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Pest Management Handbook Revision

The Illinois Commercial Landscape and Turfgrass Pest Management Handbook is being revised. It is expected that it will be available for purchase in late January or in February of 2010. As was the case with the previous edition published in 2007, it will only be available in a printed format in order to recoup editing and design costs. It will be available for purchase at Pesticide Applicator Training Clinics, local Extension offices, and at the University of Illinois Pubs Plus website:

<https://pubsplus.uiuc.edu/>. The price of the handbook will be determined after the revision is completed and printing costs are known. The 2007 edition sells for \$17; the 2010 edition is likely to be just a few dollars more due to increased costs.--*Phil Nixon*

Mole Cricket Update

After the article on northern mole crickets in the previous issue of this newsletter, damage from this insect has been reported in several other states including Kentucky, Pennsylvania, and Connecticut. These have all occurred after several years without damage reports.

Dr. James Reinert, Texas A&M University, suspects that the damage is due to fall dispersion flights. The tawny

mole cricket and other subtropical, turf-damaging mole cricket species capable of flight in the southern U.S. have spring and fall dispersion flights. One flight is associated with mating, but the other is apparently to disperse, that is, to extend their range into other areas. Adult southern mole cricket species fly onto fine turf, burrow into it, but only cause local damage near their entry point. Much more damage is caused by their offspring during the growing season. Northern mole cricket is likely to act similarly, but there is little behavioral information available for that species.

The accompanying photos from Dr. Dan Potter, University of Kentucky, show damage caused by northern mole cricket in Kentucky. It is similar to that caused by adult burrowing after dispersion flights by southern mole cricket species. One photo shows the mole cricket next to the damage.

Even though the damage appears to be light and localized, this is more northern mole cricket damage than has been reported in Illinois or any other state previously. It is possible that northern mole cricket is changing its behavior and may cause more damage to turf in the future. It is also possible that northern mole cricket numbers are much higher than normal. This species is normally found in saturated or nearly-saturated soil. With two successive years of above average rainfall during the growing

season in much of the Midwest and Northeast, it is likely that their numbers might have increased. With higher population numbers, damage due to dispersion flights may have become more obvious. --*Phil Nixon*

Pyrethroid Insecticide Poisoning Study

There has been a recent study published on the incidence and severity of pyrethrin and pyrethroid insecticide illnesses. The study covers reported illnesses from 2001 through 2005 in the states of Oregon and Washington.

Pyrethroid insecticides are perhaps the most commonly used insecticides inside and outside buildings by both professionals and homeowners. These results provide insight into pesticide illness throughout the nation.

Data were collected from the pesticide illness surveillance systems of the Washington Department of Health and the Oregon Public Health Division. Both systems are operated under the National Institute of Occupational Safety and Health (NIOSH) guidelines. Both systems utilize mandatory physician reports, reports from poison control centers and other state and local agencies, and reports from individuals.

Illness cases were assigned to four categories as follows:

1. Low severity illness or injury resulting in three or fewer missed days from work or normal activity. These cases commonly do not require treatment.
2. Moderate severity illness or injury that is not life-threatening,

but that results in some time lost from work, usually less than five days.

3. High severity illness or injury that usually requires hospitalization and loss from work or normal activities for more than five days.
4. Death due to exposure to one or more pesticides.

There were 407 cases of pyrethrin and pyrethroid insecticide illness that were reported in the five year time period. Each state had a similar number of cases. The largest number of cases occurred during the summer. Sixteen percent of these cases were deemed as being definitely caused by pyrethrin or pyrethroid insecticides. 11% were deemed as probable, and 73% were classified as possible. Approximately one-fourth of these cases were work-related. Slightly more females (55%) were reported than males. Almost all (92%) were in the low severity illness or injury category, with 8% in the moderate and high severity illness or injury categories. There was one death reported due to pyrethrin or pyrethroid exposure.

There are three categories of these insecticides. The percentage of illness and injury cases in this study are given in parentheses.

1. Pyrethrins (32%) are extracts of the flowers of chrysanthemum and are usually designated in the active ingredient statements on pesticide labels as pyrethrins. They have the lowest toxicity to mammals of the three categories. They are short-lived, typically lasting only a few days.

2. Type I pyrethroids (41%) have a cyclopropane carboxylic acid structure. Their chemical name in the active ingredient statement on pesticide labels usually ends with the word, cyclopropane. In this study, type I pyrethroids reported in illness and injury cases included permethrin 16%), tetramethrin (9%), allethrin (6%), bifenthrin (4%), phenothrin (4%), imiprothrin (2%), prallethrin (<1%), and resmethrin (<1%).
3. Type II pyrethroids (26%) have an alpha-cyano group attached to the benzylic carbon, which enhances the insecticidal properties. They are also more toxic to mammals, and are involved in most clinical cases of human poisoning due to pyrethrins and pyrethroid insecticides. Their chemical name in the active ingredient statement on pesticide labels includes alpha-cyano, commonly being the first part of the name. In this study, Type II pyrethroids reported in illness and injury cases included cypermethrin (7%), cyfluthrin (5%), deltamethrin (4%), esfenvalerate (4%), lambda-cyhalothrin (3%), tralomethrin (2%), fenvalerate (<1), and fenpropathrin (<1%).

All three groups accounted for approximately the same percentage of low severity cases with pyrethrins at 33%, Type I pyrethroids at 39%, and Type II pyrethroids at 27%. Type I pyrethroids were more involved with moderate severity cases at 63%, pyrethrins and Type II pyrethroids each were at 19%. There were only four high

or fatal severity cases with two involving Type I pyrethroids (permethrin, bifenthrin), and one each involving pyrethrins and Type II pyrethroids (esfenvalerate).

The only death occurred in an elderly woman with a history of heart disease who entered her home three and one-half hours after an interior crack and crevice treatment of esfenvalerate and pyrethrins and an exterior application of permethrin. She experienced acute respiratory symptoms and cardiac arrhythmia. Resuscitation attempts were unsuccessful and she died at the scene.

Another severe case involved a 53-year-old man with a history of reactive airways disease and allergies to common therapeutic drugs. He sprayed his car with an aerosol home and garden insecticide containing phenothrin and allethrin. He left the car with the windows up until the following day, driving it without thoroughly ventilating it or cleaning interior surfaces. He reported that breathing difficulties developed within an hour which progressed to coughing and respiratory congestion. After out-patient treatment, he was admitted to the hospital ten days after exposure. He was treated in the hospital with intravenous steroids, antibiotics, bronchodilators, and oxygen supplementation and discharged after three days in stable condition with a diagnosis of severe asthma exacerbation.

The entire study is available at: Walters, J.K., et al. 2009. Pyrethrin and Pyrethroid Illnesses in the Pacific Northwest: A Five-Year Review. Public Health Reports, Vol. 124: 149-159. --Phil Nixon

Oak Leaf Spot

Tubakia leaf spot infects oak and sounds relatively harmless. After all, it is only a leaf spot disease and usually on large oak trees. This year, however, we saw more of this disease than any of the Plant Clinic staff can ever remember seeing in the past. One of us has been here for nearly 30 years.

The fungal pathogen of this leaf spot disease is *Tubakia dryina*. According to scientific literature, hosts might include oaks, maple, hickory, chestnut, redbud, ash, tupelo, sourwood, rose, sassafras, and elm. Still, the only host we have confirmed at the Plant Clinic is oak. This year we found it on 26 oak samples, and I found it easily on oaks throughout Champaign/Urbana. Stressed trees are more likely to be infected. Pin oaks with iron chlorosis are commonly infected with Tubakia leaf spot as well.

Symptoms appear as large leaf spots, appearing in midsummer. On oak leaves, a small spot is surrounded by a much larger brown area of necrosis, as seen in the image. The fungus secretes plant toxins which are thought to be responsible for the large lesions. They are easy to identify. If we look closer in the lab we can find the very distinct fruiting bodies of the fungus. They are called pycnothyrium and they look like large discs composed of mycelia and spores. The image shows these fruiting bodies, along with the oval spores of the fungus, as viewed with one of the Plant Clinic microscopes.

So why did we see so much of this disease in 2009? The disease cycle has not been described in detail. We know that the fungus overwinters on fallen

leaves. Moist and moderate temperatures are thought to allow the spread of this fungus. Often, we only see infection in the early part of the season, but this year, infection intensified as the season progressed. It is likely that repeated rain events this summer allowed repeated infections and spread of the disease. We also saw early leaf drop in heavily infected trees.

Treatment with fungicides is not usually recommended. In order for fungicides to be effective, sprays would be required at bud break to prevent early infection and then repeated as long as rain events occurred. It would be very costly to make even one application on a large oak tree. Additionally, in most years we do not see enough of this disease to cause a problem. After a heavy disease year like 2009, rake and remove leaves. Stressed trees should be examined to find the source of stress and that source alleviated.--Nancy Pataky

Thousand Cankers Disease of Black Walnut

Thousand cankers disease of black walnut is a lethal insect-disease complex affecting various walnut species. It has not yet been found in Illinois. It is present in western U.S. states and as far east as Colorado. The disease can kill walnut trees in three years. Initially trees are attacked by the walnut twig beetle, *Pityophthorus juglandis*. Two fungal cankers then invade around beetle galleries. The fungi are *Geosmithia* sp and possibly *Fusarium solani*. Many small cankers kill the wood and girdle branches. The dark cankers can be seen by peeling away bark on affected branches. Cankers are as much

as 3 cm or larger and each canker has a shallow tunnel near the center of the dead area. The tunnel is made by the walnut twig beetle.

There is quite a bit of interest in preventing spread of this disease complex. November 3-4, 2009, there will be a national conference on thousand cankers of black walnut. For those interested, the conference is quite close. It will be hosted by the Missouri Department of Agriculture and the Missouri Department of Conservation in St. Louis, Missouri. The conference registration fee is only \$75.00 if you register before October 23rd. For information on this conference, go to <http://mda.mo.gov/plants/pests/thousandcankers.php>.

A very good source of information on diagnosing Thousand Cankers Disease can be found on this University of Colorado web site:
http://www.coopext.colostate.edu/pf/pdfdocs/diagnosing_thousand_cankers_disease.pdf. --Nancy Pataky

Crabapple Scab Reduction for 2010

Scab was extremely intense on crabapples and edible apples in the Midwest in 2009. Refer to 2009 issues 5 and 16 of this newsletter for details. The image shows a typical crabapple in 2009, denuded by apple scab. Many have asked how they might reduce the amount of scab in apples and crabapples next year.

The first fact is that the fungus overwinters on fallen leaves and fruit. Those trees that were infected this year have a very good chance of at least an

initial infection next year from the pathogen present in fallen plant debris. The second fact is that spores do not move very far. Certainly you will get spread from nearby trees, but not from those a few blocks away. Logically, if you can reduce the amount of fungus under your tree, you will greatly reduce the amount of scab infection next year, even in an ideal scab year.

The most practical means of controlling that first wave of scab next season is to rake and remove fallen leaves. Dr. John Hartman at the University of Kentucky addresses this issue for edible apples in his article at http://www.uky.edu/Ag/kpn/kpn_09/pn_091013.html#Fruit. The pathogen is the same for crabapple scab. It is not practical to rake and remove fallen leaves from apple orchards. Dr. Hartman discusses ways to help hasten the decomposition of these leaves that might be hosting the scab fungus. He discusses chopping and shredding the leaves with a mower to encourage decomposition of small leaf pieces as well as to encourage their consumption by earth worms. He also discusses the use of urea to hasten decomposition. Sinclair and Lyon, in Diseases of Trees and Shrubs, 2nd edition, suggest removing the fallen leaves, composting them, and applying nitrogenous fertilizer to the compost pile. They also state that dolomitic lime applied to the ground around the trees will suppress the maturation of the fungus in the fallen leaves and therefore reduce the amount of spore release in the spring.

These are just a few suggestions to help reduce the battle with crabapple scab in 2010. --Nancy Pataky