PLANT PEST Newsletter

MINNESOTA EXTENSION SERVICE UNIVERSITY OF MINNESOTA

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ALFALFA

GRASSHOPPERS—In addition to infestation in the western counties, grasshopper populations in alfalfa are continuing to increase in the central east-central areas of the state. Density estimates in the 20-40/yd^2 (or 20-40/25 sweeps) range are common. Our current concern is that much of alfalfa harboring these infestations (including set aside acreage) will soon be cut for hay. Given the severity of this infamous grasshopper year, there are several reasons

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why you should consider spraying your alfalfa for grasshopper control **prior to harvest**. This management option is reasonable because of the following:

- Proximity of Alfalfa to Corn (especially at tassel) Soybeans, Sugar Beets, etc.
- Potential for Extremely high numbers of adults surviving to infest adjacent crops (Most hoppers now in alfalfa are in nymphal stage (no wings) and cannot yet disperse very far).
- Current Value of Hay ("Standard-1-Hay" at approx. $100/ton, where RFV=140).
- Potential for Damage to Regrowth if you do not spray prior to cutting.
- Can spray with Malathion (Cythion) and cut the next day.

The alternative option is to go ahead and harvest and wait to see if subsequent insecticide treatment is necessary. Although you might get significant hopper mortality at cutting (if temps. > 85°F for 3+ days), you may also have dispersal to adjacent cash crops as well. Thus, its possible subsequent insecticide treatments might be necessary not only on regrowth alfalfa but also in adjacent field crops. At many locations we currently have an advantage in that the alfalfa is essentially acting as a "trap crop" for the hoppers. Again, given the year we're having, this provides a rare window of opportunity for management options—i.e., treat while the hoppers are localized.

This scenario is only appropriate if you have high grasshopper counts throughout the alfalfa field. If counts are high (>20/sq. yd.) only along field edges, consider treating only the field edges, ditch banks, to protect adjacent crops. If you do decide to spray **before** cutting, but still need the option to harvest in less than 7 days, the only insecticide option is: Malathion (Cythion) 5E 1 1/2-2 pts product per acre. Malathion has **no** preharvest interval and should provide good knockdown kill. I would recommend going with the high rate of 2 pts per acre.

If you decide to spray and can wait 7+ days to harvest, additional insecticide options include: Diazinon 4E 1 pt product per acre, *Furadan 4F at 1 1/4-1 1/2 pts product per acre, Lorsban 4E at 1/2 pt product per acre, and Sevin XLR 4F at 1-3 pts product per acre. *Restricted use material at these rates. Each product has a preharvest interval of 7 days. **Reminder:** Orthene and Asana are not registered for use on alfalfa in Minnesota. Also, do not consider treating regrowth alfalfa with Sevin XLR plus. For Sevin to be effective (primarily first 3-4 days after application), grasshoppers must continue to feed on treated vegetation to ingest the insecticide. As regrowth does not initially provide much vegetation, the probability for adequate ingestion is low.

PLANT BUGS—I have received several questions regarding plant bugs and damage. Plant bugs do have the potential to induce yield loss. As with grasshoppers, high populations are building up in much of the set a side acreage. They damage hay by sucking plant juices from leaves and flower buds. Damaged leaves will be crumpled ("buckled" in from the sides of the leaves) and plant will be stunted.

Although we have 3 common species of plant bugs in the state, the 2 most abundant species include the Tarnished Plant Bug and the Alfalfa Plant Bug.

Recent research indicates that insecticide treatment is not justified until a field average is 5 or more plant bugs per sweep for alfalfa greater than 6" tall; if less than 6" tall the threshold is 3 per sweep. This threshold includes both species combined plus nymphs and adults. It usually does not pay to treat if less than 10 days yield before harvest. To determine the plant bug count in a field, take at least 3 sets of 10-20 sweeps each in 3 different sections of the field.

Recommended Plant Bug Insecticides

Lorsban 4E	1 pt
Cygon 4E	1/2 - 1 pt
Rebelate 2.67E	3/4 - 1 1/2 pts
Double M 2E + 2E	3 pts
*Penncap-M 2F	2-3 pts
*Ambush 2E	6.4 - 12.8 fl oz
*Pounce 3.2E	4-8 fl oz
Dylox 80SP	20 oz

**Restricted use material.*
Check label for re-entry interval.

—Bill Hutchison
Extension Entomologist

CORN

EUROPEAN CORN BORER—Adult activity continues to decline in southern Minnesota. Egg laying is largely completed with larval infestations rapidly aging to the point any treatment would no longer be effective. While infestations in the southern third of Minnesota did not reach treatable levels, scattered fields in West Central and Central Minnesota, particularly irrigated fields, have reached treatable levels. Adult activity is increasing in northern Minnesota and larval infestations are beginning to climb. The adult flight is always long in northern Minnesota. Larval infestation can build slowly to economic levels. Scouting over the next 2 to 3 weeks is critical to deciding if treatment is needed and timing that treatment. Shotholing criteria are not valid in northern Minnesota because corn is close to tasseling or has already tasseled when scouting takes place. Focus attention on counting larvae in leaf axils. Use a calculated threshold. Control is best when targeted against second and third instar larvae before tunneling in tassels and midribs takes place.

As grasshopper problems continue in western and central Minnesota, the question is asked, "What can be used to control European corn borer and any grasshoppers in the field?". Because aerial applicators are extremely reluctant to switch to granular applicators, this questions really translates into "Are there any liquid insecticides that will work well against both pests?". Aerial and ground insecticide trials on whorl and pretassel corn conducted in Minnesota from 1984 to 1988 indicate liquid formulations can work just as effectively as granular formulations against first generation European corn borer. Ambush 2E, Pounce 3.2E, and Penncap-M 2F work extremely well against European corn borer. Unfortunately, neither Pounce or Ambush perform well against grasshoppers. Conversely, Asana and Pydrin give excellent control of grasshoppers but not European corn borer. Thus, the best choice is Penncap-M. Other grasshopper alternatives such as Sevin, Furadan, and Lorsban are not extremely effective against European corn borer in Minnesota trials. That leaves Penncap-M as the insecticide which has good activity against both pests. The key question that will help resolve debate about which insecticide to use is "Which pest do you want to control, not suppress?".

—Ken Ostlie
Extension Entomologist

GRASSHOPPER UPDATE

BIOLOGY—Two stripped grasshoppers are now in the adult stage and are mating. Egg laying, if not underway, will begin within a week. Where numbers of adult hoppers are high, movement form egg laying sites to cropland is almost inevitable. These dispersals will be to adjacent fields however, and will not be "migratory" in the sense of long distance movements.

Egglaying will again be in "permanent" locations such as CRP and roadsides. These eggs will complete embryonic development and remain in the soil until May of 1990.

We are seeing pockets of migratory and clearwinged adults and large number of redlegged grasshopper nymphs. There are 5th instar redlegged hoppers at many sites.

CONTROL—Small grains will shortly be within 21 days of harvest. If such fields need treatment for grasshopper growers will need to use Malathion as most alternative insecticides have excessively long preharvest intervals.

I do not believe that banding Malathion (and probably any other insecticide) will be sufficient to protect soybean or dry bean if number of migrating hoppers are moderate to high. In fact broadcast insecticide treatments to crop where high number of grasshoppers are moving may be inadequate.

I am still hearing the statement that killing this year's grasshoppers will take care of next year's too. There is little, if any, evidence to support this. The Rangeland grasshopper people have compared insecticide treated rangeland in Wyoming and untreated rangeland in Montana. They have concluded that treatment may prolong the outbreak. The area that we used for our insecticide trial in 1988 near Fertile actually had more grasshoppers per sq yard on July 12, 1989 than on Aug. 1, a year ago.

To reemphasize, our 1989 grasshopper controls are to protect 1989 crops. Projected reduction in 1990 grasshopper population, i.e. to 1989 treatments, lacks good supporting evidence.

I have also heard comments that "plowed ground appears to have fewer grasshoppers". Once eggs are laid, it is extremely unlikely that tillage of any sort will increase egg-

nymph mortality enough to affect long term grasshopper population trends. It is evident the egg laying in bean ground is greater but tillage is probably not a factor in this behavior. Simply put, there is no evidence that plowing this fall will have a negative effect on next years grasshopper populations. You should base tillage method on soil conservation and not on whether you have grasshoppers.

Likewise, burning is not a useful grasshopper control method. In fact, it is unlikely to increase egg mortality.

—Dave Noetzel
Extension Entomologist

SOYBEAN

SPIDER MITES—Patchy rain fall has left soybeans in many areas of western Minnesota under drought stress. Combined with above normal temperatures last week, spider mite populations have begun to increase. Mites are especially evident in field margins near permanent vegetation (alfalfa, roadsides) where spider mites overwintered. While a widespread repeat of last summer's outbreak seems unlikely, spider mite infestations are likely to occur in drier areas.

Spider mites ((1/50" long) usually occur on the underside of soybean leaves in colonies. Their piercing/sucking feeding produces small light-colored spots on the leaves called stiples. Under severe infestations. leaves yellow, dry, and drop off the plant. In Iowa and Illinois, iron chlorosis of soybean has been mistaken for spider mite injury and insecticides applied. As a reminder, leaves from plants with iron chlorosis typically are yellow with more intense green near leaf veins. In contrast, spider mite populations stipling is more pronounced near leaf veins.

Because spider mite populations can increase and decrease rapidly, its important to monitor spider mite levels in fields over the next 1 1/2 months (especially in drier areas). **Note:** The mites can be readily detected with a hand lens or by shaking leaves over a white sheet of paper. If mites are detected throughout the canopy and some stipling is evident, treatment is recommended. Only two insecticides, dimethoate (Cygon and Dimethoate 400) and chlorpyrifos (Lorsban) are currently labelled in soybean.

Potential interactions between grasshopper and spider mite control need to be mentioned. Of the insecticides used against grasshoppers, only dimethoate and chlorpyrifos will control both grasshoppers and spider mites. All other insecticides will have either a negligible effect on the mites or in some cases may promote a spider mite outbreak. This phenomena has been noted in corn in Nebraska and Kansas where European corn borer control has triggered later spider mite outbreaks. This phenomena seems more pronounced with pyrethroids, such as Asana. The exact cause is not known but may involve removal of natural, enemies or the triggering of dispersal. As a safeguard, check soybean field margins or fields 2 to 3 weeks after insecticide application.

—Ken Ostlie
Extension Entomologist

VEGETABLES

COLORADO POTATO BEETLE (CPB)—Dr. Radcliffe has just completed a series of insecticide trials at Crookston, Grand Forks, and in the Park River, ND area. He reports that each of these CPB populations shows a marked difference in response to the range of insecticides he compared. For example, Sevin XLR and Furadan gave poor control at the Crookston location where he reported resistance to Temik in 1986-87. On the other hand they performed well at Grand Forks and Park River. Similarly, Guthion and Phosphamidon performed well at some locations and not at others. He suggests we may have to test CPB populations since each local population is unique and prescribe specific insecticides.

The first summer generation is well along and adult emergence is under way. There are still some eggs from the end of the first generation present however.

Where CPB control has not been carried out, total destruction of potato has taken place as of July 11.

—Dave Noetzel
Extension Entomologist

MISCELLANEOUS

BLACKLIGHT TRAP CAPTURES—The following table summarizes the captures made last week. July 5-12.

District	Location	Nightly captured European corn borer Average	European corn borer High	Armyworm Average	Armyworm High
NW	Crookston	6	12	1	3
WC	Fergus Falls	11	32	4	9
C	Glencoe	5	10	4	9
C	Olivia	2	5	18	87
SW	Worthington	1	3	4	6
SW	S. Lamberton	—	—	—	—
SC	Blue Earth	8	5	11	22
SC	LeSueur	2	5	3	10
SC	Montgomery	2	5	2	6
SC	Clarks Grove	1	3	10	21
SC	Waseca	8	16	12	27
SC	Calendonia	14	17	19	40
SE	Randolph	2	2	2	2
SE	Mankato	—	—	—	—
SE	Goodhue	23	30	3	6
SC	Brown	4	5	9	11

—Ken Ostlie
Extension Entomologist

PLANT DISEASE CLINIC

WHEAT STREAK MOSAIC VIRUS (WSMV)—WSMV have been verified to be present on several winter wheat samples submitted from Mahnomen county. This is a new county record.

—Jill D. Pokorny
Director, Plant Disease Clinic

DIAL U HIGHLIGHTS

Woolly alder aphid—Callers have been describing silver maple leaves folded or curled with a lot of white, waxy, often filamentous material covering the lower leaf surface. In some cases, these 'white threads' have been falling to the ground. Although some people believe it is a disease, it is the secretions of the woolly alder aphid. This aphid is usually more of a nuisance than a pest to the tree. Heavily infested young or recently transplanted trees can be protected with acephate (Orthene).

Patch disease is continuing to be a big problem on lawns. The turf must become well rooted and the thatch layer reduced to less than 1/2 inch in combination with good management practices before this disease condition can be corrected. This takes several years of high management. For more information refer to the revised sheet, *Patch Diseases of Lawns*, AG-FS-3034.

Grease ants—Callers describing very tiny ants in homes feeding particularly on greasy foods probably have thief ants.

DIAL U HIGHLIGHTS/*Continued*

Chemical sprays indoors often are ineffective. In fact, Pharaoh ants which often are confused with thief ants will splinter their colony when they sense chemicals (insecticides, cleaning agents, etc.), causing several infestations and making control more difficult.

Thief ants often nest outdoors so an insecticide barrier around the outside of the foundation usually helps decrease the number of ants that enter inside. A homemade bait consisting of peanut butter and honey (98 parts) and boric acid (2 parts) is known to be effective, although it may take up to 17 weeks to eradicate the ants. Pest control companies use baits, such as Maxforce, which are more effective and act more quickly. These baits are also effective against Pharaoh ants. See AG-FS-1006, *What to do about Ants.*

Leaf spot and powdery mildew are starting to become quite common in annual and perennial flowers. Proper plant spacing, good air circulation and watering early in the day and at the base of the plants will help to minimize disease development. For some plants fungicides will be needed. Refer to *Disease Control for Home Landscape Ornamentals*, AG-FO-3495, for further information.

Other common calls include—wilt diseases, rose black spot, powdery mildew and carpenter ants.

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