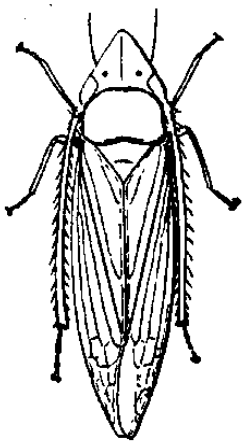
RUTGERS COOPERATIVE EXTENSION AT THE NEW JERSEY AGRICULTURAL EXPERIMENT STATION

PLANT & PEST ADVISORY

FIELD CROPS/LIVESTOCK EDITION $1.50 JULY 9, 1998



INSIDE

Does it Pay to Fertilize Grass Hay Fields?

Jeremy Singer, Ph.D., Field and Forage Crops

Grass hay fields typically are not managed for high production despite recent research highlighting the yield and quality gains that result in increased net return from improved management. Unlike alfalfa, grasses need nitrogen (**N**) for top dry matter yields. Topdressing grass hay fields can dramatically increase yield, and in most cases if cutting interval is less than 40 days, improve quality.

Results from a grass hay demonstration at the Rutgers Snyder Research Farm for first and second cut this season reinforce the yield potential of perennial cool-season grasses such as timothy and orchardgrass. Yield was measured after first cut in timothy and orchardgrass harvested at the boot to early-head growth stage. Plots were mowed with a mower/conditioner and allowed to field dry until a suitable moisture (less than 20%) was attained for safe storage. The plots were then baled and each bale was weighed to determine yield. Samples were randomly taken to determine quality.

These are established hay fields that had not been previously managed for high production. Therefore, no N was applied in the spring at greenup, which can easily be surmised from the low 1st cut yield and quality numbers. Orchardgrass was mowed on 5/14 and baled on 5/16 with no rain in between and yielded 0.64 tons per acre with 9.1% protein. Timothy mowed at a similar growth stage on 6/3 and baled on 6/5 with no rain in between yielded 0.83 tons per acre and 8.6% protein.

After these fields were baled, N was applied at 0, 25, and 50 lb. N per acre. Orchardgrass 2nd cut was mowed on 6/17, 34 days after 1st cut, and baled on 6/19 with no rain in between. The 0, 25, and 50 lb. N levels yielded 0.42, 0.70, and 1.16 tons per acre, respectively. Ammonium nitrate fertilizer was used as the N source to minimize volatilization at a cost of $215 per ton. Assuming hay can be sold at $105 per ton, which is a conservative estimate, and charging $7 per acre to topdress N, returns for the 3 N levels are 44, 64, and $109, respectively.

Timothy 2nd cut will be mowed this week. Results from the entire growing season will be available this fall, but preliminary findings are encouraging. Remember, however, that is a non-replicated demonstration project and not a research experiment. Also, so far this growing season we have had average to above average precipitation. In years with below average precipitation, these grasses will respond differently. Hopefully, next season we will initiate research on grass hay production in New Jersey. ❑

Scout Pastures for Poisonous Weeds

William J. Bamka, Burlington County Agricultural Agent

During the hot and dry months of July and August, many pastures brown out and decline in productivity. If forage is plentiful in the pasture, livestock will often avoid poisonous plants. However, during periods of drought, or when pastures are overgrazed, animals may begin to investigate undesirable plants discovered in pastures. Many individuals believe that instinct protects livestock from poisoning, but this cannot be relied on to prevent pasture poisonings. It is up to the livestock owner to prevent pasture poisonings.

During periods of drought, or when pastures are overgrazed, animals may begin to investigate undesirable plants discovered in pastures.

Scout pastures and remove poisonous weeds before they cause livestock problems. There are many poisonous plant species that can invade a pasture. Some plants to look for include the nightshades (eastern black nightshade, jimsonweed, groundcherry), wild black cherry, brackenfern and poison hemlock. If you suspect the presence of a poisonous weed and require identification assistance, contact your County Agricultural Agent. ❑

Field Crops Weekly Pest Summary - 7/9/98

Field Crops Working Group

Alfalfa

Potato leafhopper numbers continue to rise in fields across the state (see Potato Leafopper Popoulations article, page 3). Ninety percent or so of scouted fields in the south half of the state are above threshold, due primarily to the large number of immatures. The amount of control given by cutting the alfalfa depends upon the amount of weeds in the field. In pure, weed-free alfalfa, there should be few surviving nymphs following a cutting. However, if the stubble still looks green immediately after cutting there is a greater likelihood that leafhoppers will survive because the weeds will provide a refuge.

No other significant problems were observed.

Corn

Most corn looks good across the state, although some fields were beginning to show moisture stress.

Western corn rootworm beetles have been found as far north as Pittstown and likely can be found throughout the state. Tom Morgart, RCD-USDA, reports that some fields in northern Hunterdon County are goose-necked, a result of root feeding by rootworm larvae.

Soybean

Potato leafhoppers are being found in soybeans but in light numbers with no apparent feeding damage.

Minor weed problems are being seen in some fields. One field was reported with a nightshade problem.

Wheat

Hessian fly was found infesting a wheat field in Salem County last week. The fly larvae had caused weakened stems from their feeding and these stems were lodging. The farmer had planted his wheat well past the fly free date last fall, but exceptionally mild temperatures during the winter probably allowed the flies an extra generation. Farmers seeing individual lodged stems should look at the node between the leaf sheath and the stem for reddish-brown fly pupae. The pupae will be nearly a quarter inch long and will be stationary. There is no control except to follow the fly free date and look for fly resistant wheat varieties. ❑

Potato Leafhopper Populations Above Threshold in Most Alfalfa Fields

Daniel Kluchinski, Mercer County Agricultural Agent

Across the state, alfalfa fields are exhibiting yellowing and stunting. The cause? Feeding from potato leafhopper. This insect is pale to bright green in color, about 1/8 inch long and slightly wedged shaped as an adult, or slightly smaller and wingless as the nymph. Both stages of the insect cause injury by sucking juice from the plant. The saliva produced by the insect is injected into the plant, leading to injury which appears as a V shaped wedge at the leaf tips or yellowing of foliage. With severe feeding, plants can also become stunted in height.

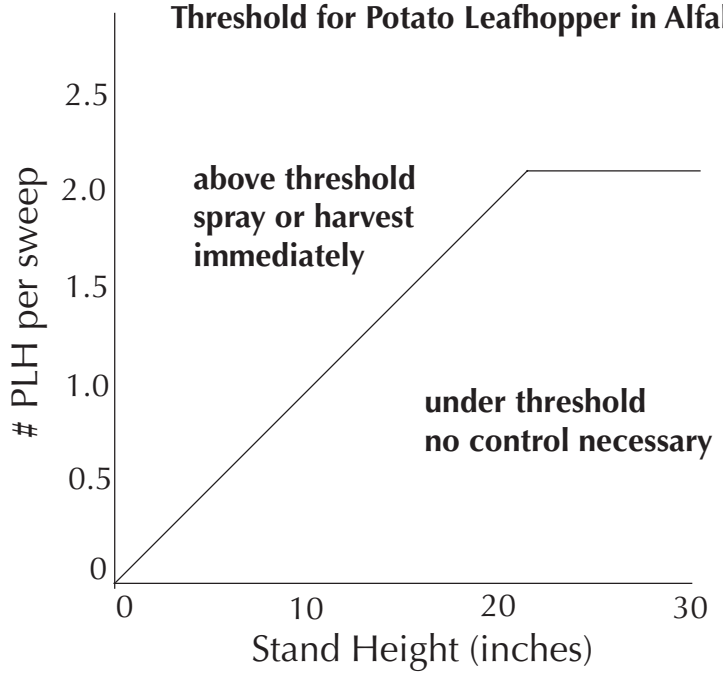
Populations of potato leafhopper (PLH) have 'exploded' in alfalfa fields, with most fields having leafhopper counts 3 to 5 times over the threshold. Above this threshold, economic losses are great enough that spraying to control the insect or harvesting the crop early, if feasible, is recommended. Unfortunately, once the visible damage is seen, the losses in forage quality have already occurred. The only way to be aware of PLH populations are to scout your fields!

Scouting must be done weekly with a sweep net. Twenty sweeps are taken in five locations in the field. The number of PLH found in the net are counted and divided by 100 (100 total sweeps taken) to determine the number of PLH per sweep. Then the threshold table is used to determine if this population level at the current plant height is over threshold or not. The threshold determines if some action is required to avoid or stop injury to the crop, or if PLH populations are still low enough that no action is needed.

For example, our alfalfa is six inches tall. Scouting determines there are 100 potato leafhoppers in our 100 sweeps; this would be an average of one PLH per sweep. Using the graph, we see that with one PLH per sweep at six inches of height is over threshold. Because the crop is too short to harvest, we should apply an insecticide to prevent further damage. If the crop had been 20 inches high, and found only an average one PLH per sweep, there would be no need to take any action. This amount of PLH at this stage in the plants' growth will not cause economic losses. However, the fields should be scouted on a weekly basis to monitor changes in PLH populations.

Remember, early detection is important. Fields should be scouted when information about PLH activity is reported in the *Plant and Pest Advisory* (also check the Weekly Pest Summary on FaxInfoLine, 732-932-6767, document 2017). If the PLH population is reaching threshold when the plants are close to maturity, cut rather than spray. Watch the regrowth for PLH populations. Populations may drop, so an automatic stubble spray is not always necessary. In addition, variation occurs between fields. Scout all of your fields weekly. Threshold populations of PLH in one field does not mean that all of your fields are at threshold.

For information on how to scout, how to purchase or build a sweep net, or use the threshold chart, contact your County Extension Agent. Additional information is included in the Rutgers *Field Crop Production Recommendations* and insecticide recommendations in the 1998 *Pest Management Recommendations for Field Crops.* ❑



Manganese Management

Joseph Heckman, Ph.D., Soil Fertility

Manganese (Mn) is a micronutrient that is often deficient in many coarse-textured soils of South Jersey but is seldom found deficient in fine-textured soils of North Jersey. Sandy soils typically have a low Mn content and are very susceptible to Mn deficiency if too much limestone is applied. As soil pH increases, plant availability of soil Mn decreases. Liming practice is therefore an important part of Mn management.

The objective of the liming program, to be consistent with the objective of maintaining soil Mn availability, is to raise the soil pH to the preferred pH level of the crop to be grown but no higher. Because sandy soils require less lime to change soil pH than soils higher in clay content, it is important to carefully apply only the amount of lime that is needed.

In recent years, increasing amounts of limed-sludge (biosolids) products are being marketed. Heavy applications of limed-sludge have in some instances resulted in excessive soil pH elevation and Mn deficient crops. Beneficial use of limed-sludge products requires the same attention to application rate as other traditional liming materials. The application rate of any liming material should be based on the calcium carbonate equivalent as listed on the product label and the soil test recommendation. Refer to Rutgers Cooperative Extension Fact sheets 635, 767, 902, 903, 904, and 905 for further information about liming and soil pH management.

Another aspect of Mn management is an awareness that different crops vary in sensitivity to Mn deficiency. Many legume crops, such as soybean, snap bean, lima bean, and alfalfa, easily become Mn deficient when grown on soils low in Mn. Small grain crops are also susceptible to Mn deficiency. Wheat is especially sensitive to the deficiency and low Mn availability from soil also favors the development of take-all disease. Bentgrass grown on golf course fairways is also more susceptible to take-all disease when Mn availability is low. Corn is generally less susceptible to Mn deficiency than most other field crops but deficiencies will occur on soils more conducive to Mn deficiency. Manganese deficiencies are occasionally observed on fruit crops, such as strawberry and peach, and some ornamentals.

Manganese deficiency symptoms often appear in random patterns across fields (symptoms may range from mild to severe). In most crops the diagnostic symptoms of Mn deficiency are exhibited as interveinal chlorosis: the area between the veins of the leaves turn yellow while veins remain green. The oat plant is an exception – gray oval-shaped specks appear on the edges of leaves.

Cultural Practices to Protect Against Manganese Deficiency

- Avoid excessive application of lime.
- Maintain an optimum pH for the crop.
- Ammonium sulfate is a fertilizer that causes soils to become acid. If soil pH is too high and Nitrogen fertilizer is needed, consider using ammonium sulfate fertilizer.
- Use an acid forming starter fertilizer containing ammonium sulfate or monoammonium phosphate.
- Soil test to identify fields low in Mn availability.
- Grow crops that are less susceptible to Mn deficiency in fields with a history of Mn deficiency.

Treatment of Manganese Deficiency

- Manganese sulfate is an excellent fertilizer source for correction of Mn deficiency.
- Begin foliar treatment of Mn deficient crops as soon as symptoms appear. Plants deficient in Mn will noticeably green up within a few days after treatment.
- For foliar treatment, apply 0.5 to 2.0 lbs. of elemental Mn per acre at each spraying.
- Foliar Mn application on soybean may be applied as a tank mix with postemergence herbicides (Blazer, Classic, Pursuit or Basagran).
- Applications of Mn to soil are generally less effective than foliar treatment. When broadcasting Mn, apply 15 to 20 lbs. Mn per acre. When banding Mn at planting, apply 6 lbs. Mn per acre with the starter fertilizer.

Soil Testing for Manganese

The Mehlich-3 soil test along with a soil pH measurement provides an index of soil Mn availability. Manganese availability index is calculated as follows:

Mehlich-3 Mn Availability Index = 101.7 – 15.2 (soil pH) + (Mehlich-3 Mn in ppm)

Interpretation of index values:

Below 25: Mn deficient soil

Above 25: Mn adequate

Refer to Rutgers Cooperative Extension Fact Sheets: FS568 and 632 for further information on Mn.

Manganese plant-analysis interpretations for various crops

Crop	Sampling Procedure	Manganese Normal Range, ppm
Alfalfa	Top 6 inches at bud	21-150
Corn	Earleaf at silking	20-200
Soybean	Recent mature trifoliates	21-100
Oat, Wheat, Barley	Top leaves	25-100
Irish Potato	Recent mature leaves	30-250
Onion	Top-no white portions	50-250
Spinach	Recent mature leaves	30-250
Snap bean	Recent mature leaves	50-300
Strawberry	Recent mature leaves	50-200
Peach	Midshoot leaves	40-160

Weekly Weather Summary

Keith Arnesen, Agricultural Meteorologist

Temperatures averaged near normal. Extremes were 90 degrees at Canoe Brook and Pembertion on the 4th, and 52 degrees at Charlotteburg on the 6th. Weekly rainfall averaged 0.64 inches north, 0.70 inches central, and 0.21 inches south. The heaviest 24 hour total was 0.86 inches at Charlotteburg on the 30th of June to the 1st of July. Estimated soil moisture, in percent of field capacity, this past week averaged 66 percent north, 61 percent central and 32 percent south. Four inch soil temperatures averaged 70 degrees north, 72 degrees central and 74 degrees south.

Weather Summary for the Week Ending 8 a.m. Monday, 7/ 6/98

	RAINFALL			TEMPERATURE				GDD BASE50		MON
WEATHER STATIONS	WEEK	TOTAL	DEP	MX	MN	AVG	DEP	TOT	DEP	%FC
BELVIDERE BRIDGE	.43	24.90	8.81	85	56	70.	-1	1198	224	59
CANOE BROOK	.48	24.32	7.12	90	58	73.	1	1404	437	63
CHARLOTTEBURG	1.14	27.13	9.73	85	52	69.	0	1045	279	67
LONG VALLEY	.65	24.88	7.23	80	56	68.	-1	1049	216	64
NEWTON	.48	20.68	4.93	84	56	69.	-1	1058	205	60
FREEHOLD	.66	25.51	9.38	87	60	73.	0	1226	129	65
LONG BRANCH	1.20	28.35	12.22	83	59	72.	0	1170	146	68
NEW BRUNSWICK	.70	25.52	9.70	88	57	72.	-2	1318	150	69
PEMBERTON	.49	18.50	2.76	90	59	75.	2	1441	308	53
TOMS RIVER	.42	32.19	16.04	88	56	72.	-2	1375	347	51
TRENTON	.75	23.87	9.02	86	56	71.	-3	1266	49	57
CAPE MAY COURT HOUSE	.62	18.69	4.45	88	58	74.	1	1370	263	37
DOWNSTOWN	.15	17.93	3.29	88	58	74.	0	1473	239	33
HAMMONTON	.01	17.61	2.15	88	59	74.	0	1426	220	20
POMONA	.21	22.32	8.34	90	57	74.	1	1404	294	30
SEABROOK	.28	20.85	6.74	89	58	76.	2	1561	320	41
ATLANTIC CITY MARINA	.00	22.92	9.55	87	65	75.	3	1338	301	15
WOODSTOWN	.33	17.98	3.28	90	56	74.	NA	1595	NA	NA

WES KLINE — GDD BASE 40 PINEY HOLLOW
Last Week 253 (Ending 6/29/98) This Week 236 (Ending 7/6/98)

Deer Fencing Installation Seminars

August 4, 1998
4 PM - 8 PM
Rutgers University, Snyder Research Farm
140 Locust Grove Road
Pittstown, NJ 08867

August 5, 1998
4 PM - 8 PM
Rutgers University, Agricultural Research and Development Center
121 Northville Road
Bridgeton, NJ 08302

The New Jersey Department of Agriculture and the New Jersey Division of Fish, Game and Wildlife in a cooperative program will be awarding over 700,000 feet of deer fencing to New Jersey farmers.

The Snyder Research Farm will be hosting the above noted seminars to educate farmers and other interested parties in the proper installation procedures. Representatives from the fence manufacturer and distributor, as well as commercial installers will be on hand to demonstrate fence installation.

Call the Snyder Research Farm at 908-730-9419, ext. 11, to register for either seminar.

Rutgers Cooperative Extension - NJAES
U.S. DEPARTMENT OF AGRICULTURE
Rutgers -The State University of New Jersey
88 Lipman Drive
Cook College
New Brunswick, N.J. 08901-8525

PLANT & PEST ADVISORY
FIELD CROPS/LIVESTOCK EDITION
CONTRIBUTORS

Rutgers Cooperative Extension Specialists
George Hamilton, Ph.D., Pest Management
Joseph R. Heckman, Ph.D., Soil Fertility
Bradley A. Majek, Ph.D., Weed Science
Jeremy Singer, Ph.D., Field and Forage Crops
Michael L. Westendorf, Ph.D., Animal Science

RCE County Agricultural Agents and Program Associates
Field Crops IPM Prog., Joseph Ingerson-Mahar (609-769-0090)
Burlington, William J. Bamka (609-265-5757)
Mercer, Daniel Kluchinski (609-989-6830)
Salem, David L. Lee (609-769-0090)
Program Associate, Miles Huffaker
Sussex, Robert C. Mickel (973-579-0985)
Program Associate IPM, Susan Eck-Jones
Warren, Everett A. Chamberlain (908-475-6503)

North Jersey Resource Conservation & Development Council
Brian Aldrich (908-852-5450)

Newsletter Production
Jack Rabin, Assistant Director, NJAES
Cindy Rovins, Editor and Designer