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INSECT, PLANT DISEASE, & WEED SCIENCE NEWS [No. 92-3] [April 17, 1992]

Lisa Brown Jasa
University of Nebraska-Lincoln, ljasa@unlnotes.unl.edu

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IPW Insect Science Plant Disease Weed Science NEWS

No. 92—3
April 17, 1992

UNIVERSITY OF NEBRASKA COOPERATIVE EXTENSION • INSTITUTE OF AGRICULTURE AND NATURAL RESOURCES

Insect Science

Cultural practices aid in corn rootworm control

In 1991 Nebraska producers used more insecticide in corn than producers in neighboring states did, according to a report from the USDA National Agricultural Statistics Service. Reasons for this difference could include that there is more continuous and irrigated corn in our state, both of which could lead to greater need for measures to control corn rootworms and other insects. Before the growing season starts, review your corn rootworm management strategies and consider whether there are ways to reduce production costs, such as insecticides, while maintaining yields.

First, crop rotation is a very effective means of corn rootworm control. Among crops, corn rootworm larvae are restricted to corn as a host. Corn rootworms overwinter in the soil in the egg stage. If corn is not available as a host when the eggs hatch in late May-early June, the larvae will starve and die. Corn grown after soybeans or other nonhost crops, does not need to be treated with insecticides for corn rootworms, except where corn follows oat stubble, soybeans with abundant volunteer corn (usually more than 4,000 corn plants per acre) or where there is an abundant weed population.

Although continuous corn production does favor buildup of corn rootworm populations, not all continuous corn fields need to be treated with insecticides. Scouting for adult beetles during

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Unconventional rootworm products not proven successful

The use of alternative or unconventional products to protect corn roots from insect injury continues to attract the attention of midwestern farmers. The fascination behind the use of these unconventional products (I hate to call them insecticides, because they don't control insects) apparently is that they are safer for the farmer to handle and supposedly less detrimental to the environment. Farmer testimonials have been widely used to promote these products; however, I have yet to see any replicated field trials to substantiate claims of superior performance. If someone tries to convince you that their product is effective, ask to see the data that compares the performance against an insecticide and untreated checks.

Entomologists at Iowa State University, University of Minnesota, and University of Wisconsin have evaluated a variety of products against conventional insecticides. The "odd" products include soybean meal, sulfur, sugar, turpentine, dry molasses, and a mixture of kelp, fish meal, diatomaceous earth, and molasses.

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Cooperative Extension provides information and educational programs to all people without regard to race, color, national origin, sex or handicap.

Cultural practices *(Continued from page 1)*

the period of beetle egg-laying (late July-August) is the most cost effective way to determine the potential for corn rootworm damage the next year. If beetle numbers exceed 18,000/acre (0.75 beetle per plant for 24,000 plant population) at any time during the period of beetle egg-laying, there is the potential for economic damage if the field is replanted to corn next year. (See NebGuide G86-774, *Western Corn Rootworm Soil Insecticide Treatment Decisions Based on Beetle Numbers*, for more information on rootworm beetle thresholds and scouting procedures.) Control options would include crop rotation or use of an insecticide.

If beetle numbers exceed the treatment threshold, numerous insecticides are available to control rootworms in corn. (See EC 92-1509, *Insect Management Guide for Corn and Sorghum*, for a list of insecticides, rates and restrictions.) For control of rootworm larvae, soil insecticides can be used at planting or cultivation time; some insecticides can be applied through irrigation systems. In Nebraska trials have shown that if corn is planted early — before May 15 — corn rootworm soil insecticides work better if applied at cultivation time rather than at planting. This is due to the longer period of time between the planting time application and rootworm egg hatch, during which the insecticide may move out of the root zone or break down to inactive compounds.

Research in Nebraska and several other midwestern states over the past several years has shown that reduced rates of the soil insecticides used for rootworm control may be just as effective in protecting corn roots as the full labelled rates. Most studies have used 75% of the labelled rate. In the vast majority of trials, reduced rate applications were as successful as full rates in keeping root damage below a rating of 3.0 on the 1-6 Iowa State root damage rating scale. A root damage level of 3.0 or greater indicates the potential for economic damage from rootworms; however, depending on environmental conditions, yield loss may not occur unless root damage is more severe.

Some growers and consultants in Nebraska and other states are using the reduced rate approach to rootworm management. If you are considering this approach, consider the following points:

1) Do not reduce the application below 75% of the labelled rate.

2) Insecticide application equipment must be well calibrated for this approach to work.

3) If planting early, use a cultivation treatment rather than a planting time treatment.

4) Try reduced rate applications on one or a few fields first, and always include an untreated check strip and a strip treated with the labelled rate for comparison.

5) Be aware that although reduced rate applications are legal, the company labelling the insecticide is under no legal obligation to you when products are used below labelled rates.

Finally, several foliar insecticides can be applied to control rootworm beetles before they lay eggs. Adult control programs can eliminate the need to use a soil insecticide for rootworms the next year if adequate scouting is done to properly time applications and to check that beetle numbers do not increase after an application. Adult sprays should be timed for when 10% of females are gravid and the treatment threshold (18,000 rootworm beetles/acre) has been reached.

Bob Wright
Extension Entomologist, SCREC

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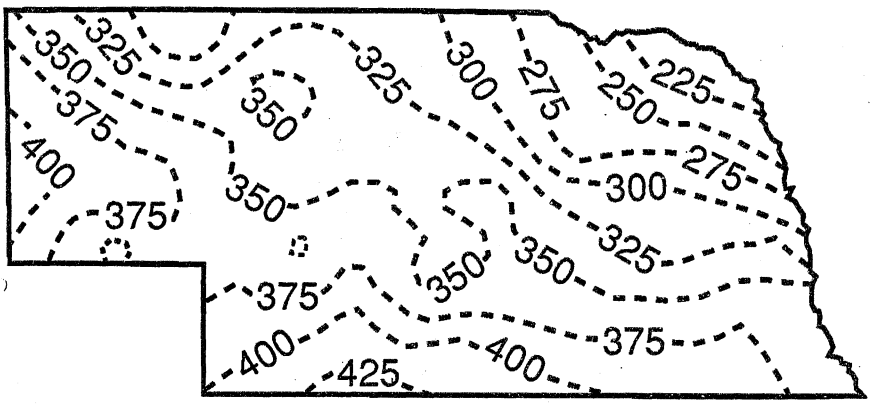
Lisa Brown Jasa, Editor

For more information about a particular subject, write the authors at the addresses below:

UNL Department of Entomology
202 Plant Industry Bldg.
Lincoln, NE 68583-0816

UNL Department of Plant Pathology
406 Plant Science Bldg.
Lincoln, NE 68583-0722

UNL Weed Science
Department of Agronomy
279 Plant Science Bldg.
Lincoln, NE 68583-0915



Base 48 degree day accumulations as of April 13.

Begin scouting for alfalfa weevils

Degree-day development of the alfalfa weevil is gradually progressing as temperatures warm across the state. The map shows that most of the state had at least 300 degree days accumulated as of April 13. Alfalfa growers should begin sampling for the weevil and its damage now although it is still early for management procedures to be implemented.

Refer to EC 92-1511, *Insect Management Guide for Nebraska Alfalfa, Soybeans, Wheat, Range and Pasture* for detailed information regarding alfalfa weevil scouting and management.

Steve Danielson
Extension Entomologist

Unconventional

(Continued from page 1)

The Iowa 1-6 root rating scale was used to evaluate the performance of these products.

Results from nine different tests strongly suggest that all of the unconventional products are ineffective in protecting corn roots from rootworm injury. In some cases, the root injury was actually worse than in the untreated plots where nothing was used at all to protect roots from feeding injury. In fields with very small rootworm populations, a farmer might think he has found a cure-all product because his corn didn't lodge, but in fields with heavy insect pressure, the use of these products could be devastating and result in yield loss. The research results strongly suggest that none of these alternative products should be substituted for a soil insecticide.

M.E. Rice, Extension Entomologist
March 6, Iowa State University
Crops, Soils and Pests Newsletter

Cutworms attacking wheat in the Panhandle

Two species of cutworms, the pale western cutworm and the army cutworm, have been found damaging wheat in the Nebraska Panhandle. Army cutworms have been found in Cheyenne and Box Butte counties; however, none were economic infestations. This insect feeds primarily at night on the leaves of wheat and alfalfa. This grazing damage is not significant unless larval numbers are quite high (five or more larvae per square foot of wheat). Delayed green-up of alfalfa also may be the result of heavy army cutworm infestations and should be investigated.

Significant infestations of the more damaging pale western cutworm have been seen in the southern Panhandle. The pale western cutworm feeds on wheat stems just below the soil surface. Their damage is much more severe than that of the army cutworm because its feeding can easily result in a thinned stand as the larvae move down the row cutting off the wheat plants. These larvae can be found near the crown of the wheat plants in the upper 1/2 to 3/4 inch of soil. Currently larvae are about 1/2 to 3/4 inch long and grey or greenish in color. It is important to correctly identify the pale western cutworm because low densities of the much less damaging army cutworm have been found in the same fields with the pale western cutworm. The army cutworm is lighter and has some longitudinal stripes. The pale western cutworm does not have any markings or stripes on its body.

The pale western cutworms are currently most noticeable where the wheat appears to be doing poorly and the stand is declining. A lot of wheat has a spotty appearance in the field this spring, but not all of this is due to the pale western cutworm. All wheat fields in western Nebraska should be inspected for the pale western cutworm. The economic threshold for the pale western cutworm is one larvae per foot of row. Infestations at the economic threshold of one larvae per row foot and beyond have been seen in Cheyenne County.

There are no effective chemical controls labeled for use against either cutworm. The status of the problem has been brought to the attention of the Nebraska Department of Agriculture and possible control alternatives are being pursued.

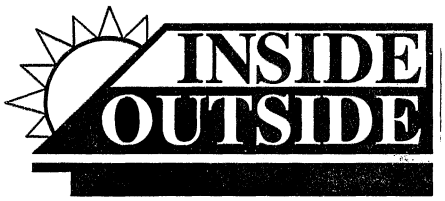
Gary Hein
Extension Entomologist
Panhandle R&E Center

Newsletter addresses urban pests, horticulture

Achieving a healthier and more beautiful landscape and garden can be made easier with the information available in a new newsletter being published by University of Nebraska-Lincoln Extension Division.

Inside/Outside, a six-page newsletter for urban pest management and horticulture, will help provide solutions for the insect, plant disease, weed, vetebrate, and horticulture problems faced by many Nebraska homeowners.

"Good information is needed to help Nebraskans manage these problems safely and effectively at minimal hazard and a reasonable cost," said Dave Keith, Extension entomologist and chair of the UNL Urban Pest Management Team which is developing the newsletter. "Inside/Outside will provide details to help people accomplish safe pest control while managing plantings for greatest beauty and productivity."



Stories will be written by Extension specialists in entomology; horticulture; plant pathology; forestry; textiles, clothing and design; and environmental programs. Topics will range from pest scouting to management strategies, and from plant and turf selection to pruning, turf maintenance, and flower and vegetable gardening. It also will feature stories on pest management in homes and industrial locations such as food processing plants. Cost for a one-year subscription is $25.

For more information or to order a sample copy, write Dave Keith, 210 Plant Industry Bldg., University of Nebraska, Lincoln, NE 68583-0816. To order a subscription, send a check for $25 to Inside/Outside, Box 830918, University of Nebraska-Lincoln, Lincoln, NE 68583-0918.

Lorsban 15G label uses increased

A supplemental label for Lorsban 15G (chlorpyrifos), manufactured by DowElanco, now allows use of this product infurrow at planting for control of western and northern corn rootworms. This is in addition to its previous labelled uses in a band or T-band application at planting or as a cultivation treatment. The use rate for all these application procedures is 8 oz product/1000 row-ft.

Bob Wright
Extension Entomologist, SCREC

Weed Science

Avoid herbicide drift through careful application

Volatility and herbicide drift can damage non-target plants when environmental factors are not properly considered or herbicides are improperly applied. Environmental factors such as wind, air temperature and temperature inversions often are the most important factors. Apply chemicals when wind speeds are low, preferably below 10 mph, and air temperatures are low (75 degrees). Volatile herbicides have a greater potential for causing injury as air and soil temperatures increase.

Temperature inversions are another environmental concern. Applying a pesticide during a temperature inversion can cause significant off-target pesticide movement. Inversions usually occur early in the morning or late in the afternoon when cool air near the soil surface is trapped under a layer of warmer air. The pesticide can be suspended in the warm air layers. Use a small fire or smoke bomb to detect an inversion. Smoke moving horizontally close to the ground signals an inversion.

Application techniques can be adjusted to minimize spray drift. Spray as close to the target as possible. The higher the spray is released above the target, the more likely it is to move to non-target areas. Use non-volatile herbicide formulations when available and keep spray pressures low. The lower the pressure, the larger the spray droplets and the less likelihood of drift. Special nozzles and spray additives can reduce the number of fine droplets and thus drift. Leaving an untreated border strip next to susceptible plants also can provide some protection.

Alex Martin
Extension Weeds Specialist

Sandbur spreading from sandy soils

Sandbur is most likely to be a problem weed on sandy soil, but numerous producers have seen a big increase in the sandbur population on upland, fine textured soil. Sandbur will usually be more of a problem in corn than in soybeans. Many commonly used corn herbicides give only fair (50-75%) or good (75-90%) sandbur control. Therefore, it is necessary to use other good cultural practices like crop rotations, rotary hoeing, and cultivation to increase sandbur control.

Cultural practices like crop rotations, rotary hoeing and cultivation can increase sandbur control.

Corn

The following soil applied corn herbicides are listed in descending order of their effectiveness: Eradicane, Sutan+, Bicep, Bullet, Cycle, Dual, Lasso and Prowl. From field research conducted in 1991, and limited comments from other producers, Accent provided good sandbur control. Cost of Accent may limit use of broadcast applications, but banding could be considered. Spot treatments are also appropriate where practical.

Several postemergence alternatives to Accent could be considered as outlined.

1. **AAtrex Nine-O.** 2.2 lb/acre plus 1 qt/acre crop oil concentrate. Apply when grass seedlings are 1 inch or less in size. Control will be much better if rain occurs soon after herbicide application. In no-till situations, applying the herbicide with 5 to 10 gal/acre 28% nitrogen in the spray solution will be more effective than application in a water solution only. 2,4-D ester at 0.5 to 1 pt/acre can be added to the atrazine-nitrogen solution. If applying atrazine in nitrogen solution, apply before corn emergence.

2. **Bladex 90 DF or Extrazine II 90 DF.** 2.2 lb/acre plus 1 qt/acre vegetable oil or nonionic surfactant. Addition of the vegetable oil or surfactant is not recommended under moist, rainy conditions. Bladex or Extrazine II can be applied in nitrogen solution as discussed under atrazine, but before corn emergence.

3. **Gramoxone Extra** at 1 pt/acre tank mixed with AAtrex Nine-O, Bladex 90 DF, or Extrazine II at 2.2 lb/acre plus 1 qt/acre nonionic surfactant should control sandbur in no-till corn. Apply before corn emergence.

4. In no-till situations, **Landmaster II** at 54 oz/acre, plus 17 lb of spray grade ammonium sulfate per 100 gal spray solution, should give good control of sandbur and other weeds. A residual herbicide applied sequentially would probably be needed. If Landmaster II is tank-mixed with atrazine or Bladex, increase the Landmaster II rate to 64 oz per acre.

For more information on sandbur control, check the *1992 Herbicide Use Guide*, NebGuide G74-121 *Sandbur Control in Corn*, and the *1991 Crop Protection Clinic Proceedings*.

Soybean

Sandbur is usually less of a problem in soybeans if Commence, Prowl, Salute, Sonalan, or Treflan are used preplant incorporated. Command at 1.5 to 2 pts/acre also should provide good control. Dual and Lasso provide only fair sandbur control.

Several postemergence soybean herbicides can provide good sandbur control as outlined.

1. **Assure II.** Apply 7 oz/acre plus 1 qt/acre crop oil concentrate or 1 qt/100 gal spray solution of nonionic surfactant. If Assure II is tank mixed with Basagran, Classic, Pinnacle, or Classic + Pinnacle, increase the Assure II rate by 2 oz/acre. Although the Assure II label doesn't specifically mention tank-mixing with Pursuit, the Assure II rate probably should be increased 2 oz/acre in such mixtures.

2. **Poast Plus.** Apply 30 oz/acre plus 1 qt/acre Dash or crop oil concentrate. If Poast Plus is tank mixed with Basagran, increase the Poast Plus rate to 36 oz/acre and add Dash or crop oil concentrate.

3. **Option.** Sandbur is not listed on the Option label as a controlled weed. Probably Option at 19 oz/acre plus 1 qt/acre crop oil concentrate would be the minimum rate to use. If tank mixing with Basagran, the Option rate probably should be increased to 25 oz/acre plus crop oil.

Russell Moomaw
Extension Weeds Specialist

Treat thistles now; observe grazing limits

Although musk and plumeless thistle may have been introduced into Nebraska as ornamental plants, both are considered noxious weeds by State law.

This is the perfect time to control these weeds, which are commonly found in untilled areas such as CRP acres, pasture, rangeland, and rights of way along railroads and highways. Plants are now in the rosette stage and are most susceptible to herbicides. Control declines rapidly once plants begin flower stalk elongation (bolting). Although later applications may visibly damage the plant, seed is still produced which perpetuates the problem.

In eastern and southern Nebraska, apply treatments by late April. In northern and western Nebraska, apply treatments 10-14 days later. Effective treatments for pasture, range, and CRP acres include the following products and rates per acre:

2/10 to 3/10 ounce Ally plus surfactant

1 1/2 to 2 quarts 2,4-D

1 quart 2,4-D + 1/2 pint of Banvel

6 to 8 ounces of Tordon 22K + 1 quart of 2,4-D

(2,4-D rates are based on 4 pound formulations.)

Curtail at 2 to 4 pints also provides effective control of musk thistle and can be used on CRP acres and small grains.

Grazing restrictions vary with the herbicide and the type of livestock. Ally has no grazing restrictions. With 2,4-D, lactating dairy animals should not be grazed on treated areas within seven days after application. However, certain manufacturers and formulations have more restrictive guidelines. Check the label of the product you're using. In pastures treated with Tordon, do not move grazing livestock to broadleaf crop areas without first allowing seven days grazing on nontreated pastures.

With Banvel, the grazing restrictions vary with the application rate and the type of livestock. Remove meat animals from treated areas 30 days before slaughter. For dairy animals the grazing restrictions are seven days for a 1 pint per acre application and 21 days for a 1 quart per acre application. Do not harvest hay for dairy animals within 37 days of a 1 pint per acre application and within 51 days of a 1 quart per acre application. There is no restriction on hay fed to meat animals. When Banvel is used with 2,4-D, grazing restrictions are the same as for Banvel alone.

Alex Martin
Extension Weed Specialist

Plant Disease

Apply fungicides in April for diplodia tip blight

Diplodia tip blight is one of the most serious diseases of Austrian and ponderosa pines in the Great Plains. Fifteen year old and older trees are commonly affected, with lower branches being more severely diseased than upper limbs. Even though symptoms don't appear until midsummer, most of the infection by the fungus occurs in spring when new shoot growth is emerging. Plan to take disease prevention measures soon.

The only effective means of controlling the disease is to apply fungicides to the foliage. The first application should be in the third week of April followed by a second application about two weeks later. Application then provides maximum protection to the new shoots, which tend to be the most susceptible to infection.

Two fungicides are labelled for tip blight control on long-needled pines. These are Bordeaux mixture and Tenn-Cop 5E.

Benlate, once registered for this use, can not be used since the DuPont Company voluntarily withdrew all ornamental uses from its U.S. label late last year.

Some arborists are injecting pines using a small vial delivery system that contains a fungicide called Fungisol. So far as I know, this product is not registered for use on pines and, hence, is not recommended for the control of Diplodia tip blight.

Dave Wysong
Extension Plant Pathologist

Dyrene uses cancelled

Turf disease control limited by loss of fungicide

Miles Incorporated (formally Mobay Corp.) notified the Environmental Protection Agency on April 3 to request voluntary cancellation of all of its Dyrene® fungicide products which contain the active ingredient **anilazine**. Miles said the cost of data acquisition for reregistration was too expensive to warrant it, according to an item in the National Agricultural Chemicals Association letter. This change will have significant impact on turf disease control.

The following anilazine uses will be lost: celery, green onion, strawberry, cucumber, summer squash, potato, tomato, lawn and turf, and gladiolus.

Miles Inc. has requested one year in which to sell its existing stock of anilazine products. EPA must publish this information in the Federal Register for a 90-day public comment period before the cancellation takes place. The products being canceled include:

Dyrene Turf Fungicide
Dyrene Lawn & Garden Fungicide
Dyrene 4 Turf Fungicide
Dyrene Lawn Fungicide
Dyrene 3% Granular
Dyrene 50% Wettable Powder
Dyrene 5% Granular
Dyrene 50% Wettable Powder in Water Soluble Packets
Dyrene 80% Dry Concentrate (Manufacturing Use)
Dyrene Technical (Manufacturing Use)

In addition, other registrants' products that will be affected by anilazine cancellation are:

Rockland Lawn Fungicide with Dyrene (Rockland Corp.)
Rockland Professional Lawn Disease Control (Rockland Corp.)
Gordon's Turf 45 Lawn Fungicide (PBI/Gordon Corp.)
Dymec 50 Turf Fungicide (PBI/Gordon Corp.)
Pax Fungicide, Insecticide Fertilizer (Pax Co.)
Turf Fungicide (Pursell Acquisition Co.)
Gro-Well Lawn Fungicide (Adikes Inc.)
Loft's Lawn Fungicide (The Andersons Lawn Fert. Div.)
Turf Fungicide (Athea Laboratories)
Pratt Turf Fungicide 50% Wettable Powder (Southern Mill Creek Products)

For further information on the cancellation of anilazine fungicide products, contact Dr. Ken Noegel, Manager of Fungicide Product Development, Miles Inc., P.O. Box 4913, Kansas City, MO 64120-0013; Tel. (816) 242-2752; and Fax (816) 242-2738.

Dave Wysong
Extension Plant Pathologist
Larry Schulze
UNL Pesticide Coordinator

Extension assistant joins plant pathology staff

We are pleased to announce the appointment of Diane Merrell to our staff as the new Extension Assistant in Plant Pathology. Diane fills the vacancy created when Luanne Coziahr finished her graduate program for a master's degree and assumed a position with the Omaha Public Power District in June 1991. We appreciate the dedicated service Luanne performed for the 7 1/2 years she was with us, and we welcome Diane to our plant pathology extension group.

Diane grew up on a farm near St. Edward and is well acquainted with crop and animal agriculture. She worked in UNL Prof. Jim Steadman's plant pathology laboratory as a student helper while completing her bachelor's degree at Nebraska Wesleyan University. Following graduation in 1990, she accepted a research assistantship in the Department of Plant Pathology at the University of Wisconsin-Madison and began her graduate program for the Master of Science degree under Prof. Craig Grau's supervision. She will complete the requirements for her master's degree this fall.

Diane will help conduct Extension Plant Pathology programs and serve as the diagnostician in the Plant Disease Diagnostic Clinic. We know you will join us in extending a warm Nebraska welcome to Diane when she joins our staff June 1.

David Wysong
Extension Plant Pathologist

When applying herbicides

Equipment adjustments important to success

Two approaches are commonly used for herbicide incorporation: complete incorporation and shallow incorporation, commonly called surface mixing. Complete incorporation calls for all the herbicide to be thoroughly mixed to a depth of 2 to 3 inches in the soil. Shallow incorporation involves shallower and less complete mixing. Shallow placement improves horizontal distribution compared to deeper mixing.

Equipment selection, assembly, and operation are the most important factors in obtaining uniform herbicide incorporation. Equipment must be adjusted in the field to the specific conditions under which it will operate. Previous crop, amount of crop residue, soil type,drainage, previous tillage operations, and weather all require adjustments in incorporation equipment.

The following adjustments should be made on any incorporation equipment:

- *Adjust the implement so it is level, both front to back and side to side.* Adjust to desired operating depth (a depth of 1 to 6 inches, depending on the tillage implement and herbicide). If wheel hydraulic cylinders do not have stop adjustments, install them for precise resetting of depth. As soil and residue moisture conditions change during the day, operating depth may need to be increased.
- *Adjust adjoining implement wings so they operate at the same depth as the center tillage unit.* Implement wings are lighter and tend to ride up and operate shallower than the center unit. Eyebolt adjustment on wing cylinders, wing-tire deflation, changing wing-tire size, or adding weight to the wing can bring wings in line with the center unit. Unequal tire sizes across the tool may make adjustment impossible without tire replacement.
- *Adjust implements so that all soil is being worked across the entire width of the tool.* A misplaced shank, broken tines or worn tillage components can result in nonuniform incorporation. In addition, tractor and tillage equipment tracks need to be tilled for uniform incorporation. It may be necessary to move a field-cultivator shank over slightly or add a shank behind equipment tires to till the tire tracks.
- *Ground speed and operating depth determine the completeness of soil mixing and herbicide distribution accomplished by a particular tillage implement.* In general, a speed of greater than 5 mph is recommended for proper incorporation. As the optimum speed of operation is approached, mixing and horizontal distribution increase. Above the optimum speed, horizontal distribution decreases because depth is difficult to maintain at higher speeds.
- *Since nozzles used on tillage implements are often in a dusty environment , select a nozzle what won't be hindered by dust accumulating around the orifice.* Flood and Raindrop nozzles are most commonly used for soil-incorporated herbicides. Rotating the nozzles 30-45 degrees so they spray forward in the direction of travel improves uniformity. Nozzle spacing should not exceed 60 inches and should be operated between 20 and 45 psi. Adjusting the nozzle orientation and height can achieve 100 percent overlap.

Often, tillage equipment is larger than the tractor can pull at the speeds necessary for proper incorporation. On hilly ground or when soil conditions are less than optimum, incorporation speeds are reduced and incorporation uniformity suffers. Use a tillage device smaller than typically matched with your tractor. This will allow for the additional power required to transport the spray tank, spray solution and operate the sprayer accessories.

Robert Grisso
Extension Ag Engineer