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2003 NEBRASKA WEED TOURS

On June 23rd, 10 A.M., there will be a joint tour of weed and soil science programs with Dr. Shapiro. The site is 1.5 miles west of Brunswick. In town, take 4th street which turns into road 863, the only black top road going west, the field is just west of a turkey farm, a large plastic turkey is in the front of a house.

We will start with the study of "Field Sandbur control in irrigated no-till corn" and then move on to see the "Nebraska Soil Fertility Project".

Sandbur is a major grass weed problem in corn, mostly west of HWY 81 in the state. This study examines 15 herbicide treatments of PRE, or PRE followed by POST, including most major products such as Outlook, Bicept II, Prowl, Harness, Lumax, Axiom, Balance Pro, Cinch-ATZ, Option, Accent, and Steadfast. So far some products worked well while some did not at all, come and see it yourself.

The Nebraska Soil Fertility Project is a three-year statewide effort by UNL Soil Scientists and others to refine the fertilizer recommendations in irrigated corn. Started in 2002 at 11 sites the experiments include a range of nitrogen, phosphorus and potassium treatments in combination. The objective is to determine the native soil fertility contributions under high yield environments. The site near Brunswick, Nebraska is no-till corn following soybeans.

On July 10, 1:00 P.M. there will be a weed tour at the Haskell Ag Lab at Concord.

On July 23rd there will be a Tour of weed control plots in pasture. Major weed species include: western ragweed, hoary vervain and eastern red cedar. We will start at 10 A.M. at Terry Gompert's house (2 miles south of Center, intersection of highways 13 & 84). There will also be a demonstration of specialized equipment for mechanical control of red cedar, and an insect update.

Aug 6th is a Purple Loosestrife Day at the Niobrara State Park, starting at 10A.M. with a few speakers, lunch, and then field visits of bio-control release sites, and herbicide plots.

Any questions, feel free to call me, otherwise please come and join us. (SK)

POTATO LEAFHOPPERS IN ALFALFA

Potato leafhoppers have had ample opportunity the last couple of weeks to ride southerly air masses into Nebraska. Checks of an alfalfa weevil plot near Winside indicate that the leafhoppers are present and should be scouted for. Southerly winds bring this insect into Nebraska, as is does not overwinter here.

These small (1/8 inch long), bright green, wedge shaped insects (Fig 1) may cause severe damage to alfalfa by injecting a toxin into the plant as they feed. This feeding results in a distinctive yellow or purple triangle shape at the tip of the leaf. First year spring planted alfalfa fields are particularly attractive to and vulnerable to potato leafhoppers, as are fields planted last year. In older fields, these insects are usually a problem on second and third cuttings. Newly developed resistant varieties will protect from potato leafhoppers fairly well, but alfalfa in the seedling stage may still be damaged. All fields should still be scouted, as large numbers of leafhoppers may still cause a problem, even in resistant variety fields.

Fig. 1. Adult potato leafhopper

Treatment decisions are based on numbers captured by sweep net. A sweep net is the only reliable way to scout for potato leafhoppers. See the following tables for decision-making help. Note that there do not have to be many to cause a problem. Most insecticides registered for potato leafhopper will give good control. See Table 4 for a partial list of registered insecticides. (KJ)

Table 1. Dynamic Treatment Thresholds for Potato Leafhoppers (average number per sweep) on Alfalfa that is 1 to 4 inches tall.

Value of hay (per ton)		**Cost of insecticide application (per acre)**				
	$8	**$10**	**$12**	**$14**	**$16**	**$20**
$ 60	0.4	0.5	0.6	0.7	0.8	1.0
$ 80	0.3	0.4	0.5	0.5	0.6	0.75
$100	0.25	0.3	0.4	0.4	0.5	0.6
$120	0.2	0.25	0.3	0.35	0.4	0.5
$140	0.2	0.2	0.25	0.3	0.3	0.4
$160	0.15	0.2	0.3	0.3	0.3	0.4

Table 2. Dynamic Treatment Thresholds for Potato Leafhoppers (average number per sweep) on Alfalfa that is 4 to 8 inches tall.

Value of hay (per ton)		Cost of insecticide application (per acre)				
	$8	**$10**	**$12**	**$14**	**$16**	**$20**
$ 60	0.7	0.8	1.0	1.0	1.3	1.7
$ 80	0.6	0.6	0.75	0.9	1.0	1.3
$100	0.4	0.5	0.6	0.7	0.8	1.0
$120	0.3	0.4	0.5	0.6	0.7	0.8
$140	0.3	0.35	0.4	0.5	0.6	0.7
$160	0.25	0.3	0.4	0.4	0.5	0.6

Table 3. Dynamic Treatment Thresholds for Potato Leafhoppers (average number per sweep) on Alfalfa that is 8 to 12 inches tall.

Value of hay (per ton)		Cost of insecticide application (per acre)				
	$8	**$10**	**$12**	**$14**	**$16**	**$20**
$ 60	2.0	2.4	2.8	3.0	3.9	5.0
$ 80	1.8	1.9	2.2	2.7	3.0	4.0
$100	1.2	1.5	1.8	2.1	2.4	3.0
$120	0.9	1.2	1.5	1.8	2.1	2.4
$140	0.9	1.0	1.2	1.5	1.8	2.0
$160	0.8	0.9	1.0	1.2	1.5	1.8

Table 4. Insecticides Registered for Control of Potato Leafhopper

	Product Name	Common Name	Rate	Restrictions/Comments
R	Ambush 2 E or Ambush 25 W or Ambush 25W WP	permethrin	3.2 -12.8 oz/acre	6.4 oz or less, no preharvest interval (phi) Over 6.4 - 14 day phi
R	Baythroid 2	cyfluthrin	0.8 -1.6 oz/acre	7 day phi
	Cythion 5	malathion	1.5 - 2.0 pts/acre	0 phi
	Cythion 8	malathion	1.25 - 1.5 pts/acre	0 phi
R	Furadan 4 F	carbofuran	1.0 - 2.0 pts/acre	1.0 pt - 14 day phi 2.0 pt - 28 day phi
	Imidan 70-WSB	phosmet	1.3 lbs/acre	7 day phi
	Lorsban 4 E	chlorpyrifos	0.5 - 1.0 pts/acre	0.5 pt - 7 day phi 1 pt - 14 day phi
	Malathion 57 EC	malathion	1.5 - 2.25 pts/acre	0 phi
R	Penncap-M	methyl parathion	2 - 3 pts/acre	15 day phi
R	Mustang Max	Zeta-cypermethrin	2.24 – 4.0 oz/acre	PHI 3 days cutting or grazing and 7 days harvesting seed
R	Pounce 3.2 E	permethrin	4 - 8 oz/acre	4 oz - 0 phi Over 4 oz -14 day phi
R	Pounce 25 WP	permethrin	6.4 to 12.8 oz/acre	6.4 oz - 0 phi Over 6.4 oz - 14 day phi
R	Pounce WSB	permethrin	0.1 - 0.2 lb/acre	0.1 lb - 0 phi Over 0.1 lb - 14 day phi
	Sevin 4 F	carbaryl	1.0 qt/acre	7 day phi
	Sevin 50 W	carbaryl	2 lbs/acre	7 day phi
	Sevin 80 WSP or 80 S	carbaryl	1.25 lbs/acre	7 day phi
	Sevin XLR	carbaryl	1.0 qt/acre	7 day phi
R	Warrior	Lambda-cyhalothrin	1.92-3.20 oz/acre	1 day phi forage 7 day phi hay

R - Restricted Use

COMMON STALK BORER DAMAGE NOW VISIBLE

Common stalk borers have been moving into corn from nearby grassy areas and damage is now visible. At first, large shotholes can be seen, and later, as the stalk borers burrow into the plant, the plant looks very ragged and stunted. Common stalk borer damage is occasionally confused with corn borer damage (see last week's issue for corn borer information) but is usually confined to a few rows that border grassy areas. The larva is pale white, with dark brown to purplish stripes that converge to form a saddle shape along the middle of the body.

Common stalk borer larva

SCOUTING FOR CORN ROOTWORM LARVAE

Corn rootworms should be in the second instar stage by now in most of northeast Nebraska. Cultivation application of granules, or post applications of Furadan 4F should be applied now for optimum corn rootworm control. Lorsban 4E applications through a center pivot should occur near when the first second instar is found. When applying Lorsban through a pivot, remember to use enough water to wet the soil to at least 4 inches down to move the Lorsban through the root zone. Once the initial movement has stopped, the Lorsban will bind tightly and will not be moved much further with additional moisture.

Rootworm larvae are white, with a brown head capsule and a dark spot on the rear end. This is the only insect in the soil with this "double-headed" appearance. Three pairs of small legs will be found just behind the head. Other insects in the soil are ground beetle larvae, with large orange to brown heads and jaws. Nematodes are thin, white and hair-like in appearance, often curling in loops. These nematodes visible to the naked eye feed on organic matter and are not harmful to the corn plant.

Some people will find larvae in fields previously treated with an insecticide, and want to know if a rescue treatment is necessary. This is a difficult decision to make, as many factors are involved in the decision. No insecticide is will give 100 % control. The goal of soil insecticides is to protect the root mass from extensive damage, and some larvae will survive. All perform poorly at one time or another, mostly due to extreme environmental conditions over which we have no control. All continuous corn fields should be scouted for rootworm larvae. If 3 or more larvae are found on average per plant, a rescue treatment may be necessary. This threshold is very subjective and allowance should be made for the skill of the scout. Experienced consultants will find the larvae much easier than beginners and may want to raise their threshold based on their previous experience. Yield losses due to rootworm feeding are difficult to correlate with larva numbers and will vary depending on environmental conditions, variety, root regrowth, etc. Lodged plants may impede harvest but not necessarily reduce yield if adequate nutrients and water are readily available to the plant. Some entomologists now feel that a corn plant can lose a whole node of roots without yield reduction.

To check for larvae, dig a 6 - 9 inch cube of soil centered on the corn plant. Sample a minimum of 2 consecutive corn plants at each of five different sites in a field. Carefully search through the soil and plant roots for the creamy white, slender worm with a dark brown head and brown tail plate (the double head appearance). Visible larvae will range from about 1/8 to 2 inch long. Placing the root-soil mass on a dark surface such as a black trash bag may

help spot the larva as they fall from the dirt.

Any of the insecticides registered for cultivation application can be applied to the soil at the base of the plant and cultivated in. Under irrigated conditions, flying the material on and then watering may provide good results. If plants are too large for cultivation, apply by air and water in if possible. Rescue treatments will not guarantee total root protection but should provide a barrier between rootworms and the root mass, allowing developing roots to establish, and injured roots to recover faster.

GRASSHOPPERS HATCHING, PLAN AHEAD FOR MANAGEMENT AND CONTROL

Grasshoppers have been hatching for the last several weeks now in northeast Nebraska. The good news is that earlier hatches have been decimated by the wet weather in most of our area. However, western areas have fared worse and some growers and ranchers are preparing to spray in Holt and Boyd counties. East of these areas, new grasshopper hatches have been observed over the weekend, with tiny hoppers appearing in open or mowed areas. Now is the time to get serious about keeping on top of grasshopper populations in northeast Nebraska. Grasshopper populations will be spotty with some areas with high populations and others nearly untouched. Areas that had problems last year are probably more at risk, but farmers should be aware of the potential problem and begin planning now to prevent serious damage to pasture, alfalfa, and row crops.

Grasshopper primarily damage wheat, alfalfa and corn, but during high population years may feed on any other crops, trees, and shrubs. Four grasshopper species cause nearly all damage to crops in Nebraska. They are the migratory, differential, two-striped, and red-legged. These hoppers prefer habitats with a variety of host plants, including both grasses and broadleaf weeds. As a result, they prefer cropland settings with undisturbed areas such as roadside ditches, crop borders, abandoned cropland, and overgrazed pastures or rangeland.

Most grasshoppers overwinter in the egg stage. Females may lay up to 300-400 eggs during the summer and fall under favorable conditions. Eggs are laid in pods of between 8 to 30 eggs. Pods are deposited in the upper few inches of undisturbed soil, such and grasslands, pastures, ditches, field margins, etc. Some grasshoppers prefer to lay eggs in soil surrounded by roots of grasses; other species select open areas with accumulations of surface debris. A few species of grasshoppers overwinter as nymphs but are normally few in number and do not cause economic damage. Grasshopper nymphs go through 5 larval instars. After each instar they shed their skins and grow larger. It takes 6 to 8 weeks for nymphs to develop into adults. Only adults have wings and move readily out of hatching areas.

Hatch of each species may be spread over a month or more. The earliest hatching problem hopper is the two-striped, which begin to hatch from mid-May to early June. The migratory will begin to hatch about a week after the two-striped, and the red-legged and differential will begin to hatch about three weeks after the two-striped.

Since most grasshoppers lay their eggs in untilled areas, to infest a crop they have to migrate from field margins or other areas of untilled soil. One exception is the lesser migratory which may deposit eggs throughout a field, particularly alfalfa.

Grasshopper Management - Grasshoppers are easiest to control before they become adults. The best time to control grasshoppers is during the 3rd and 4th instars. This generally occurs in late June through mid-July, when most of the eggs will have hatched. Scout for hoppers my moving through an area and estimating the number of hoppers per square yard that jump out as you move through. The following table is a guideline for treatment.

Table 5. Treatment guidelines based on number of grasshoppers (nymphs and adults) per square yard.

Grasshopper Population Category	Field	Field Margin	Treatment Necessary?
Non-economic	0-2	5-10	No
Light	3-7	11-20	Depends on size, species, type of crop
Moderate	8-14	20-40	Probably
Abundant	15 or more	41 or more	Yes

Border treatments should be adequate for grasshopper control providing the timing of application is before the hoppers move from hatching areas into crops. A border treatment of 150 feet should be adequate depending on the size of the grasshopper source area. Multiple border treatments may be necessary in areas with higher populations. A border spray should be effective for 7 - 14 days. You must keep monitoring crop margins after treatments to make sure grasshopper do not reenter the field.

If a range of rates is listed for a chemical, higher rates should generally be used later in the season when hoppers are larger. Several insecticides are effective for grasshopper control. Follow the recommended label rates, application directions, and restrictions. Insecticides recommended for various crops include:

Asana XL: corn, soybeans, sunflowers, dry beans, potatoes, and non-crop use in field margins
dimethoate: alfalfa, corn, sorghum, wheat, dry beans, potatoes
Lorsban 4E: alfalfa, corn, sorghum, soybeans, sugar beets, wheat
Furadan 4F: alfalfa, corn, small grains, soybeans, sunflowers
Orthene: dry beans, pasture/range and non-crop use. The low rate can be used for small hoppers, but higher rates are needed for larger grasshoppers
malathion: Most crops and non-crop use, performs best on small grasshoppers
Sevin: Most crops and non-crop use, performs best on small grasshoppers

Mustang, Penncap M, Diazinon, Warrior, Scout, parathion, and Sniper are labeled for some crops and pasture, however information is limited on the efficacy of these products. Baythroid is registered for red-legged grasshoppers in alfalfa. (KJ)

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