



PLANT PEST *Newsletter*

MINNESOTA EXTENSION SERVICE

UNIVERSITY OF MINNESOTA

PPST09 **June 9, 1989**

IN THIS ISSUE	PAGE
ALFALFA	
ALFALFA WEEVIL	48
CORN	48
EUROPEAN CORN BORER	48
STAND LOSS REPORTS CONTINUE	48
GRASSHOPPER UPDATE	49
SITUATION TO DATE	49
GROUND APPLICATION OF FURADAN	49
CARBAMATE INSECTICIDES AND BUFFERS	49
HONEY BEES AND INSECTICIDES	49
WILDLIFE CONCERNS	50
SMALL GRAIN	50
APHIDS	50
SOYBEAN	50
EARLY SEASON INSECT DEFOLIATION	50
CUTWORMS	51
WHITE GRUBS	51
MISCELLANEOUS	52
BLACKLIGHT TRAP CAPTURES	52
TORDON 22K USE IN MINNESOTA—CLARIFICATION	52
PLANT DISEASE CLINIC REPORT	52
WHEAT STREAK MOSAIC VIRUS—(WSMV)	52
BACTERIAL LEAFSPOT OF OATS	52
DIAL U HIGHLIGHTS	53

UNIVERSITY OF MINNESOTA
 DOCUMENTS
 JUN 13 1989
 ST. PAUL CAMPUS LIBRARIES

For more information regarding the Plant Pest Newsletter
 contact Extension Plant Pathology at 612-625-6290

ALFALFA

ALFALFA WEEVIL—Fields continue to be cut throughout the state this week. Fields that had high alfalfa weevil counts prior to cutting (>50/sweep or close to 1/stem) and were not treated with insecticide, should be watched very closely for feeding activity on new regrowth. So far this year, we have been fortunate to have a cool, wet spring. These weather conditions (in Minnesota) have favored alfalfa development over weevil development, which permitted many growers to get through the first crop without an insecticide treatment.

However, with the recent gradual buildup of weevil populations prior to cutting, coupled with relatively minor mortality induced by cutting, significant infestations of third and fourth instar larvae may hinder new regrowth. Given these infestation levels and 2-4 warm days (above 80°F), such fields stand a good chance of not greening up in 3-4 days after cutting.

If you believe you have some fields that fit this scenario, watch them closely. Look for larvae under the windrows after the alfalfa is cut. Note the density and size of the larvae. The presence of larvae under the windrow simply

suggests you continue to watch the field closely, especially if you see large larvae (>1/4" in length).

AFTER the hay is picked up, continue to watch the regrowth. Again, focus your effort in the windrows. If after 3-4 days the alfalfa is not greening up, and you find 6-8 larvae and/or adults/sq. ft., insecticide control is recommended. Please see last week's *Plant Pest Newsletter* or contact your county agent for registered chemicals and rates. With regard to the June 2 newsletter, Carbaryl (Sevin) was inadvertently left off the list of available materials. The recommended rate for Sevin XLR Plus is 1 to 1 1/2 lb AI/ac.

Because larvae often aggregate under the windrows, you should consider only treating the windrows to save time and minimize insecticide cost.

Throughout the summer, I would appreciate your feedback regarding our suggestions for insect pest management in alfalfa and your experiences (good and bad) with the various control options.

—Bill Hutchison
Extension Entomologist

CORN

EUROPEAN CORN BORER—Adult emergence of European corn borer began last week in southern Minnesota but is not expected to peak for 1-2 weeks. Adults can be observed in grassy action sites. Delayed planting and corn development are likely to reduce the potential for first generation problems.

STAND LOSS REPORTS CONTINUE—Reports of stand loss from insect infestations continue throughout Minnesota. Wireworms and white grubs infestations are more common than in any of the last 5 years. Many infestations in corn/soybean rotations lack any link to grasses as oviposition sites. Apparently, oviposition is proceeding in soybean or corn despite the lack of grass. This suggests that other site characteristics such as soil type, topography, proximity to trees (white grubs only) may be more important than the presence of grass.

Although a few black cutworm infestations originated from flights after the May 5 frost, most cutworm problems in corn have occurred on sandy soils. Corn following set-

aside or sod has been attacked by cutworms which lay eggs in the Fall and overwinter as larvae, e.g., sandhill cutworm.

Stand-loss from sod webworm has intensified over the last week with dramatic changes from leaf feeding to cutting. Sod webworms produce an amazing variety of damage from leaf feeding, leaf cutting, plant cutting, and even stem feeding below ground. Reports of insecticide performance are sketchy with Lorsban but a continuing decline in plant stand. The cause of this continuing decline was not new feeding but earlier feeding damage taking its toll. It appears that control measures for sod webworm need to be taken before cutting begins if this delayed expression of damage is to be prevented.

Hop vine borer movement into corn is largely complete but stalk borer movement is increasing. Hop vine borer control at this time will slightly reduce but not eliminate stand loss.

—Kenneth R. Ostlie
Extension Entomologist

GRASSHOPPER UPDATE

SITUATION TO DATE—Numbers of nymphal grasshoppers as high as 700 per sq. yard have been reported from cropland. The most severe infestations appear to be centered in Big Stone, Wilkin, Traverse, Clay and Stevens counties but moderate to high numbers have been reported from most western Minnesota counties from Kittson to Lincoln.

Considerable treatment of cropland has already been carried out and many townships have begun roadside control programs.

The legislation introduced by Senator Berg and Rep. Nelson was signed on Monday, 5 June I understand. This can require the treatment of virtually every productive grasshopper site. The mechanism for managing such a task is basically that for enforcement of weed control. Very little funding was established for the 50% reimbursement spelled out in the law.

The initial step in putting the law into action is for the Commissioner of Agriculture to declare grasshopper control zones. These will be based on governmental units (city, township, and county). As of the date of this newsletter that has not yet been done. My guess, however, is that we will hear before Monday, June 12.

According to past law township officers, and county weed inspectors could make the determination of the need for noxious weed control. An analogous process should develop for grasshoppers. Training sessions for these folks will likely be held the week of June 12.

It's our feeling that twostriped grasshopper egg hatch will be complete enough that treatment of egg laying sites where nymphal numbers (50+/sq. yd.) and/or adjacent crop damage justify treatment should begin next week.

We have not observed redlegged nymphs yet but feel that the hatch should have begun this week. This species has a very long hatch period so we could continue to see redlegged nymphs into mid and late August. When controlling these on egg sites try to delay as late as possible to prevent egg laying (i.e. before nymphs become adults) but to maximize nymph reduction.

GROUND APPLICATION OF FURADAN—A few people are asking about the use of Furadan as a ground applied insecticide. I would discourage this as Furadan has high oral toxicity. It should also be noted that Furadan 4F has a 24 hour re-entry limitation. By Minnesota law this requires some sort of reasonably conspicuous *posting* of the field by the applicator or owner. Warnings are also required to folks working with the compound and to those likely to utilize the areas being treated.

CARBAMATE INSECTICIDES AND BUFFERS

There appears to be a concerted effort to push the use of buffering agents with the carbamates, Sevin XLR and Furadan. The claim is that the high pH water used as the carrier breaks down the insecticide thereby reducing its efficacy against grasshoppers. The half life of each compound at the given pH is as follows:

Insecticide	1/2 life in days at pH			
	6	7	8	9
Sevin XLR	125	27	2.5	1
Furadan	200	40	5	3.25

Where most insecticide is mixed and sprayed within an hour buffering, or lack thereof, is going to change the insecticide concentration very little. The spray dries rather quickly on the plant and any pH effect will cease at that time.

We have done an enormous amount of plot work in western and northwestern Minnesota counties and do not believe we have ever observed significant reduction in insecticide efficacy due to water pH with normal application. I am not aware of good field trials supporting it either. Quite frankly the cost of adding buffer is such that should this be an issue I would very quickly choose an alternative insecticide that the supposed pH effect will not alter. These include both the phosphate and pyrethroid insecticides.

I might also observe that we have not seen added efficacy or persistence of insecticides with any additive we have tested.

HONEY BEES AND INSECTICIDES—Widespread control of grasshoppers is underway in western Minnesota and will increase considerably as grasshoppers increase in number and size. It will be virtually impossible to avoid treating plants upon which honey bees are foraging. CRP fields with alfalfa and sweet clover are major foraging sites for commercial honey bees.

The insecticides which have previously contributed most greatly to bee kills are PennCap-M and various formulations of Sevin. Malathion ULV was a moderate problem the year encephalitis mosquitoes were widely controlled. We have also experienced minor kills with Lorsban and Furadan.

The use of Asana XL, Pydrin and Malathion 5E (Cythion) have greatly reduced bee kills. Where potential for bee kills

GRASSHOPPER UPDATE/Continued

is high these insecticides should be used. And whenever possible insecticide application should be made as late in the day as possible on plants in bloom.

In all cases beekeepers and applicators, both aerial and ground, should stay in contact with each other at the local level. Beekeepers should be encouraged to provide applicators with their bee yard locations. Applicators should then contact the beekeeper a day or so ahead of when an application will be made.

I doubt that we can completely avoid some damage to honey bees under the conditions that are likely to exist for the next few weeks. However the proper selection of insecticides and application times and maintenance of local communication between applicators and beekeepers should keep problems manageable.

WILDLIFE CONCERNS—Wildlife concerns have been raised by most of you. We have discussed the honey bee situation but there is also need to consider insecticides least harmful to wildlife utilizing fields, including roadsides, in which grasshopper numbers may require control.

Perhaps the greatest single management factor in reducing potential hazard to wildlife is to avoid treating where it is not needed. Some argue we need to control hoppers now in order that 1990 grasshopper populations also be reduced. That can occasionally be true but I do not believe we have the evidence to suggest completely blanketing a township, for example, is the answer to taking care of 1990 grasshoppers.

I would strongly encourage cooperation with state and federal wildlife people who manage wildlife production areas. It seems to me a proper trade-off that these areas should be permitted to carry somewhat higher grasshopper numbers before treatment is considered. And to the extent possible I would discourage treatment of the wildlife production area and encourage treatment of the minimum

area required to maintain integrity of the adjacent crop. I do not believe we can treat wildlife areas containing grasshoppers on the basis of the argument that we are controlling next years grasshoppers. Environmental conditions may well do that for us.

Finally the insecticides with the least hazard, to birds in particular, are Asana, Pydrin and Sevin XLR. I believe the risk from Malathion is also reasonably low.

Applicators should avoid water and drainage courses with all insecticides. However the group of compounds most toxic to aquatic organisms are the pyrethroids. The pyrethroids should neither be applied to water nor should they be permitted to drift into such sites.

The compound I have most concern about with wildlife is Furadan. We know it is extremely effective on grasshoppers at low dosage. As a result its widespread use has the potential for wildlife injury. I would absolutely limit its use to cropland only.

—Dave Noetzel
Extension Entomologist

SMALL GRAIN

APHIDS—While checking for grasshoppers some agents have reported various numbers of aphids in wheat. Numbers as high as 10 per stem were reported by Rich Kvols of Yellow Medicine County. We have been using 20-30 aphids per stem as an action level based on work by the Northern Great Plains lab. In those studies it was rather clearly shown that treatment for aphids at or past heading did not change yield.

—Dave Noetzel
Extension Entomologist

SOYBEAN

EARLY SEASON INSECT DEFOLIATION—Bean leaf beetles and grasshoppers are causing locally severe defoliation of soybean. Bean leaf beetles overwinter as adults. The 1/4-inch beetles typically have a light yellow to crimson background color, 4 black spots (optional) and a

black triangle on the wings just behind the thorax. Adult feeding on soybean ranges from gnawing on cotyledons, clipping off cotyledons, and defoliation of unifoliate and trifoliolate leaves. Soybeans are generally tolerant of defoliation in vegetative stages but prolonged, severe

defoliation can retard growth and reduce yields. Treatment of bean leaf beetles is recommended when defoliation reaches 30 - 40% during soybean stages V1 to V3. The beetles lay eggs near soybean and the larvae feed on soybean roots and nodules. Larval feeding does not cause economic damage. Because adult populations are now declining, make sure adults are still present and defoliation is continuing before treating. Soybeans should rapidly outgrow bean leaf beetle injury. Economic damage is unlikely beyond V3.

Reports of grasshopper feeding have increased dramatically over the last week. The same economic threshold criteria used for bean leaf beetles can be applied to grasshopper defoliation. Because insect defoliation occurs overtime, it causes a prolonged drain on plant resources and results in economic loss at lower defoliation levels than a one-time hail storm. Grasshopper defoliation is most common near field edges as nymphs migrate from batching beds. Defoliation may also be visible throughout the field if it served as an egg laying site last year (e.g., set aside). Hatch of two-striped grasshoppers is largely completed. Treating not only the field but also the source of migrating nymphs is extremely important for effective long-term control. See following table for suggested insecticides and rates. Make sure the insecticide is labelled for both the crop and source of nymphs (if outside the field).

Recommended Grasshopper Insecticides in Soybean

Insecticide		Product/acre
acephate (Orthene)	75SP	3/8-3/4 lb
carbaryl (Sevin)		3 pt
	XLR	
*carbofuran (Furadan)	4F	1/4-1/2 pt
chlorpyrifos (Lorsban)	4E	1/2-1 pt
dimethoate (Cygon, Defend)	2.67E	3/4-1 1/2 pt
	4E	1/2-1 pt
*esfenvalerate (Asana)	1.9E	1.7-3.4 fl oz
	0.66E	4.8-9.6 fl oz
*fenvalerate (Pydrin)	2.4E	5 1/3-10 2/3 fl oz
*methylparathion (PennCap-M)	2F	2-3 pt
*tralomethrin (Scout)	0.3E	6.4-8 fl oz

* *Restricted-use material.*
Post treated areas when required by label.
Check label for re-entry interval.

CUTWORMS—Several reports of cutworm activity in soybean have been received from SC and SW Minnesota (e.g. Blue Earth, Brown, Redwood counties). Cutworms may clip the hypocotyl of soybean (the bend in the stem) just before the cotyledons are pulled from the soil. On more mature plants, cutworms defoliate or cut off cotyledons, unifoliates, and trifoliolate leaves. If cutting occurs below the cotyledons, the plant dies. If cutting of the growing point occurs above the cotyledons, the plant survives. These, soybean develop into "Y-plants" when ancillary buds at the cotyledons develop. Treatment for cutworms in soybean is recommended when 20% of the plants cut, stand has gaps of 1 foot or more, and cutworms are still present. Fortunately, soybean can tolerate more stand loss than corn before economic loss occurs. Recommended insecticides and rates are given in the following table.

Recommended Cutworms Insecticides For Soybean

Insecticide		Product/acre
carbaryl (Sevin)		3 pt
	XLR	
chlorpyrifos (Lorsban)	4E	1-2 pt
*esfenvalerate (Asana)	1.9E	1.7-3.4 fl oz
	0.66E	14.8-9.6 fl oz
*fenvalerate (Pydrin)	2.4E	
*permethrin (Ambush, Pounce)	2E	6.4 fl oz
	3.2 E	4 fl oz
thiodicarb (Larvin)	3.2F	1 1/4-1 7/8 pt
*tralomethrin (Scout)	0.3E	6.4-8 fl oz

* *Restricted-use material.*
Post treated areas when required by label.
Check label for re-entry interval.

WHITE GRUB—Roof pruning by white grubs occasionally causes economic stand-loss in soybean. Soybean stands are fairly resilient, tolerating 40 to 50% stand loss before yield loss reliably occurs.

Thus, mild white grub infestations often go unnoticed. Unfortunately, when severe infestations occur, no rescue treatments are effective. The management options boil down to whether or not to replant. Root feeding and corn loss continue through June before white grubs move deeper to continue feeding.

—Kenneth R. Ostlie
 Extension Entomologist

MISCELLANEOUS

BLACKLIGHT TRAP CAPTURES—The following table summarizes the captures made last week. May 31 - June 6 1989.

District	Location	Nightly captured			
		European corn borer		Armyworm	
		Average	High	Average	High
NW	Crookston	--	--	T	1
WC	Fergus Falls	--	--	3	37
C	Glencoe	3	9	2	4
C	Olivia	T	1	4	14
EC	Scandia	--	--	--	--
SW	Lamberton	--	--	1	3
SW	Worthington	11	20	1	4
SW	S. Lamberton	7	29	2	10
SC	Blue Earth	19	86	16	29
SC	LeSeuer	8	28	5	13
SC	Brown	3	9	1	2
SC	Clarks Grove	6	25	2	4
SC	Waseca	7	17	7	18
SC	Caledonia	11	25	27	58

—Kenneth R. Ostlie
Extension Entomologist

TORDON 22K USE IN MINNESOTA-CLARIFICATION—Tordon 22K uses under the 24c Minnesota state label no longer exist and are technically not legal this season. This includes pasture and rangeland uses, and use on spring and winter wheat, spring barley and oats (see PPST08, June 2, 1989 issue). Apparently no notification has been given to dealers handling Tordon 22K and no relabeling of existing stock occurred. The label currently in effect is date coded D1188 replacing D987 on the back of the label booklet. It is a "grey area" legal issue for the

uses that may have occurred already this season when the apparently correct label was on the container (D987), but is a more serious issue if more recent production product is used and the new label (D1188) was in possession but not followed at the time of application. Regardless of the handling of notification and awareness generation, do **NOT** use Tordon 22K on these sites until further notice.

—Roger Becker
Extension Agronomist-Weed Control

PLANT DISEASE CLINIC REPORT

WHEAT STREAK MOSAIC VIRUS-(WSMV)—Three additional winter wheat samples from Traverse and Wilkin counties have been tentatively identified as positive for WSMV. Samples exhibited symptoms of stunting, yellow streaking and mottling on the leaves and wheat curl mites were present. ELISA testing is underway to positively confirm the diagnosis.

BACTERIAL LEAFSPOT OF OATS—We have received samples of oats from Kanabec and Douglas counties with bacterial leafspotting present. The leafspots first

appear as light green, water-soaked areas which then turn yellow and finally brown. Often a yellow halo is present around the leafspots. The leafspots enlarge, become elongate and often coalesce and kill large portions of the leaf surface. Bacterial leafspot diseases of oats are most prevalent during cool, raining weather and gain entry into the plant via wounds or damaged tissues (hail, sandblasting etc.) and stomates. Warm, dry weather will prevent further spread and hold disease development in check.

—Jill D. Pokorny
Director, Plant Disease Clinic

DIAL U HIGHLIGHTS

Viral diseases have been seen on roses and geraniums in recently purchased plants. Avoid purchasing plant material with prominently lighter colored veins, mottling, mosaics or ring patterns on the foliage. Viruses are usually systemic; the plant material will not recover.

Plant bugs, particularly honeylocust plant bug (HPB) and ash plant bug (APB) have been common. HPB causes the leaves to turn yellow or brown with some leaves becoming cupped and dwarfed. Moderate infestations of APB cause a white or yellow speckling on the upper leaf surface; heavy infestations cause affected areas to turn brown. Control is not normally necessary for the health of the tree, although heavy infestations of HPB can be damaging. Carbaryl (Sevin), diazinon, or malathion are effective insecticides.

European pine sawflies—Callers have been complaining about 'worms' in their mugo pines. In most cases the European pine sawfly is between 1-2 inches in length and nearing or have already finished their feeding. Watch for these pests next spring and spray when they are first noticed with acephate (Orthene), carbaryl (Sevin), or malathion.

Horticulture—We're beginning to see a number of samples of trees, shrubs and flowers exhibiting the typical cupping and twisted growth we associate with herbicide drift or uptake. Try to avoid this by spraying only when it's not windy and when no rain is forecast for a couple days. Aim directly at the offending plants, keeping the hose or sprayer close to the ground at all times. Choose a day when the temperature is not expected to go above the low to mid 80's, maximum.

Reports have also come in about grape vines that are not producing fruit. Flower clusters develop, but nothing more. Some native (wild) grapes and a few old varieties have separate male and female plants. Both are needed so female flowers can be pollinated to produce fruit. Grapes are also very sensitive to 2,4-D and other phenoxy herbicides. If they're hit with herbicide drift when the flowers or young fruit are forming, the fruit may abort.

People are sending us lots of evergreen samples with brown, dry needles and poor or no new growth this spring. Even though there may be some insect feeding on these samples, usually the insects were not the main culprit. Instead, it's the heat and drought damage we were expecting. When evergreens go into winter under stressed conditions, they are subject to lots of injury. So even if they looked pretty reasonable last fall, they may look terrible this spring. Water, fertilize and prune if damage is not too severe. You can always replant in early autumn.

Other common calls include oak wilt, mushrooms, lawn diseases, anthracnose, post birch leafminer damage (!), carpenter ants, cutworms, seeding and sodding lawns, and weed control.

Jeffrey Hahn
Entomology

Cynthia Ash
Plant Pathology

Deborah Brown
Horticulture

The information given in this publication is for educational purposes only. References to commercial products or trade names is made with the understanding that no discrimination is intended and no endorsement by the Minnesota Extension Service is implied.

**Department of Plant Pathology
University of Minnesota
495 Borlaug Hall
St. Paul, MN 55108**

St. Paul Campus Library
Documents Department
University of Minnesota
St. Paul, MN 55108