Kansas Insect Newsletter

For Agribusinesses, Applicators, Consultants and Extension Personnel

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Hessian Fly Report from Far Western Kansas

Lodging caused by Hessian Fly

Leaf sheath pulled back to expose Hessian fly Pupae

We normally think of Hessian fly as being a pest of wheat in south central Kansas, but this year we have had reports of Hessian fly in far western Kansas and Eastern Colorado (See the November 7, 2008 newsletter - http://www.entomology.ksu.edu/DesktopModules/ViewDocument.aspx?DocumentID=4626). Last week I had a chance to visit a field in Hamilton County that has a severe infestation of Hessian fly. I sampled 150 stems from the south side of the field. 72 were infested (48%) -- with an average of 2 HF per infested stem range 1-

5 -- only 13 of the stems appeared to have lodged so far (8.6%) -- thus there will probably be a lot more lodging before harvest. This field was planted in late August into last years wheat stubble, showing that if conditions are right and you ignore common Hessian fly management practices then Hessian fly can be a pest throughout most of the state. Unfortunately, much of the Hessian fly damage probably goes undetected. That is why, now is the time that you should inspect fields for Hessian fly injury. Look for tillers that are broken over just above a node and then remove the leaf sheath to determine if Hessian fly pupae are present. If wind or hail caused the lodging then the stems will often be broken over at varying distances from the nodes, but with Hessian fly most of the stems will break over with in ½ inch of the node. But the presence of the fly pupa is the real tell-tail sign that Hessian fly is present in the area. If you find fields with heavy infestations of Hessian fly please contact us and let us know the locations of the fields. We could like to collect samples after harvest to determine the biotypes of the flies that are present. Just send a quick e-mail to psloderb@ksu.edu or call us at 620-275-9164. Or in eastern Kansas contact Jeff Whitworth, jwhitwor@ksu.edu, 785-532-5656.

Phil Sloderbeck and Jeff Whitworth

Not to beat a dead horse, but ……. "cutworms"

It is said, "What one hears, one may doubt. But what one sees and does erases doubt". Cutworms were addressed in several previous 2009 Kansas Insect Newsletters (#'s 3, 7, 9 and 12). Well cabbages are ready for cutting and tomatoes are setting. So if there was a winner, **IT WASN'T THE CUTWORM!** While it cut cabbage plant #8 and no head formed, all other's produced heads. (Figures 1 and 2).

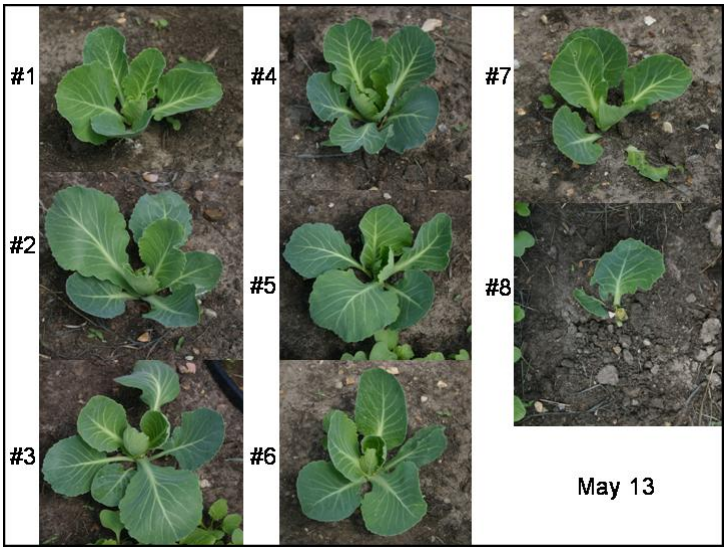


Figure 1

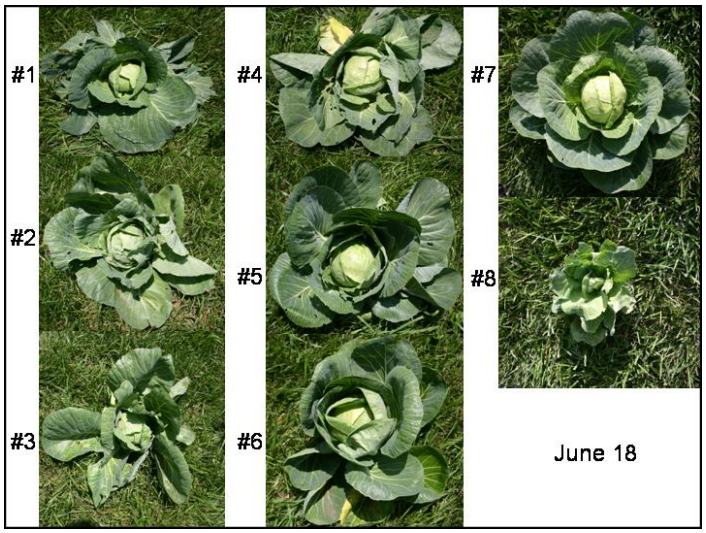


Figure 2

And the center tomato plant is rapidly catching up to its partners on either side (Figure 3).

Figure 3

Bob Bauernfeind

The Beginning and, The Flight ……. Masked Chafers

Not "Exorcist: The Beginning", or "Flight of the Phoenix", but The Beginning of the 2009 Masked Chafer Flight. Mid-June traditionally marks the start of this annual event. And the first-of-the-year blacklight trap catches were recorded in all 3 of traps operating in the Manhattan area (Figure 4).

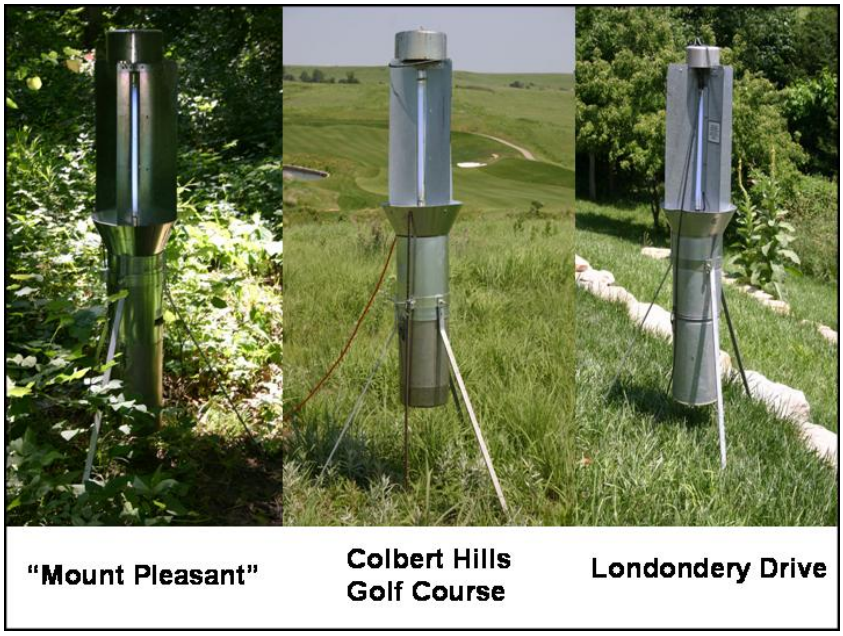


Figure 4

Masked chafers are the beetles (Figure 5)

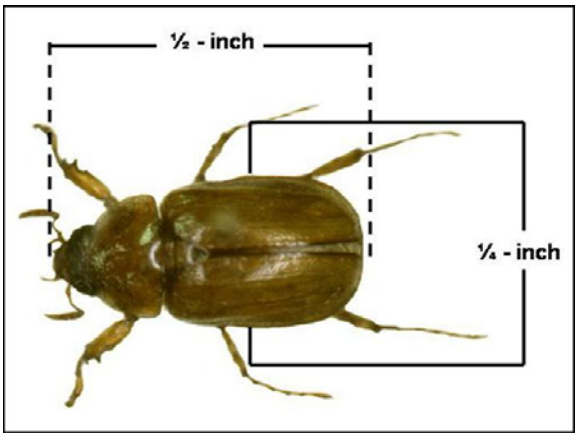


Figure 5

which produce the "annual white grubs" which are responsible for the grub damage observed in the late summer and fall of the year (usually becomes evident in September).

For people who routinely apply preventative systemic insecticide applications to their home lawns, commercial applicators contracted by homeowners, apartment complexes or industrial "parks", or golf course superintendents who routinely treat "trouble spots" with a history of grub problems, now is an appropriate time to apply systemic insecticide treatments. Two Active Ingredients (AI's) are incorporated into products for homeowner use: imidacloprid (targets the nervous system) and halofenozide (disrupts the normal molting sequence). Because product manufacturers choose to rename items in their product lines, it is possible that (side-by-side) two packages of a granular product might bear the same trade name, but do not contain the same active ingredient. Thus, it important to look beyond the trade name and ascertain the actual AI being used.

In addition to the two-abovementioned AI's, there are several additional "grubacide" AI's (Trade Name) available for use by commercial applicators and golf course greens keepers: chlorantraniliprole (DuPont Acelepryn); clothianidin (Arena); and thiamethoxam (Meridian).

More discussion on grubs and grub damage as the season progresses.

Bob Bauernfeind

Aphids In Greenhouses: What Can Be Used In Organic Production Systems?

Aphids attack a diversity of horticultural crops grown in greenhouses including annuals, perennials, vegetables, and herbs. Aphids vary in color from yellow, green, black, orange, brown, and pink; however, this is dependent on the plant type fed upon, so color should never be used to identify aphids. The two most common species found feeding on greenhouse-grown crops are the green peach aphid (*Myzus persicae*) and the melon/cotton aphid (*Aphis gossypii*). Green peach aphid has long cornicles (tube-like projections extending from the end of the abdomen) with black tips whereas the melon/cotton aphid has shorter cornicles. Furthermore, green peach aphid has a distinct indentation at the base of the antennae. In general, aphids are 1/8 inch (3.0 mm) or less in length, and feed by inserting their piercing-sucking mouthparts through leaf tissues into the phloem sieve tubes (food-conducting tissues) and withdrawing plant fluids. Aphids feed in large colonies on terminal buds and on the underside of leaves causing plant stunting, leaf yellowing, and distorted plant growth.

During the feeding process, aphids excrete a clear sticky, sugary liquid called honeydew. Honeydew is an excellent growing medium for black sooty mold fungi, which covers leaves and inhibits the plants' ability to manufacture food via photosynthesis. In addition, ants feed on honeydew and will "farm" or transport aphids among different greenhouse-grown crops. Moreover, ants protect aphids from their natural enemies such as parasitoids and predators.

Most aphid species, particularly those in greenhouses, give birth to live offspring or nymphs, which are predominantly female. In fact, aphids don't have to mate to reproduce (this is called parthenogenesis). These new female nymphs are then able to produce successive generations of additional female nymphs within 7 to 10

days. Aphids reproduce for a period of 20 to 30 days. During their lifespan, one aphid female can give birth to 60 to 100 live nymphs.

There are many effective contact and systemic insecticides that may be used to control or regulate aphid populations in greenhouses; however, what can you use if you are growing crops organically? Well, there are a number of active ingredients labeled for control of aphids in organic production systems including *Beauveria bassiana*, potassium salts of fatty acids, neem oil, pyrethrum, and horticultural oils. Below are characteristics of each of these materials:

1. ***Beauveria bassiana*** (entomopathogenic fungus)
   * Products: Naturalis and Mycotrol.
   * Insects are affected either by consuming the fungus or the fungus penetrates the cuticle (skin).
   * Speed of kill depends on the concentration of spores contacting the insect, insect age, and environmental conditions (temperature and relative humidity).
   * Labeled for control of soft-bodied insects such as aphids, caterpillars, thrips, and whiteflies.
   * Susceptible to ultra-violet light degradation.
   * Multiple applications may be required.
2. **Potassium salts of fatty acids** (insecticidal soap)
   * Products: M-Pede.
   * Kills target insect and mite pests by disrupting the cuticle (skin) resulting in desiccation.
   * Contact only, so thorough coverage of all plant parts is essential. Also, has short-residual activity.
   * Primarily effective against soft-bodied insect and mite pests such as aphids, mealybugs (crawlers), spider mites, and whiteflies.
   * "Hard" water or water containing excessive amounts of calcium and magnesium may reduce effectiveness.
   * Harmful (phytotoxic) to plants if used "too often" (3 to 4 times per week).

3. **Neem oil** (botanical)
   * Products: Triact and Organica (contains neem oil and soap).
   * Active ingredient: clarified hydrophobic extract of neem oil.

* Works by suffocating or blocking the breathing pores (spiracles) of insect and mite pests.
* Contact only, so thorough coverage of all plant parts is essential. Also, has short-residual activity.
* Active on soft-bodied insect and mite pests including aphids, mealybugs (crawlers), scales (crawlers), spider mites, and whiteflies.
* May be harmful (phytotoxic) to plants if applied "too often" (3 to 4 times per week).

4. **Pyrethrum** (botanical)
   * Product: Pyganic.
   * Pyrethrum=generic name; pyrethrins=six active constituent compounds derived from chrysanthemum flowers.
   * Contact only, so thorough coverage of all plant parts is essential. Also, has short residual activity.
   * Highly toxic to bees.
   * Susceptible to ultra-violet light degradation.
   * May be active on a broad range of insect and mite pests including aphids, caterpillars, flies, true bugs, and whiteflies.
   * Final spray solution should be buffered to a pH of 5.5 to 7.0.
   * A synergists such as piperonyl butoxide (PBO) may be added to enhance efficacy; however, the use of PBO is not allowed under the National Organic Program.

5. **Horticultural oils** (synthetic and naturally-derived oils)
   * Products: PureSpray Green, Golden Pest Spray Oil, and Organocide.
   * Types: Petroleum (or mineral), plant, and fish-based.
   * Work by preventing normal gas exchange or suffocation by blocking openings in the respiratory system.
   * Active on most life stages of insect and mite pests including eggs, young (larvae or nymphs), and adult.
   * Primarily effective against soft-bodied insect and mite pests such as aphids, mealybugs (crawlers), scales (crawlers), spider mites, thrips, and whiteflies.

* Contact only, so thorough coverage of all plant parts is essential; however, may be harmful (phytotoxic) to plants if applied "too often" (3 to 4 times per week) of if applied during conditions of high humidity (>80%).

Raymond Cloyd

Leafminers in Wheat

Last week we received a call about leafminers damaging wheat in Sherman County, not far from the Colorado border. A number of fields were reportedly affected to various degrees, although the field we visited had only a small fraction of leaves affected, and mostly along the edges. The wheat in question had other problems of greater concern, namely leaf rust and Russian wheat aphids. These leafminers are probably insects that are normally present in numbers too low to attract attention, but happen to be enjoying unusual abundance in this particular year.

There are only four species of leafmining flies reported from grasses in the family Poaceae in North America - all in the genus *Agromyza* (Diptera: Agromyzidae). The species reported from wheat is *A. ambigua* (Fallen), but leafminers of grasses are not very host-specific so identification of the culprit to species will only be possible if an adult can be reared from the infested material we collected. These flies are thought to have only one generation per year, but multiple generations have been reported. Usually, *Agromyza* spp. pupate in the soil, but pupation within the mine has also been reported.

Mines occur mostly on the flag leaf or the next leaf down and begin at the leaf edge where the egg is laid. Larvae feed between the two epidermal layers causing a 'blister' on the underside of the leaf (Fig. 1). Flecks of black frass are usually visible within the mine, but the larva is very pale and difficult to see unless the mine is dissected (Fig. 2). As with all forms of visible crop damage, growers express concern when faced with anything unfamiliar. Although the flag leaf is attacked and some acceleration of leaf senescence is possible, only a small portion of the photosynthetic surface appears to be directly affected (Fig. 3). Thus, it is unlikely that any measurable economic impact could result from this leaf mining - leaf rust was clearly a greater threat to grain fill in the field we visited.

Figure 1

Figure 2

Figure 3

J.P. Michaud

Insect of Interest

The Insect Diagnostic Lab has had several calls/e-mails about a very interesting insect phenomenom. One phone call came from Chase county Kansas and photos were e-mailed from Lancaster county Pennsylvania, regarding a "snake" composed of thousands of tiny worms crossing the driveway or a road (Photos 1 and 2). These large masses are groups of thousands of fungus gnat larvae, or maggots, *Sciara* sp., and are moving to new locations to find food or possibly a better habitat. They have also been known to do this when they are ready to pupate. Typically these masses are much smaller (Photo 3) and it is not known why the populations are so large this year in several, very separate locations.

Fungus gnats are tiny (1/8 to 1/10 inch long) flies that have a somewhat mosquito like appearance (Photo 4). They reproduce in moist, shaded areas with a lot of decaying organic matter. The maggots are tiny, white, to almost translucent 'worms" that feed on fungi, decaying organic matter and even living plant tissue, such as root hairs. The adult flies live about 7-10 days and there may be many overlapping generations each year. Outdoors, these insects are very rarely of economic importance.

Photo 1: Large mass of fungus gnats crossing a driveway - found in Lancaster Co, Pennsylvania

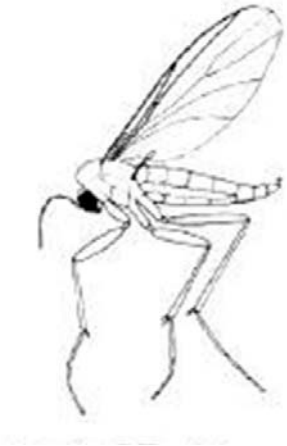
Photo by William Hilt

Photo 2: Close-up of fungus gnat larvae

Photo 3: Size of a more typical fungus gnat mass

Photo courtesy of Dave Shetlar, Ohio Sta University

Photo 4: Adult fungus gnat



Ohio State University

Holly Davis

Report from the Kansas State University Insect Diagnostic Laboratory:

The following samples were submitted to the Insect Diagnostician Laboratory from June 12th to June 18th

June 12 2009 Thomas County – Assassin bug nymph in bathtub
June 12 2009 Pottawatomie County – Wheel bug nymphs on fragrant sumac
June 12 2009 Leavenworth County – Burrowing bug nymph
June 12 2009 Wabaunsee County – Dogbane beetles feeding on fruit tree leaves
June 12 2009 Graham County – Wolf spider in home
June 12 2009 Lyon County – Possible stink bug nymphs found in residue around corn plants
June 12 2009 Riley County – Jumping spider in home
June 15 2009 Decatur County – European pine sawfly larvae
June 15 2009 Allen County – Dragonfly nymph
June 16 2009 Riley County – Crane fly larvae from creek
June 16 2009 Labette County – Western flower thrips on people and in home
June 16 2009 Graham County – Tachinid flies (dead) with fungus
June 16 2009 Thomas County – Virginia creeper sphinx moth around home
June 17 2009 Sedgwick County – False Japanese beetles on rose bush
June 17 2009 Marshall County – Wheel bug nymphs
June 17 2009 Douglas County – Short-winged soldier beetles on raspberry
June 18 2009 Johnson County – Carpet beetle larvae and small spider in home
June 18 2009 Johnson County – Green stink bugs eggs in vineyard

June 18 2009 Osage County – Leaf beetle pupae on iris leaf
June 18 2009 Edwards County – White-lined sphinx moth larvae and carpet beetle larvae

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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