http://www.oznet.ksu.edu/entomology/extension/extensio.htm

Kansas Insect Newsletter

For Agribusinesses, Applicators, Consultants, and Extension Personnel

Department of Entomology
239 West Waters Hall
K-State Research and Extension
Manhattan, KS 66506-4027

Tel: 785-532-5891
Fax: 785-532-6258

September 16, 2005 No. 21

White Grubs in Brome:

There have been several recent reports of white grub infestations creating “dead spots” in bromegrass fields (Figure 1). While some of them may be small, others are quite extensive (Figure 2). That white grubs were responsible for the damage was easily discerned: grubs were present in dirt clods (Figure 3).

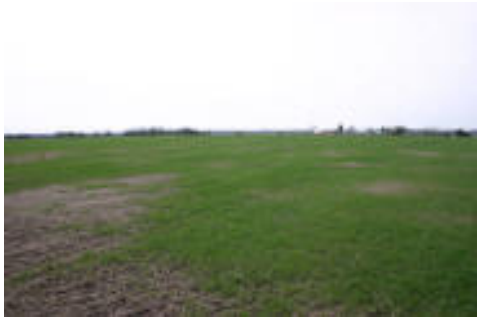

Figure 1
Dead spots

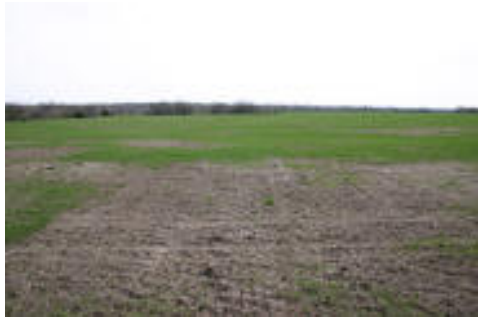

Figure 2
Large dead patch

Figure 3
White grub

White grubs are probably present in most bromegrass fields on a yearly basis. Under normal circumstances, bromegrass can withstand white grub feeding activities. However, unusually high populations of white grubs (Figures 4 and 5) can destroy plant root systems. Thus the appearance of “dead spots”.

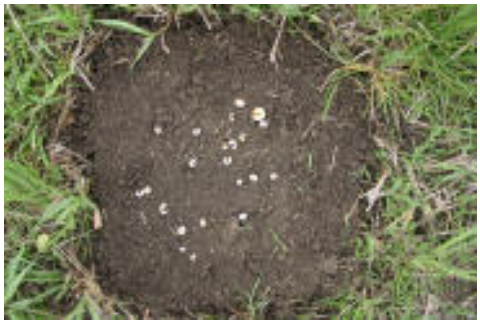

Figure 4
Twenty two grubs per square foot

Figure 5
Closeup

The white grubs encountered in bromegrass invariably are the larvae of May/June beetles. There are various species of May/June beetles (Figure 6, all but the top specimen in the second column from the left). It may but be of academic interest as to exactly which species is/are causing the damage. What all have in common is that they have a 3-year developmental cycle spanning 4 calendar years. Figure 6 May/June beetles

Figure 6
May/June beetles

Bromegrass producers may wonder how the current grubs came to be. In April and May of 2004, large populations of beetles appeared and deposited eggs in fields of bromegrass. The larvae which emerged from those eggs fed throughout the remainder of last year during which time they entered their second growth stage. They caused no noticeable damage because they were relatively small and incapable of inflicting extensive root damage. As soil temperatures dropped, they burrowed deep into the soil where they overwintered.

With this year's spring warmup, larvae moved up and resumed feeding. During this second year of their developmental cycle, they grew rapidly and became third instar larvae. Given their voracious appetites, they consumed increasingly greater amounts of root tissue. In addition to the presence of numerous grubs, bromegrass was further stressed by high temperatures and drought. This combination of factors resulted in appearance of "dead spots". With impending cooler soil temperatures, larvae will (again) burrow deep into the soil to overwinter.

Next spring, larvae will return and feed. While some additional stand reduction might occur, it should be minimal because cooler and more moist growing conditions should favor bromegrass root production, and grubs will cease feeding by late spring. Each grub will then construct an earthen chamber within which it

will pupate. By summer's end, beetles will emerge from their pupae but remain underground for the duration of 2006. Overwintered beetles will emerge in April and May of 2007 to repeat their developmental cycle.

The question currently being asked is, "What can be done to kill the grubs in bromegrass?" What insecticide (s) is/are legally registered for use against white grubs in bromegrass? Unfortunately, while chemical manufacturers have sought product labels for use against grubs in turf (for which there is a profitable market), bromegrass registrations have not been pursued due to low projected returns versus costs incurred for product registration.

The only active ingredient registered for use against grubs in the current situation is carbaryl (contained in products with the familiar trade name Sevin). Not all of the 82 carbaryl-containing products currently registered with the Kansas State Board of Agriculture can automatically/legally be used against white grubs in bromegrass. And of the products which can be used, bromegrass (per se) is not mentioned on the labels. Rather, some products may utilize the words "forage" (under which bromegrass fits) or "pasture" (for which bromegrass is sometimes used). There is a 14-day waiting period between treatment application and grazing or harvest.

Does carbaryl have activity against white grubs? Yes! Carbaryl has proven efficacy in turfgrass trials. While grubs associated with turf are predominantly annual grub species, there is no reason to not believe that 3-year grubs are not also susceptible.

Do carbaryl treatments always work? No! There have also been trial failures. Merely applying an insecticide treatment does not guarantee successful grub control. Surface treatments need to be carried into the underground zone where grubs are actively feeding. This movement relies on a post-treatment irrigation. Yet this alone does not guarantee successful control (read on).

Earlier this year (May), different carbaryl formulations were applied to control grubs in bromegrass plots under what were considered ideal conditions (rainfall had pre-moistened the soil, and a ½ rain fell 1 day after treatment). However, when plots were rated 10-days post application, there were no differences between grub populations in any of the treated plots versus the untreated checks.

Other alternatives? Over-seeding? Replanting? How and when? And to what extent? Answers will depend on the assessment of individual field situations. Ideally, because bromegrass is a cool season grass, fall would be the best time for reestablishing stands. An advantage to fall seeding is that fall establishment and root development will be ahead of where it might be if reestablishment/re-seeding were done in early spring. The hardier fall-seeded plants and their root systems should better withstand the early season nibbling done by the overwintered grubs prior to their completing their feeding phase by early May.

If there are large scattered dead spots and the ground is essentially bare, seed could be directly drilled. If these same dead spots are overgrown with weeds, a tillage may be required prior to drilling. Re-seeding an entire field would depend on the overall extent of existing damage and the pattern thereof. Substantial regrowth (after earlier cutting) might impede over-seeding operations. Grazing off regrowth (if an option) could reduce this impediment. If there is justification for "starting over", than preparation of the entire field

becomes a major operation/activity.

The wintertime activity of broadcasting seed over frozen ground is another option for re-seeding and thickening stands of bromegrass. This method, while requiring fewer “tractor hours”, may be less reliable for producing satisfactory results. The last opportunity for over-seeding or replanting is early spring. However, unpredictable weather may hinder the timeliness of ground preparatory work and seeding activities . And, minimal root systems of late-seeded bromegrass may not support the limited springtime feeding activities of the grubs, resulting in the continuance of “dead spots”.

Bob Bauernfeind

?????White Grubs in Soybeans?????

A recent report was received regarding a “sick” soybean field (Figure 7). Green plants had healthy root systems whereas those of the yellowed plants were severely damaged (Figures 8 and 9). White grubs were responsible for the damage.

Figure 7
Soybean field

Figure 8
Green vs. yellow plants

Figure 9
Healthy vs. damaged root systems

The situation seemed unlikely until the field’s history was revealed — that ground had been in brome from 2001 through 2004. It was the farmer’s misfortune to chose 2005 as the year to plant first-year beans in this field. Simply, the grubs fed on the only available food source: soybeans.

Because of his current soybean failure, the farmer was considering corn next year. This could result in added disappointment. While virtually all of the current grubs are in their 3rd and final developmental stage, their 2006 early-spring feeding forays would likely cause germination failures (grubs will destroy the corn seed) or stand reductions (grubs will devour the tender newly developed and succulent root systems). If he opts for corn, a seed treatment or planting time treatment should be considered.

If the producer goes back to soybeans in 2006, he should not experience a repeat soybean crop failure due to white grubs. The current 3rd instar grubs will have finished their feeding next spring prior to soybean planting.

Bob Bauernfeind

Sorghum Midge Detected in Southwest Kansas:

I received a sample from a Seward county Sorghum Field on September 9th. The sample was from a field that had reportedly been planted on June 28th and the producer had noticed that there were blasted or unfilled kernels on the upper parts of some of the heads. Some heads were showing just a few aborted kernels and others had up to half of the head affected.

At first I assumed that some type of environmental stress had caused the kernels to abort. However, after close inspection and accidentally shaking one of the heads over my desk, it became apparent that the heads had been attacked by sorghum midge.

The adult is a tiny, reddish-colored fly only 1/8 of an inch long. Eggs are laid in the flowers at bloom. The pinkish larvae feed on the developing ovaries of seeds, darkening to reddish orange as they mature. Infested seeds may exude an orange juice when squeezed. When adults emerge, an empty, clear-colored pupal case may remain attached to the glumes.

This is a problem that has occasionally been noted in southeast Kansas, but is unusual in western Kansas. If you find similar damage in late planted sorghum fields, we would be interested in hearing from you and/or receiving samples so we can determine if this was an isolated case or if we are dealing with a more widespread problem.

Any damage we find now is past the point of trying to apply any type of treatment. Treatments have to be applied for the flies as they are laying eggs on blooming sorghum. Once the damage becomes evident it is too late to apply any treatments.

Picture of sorghum head showing damaged (unfilled) kernels. (Note if you look close you can see some of the pupal cases still attached to some of the glumes.)

Midge emerging from pupal case on a sorghum seed.

Midge on sorghum head

Phil Sloderbeck

Soybeans:

Sampled several late-planted soybean fields this week and discovered soybean aphids in three of them, Saline, Dickinson and Marion counties. These fields were probably between R5-R6 (Beginning seed to Full seed) with very few aphids, but no winged ones. This may mean, however, that these populations could increase, especially with the cooler temperatures, over the next few weeks. This is just a situation to be aware of but probably not require treatment at this time of year.

Woolybear caterpillars are common this time of year and are being reported in soybeans and sunflowers. They are easily visible insects and do defoliate these crops but seldom require treatment. Consult the respective Insect Management Guides available at all County Extension Offices for treatment recommendations.

Jeff Whitworth

Calls on Alfalfa - Seedling and Established Stands:

We have had a scattering of calls about fall armyworms threatening seedling and, in some instances, the foliage of established stands of alfalfa. Seedlings have no reserves - once they have been cut off or chewed back to the ground, the plant is lost. Therefore, thresholds for these stands are set pretty low: one or two worms per square foot can destroy a fine stand of seedling alfalfa in a few days. In the past, populations of 10 to 15 fall armyworms per square foot have been enough to destroy the above ground production of 12- to 14-inch tall established alfalfa. To identify fall armyworms, look for four black spots arranged at the corners of an imaginary square near the rear of the worm. For fall armyworm control, our 2005 recommendations list Carbaryl (Sevin), Chlorpyrifos (Lorsban, Nufos), Cyfluthrin (Baythroid), Gamma-cyhalothrin (Proaxis), Lambda- cyhalothrin (Warrior with Zeon Technology), Methomyl (Lannate), Methyl Parathion (Cheminova Methyl 4EC), Permethrin (Pounce, Ambush), and Zeta-cypermethrin (Mustang MAX). Remember to always check the label to verify that the product is registered for the intended use and make sure the producer is willing to abide by all pre-harvest waiting intervals. Callers from a few locations have reported webworms, along with green cloverworms, in some alfalfa fields as well.

Randy Higgins

Weekly Report from the Kansas State University Insect Diagnostic Laboratory:

The following samples were submitted to the Insect Diagnostic Laboratory from September 9 through September 15, 2005:

9-9-2005, Sedgwick County: Carpet Beetle larval exuviae in home air filter.
9-12-2005, Miami County: Lone Star Tick nymph off person.
9-15-2005, Sedgwick County: Achemon Sphinx Moth caterpillar on grapes.
9-15-2005, Harvey County: Sawtoothed Grain Beetles in home.
9-15-2005, Sherman County: Juniper Webworms.
9-15-2005, Harvey County: Wolf Spiders in home.
9-15-2005, Bourbon County: Mite.
9-15-2005, Neosho County: Hump-backed Flies in home.
9-15-2005, Reno County: Spider Beetle 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 at bbrown@oznet.ksu.edu.

Bobby Brown

Brand names appearing in this publication are for product identification purposes only. No endorsement is intended, nor is criticism implied of similar products not mentioned.

Sincerely,

Randall Higgins
Extension Specialist
Entomology (Crops)

Jeff Whitworth
Extension Specialist
Entomology (Crops)

Phil Sloderbeck
Southwest Research and Extension Center
Entomology - Garden City, KS

Bobby Brown
Entomology Diagnostician

Robert Bauernfeind
Extension Specialist
Horticultural Entomology