female scale appearing as a brown cap on one end, which

twicestabbed lady beetle larvae do not have. The lady beetle larvae pupate in late summer and emerge as adults in the fall.

Twicestabbed lady beetles have a typical predator-prey relationship with cottony maple scale. That is, predator numbers increase in direct relationship to prey number increases. Twicestabbed lady beetles typically reduce cottony maple scale numbers to very low numbers. They normally take about three years to do so once cottony maple scales become numerous enough to be noticeable. In other words, we are probably in the first year, or perhaps the second, of having high numbers of cottony maple scale with associated silver maple canopy thinning and copious honeydew and sooty mold. If nothing is done, in the spring of 2013 there will likely be no cottony maple scale that can be found, and there will be large numbers of adult twicestabbed lady beetles crawling over trees, shrubs, and houses looking for something to eat before they die of starvation. About eight years later, cottony maple scale will be back as the cycle repeats itself. *--Phil Nixon*

Cottony Maple Scale Management

Control of cottony maple scale can be achieved in several ways. Letting nature take its course and allowing the twicestabbed lady beetles to provide control is one option. Another is to apply a crawler spray after the cottony maple scale crawlers hatch about mid-July. Acephate (Orthene), acetamiprid (TriStar), bifenthrin (Talstar, Onyx), cyfluthrin (Tempo), insecticidal soap, malathion, and summer spray oil are all effective crawler sprays.

Before applying a crawler spray, look for the presence of twicestabbed lady beetle adults and larvae on the tree. If there are at least two or three per foot of infested branch, a crawler spray will probably kill the lady beetles and reduce the cottony maple scale about as much as the lady beetles would have if they had not been killed. Do not apply a crawler spray before the eggs hatch or after the crawlers have settled on the leaves. Not only will there be little scale control, but many of the lady beetles will be eliminated, resulting in a higher cottony maple scale infestation than if nothing were done.

Some groups may contend that spraying for adult mosquitoes kills the twicestabbed lady beetles, causing cottony maple scale outbreaks or extended outbreaks. However, cottony maple scale outbreaks in Illinois communities where there is no mosquito spraying occurs in the same years as communities that do have a mosquito spraying program. In the past, cottony maple scale outbreaks ended in the same year in northeastern Illinois communities whether they had adult mosquito spraying programs or not.

Systemic insecticides such as imidacloprid (Merit, Imicide, Pointer, Xytect, others) or dinotefuran (Safari) trunk-sprayed, soil-injected, or trunk-injected according to label directions should provide control of the settled crawlers on the leaves, but we do not have any efficacy data. I would appreciate hearing of any treatment results.

Perhaps the best option is to apply a dormant oil spray during the tree dormant season on a day when the

temperature stays above freezing for 24 hours after application. The dormant oil kills about 90% of the overwintering cottony maple scales when the twicestabbed lady beetles are wintering under loose bark where they are not hit by the oil spray. --*Phil Nixon*

Scouting Watch

Bagworms have hatched throughout Illinois. Look for bagworms one-eighth to one-quarter inch long feeding on the foliage before treating. Also look at the top of the tree for evidence of silk strands about three feet long. When bagworms hatch, they climb to the top of the tree, spin out long silk strands, and ride it to new hosts. They typically do this for about two weeks and then start to feed. In southern Illinois, usually ballooning stops and feeding starts around the middle of June, occurring in early July in central and northern Illinois. This year, with our accelerated spring, the bagworms appear to have stopped ballooning and started feeding heavily already in southern and central Illinois. Scout for this in northern Illinois. Once ballooning stops and feeding starts, spray with *Bacillus thuringiensis* 'Kurstaki' (Dipel, Thuricide, others) or other labeled insecticide to provide season-long control with one application. Spraying too early usually requires more than one application.

Earwigs are already numerous throughout Illinois, a couple of weeks earlier than usual. Earwigs feed primarily on dead organic matter, but are also predators and plant feeders. Severe leaf and petal feeding can occur on roses and many thin-leaved

herbaceous flowers such as daylilies, impatiens, hosta, violets, petunias, salvia, and pansies. Carbaryl (Sevin) or labeled pyrethroids are effective on the foliage for control. Do not treat the blossoms, even if the earwigs are eating them, to avoid killing bees and other pollinators.

Grass sawfly larvae are feeding on various species of *Lysimachia*, sometimes called loosestrife or creeping jenny in northern and central Illinois. These plants should not be confused with purple loosestrife, which is in a different genus. The sawfly larvae are whitish to pale green with light tan heads and obvious black eyes. Fully grown larvae are a little over one inch long. Although sawfly larvae look similar to caterpillars, they have more than five pairs of prolegs. Not being true caterpillars, they are not controlled with Btk. Spraying the foliage with carbaryl, Sevin, or a labeled pyrethroid will provide control. Do not spray the blossoms to avoid killing bees and other pollinators.--*Phil Nixon. Greg Stack, Mike Greifenkamp*

Friend or Foe: Giant Hogweed and its look-alikes:

Giant Hogweed (*Heracleum mantegazzianum*) is a member of the carrot or parsnip family (*Apiaceae*). While many members of this family are native to Illinois, Giant hogweed is an invasive species that was brought from Asia in the 1900's. This plant was most likely brought as an ornamental because of its showy white flowers and impressive size. However, it is very aggressive and noxious. When bare skin comes into contact with this plant, a

hazardous sap is deposited that when exposed to sunlight causes severe skin irritation such as [burning blisters](#). The resulting scars may last for several years. For these reasons, this plant is not only of ecological concern, but it is a public health hazard.

Like many members of the carrot family, this plant has lacy white flowers and wide fern like leaves. Giant Hogweed is generally easy to distinguish because of its large size. Plants in Illinois that have a similar appearance (<http://www.hort.uconn.edu/cipwg/hogweedLookalikes/HogweedLookAlikeWEB/index.htm>) to Giant Hogweed include; Water Parsnip, Cow Parsnip, Queen Anne's Lace, Water Hemlock, Poison Hemlock, and Angelica. While these plants have similar leaves and flowers, all are dwarfed by Giant Hogweed which grows 10-15 feet tall. The only 'look-alike' that comes close in size is the Cow Parsnip at 4-9 feet tall. Other important differences between these two plants include the leaves which are 5 feet wide on the Giant Hogweed and only 1 foot wide on the Cow Parsnip. In addition, the Hogweed flowers are 2.5 feet wide where as Cow Parsnip flowers are only 6 to 12 inches wide.

Due to the noxious nature of the plant, **ALWAYS** wear skin protection when coming into contact with Giant Hogweed. Giant hogweed is still rare in Illinois. While visitors in natural areas are unlikely to encounter this plant, it never hurts to keep a watchful eye for this and other invasive plants. If you think you may have Giant Hogweed on your property or you want more information feel free to contact [Illinois Cooperative Agricultural Pest Survey](#)

[\(CAPS\)](#). --Irenka Carney and Stephanie McLaughlin, research assistants with the Illinois CAPS program

Hemlock Woolly Adelgid: Know This Tree Killer!

The Hemlock Woolly Adelgid (*Adelges tsugae*) is an invasive species that was brought from Japan to the Western United States in the 1920's. The insect has since moved east and can now be found in Georgia, the Carolinas, through the Appalachian Mountains and in parts of the New England area. The Hemlock Woolly Adelgid is of particular concern because, unlike the Hemlocks in its native range in Japan, American hemlock species have no defenses against it. In addition, all members of adult adelgid populations are females that are capable of producing 50-300 eggs in their life time making infestations more intense. The result of an infestation is defoliation and eventually death of Hemlock trees within 4-6 years. In instances where infestations are severe, hemlock species can be completely removed from a forest. The impact is already clearly visible in the [Great Smokey Mountains National Park](#).

The presence of the Hemlock Woolly Adelgid is often indicated by little white cotton like balls along hemlock branches. These balls are adult adelgids that create a woolly waxy protective coating around themselves and their eggs. Without the coating the adelgid looks like a flat black oval approximately a millimeter in size.

The Hemlock Woolly Adelgid is transported on smaller scales by birds, mammals, and wind and on a larger

scale by the shipment of planting stock. There are a variety of methods being used and investigated to control woolly adelgid, including chemical and biological means, but a fully effective solution has not been found. To help slow the spread of the woolly adelgid make sure you do not transport Hemlock trees from infested areas. Also, if you make sure you have no bird feeders on or near Hemlock trees you will reduce the likelihood of transmission of the pest through birds. The Hemlock Woolly Adelgid has not been found in Illinois, so if you think you have found signs of this insect please contact the [Illinois Cooperative Agricultural Pest Survey \(CAPS\)](#). --Irenka Carney, research assistant with the Illinois CAPS program

Additional notes on NPDES General Permit Comment Period

In last week's issue, notice was given of a NPDES General Permit Comment Period (<http://hyg.ipm.illinois.edu/article.php?id=182>). If you haven't read it, I encourage you to do so.

It seems that this EPA announcement (and the whole concept of requiring NPDES permits) has spurred considerably more questions than answers. We in the Pesticide Safety Education Program are currently unclear about the exact scope of this matter and we encourage all pesticide applicators to participate in these sessions, ask questions, and submit comments. This week, I've seen similar announcements from grower groups and professional associations encouraging their members to do the

same. Now is your chance to speak up because these matters could affect you.

Currently, the draft permit includes only 4 areas. If an application does not fall into these 4 areas, it does NOT mean that an NPDES permit is not needed. With this comment period, EPA wants to know if they should include other areas (uses/additional use patterns). From discussions at various pesticide meetings this past year, this could include drift from nearby applications. A recent article in the *North Dakota Pesticide Quarterly* had this to say, "The general permit is silent when it comes to agricultural uses, although most Clean Water Act experts agree that the court's ruling likely covers uses 'near' water. Some agricultural users also may want to be permitted to protect themselves from citizen lawsuits."

EPA's website reads, "Any use patterns not covered by this proposed draft permit would need to obtain coverage under an individual permit or alternative general permit if they involve pesticide application that result in point source discharges to waters of the United States." Would a revised version of the current PGP be considered an *alternative general permit* or would it be an entirely different permit? If the latter, how would that be obtained? How is an applicator to know if his application could fall under the definition of a point-source discharge? What is meant exactly by waters of the U.S.? Hopefully, the webcast on June 17th will cover these important questions.

Monitoring, IPM, equipment cleaning schedules, and mandatory calibration

and maintenance would be required according to this draft. That in itself is something that applicators should pay careful attention to. These requirements could affect your operation's time investments and finances.

Operators will need to know if their applications will exceed an annual treatment area threshold. What is that threshold? It depends on the size of the area, the number of treatments, and type of site. Those that know they will exceed it, will have to file their NOI (Notice of Intent) and then wait until its receipt is confirmed by EPA before they can apply the pesticide. Additional requirements such as development of a Pesticide Discharge Management Plan and submittal of annual reports are included in this draft PGP for those who know they will exceed the threshold. Emergency pesticide applications can be performed without delay, but an NOI must then be filed.

A violation – intentional or not – of the Clean Water Act could reach up to \$37,500/day. Comparatively, FIFRA violations are minimal. Those in violation of the Clean Water Act could be driven out of business fairly quickly. How good is your relationship with your neighbors and clients? Citizen lawsuits will be a very real concern for many.

At this time, the only clear recommendation I have for pesticide users is to get involved and become familiar with the issues at hand. Inclusion in the PGP may provide protection against citizen lawsuits, however, the PGP process is quite involved. For details, read the draft permit at

http://cfpub.epa.gov/npdes/home.cfm?program_id=410. It's no quick read at 58 pages long and neither is the "Fact Sheet" at 116 pages (also on EPA's website). I guess these documents are shorter than the health care bill, but likewise won't be completely read by most. At the very least, check out the "Questions and Answers", which is only 8 pages long.

The Federal Register Notice is filled with intermingled requests for comments on specific topics. At 11 pages in length, it's not so bad. For a shorter, bulleted list that's been paraphrased a bit by the Agricultural Retailers Association, check out: <http://www.aradc.org/> (under "news") or

http://www.magnetmail.net/actions/email_web_version.cfm?recipient_id=200065621&message_id=1025402&user_id=ARA1 for the direct link.

My prediction is that there will be a great reduction in the number of pesticide applications made to these 4 areas in the upcoming year. Some will choose to simply not apply pesticides at all to avoid these new requirements. Others, in an effort to lessen their requirements, will choose to make only one application if they determine that 2 applications will exceed the threshold. It will be interesting to see the long term effects of all of this.--*Michelle Wiesbrook, Pesticide Safety Education Program*