

Kansas Insect Newsletter

For Agribusinesses, Applicators, Consultants and Extension Personnel



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Slugs...With A Bit Of Humor!

The recent wet weather experienced throughout most of Kansas will likely favor an increase in slug population activity. Slugs are destructive pests feeding on many plants in landscapes and gardens including annuals, perennials, vegetables, bulbs, ground covers, trees, and shrubs. Additionally, slugs can devour young seedlings overnight. One of their favorite plants to feed on is hosta.

Slugs are mollusks, related to oysters and clams. Slugs are referred to as “naked snails,” because they possess no shell. They are brown in color and 1-1/2 to 2 inches long. Slugs lay clusters of translucent, pearly-shaped eggs under debris or beneath the soil surface. They can lay between 20 to 100 eggs several times per year. The gray garden slug, *Deroceras reticulatum*, is the slug generally encountered in the Mid-west. It is approximately 3/4 to 1-1/2 inches in length; ranging in color from pale yellow, lavender, or purple. In addition, they are covered with black or brown spots and mottling.

Slugs have chewing mouthparts and cause plant damage by creating large irregular shaped holes in leaves with tattered edges. They feed using a structure called a radula, which is in the mouth and covered with small teeth. Slugs tend to feed on succulent foliage such as seedlings, herbaceous plants, and fruit lying on the ground.

Slug activity is dependent on soil moisture because they require moisture to move around. Slugs secrete a slimy mucus substance, which they use to move about. This then dries-up into a shiny noticeable trail. Slugs are mainly active at night (nocturnal) when relative humidity is “high” from evening rains or irrigation. They hide during the day under mulch, plant debris, rocks, boards, weeds, and ground covers.

Slug management involves implementing a combination of strategies such as hand-picking, habitat modification, and use of barriers, traps, baits, and commercial molluskicides. Monitoring is important to determine the effectiveness of slug management strategies. Monitoring involves going out in the evening with a flashlight and looking for slugs. During this time, hand-picking can be performed to reduce initial slug numbers. Hand-picking is especially effective during moist weather conditions. Placing slugs into a jar containing soapy water will kill them. Another possibility is to pay (\$\$) some children to collect slugs (this will keep them from playing video games or texting). There are two other methods of killing slugs once they have been collected. However, both are quite macabre. One method simply involves stepping on the critters. Slugs will give off (or emit) a “squishy” sound when stepped on (although this is dependent on the intensity of the stepping process). The other method is associated with scattering slugs on a driveway and then driving back and forth over them with a truck or car. Although this method is not environmentally-sound it does appear to be psychologically satisfying to most individuals. A more environmentally-sound method is to have children with bikes “run over” the slugs (it is important that they “run over” the slugs more than once).

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Habitat modification is one of the most effective strategies in reducing problems with slugs. This involves eliminating hiding places such as mulches, weeds, old vegetation, and plant debris. Proper watering practices can also alleviate slug problems. For example, avoid watering late in the day as this creates moist conditions conducive to slug activity. Instead, water plants early in the morning. Research has shown that morning watering provides protection from slug damage comparable to metaldehyde (Deadline) pellets. In addition, the use of drip irrigation systems, where water is directed toward individual plants, may reduce slug populations.

Copper barriers may be placed around the base of shrubs and trees that are being constantly fed upon. Slugs receive a slight electric shock when their moist bodies contact copper; this then repels them. However, widespread use of this method may not be feasible. Furthermore, copper bands have sharp edges, which can harm children and pets.

Diatomaceous earth, shredded bark, egg shells, and wood ash have been used as barriers to prevent slugs from feeding on plants. Overall, these materials work best during dry periods when slugs are less active. However, the effectiveness of these materials is reduced by rainfall, which means they have to be reapplied regularly. Moreover, these materials lose their effectiveness after getting wet. Constant use of some of these materials such as egg shells and wood ash is discouraged because overtime they may raise the pH of the soil. Also, never pour salt on slugs as this may burn plant foliage and roots.

Traps, such as wooden boards or rolled-up newspaper can be positioned where slugs are feeding. Check traps early in the morning. Perform this procedure once or twice per week. Afterwards, place slugs into a jar containing soapy water to kill them.

Baits are available that attract slugs into traps where they then drown. One popular type of bait is the use of beer. Although there are better uses for beer, some die-hard practitioners “swear” that beer reduces slug populations. How does this work? Well, beer is poured into a shallow pan (however, some may “accidentally” be poured into the individuals’ glass), which is then placed (sunk) into the ground with the pan edges extending out about 1/8 to 1/4 inches. Slugs are attracted to the “yeasty” smell of beer and fall into the pan and drown. Some folks claim that slugs have a massive beer party and eventually they get very “sluggish” with a high enough alcohol content that eventually kills them. I have not seen any data that supports this claim. A study from Colorado State University showed that Kingsbury Malt Beverage (from Heileman Breweries) was the beer most preferred by slugs (I guess they conducted a “slug-taste-test”). However, beer does not have an EPA (Environmental Protection Agency) registration number, so the use of beer as a pesticide is not technically legal. The use of beer to manage slugs may also be problematic on college campuses that don’t allow alcoholic beverages.

Most commercially available poison baits include metaldehyde (Deadline) as the active ingredient. Metaldehyde does not directly kill slugs. Instead, it works by paralyzing and causing slugs to secrete excess amounts of mucus. Death generally occurs from water loss and/or exposure to direct sunlight. Nonetheless, under cool, moist weather slugs may actually recover. Metaldehyde is very sensitive to environmental conditions, degrading very rapidly when exposed to direct sunlight and excessive moisture. However, the new formulation of Deadline is more resistant to degradation. Metaldehyde is toxic to cats and dogs if large quantities are ingested. The molluscicide, Sluggo is also available. The active ingredient is iron phosphate. Sluggo contains a bait that attracts and kills slugs. Once they consume the material they will crawl away and die. This is why people don’t typically see dead slugs around the area. Sluggo will kill slugs within 3 to 6 days. Sluggo can be used around pets, and may remain potent for a longer period of time compared to metaldehyde.

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There are various beetles such a firefly larvae and ground beetles that feed on slugs. However, these predators may not be present in sufficient enough numbers to maintain slug populations below damaging levels.



Raymond Cloyd

Getting Jumpy, Part 1 ---- Grasshoppers

Actually, a couple of weeks ago when I was hand weeding a flower bed (Figure 1),



Figure 1

I noted itsy-bitsy grasshoppers jumping here and there. As I indicated in a previous newsletter, grasshopper control begins with locating hatching beds and eliminating grasshopper nymphs while still “young nibblers” and somewhat confined to their “nursery area”. In that article, I indicated the task of locating/identifying hatching beds was difficult. Well, apparently not as difficult as I thought. It was evident that the little hoppers I was seeing were being generated in the flower bed, in an adjoining small garden area and/or possibly (?) in the adjacent lawn (plenty of little grasshoppers “scared up” when walking through).

As I was re-weeding between recent rains (moistened soils make weeding so much easier), I was reawakened as to the presence of grasshoppers ----- only now, they had grown. While still small, they were dramatically larger (Figure 2).



Figure 2

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Thus, I have decided to spray those small restricted areas **NOW** and stop the grasshoppers in-their tracks. I will not treat the lawn ---- simply, I want to compare grasshopper activity in the flower bed/garden plot versus that in the lawn, and see if eventually grasshoppers move from the lawn into the flower bed. A follow-up spray would then be applied.

Perhaps other people have noted small grasshoppers in their vegetable gardens and flower beds. However, if not, it is advisable that people take time to check their flower beds and garden plots for small grasshoppers. It is easier to spray grasshoppers while confined to restricted areas, and while still small/non-damaging and especially susceptible to insecticides.

Insecticide of choice? A numbers game as I have stated in previous Newsletters. There are 673 products currently registered (in Kansas) for use against grasshoppers. People need to go to retail outlets to see what products are being marketed for use (against grasshoppers) in their respective locales.

Getting Jumpy, Part 2 ----- Bagworms

In last week's issue (#12) of the Kansas Insect Newsletter, Dr. Cloyd alerted people to be on the alert for bagworm activities. While it was noted that the bagworm hatch had begun in the Manhattan area of May 22 (KIN #10) and that detection of 1 mm larvae and their small bags was difficult, bags 3-4 week old bags are easily detected (Figure 3 – arrows).

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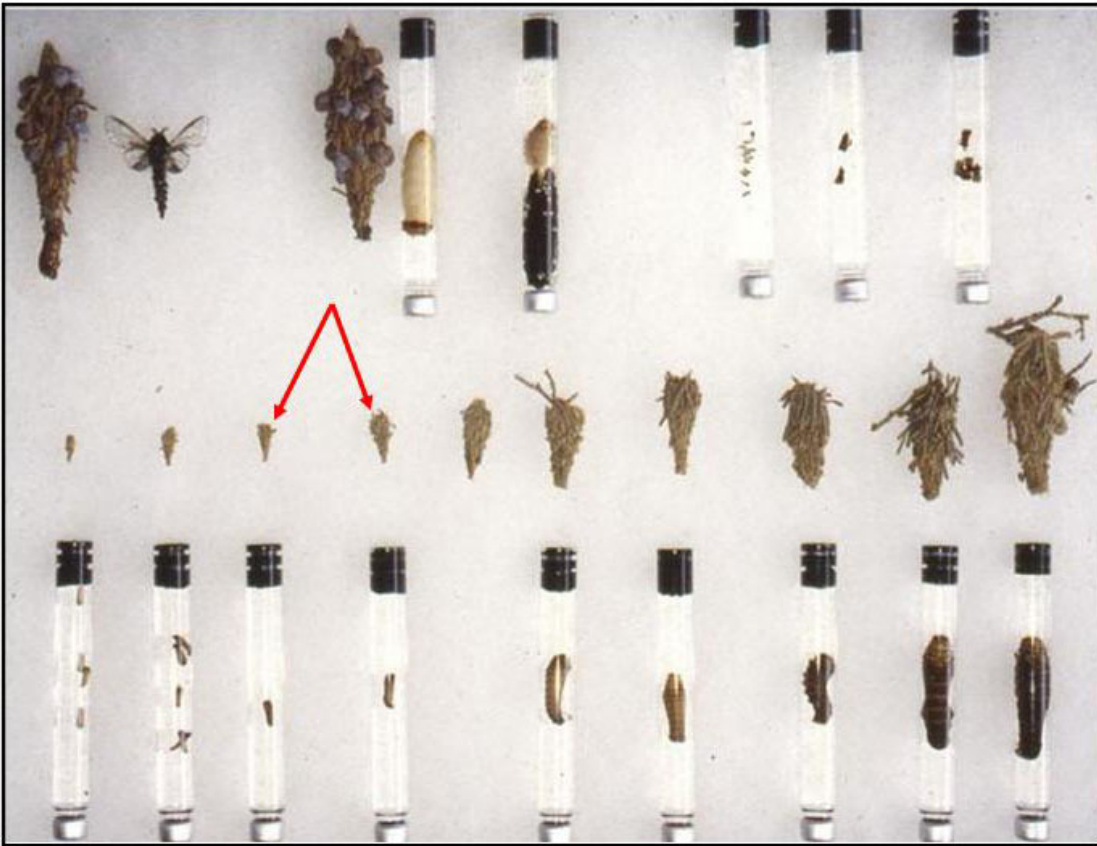


Figure 3

While if wanting to spray for bagworm but a single time, I ordinarily recommend an application the last week of June or first week of July. This ensures that the egg hatch has been completed, and that even those bagworms which began their activities at the beginning of the hatch are still small, more susceptible to insecticides and will not have caused much damage.

So why am I jumpy at this point? I recently noted some off-color eastern red cedar. And upon taking a closer look, I noted TREMENDOUS numbers of bagworms. So even though still relatively small, their sheer numbers mandate a treatment NOW as opposed to waiting another week or two. And again, this is for the Manhattan area ----- bagworm development in southern Kansas may have begun a week+ earlier, and the situation(s) are in advance of what is occurring in northern Kansas.

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Dr. Cloyd listed a number of active ingredients/products with activity against bagworm. Again, the numbers game comes into play. In Kansas, there are 524 products currently registered (in Kansas) for use against bagworms.

More important than which active ingredient/product is selected is how the product is applied. There is a tendency for people to want to do the job quickly. And that may mean filling a sprayer but one time and streeeeching that tank's contents to achieve the spray treatment. In essence, this translates into inadequate coverage of foliage/bagworms. While some peripheral bagworms will be killed, a greater portion of the population (especially those feeding in more dense areas of the host) will escape treatment and continue their defoliating activities.

Rather, DO THE JOB CORRECTLY. Take your time. Be prepared to refill your sprayer a time or two. Thrust your sprayer wand first into the inner areas/portions of the foliage to achieve thorough coverage of foliage as well as directly contacting bagworms.

Second Round ----- Nantucket Pine Tip Moths

Professional boxing matches typically are 10-round affairs while Championship matches are lengthened to 12 round events. Amateur boxers mix it up for matches are 3-rounds. So I guess that Nantucket pine tip moths are the equivalent of amateurs: 3 generations per year.

The first round/generation (as reported Issue #3 of this year's newsletter) began the evening of April 2 based on pheromone trapping results. Between that time and now, the traps have remained empty. But on the evening of June 9, 6 moths were trapped ----- so we are in Round 2.

As repeated: Who should be concerned with NPTM? Nursery personnel and Christmas tree producers who have Zero tolerance for NPTM damage ---- their livelihood is dependent on top quality "stock". Landscape maintenance personnel need to be observant in order to deliver "good service" to their clientele. Groundskeepers for municipal parks industrial parks of other businesses/buildings with landscape plantings need to be alert in order to maintain high quality aesthetically pleasing surroundings. For the average homeowner it is a matter of wait-and-see-if they-appear. It may be that Nantucket pine tip moths are something they may never experience.

Those Stunning Redheads ---- That is, Fall Webworms

We are only 4 days short of the first official day of summer. Yet we are going to address an insect whose common name would suggest that it is an autumn species ---- the fall webworm. Both the blackheaded and redheaded forms of the fall webworm begin their seasonal activities in spring. Whereas in the fall of 2008 I was able to collect and rear the blackheaded race, and maintain their overwintering pupae (and thus report on their

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emergence on May 15, 2009, in the fall of 2009, I collected and reared larvae of the redheaded race. I am reporting (to you) that the moths began their current/2010 emergence on June 10. Larvae/pupae were maintained in aluminum rearing cages (Figure 4).



Figure 4

Whereas the wings of the moths of the blackheaded race are white with some black specking (Figure 5), the wings of moths of the redheaded race are pure white (Figure 6).

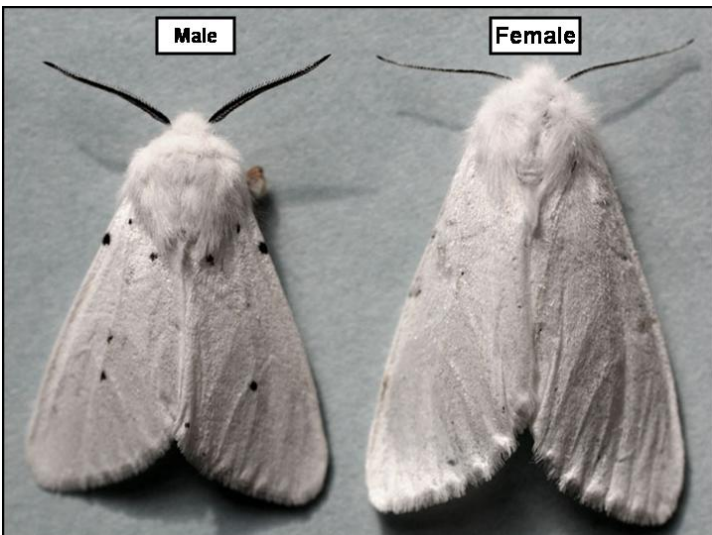


Figure 5



Figure 6

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The 1-month differential between emergences of the two races is as described in Kansas State University Extension Publication [MF-2395 – Web-Producing Caterpillars in Kansas](#). This publication is available on-line and provides details on these two races.

In essence, people seldom notice first generation fall webworm activities because their numbers are generally low. However, higher populations of first generation moths (as compared to populations of overwintered moths) result in more webbing activity which towards autumn is responsible for their **fall** webworm common name.

Other than the objectionable appearance of web masses (Figure 7) and clumps of worms (Figure 8),



Figure 7



Figure 8

fall webworms are not detrimental to overall tree health and vigor. Look for more comments of on fall webworms as 2010 progresses.

Bob Bauernfeind

Report from the Kansas State University Insect Diagnostic Laboratory:

The following samples were submitted to the Insect Diagnostic Laboratory from June 11th to June 17th.

- June 11 2010 – Phillips County – carpet beetle larvae in home
- June 11 2010 – Johnson County – Stoneflies
- June 11 2010 – Anderson County – Lady beetle larva
- June 11 2010 – Cowley County – Woolly apple aphid
- June 11 2010 – Ford County – Predatory stink bugs on columbine
- June 14 2010 – Linn County – Giant leopard moth and male dobsonfly around home
- June 14 2010 – Morton County – Solifugae (windscorpion) in home
- June 15 2010 – Sumner County – Termite swarms in garage
- June 15 2010 – Lyon County – Possible spider mite damage on privet
- June 15 2010 – Sedgwick County – Oak kermes and oak flake gall on pin oak

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June 15 2010 – Cheyenne County – Tadpole shrimp (tripos) in lagoon
June 15 2010 – Ford County – Spider mite damage on spruce
June 15 2010 – Atchison County – Lone star tick nymph
June 15 2010 – Johnson County – Abiotic debris
June 15 2010 – Haskell County – Springtails (Collembola) in home
June 15 2010 – Russell County – Carpet beetles in home
June 15 2010 – Sherman County – Possible wheat stem maggot damage in wheat
June 16 2010 – Shawnee County – Picturewing flies around home
June 16 2010 – Sedgwick County – Picturewing flies in garden
June 16 2010 – Ness County – Tumbling flower beetles around maple
June 16 2010 – Riley County – American dog tick on human
June 16 2010 – Gove County – Ash leafcurl aphid

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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