



PLANT PEST Newsletter

MINNESOTA EXTENSION SERVICE UNIVERSITY OF MINNESOTA

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ALFALFA

Alfalfa Weevil—Degree-day updates for several locations are shown in the table below. We are still about 80 DDs (6-10 days) behind last year (eg. at the Rosemount location). In extensive sweep net sampling by Dr. Kathy Flanders in southeastern Minn., she has found a range from 1-6 weevil adults/200 sweeps. These numbers are 2X greater than last year, but still very low. I did find one 2nd-3rd instar weevil larva at Rosemount on 5/13, that must have survived from overwintered eggs (based on our current Degree-day information). Kathy Flanders has also found a few larvae/1000's of sweeps. To review, most of our alfalfa weevil populations overwinter in Minnesota as adults, with fall-laid eggs only representing a fraction of the spring larval population in most years. With the few numbers detected to date, I am anticipating that previous (1991) fall-laid eggs will again contribute little to the overall infestation.

Alfalfa Weevil Degree-days (>48°F) as of May 10, 1992

Location	Degree-Days
Caledonia	160
Winona	200
Rochester	186
Waseca	209
Faribault	185
Rosemount	226 (277 as of 5/13)
Cambridge	199
St. Cloud	204

Scouting for Weevil larvae (from spring-laid eggs) should begin between 300-400 degree days. Refer to 5/8/92 newsletter for more information.

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

Alfalfa/Continued

Potato Leafhopper—The strong southerly air flow we had this past weekend provided ideal conditions for PLH movement into the state. Although we do not have a positive ID for the leafhoppers collected to date (there are many species of these little green guys), there is strong circumstantial evidence that what we have picked up since this past Sunday (5/10) are indeed PLH. Numbers collected at Rosemount (5/13) averaged 1-2/100 sweeps. Likewise, Kathy Flanders found similar adult counts in Olmsted county on 5/13 after finding 0/1000+

sweeps on 5/10. These “low-density” early flights are not that unusual. We still have plenty of time for significant influxes of PLH (typically late May, early June) that will most likely make the decision to spend their summer somewhere in the upper mid-west. Let’s just hope that most of them land in Wisconsin for a change.

*Bill Hutchison
Extension Entomologist*

CORN

BLACK CUTWORM UPDATE—Activity was generally light all last week with only sporadic sites capturing 4 or more in a single night. No significant captures were reported through Friday May 8. Flights in general have been light this spring. Light flights combined with the pace of field work suggests that black cutworm infestations will have little impact this spring.

Scouting for cutworm injury from corn emergence through the 4-leaf stage is always a good idea. Native cutworms that overwinter here such as the sandhill, darksided, dingy, glassy, etc. can also attack crops. Other insects such as wireworms, white grubs, seedcorn maggots, and sod webworms can also cause stand loss. Even though soybean planting, weed control, and alfalfa harvest demand a farmer’s attention, take some

time to check on corn. Prompt detection and diagnosis of what’s causing stand loss can rescue a crop with a good yield potential or help speed replant decisions when every day’s delay diminishes yield potential.

The gusty southerly winds preceding the cold front last weekend, however, brought with it a sizeable migratory flight. Preliminary reports indicate widespread significant captures of the magnitude 10-16 in a single night. The late arrival of this significant flight will reduce its threat to corn production except on late-planted fields (after May 10). Next week’s article will review this flight and make cutting projections from all flights this spring.

*Ken Ostlie
Extension Entomologist*

OATS AND BARLEY

OAT AND BARLEY GROWERS FACE CONCERNS OVER RUST DISEASES—The last three seasons have been shifty ones for rust fungi, especially those attacking Minnesota’s oat and barley crops. New strains have developed that are affecting previously resistant varieties. While plant pathologists and breeders struggle to identify new sources of resistance, growers face uncertainty about the potential for losses and what they might do to reduce them.

Crown rust represents the major concern for oat growers. Last year, crown rust reduced yields an average of 17%. Producers in Southeastern Minnesota felt the bite of this disease to a much greater extent with devastating losses in yield and test weight.

In the Northwest, barley growers listened all spring to concerns about Race QCC of the stem rust fungus and escaped only to watch other diseases, like powdery mildew ravage their crop.

So what’s in store for 1992? It’s a sure bet that these rust diseases will be back, but to what extent is not yet known.

Stem rust of barley originates on susceptible winter wheats far to our south. Reports of the disease in Texas have thus far been negative. But as the disease begins to develop, and move north to Kansas, alerts will be sounded.

Stem rust losses have been minimal the last three years. This has been partially due to the fact that our barley crop has been planted early and matured before the rust had much of an opportunity to damage it. The cold, late spring of 1992 bodes ill as planting dates slide toward mid-May.

As for oat producers, the soaking rains of ‘91 do not appear to interested in a repeat performance. Planting has been timely. Unfortunately, oat crown rust originates much more locally (on buckthorn bushes and hedges) and preventing losses in susceptible varieties is more complicated than simply getting them planted early.

Given the losses, and the potential for losses, there may be questions about chemical controls for these diseases. In February of this year, the Environmental Protection Agency

completed a long term re-registration process on the EBDC fungicides. These products include various formulations of maneb and mancozeb. EPA concluded that dietary health risks and applicator exposure concerns were minimal and re-established registration on 42 agricultural crops including both barley and oats. Registration of mancozeb on barley and oats had been voluntarily suspended back in 1989 and mancozeb was not available to growers interested in combating rusts in 1990 and '91.

Resistance to rusts has been so effective in the past that little data exists on the effectiveness and economics of using fungicides. Trials were conducted on Robust barley in Minnesota and North Dakota last season (Table 1) but very little stem rust developed. Yield differences between sprayed and unsprayed treatments at Crookston and Langdon (Table 2) were primarily due to control of powdery mildew, net blotch and/or spot blotch. Mancozeb was not included in last years trials because of their registration status. They will be included in trials conducted this year.

Chemical costs and barley prices make it difficult to achieve a profit from applying foliar fungicides. Bayleton and Tilt are registered for control of rusts in barley but these materials cost anywhere from \$13.50 to \$28.00 per acre (depending on rate and material) and they do not always result in a significant net return (Table 3). The re-registration of mancozeb on barley as well as recently announced manufacturer rebates for Tilt could improve the potential profitability of using foliar fungicides on barley but much more research on that question is needed. In the last three years, there have been no reports of fields sustaining losses due to stem rust in excess of 10%. Fields with a yield potential of 80 bu/acre would have to be damaged at approximately 10% (loss of 8 bu/acre) before available fungicides would become economical. And that estimate assumes total disease control by the sprays.

The issue of attempting to use mancozeb to manage losses due to crown rust is even more challenging. Mancozeb is effective in preventing rust infections but the issue of profitability in relation to spray frequency has to be addressed. Quality formulations of mancozeb sell for around \$2.00 per pound of product.

Labels recommend the use of 2 pounds/acre. Use directions suggest starting applications at the onset of disease or

when plants are in the tillering to jointing stage and repeat at 7 to 10 day intervals. The number of applications per season is limited to a maximum of 3. Other restrictions include a pre-harvest interval of 26 days from the time of the last application, and that livestock are prohibited from feeding in treated areas prior to harvest. Alfalfa, seeded under oats is not registered for applications of mancozeb. **Do not apply mancozeb to oats under-seeded with alfalfa.**

To estimate the cost of sprays, oat growers should include a custom application cost. These usually average about \$3.50/acre (aerial application in 5 gallons of water). This would bring the cost of an average spray to around \$7.50/acre.

Oat producers have much to consider when making spray decisions on this crop. Varieties resistant to last years "races", such as Troy, Dane, or Horicon will not likely benefit from chemical treatment. Also, I would not begin considering sprays until crown rust was evident on lower leaves and in any considered opinion, the outlook for disease development was high. **By the same token, mancozeb is a protective fungicide, spraying after significant damage will not be beneficial.**

The most critical period for the development of crown rust epidemics in relation to yield of oats is jointing through soft dough. Protection of the flag leaf during grain fill is extremely important. To this end, growers may want to consider "costing out" a program that involves at least two sprays (\$15.00/acre) with the first applied around Feekes 6 or 7 and then a second application around late boot to early heading. Three spray programs would probably better cover the "window" of vulnerability, but they may be a bit pricey. If a decision is made to spray, always use the highest rate (the cost of mancozeb relative to the cost of application is reasonably low). Leaving an unsprayed area in a field to compare the results might help with future decisions.

Finally, the issue of whether to even spray at all. Without a thoroughly researched database, producers will have to use their own skills and past experiences to make this decision. Profit margins are small and spray costs will represent a significant percentage of expected gross returns. On the other hand, losses in excess of 30%, such as those experienced in certain fields last season, could be reduced.

Table 1. Yield of Robust barley from fungicide trials at four locations. 1991.

Treatment	Yield (Bu/Ac)				
	Crookston	Fargo	Langdon	St. Paul	Average
Bayleton (4/10.1)	45.8	33.5	51.4	29.0	39.9
Bayleton (8/10.1)	46.8	32.1	46.3	29.4	38.7
Tilt (4/ 8.0)	50.1	34.3	58.4	29.5	43.1
Unsprayed	38.6	29.8	43.5	27.7	34.9

**rates of 4 oz or 8 oz per acre applied at Feekes Stage 8.0 (flag leaf emergence) or 10.1 (head emergence).*

CORN/Continued

Table 2. Yield response above unsprayed at four locations. 1991.

Treatment	Yield Above Unsprayed (Bu/Ac)					
	Rate/ Timing*	Crookston	Fargo	Langdon	St. Paul	Average
Bayleton	4/10.1	7.2	3.7	7.9	1.3	5.0
Bayleton	8/10.1	8.2	2.3	2.8	1.7	3.8
Tilt	4/ 8.0	11.5	4.5	14.9	1.8	8.2

*rates of 4 oz or 8 oz per acre applied at Feekes Stage 8.0 (flag leaf emergence) or 10.1 (head emergence)

Table 3. Net return from fungicide treatment on Robust barley. 1991.

Treatment	Net Return (\$/Ac)				
	Crookston	Fargo	Langdon	St. Paul	Average
Bayleton (4/10.1)	- \$ 5.22	- \$10.47	- \$ 4.17	- \$14.07	- \$ 8.52
Bayleton (8/10.1)	- \$16.12	- \$24.97	- \$24.22	- \$25.87	- \$22.72
Tilt (4/8.0)	\$ 3.72	- \$ 6.78	\$ 8.82	- \$10.83	- \$ 1.23

Estimates of chemical costs obtained from local distributors averaged \$307/gallon for Tilt 3.6 EC and \$48/pound for Bayleton DF. Aerial application costs were estimated at \$3.50/acre to include application in 5 gallons of water/acre with automatic markers or flagmen. Interest on these variable cost inputs was estimated at 10% for 4 months. Total fungicide program costs in 1991 were thus estimated at \$13.53 (Tilt), \$16.02 (Bayleton @ 4 oz rate), and \$28.42

(Bayleton @ 8 oz rate). Barley price estimated at \$1.65/bushel (malt quality of at least 70 % plump, 45 lb/bu test weight, and maximum protein of 12.5%) and \$1.50/bushel (feed quality). Yield of treated above untreated multiplied by barley price minus fungicide program cost calculates net return/acre.

Roger K. Jones
Extension Plant Pathologist

MISCELLANEOUS

Insecticide Label Changes—There has been a flurry of activity in “re-labeling” many of our most commonly used older insecticides. Some of these are going through the regular re-registration process, some are under special review, and some have had so much public attention that the political reality is that uses will have to be narrowed. Along with this technical process is the almost obsessive desire to communicate these label changes and, as a result, much of the relative information is really clutter.

Two compounds which will have their labels narrowed starting in 1992, and continuing during the next few years, are carbofuran (Furadan) and ethyl parathion. Both of these materials have been enormously beneficial contributors to profitable, and relatively safe, insect pest management in Minnesota.

For example the use of carbofuran granules applied by air was one of the first uses dropped from future labels. However

the final negotiations between FMC and EPA allows the continued use of granular product properly labeled for aerial application for such uses. What the user needs to do is to more closely pay attention to what the Furadan label on the product you have in hand says. And follow what that label reads.

A second product with large reduction in uses is ethyl parathion. Lets examine that products use from the positive side. It is still labeled for use on alfalfa, barley, canola (where 24 cs are present) corn, cotton, sorghum, soybean, sunflower and wheat. All of the EPA releases about these limitations were so confusing that they did little to make the future clear. Again the best advice for use of ethyl parathion is to read and follow labels on the material you use. Most use of ethyl parathion in Minnesota will be by certified commercial applicators.

Dave Noetzel
Extension Entomologist

Snap Beans—A section 18 emergency request for permethrin (Ambush, Pounce) was submitted to the EPA for review on May 12, 1992. The request for permethrin was made in anticipation of potentially high European corn borer (ECB) infestations in 1992. ECB "Indicator Fields" (those with 2-4 diapausing ECB larval/stalk last fall that have not been fall or spring plowed) at Rosemount and Waseca still average 0.6-

1.6 larvae/plant (31-40% overwintering survival) as of May 7-10. Larvae are just now starting to pupate. We hope to monitor moth emergence from nearby fields that have been fall or spring plowed to see how the "Indicator Field" data relate to area-wide spring emergence.

Bill Hutchison
Extension Entomologist

DIAL U

County Agents: Please Alert Master Gardeners of the Following Items

Cankerworms—Newly hatched cankerworms were observed in the Twin Cities recently. Judging from their size, the first caterpillars hatched sometime during the middle of last week. Of course not all eggs hatch at the same time. The best time to spray is about 10 days after egg hatch; be sure caterpillars are one-half inch or smaller and more than 50% of the leaves remain. See AG-FO-0876, *Cankerworms*.

Lawncare concerns—still comprise the vast majority of horticultural questions. Now people are beginning to worry about whether they've missed the time to apply a pre-emergent herbicide to prevent crabgrass.

We generally recommend getting it down and watered into the soil by May 15th in the Twin Cities area, but it's good to remember that not all crabgrass seeds sprout at exactly the same time. They continue to come up over a good part of the summer. So if folks are a little late with their application, it still may be worth their while. They might not get as good control, but they still will benefit. There is no magic cut-off date, after which the pre-emergents are worthless...at least in springtime.

With the advent of occasionally hot weather, we're suggesting that people in the southern half of the state avoid large lawn seeding projects at this time. It's better to defer them till late August or early September when nights are growing longer and days, cooler. Smaller "patch" jobs such as repairing dog damage or overseeding thin areas may still be under-taken with a reasonably good chance of success.

Rhizosphaera needle cast—It should be just about time to spray spruce infected with *Rhizosphaera* needle cast. The first application of chlorothalonil or bordeaux should go on when the new growth is 1/2 to 2 inches in length. Repeat in 3-4 weeks. This disease attacks stressed trees so the "stressor" must be removed to prevent recurrence of needle cast. For more information refer the Dial U Brief titled "*Rhizosphaera* Needle Cast."

Birch leafminers are here!—The recent warm weather has accelerated the predicted first date for birch leafminer mines to May 22 (as of May 10) in the Twin Cities according to the computer degree-day forecasting program. Unfortunately small mines were first seen on May 11, throwing a monkey wrench into the works. There have been a number of reports later this week suggesting that this is not an isolated case but rather that some leafminers are out early. This emphasizes you should use tools such as computers as guides and use observations of small mines as the final monitoring method. Even though some leafminers are active now, others will emerge later, so not all trees are attacked at the same time. See PPST 3 & 4 for additional information on birch leafminers.

Lilacs—typically grow like weeds in Minnesota, but we've received a number of calls this spring, as in others, about lilacs that just never bloom. Usually it's because they don't have adequate sun. A minimum of four hours, and preferably five or six, is needed for flowers to form. Those buds actually begin to develop the summer before you see flowers, so summer or fall pruning removes them. Also, heavy pruning often delays blooming by several years.

One more lilac note: They rarely need fertilizer, and seem to thrive in poor soil. However, that soil must drain decently. What with all the rain we had last year, some lilacs started to blacken and rot because their roots were in wet, soggy soil much of the growing season.

Ash Yellows—This disease is causing a lot of excitement in Minnesota right now. It is similar to aster yellows--they are both caused by mycoplasma-like organisms. Unfortunately, we have a lot of unanswered questions--much research needs to be done. The impact of this disease on green ash in Minnesota is unknown. For more information and a color brochure refer to AG-MI-5898, *Ash Yellows in Minnesota*.

Eastern tent caterpillars—are active now. They web the crotches of branches and trunks where they hide at night and during cool or wet days. On warm, sunny days they come out and feed on the leaves. Their favorite trees are apple, cherry, flowering crabapple, plum, and chokecherry. Eastern tent caterpillars rarely kill trees, although they do detract from the attractiveness of them.

DIAL U/Continued

Take a stick or broom and pull out the web on an overcast or cool day (when the caterpillars remain in their tent) and destroy them. If an insecticide is desired, spray the foliage with one of the following: Bacillus thuringiensis (Dipel, Thuricide), acephate (Orthene), carbaryl (Sevin), or malathion. It is not effective to treat the web as the caterpillars are protected inside of it. If the tree is flowering, spray Bacillus thuringiensis because it is nontoxic to bees.

Gall midges associated with elm—Large numbers of very small, reddish 'worms' are being found under elms. The 'worms' are a fly known as a gall midge. Based on the literature, the species appears to be Dasineura ulmea. This gall midge attacks developing samaras (winged seeds) in early spring. Later in the spring (normally about April), the mature

larvae drop to the ground where they remain until next spring. There is no real injury to the trees and no control is necessary. If people have problems with them on driveways, sidewalks, etc., just sweep them away. This is a short-lived problem that is more of a curiosity than anything else.

Other common topics: Pruning trees and shrubs, tulips that failed to bloom, removing fruit on ornamental crabapple trees (best avoided by planting sterile varieties or trees like Red Splendor, that hold their fruit into winter for birds).

Jeffrey Hahn
Entomology

Cynthia Ash
Plant Pathology

Deborah Brown
Horticulture

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MINNESOTA EXTENSION SERVICE

UNIVERSITY OF MINNESOTA
AGRICULTURE

Department of Plant Pathology
University of Minnesota
495 Borlaug Hall
St Paul MN 55108-6030

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