9-28-1990

INSECT, PLANT DISEASE, & WEED SCIENCE NEWS [No. 90-24] [Sept. 28, 1990]

Alex Martin
University of Nebraska - Lincoln, amartin2@unl.edu

Bob N. Stougarrd
Extension Weed Specialist, University of Nebraska-Lincoln

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

Insect Plant Disease Weed Science NEWS

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

No. 90-24 Sept. 28, 1990

In This Issue

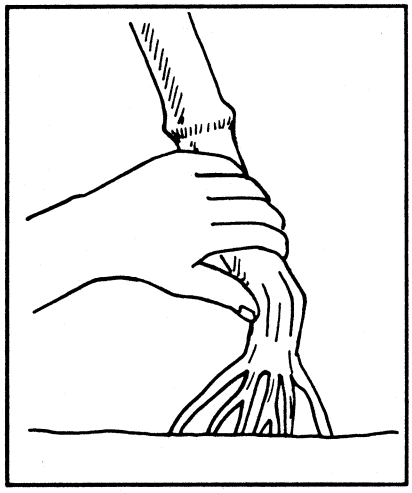
PLANT DISEASE

Scout Fields Now to Assess Stalk Rot Damage

As we swing into the harvest season, it would be well to remember that stalk rot diseases can take a significant toll from expected grain yields, particularly if we have less than optimum weather at harvest. Once physiological maturity has been reached, there are no mechanisms by which corn or sorghum plants can stop fungi and other microorganisms from developing in the stalk tissues and causing stalks to lose their structural strength. If frequent rains or an early snowstorm delay harvest, or if severe winds or wet, heavy snows place additional tensile pressures on already weakened stalks, the risk of stalk lodging increases dramatically.

Minimize yield losses associated with stalk lodging by knowing the stalk rot potential for each field. This is based on hybrid characteristics (days to maturity, rind strength, ear maturation), cultural practices (plant populations, date of planting, fertility/irrigation program), degree of insect infestation (corn borer, rootworm), and field conditions (soil type, moisture profile). In essence, you are assessing the general health of the crop; but at this point, you are only half done.

The next step is to walk your fields and check for early stalk rot development. Select five to 10 inspection sites per field and examine 25 to 50 consecutive plants down each of two adjacent rows. Either squeeze the lower two internodes just above the brace roots (see illustration) or push the plants 6 to 8 inches from the vertical position. Count and record the number of crushable stalks (or the number of pushed plants that do not snap back) per site. Then determine the average number of "at risk" plants across all sites per field. The first fields to be harvested should be those with the highest average of "at risk" plants.



If early harvest is needed, be sure to check the kernel moisture content and be prepared to dry the grain to a level safe for storage.

David S. Wysong

Wheat Fungicide Trial Examines Effect on Rust

Wheat fungicide trials have been conducted at the South Central Research and Extension Center, Clay Center since 1976, and this year proved to be one of the best for determining leaf rust control. TAM 107 was the variety used in the trial. Leaf rust developed very rapidly causing heavy rusting by mid June. Fungicides were applied May 2 (Feekes Stage 8), May 14 (Feekes Stage 10), and May 22 (Feekes Stage 10.1). Leaf rust was rated as percentage severity on the flag leaf.

Briefly, yields and 1000-kernel weights were highly correlated with rust severity. Treatments that held the final rust severity to 60% or less had yields of 75 bushels per acre or above and 1000-kernel weights above 31 grams.

John E. Watkins

1991 Wheat Fungicide Trials at Clay Center

Treatment, rate of product/acre, and application schedule (Feekes)	Leaf Rust Severity (%) June 4	June 11	June 18	Yield (bu/A)	1000 K wt (g)	Test Wt (lb/bu)
Dithane F-45 80F, 3.2 pt, 10 & 10.1	3	20	64	72	30.1	57
Tilt 3.6EC, 4 fl oz, 8	10	56	90	70	28.9	56
Tilt 3.6EC, 4 fl oz + Plex, 1 pt, 8	6	49	88	67	28.4	56
Bayleton 50WP, 4 oz, 10 & 10.1	trace	11	55	77	32.4	57
Bayleton 50WP, 4 oz + X-77, 0.5 pt, 10 & 10.1	trace	4	53	82	31.5	58
Bayleton 50WP, 4 oz + Plex, 1 pt, 10 & 10.1	trace	8	58	75	31.2	57
Bayleton 50DF, 2 oz + Mancozeb 4 80F, 3.2 pt, 10	4	44	86	70	28.8	57
Bayleton 50DF, 2 oz + Mancozeb 4 80F, 3.2 pt + X-77, 0.5 pt, 10	2	29	79	75	30.4	57
Bayleton 50DF, 2 oz + Mancozeb 4 80F, 3.2 pt + Plex, 1 pt, 10	3	39	84	69	29.5	57
Folicur 3.6F, 4 fl oz, 10	0	14	59	76	31.6	58
Folicur 3.6F, 4 fl oz + X-77, 0.5 pt, 10	0	2	35	80	31.2	58
Folicur 3.6F, 4 fl oz + Plex, 1 pt, 10	trace	8	60	75	31.6	57
Untreated Check	15	71	95	60	28.5	56
LSD (0.5)	3	9	10	6	2.0	1

Turfgrass Rusts Severe This Fall

Heat and drought stress during late August and early September followed by cool night and moderate day temperatures have resulted in a rapid development of leaf and stem rusts this fall.All turfgrass species are attacked by rusts, but some may be more susceptible to severe rusting than others. On grass hosts most rusts have two types of spores, the orange urediospores and the black teliospores. It is urediospores that turn grass catchers and $100 tennis shoes orange when the turf is heavily rusted. The most evident turf rusts in Nebraska are crown rust on ryegrasses and stem rust on bluegrasses.

Most homeowners can effectively reduce rust injury by mowing regularly and watering during the early morning rather than at night. Chlorothalonil (Daconil 2787), maneb, mancozeb, and triadimefon (Bayleton) effectively control turfgrass rusts but should be applied as preventatives in August rather than curatives in October.

John E. Watkins

Get Out the Rakes to Reduce Disease Threat

The end of the growing season is approaching and many gardeners are getting ready to put away their gloves, work boots, and tools. Don't be in too big of a hurry — from a plant pathologist's point of view, there is still some work to do.

Many organisms which cause plant disease can survive the winter in excellent condition on infected plants and plant debris. It is nature's way of having them in place and ready to attack next spring. However, years of research and experience have shown that by removing them or preventing their overwinter survival, plant disease can be reduced effectively.

For example, leaf spot diseases such as black spot on roses, apple scab, iris leaf spot, early blight and Septoria leaf spot on tomatoes, and hollyhock rust all can be reduced next year by removing fallen leaves. Burying the material is also effective because when plant debris decays, the organisms also do. Burning is also a way to destroy infected debris, but not all communities allow this. Composting infected plant debris is not recommended. The compost pile must be well managed to insure that all the material is well mixed and sufficiently heated and broken down to kill the organisms.

Canker and dieback diseases such as fire blight, black knot of plum, and Phomopsis canker of Russian olive can be controlled by pruning out infected branches. Be sure to cut 6-12 inches below the last visible signs of infection. Clean and disinfect cutting tools between cuts to reduce the chances of spreading the disease. Dipping the pruners in rubbing alcohol or bleach is suitable. (Remember to wash and dry your tools when you are done to prevent corrosion.)

Remove plants which show symptoms of virus infection, such as: stunting, leaf mosaic patterns, or abnormal growth. While you are at it, pull biennial or perennial weeds because many are suitable hosts for viruses. In spring, insects feeding on the weeds pick up viruses and carry them to healthy, desirable plants.

Luanne V. Coziahr

WEED SCIENCE

Control Turf Weeds with Fall Treatments

Homeowners sometimes forget that fall can be a better time than spring for effective weed control in turf. The very best control should be expected on dandelions, field bindweed, chickweed, shepherdspurse, henbit, ground ivy, violets, and other broadleaf weeds that have fall regrowth. Consider the advantages:

(1) Cool season turf species grow well in the fall and weed elimination permits turf grasses to fill in areas occupied by weeds.

(2) Late fall applications come at a time when gardens, most ornamentals, and trees are less subject to herbicide injury,

(3) Cool temperatures reduce the amount of herbicide vapor drift.

(4) Herbicides are more effective in controlling perennial weeds when applied in fall. Most available herbicides can be applied between mid-September and the first hard freeze.

Several management practices will increase the effectiveness of treatments. Avoid applying the herbicide if rainfall is expected within 24 hours. After applying the herbicide, avoid mowing for several days to allow the chemical to move throughout the weed. Apply nitrogen fertilizer this fall to enhance turf growth and competition. If certain areas need reseeding, observe a 45-day interval between seeding and herbicide application to avoid turf injury. Repeat treatments may be needed for ground ivy and violets. Respray about 10 to 14 days after the first application. Cool temperatures may cause symptoms to develop slowly, but be patient — you'll get results.

Several products are available to control troublesome broadleaf weeds. These products include:

Common Name	Trade Name
2,4-D + Dicamba	Lesco Eight-One
2,4-D + MCPP	Lescopar, 2 Plus 2, Ortho Weed-B-Gon
2,4-D + Triclopyr	Turflon D Turflon II Amine
2,4-D + MCPP + Dicamba	Trimec Classic, Lesco Three-Way, Ortho Chickweed, Spurge & Oxalis Killer D

Alex Martin and Bob Stougaard

Don't Wait Too Long to Attack Weeds in Alfalfa

Fall is an excellent time to control weeds in established alfalfa. Fields that were weedy this year will almost certainly be weedy again next year unless preventive measures are taken. Many times the problem is not recognized until the alfalfa "greens up" in the spring — then it is too late for most herbicides. This year get a jump on the problem.

For alfalfa established one year or longer, use Karmex, Lexone, Sencor, Sinbar and Velpar. These herbicides control both winter annual grasses and broadleaf weeds including downy brome and pennycress. Karmex is best suited to low organic matter soils. Treat either in the late fall or early spring. Alfalfa injury may occur on soils containing less than 1% organic matter with any of the herbicides.

Butyrac or Butoxone (2,4-DB) can be used to control pennycress and other mustards in both established alfalfa and new seedings where plants have at least two trifoliolate leaves. These herbicides should not be used where temperatures will drop to 40 degrees within three days after application. Buctril is also effective in seedling alfalfa, but should not be used if temperatures are above 70 degrees.

Where downy brome is a problem in alfalfa seeded this past spring or summer, apply Kerb after late October. It controls winter annual grasses and can be used on both this year's seedings and older stands of alfalfa. In established alfalfa, downy and other annual bromes are most economically controlled with Sencor or Lexone.

Alex R. Martin and Bob Stougaard

Fall Control Program Best for Perennials

Perennial weeds including field bindweed, Canada thistle, and others can be effectively treated with herbicides in the fall when the root system is storing its food.

Herbicides applied in fall to plants with excellent top growth readily move down to the roots along with the food. In the fall, temperatures and soil moisture are generally more favorable for plant growth than during summer. This is essential for best herbicide performance.

Herbicides most useful for controlling these perennial weeds are 2,4-D and combinations of 2,4-D + Banvel, Roundup, and Tordon. Treatment with 2,4-D and combinations of 2,4-D + Banvel must be made repeatedly to obtain satisfactory control. Tordon use for perennial weeds is limited to grazing land and non-crop areas. Curtail is useful in Canada thistle control programs. Control of these weeds in gardens, windbreaks and around farmsteads is best accomplished with Roundup and 2,4-D. These herbicides will not leave soil residues that damage trees, next year's garden, or ornamentals.

Apply fall treatments any time from now until the first hard freezes. Daytime temperatures in the 50s are satisfactory. It is not necessary to spray before frost as long as plants are still green and growing.

Alex R. Martin and Bob Stougaard

Begin Treating Musk Thistle Now

October and early November are excellent times to control musk thistle if the weather cooperates. A good fall control program normally eliminates the need for spring control. This is because plants that would flower next summer are normally growing in the fall. However, the success of a fall control program depends on adequate fall rainfall. Dry weather reduces musk thistle seed germination and plant establishment. When the weather has been dry, there may be no plants to control. Examine the site and determine if the thistle population justifies spraying. Herbicides and per acre rates for musk thistle are:

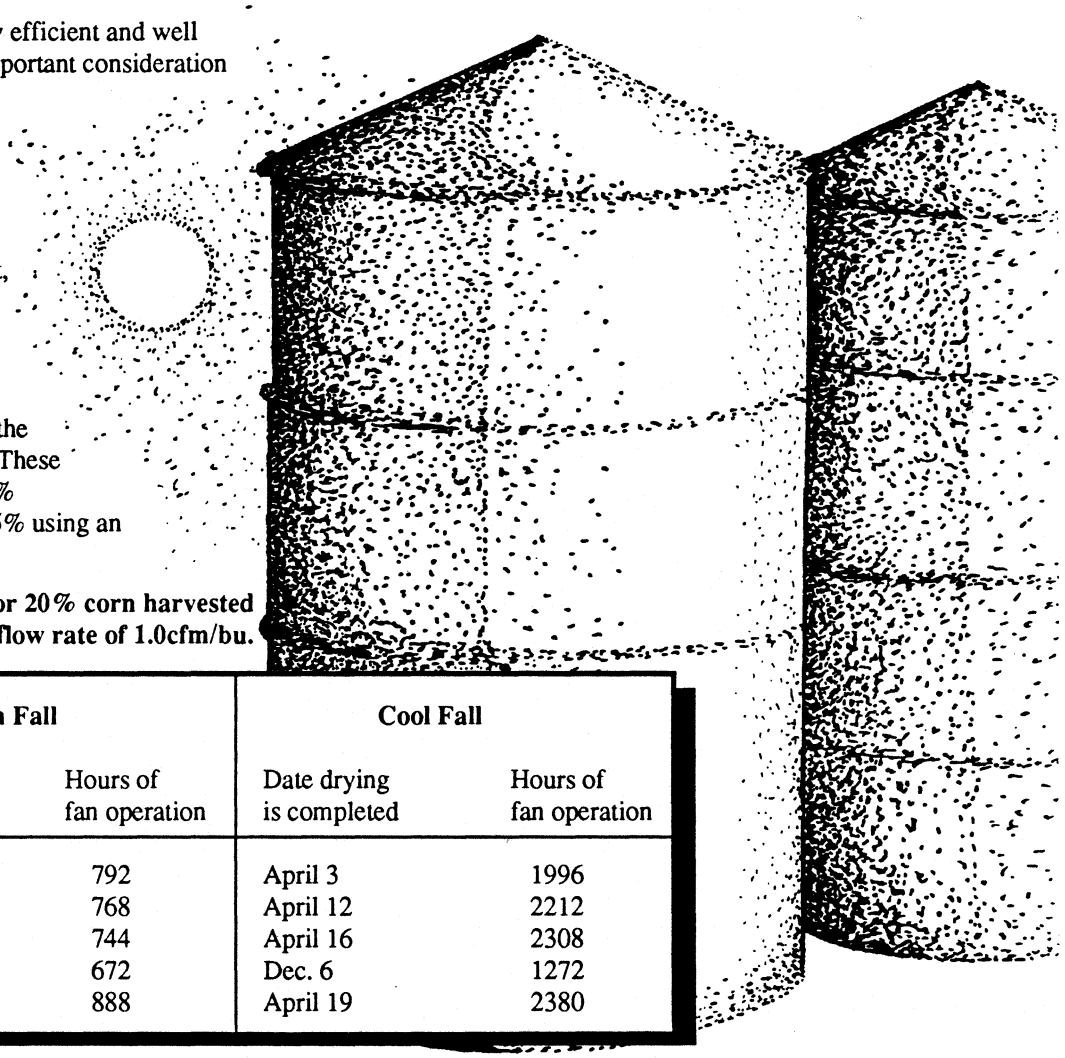
Tordon 22K at 6 to 8 fluid ounces
2,4-D + Banvel at 1.0 quart + 0.5 pint
2,4-D at 1.5 to 2.0 quart.

These treatments are ranked in order of effectiveness for fall application. When mild, moist conditions prevail, all three treatments are effective. Under very dry, cool conditions only Tordon will perform well. Treat after Oct. 1.

Alex R. Martin and Bob Stougaard

Drying Times When Using Natural Air Drying

Natural air grain drying is energy efficient and well suited to Nebraska weather. An important consideration when using natural air drying is to operate the fans long enough to move the drying zone completely through the grain bin.



Drying times vary, depending on 1) harvest date, 2) moisture content, 3) airflow, and 4) local weather conditions. Fan operating procedures also affect the time required to complete drying. Typical drying times are shown in the table for five sites across the state. These results are for corn harvested at 20% moisture on Oct. 15 and dried to 15% using an airflow rate of 1 cfm/bu.

Table 1. Example drying times for 20% corn harvested on Oct. 15 and dried using an airflow rate of 1.0cfm/bu.

	Warm Fall		Cool Fall	
Location	Date drying is completed	Hours of fan operation	Date drying is completed	Hours of fan operation
Grand Island	Nov. 16	792	April 3	1996
Lincoln	Nov. 15	768	April 12	2212
North Platte	Nov. 14	744	April 16	2308
Scottsbluff	Nov. 11	672	Dec. 6	1272
Sioux City	Nov. 20	888	April 19	2380

In heated air in-bin drying systems, little stirring management is needed. The stirring device is simply run continuously for the five to seven days required for drying. For natural air systems, this is not true since drying times are typically extended to six to 12 weeks. Stirring for this long is not energy efficient and may result in high levels of grain damage. Rather, the maximum benefit comes from stirring the corn once every one to two weeks.

The following management procedures are recommended when stirring natural air drying bins:

1) While the bin is being filled, run the stirring device to loosen the grain and allow easier starting of the stirring augers later.

2) Stir the grain every two weeks as drying progresses during the fall. Stir more frequently as drying nears completion.

3) If the drying front has not been moved through the grain by mid-December, stir the grain before reducing fan operation for the winter.

4) If additional drying is needed in the spring, stir the grain once a week until completely dried. This more frequent stirring will make it easier to check average grain moisture contents.

Stirring devices can aid the natural air drying process because they allow changes in fan management practices to take advantage of favorable drying conditions. Since overdrying is no longer a concern, fan operation can be avoided during rainy or humid conditions if all the corn is below 18%.

The most critical component of natural air drying is to allow the fans enough time to move the drying zone through the grain mass. Typical drying times can range from six to 12 weeks. Often it's necessary to discontinue drying in winter and finish in the spring.

More information on natural air drying can be found in the NebGuide *Natural Air Corn Drying* (G85-760) available from your local Extension office.

David Jones
Extension Grain Storage Specialist

INSECT SCIENCE

1990 Corn Rootworm Insecticide Evaluations

The following data are from corn rootworm (CRW) insecticide performance studies conducted this season by Dr. Lance Meinke at the University of Nebraska Agricultural Research and Development Center near Mead. The data are provided for your information and should only be used in their entirety and in the context of these experiments.

The experimental design was a randomized complete block with four replications. Root ratings were based on a 1-6 rating scale, with 1 = no damage and 6 = three or more root nodes destroyed. The planting-time and cultivation-time plots were planted May 7. Planting-time treatments were applied either in-furrow (I), or as a 7-inch band (B) over the row and in front of a press wheel. Cultivation treatments were applied in a 7-inch band on June 11 and cultivated into the soil. For comparative purposes, two banded planting-time treatments were included in the cultivation test. Means in each column followed by the same letter are not statistically different (p=0.05).

These experiments included some insecticides and application rates not registered and therefore not legal for general use. Please follow all pesticide label directions and apply only federally registered pesticides.

Bob Wright

First Cultivation Applications

Insecticide	Rate (oz AI/1000')	Mean Root Rating (1-6 scale)
Furadan 15G	1.20	2.30 a
Counter 15G	1.20	2.30 a
Fortress 5G	0.30	2.65 ab
Force 1.5G	0.12	2.80 ab
Counter 20CR	1.20	3.15 bc
Thimet 20G	1.20	3.15 bc
Dyfonate II 20G	1.20	3.15 bc
Aztec 2.1G	0.14	3.20 bc
Lorsban 15G	1.20	3.50 c
Untreated		4.45 d
Planting-Time Standards		
Dyfonate II 20G	1.20	2.40 a
Counter 15G	1.2	2.80 ab

Planting Time Applications

Insecticide	Rate and Placement (oz AI/1000')	Mean Root Rating (1-6 scale)
Fortress 5G	0.3 B	2.10 a
Counter 20R	1.2 I	2.15 ab
Counter 15G	1.2 B	2.15 ab
Counter 15G	1.2 I	2.25 ab
Counter 20CR	1.0 B	2.25 ab
Fortress 5G	0.3 I	2.30 a-c
Counter 20CR	0.9 B	2.30 a-c
Counter 20CR	0.9 I	2.30 a-c
Force 1.5G	0.12 I	2.50 a-c
Force 1.5G	0.15 I	2.55 a-d
Brace 10G	0.6 I	2.60 a-e
Counter 20CR	1.2 B	2.60 a-e
Counter 20CR	1.0 I	2.65 a-e
Aztec 2.1G	0.14 B	2.70 a-e
Holdem 20G	1.2 B	2.75 a-e
Lorsban 15G	1.2 B	2.75 a-e
Aztec 2.1G	0.14 I	2.75 a-e
Dyfonate II 20G	1.2 B	2.85 b-e
Lorsban 15G	1.2 I	2.85 b-e
Force 1.5G	0.12 B	2.85 b-e
Holdem 20G	1.61 B	3.00 c-e
Thimet 20G	1.2 B	3.25 de
Furadan 15G	1.2 B	3.30 e
Untreated		4.70 f
Untreated		5.05 f

For More Information

The following publication recently was released by the University of Nebraska Department of Agricultural Communications: **G76-303 Large Round Bale Safety.** This publication addresses safety factors involved with large round bales.

This publication and many more are available free or at a nominal charge at your local Extension office or from the UNL Department of Agricultural Communications. For a Publications Catalog, contact your local Extension office or write Bulletins, 105 Ag Communications Bldg., University of Nebraska, Lincoln, NE 68583-0918.

Plan for Control of Lacebugs and Psyllids

Yellow stippling and spotting on the undersides of sycamore, linden, hackberry, and oak leaves is often caused by lacebugs. These unusual sucking insects are grey or brownish as nymphs and whitish as adults. Their outer covering, or cuticle, is highly sculptured and they have intricately patterned, lacy wings. One or more generations may occur each year. Lacebugs are often a nuisance to picnickers and campers, when the bugs land on them or on food. Lacebugs can be controlled on their host trees, but it is too late this season.

The most common psyllid is the species that causes the nipple-galls on hackberry. These galls can become so abundant that each leaf has 10-15. Within each gall is a developing psyllid. After emerging from the galls, the grey, gnatlike adult psyllids often fly to clothing hung on clothes lines and to windows, frequently entering the home, where they become a nuisance. Tight screening is the best prevention. Spraying vertical surfaces where bugs congregate with a light application of malathion, carbaryl (Sevin) or Dursban will reduce numbers. Spraying trees next spring as leaves begin to unfold will help prevent their reoccurrence.

Fred Baxendale

From Lab to Label

Pesticide Development Costs Millions

Chemical companies spend millions of dollars in pesticide development before a product is offered to the public.

A chemical company may commit up to 10 years and $40-$60 million after a chemist makes a new compound and before a pesticide is registered and sold. While the main development of a new chemical is in the laboratory, parallel research is also undertaken in the areas of consumer need, marketing, factory requirements and patent application.

During laboratory development, the pesticide must first pass several stages: synthesis, evaluation, testing, registration and preparation in a chemical production plant. Development begins when a chemist develops a new compound. Up to 20,000 chemical compounds may be synthesized and screened in the lab before a product is determined to have potential pesticidal properties. If a chemical shows promise, it moves into the next developmental stage.

The chemical is evaluated in greenhouse studies and then in field trials and tests. Toxicity studies are used to establish the parameters of safe use. They include longterm studies of how the chemical affects reproduction and short-term studies of the effects of acute use and exposure (skin, oral, lungs). Environmental and residue research confirms the levels of safe use relative to soil, water, air, drift, wildlife, fish and crops. Field trials at test farms, university experiment fields and in limited producer fields measure the efficiency of the material. These field trials determine how a product works, when and where it works, and its effectiveness on pests.

Environmental Programs

As the toxicity, environmental, and field evaluations are completed, the company begins the process for registering the product with the Environmental Protection Agency. Data from previous research is presented to the EPA, which reviews it and often may request additional tests or data.

When a substance has met all EPA qualifications and standards, an EPA registration number is issued. All pesticides must have this number.

Throughout this process, the company is conducting another series of activities — market research, evaluations of user interest in the potential product and an economic analysis to determine if further resources should be invested. The company also may have applied for and received a patent on the new pesticide. Finally, the company evaluates whether any changes will have to be made at the factory to begin production.

Once the EPA has approved a new pesticide label, the product should perform as expected and present no undue hazard to humans, animals or the environment. The safe, judicious use of pesticides is a concern to everyone, from scientists and researchers to applicators and the general public. The years of rigorous testing and screening required by the EPA help ensure its safe use.

Larry Schulze
Extension Pesticide Coordinator

Dates Set for 1991 Pesticide Training, Testing

Following is a schedule for initial certification for being a commercial pesticide applicator. Certification is based on satisfactory test scores on a general standards exam plus one or more categories listed below. Individuals can be trained in general standards and one category at a training/testing session. You also may take additional category exams without training at a given session.

Preregistration is required. General standards training and testing will be held from 8:30 a.m. to noon with category training and testing being held from 1 p.m. to 4 p.m. at each site. To register, contact Larry Schulze, Extension Pesticide Coordinator, 101 Natural Resources Hall, UNL, Lincoln, NE 68583-0818 or call (402) 472-1632.

Feb. 19 — Lincoln. Nebraska Center, 33rd and Holdrege. Covering ag plant, forestry, ornamental and turf, right of way, structural, public health, regulatory, food processing and grain handling (grain fumigation), and wood preservation.

Feb. 20 — Norfolk. Villa Inn, Hwys 275 & 81. Covering ag plant, ornamental and turf, right of way, structural, and food processing and grain handling (grain fumigation).

Feb. 21 — Omaha. Douglas County Extension Office, 8015 W. Center Road. Covering ag plant, forestry, right of way, structural, public health, regulatory, food processing and grain handling (grain fumigation), and wood preservation.

Next Issue:
Pesticide Recertification Dates

Feb. 22 — Omaha. Douglas County Extension Office, 8015 W. Center Road. Covering ornamental and turf only.

Feb. 26 — Scottsbluff. Panhandle Research and Extension Center, 4502 Avenue I. Covering ag plant, ornamental and turf, aquatics, right of way, structural, food processing and grain handling (grain fumigation).

Feb. 28 — North Platte. Stockman Inn, I-80 & Hwy 83. Covering all categories.

March 1 — Kearney. Buffalo County Extension Office, 1400 E. 34th St. Covering ag plant, ornamental and turf, right of way, structural, food processing and grain handling (grain fumigation).

March 5 — Grand Island. Midtown Holiday Inn, 2503 South Locust. Covering ag plant, ornamental and turf, aquatics, right of way, structural, food processing and grain handling.

IPW News Contributors

The Insect, Plant Disease and Weed Science News is published throughout the growing season by the University of Nebraska Department of Agricultural Communications, 108 Agricultural Communications Bldg., UNL, Lincoln, NE 68583-0918. To order a subscription or to change your address, write to IPW News, Department of Agricultural Communications or call (402) 472-7981. **Lisa Brown Jasa, Editor**

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

Fred Baxendale, Jack Campbell, Steve Danielson, Art Hagen, Gary Hein, Keith Jarvi, Ackland Jones, Jim Kalisch, Leroy Peters, Ron Seymour, John Witkowski, Bob Wright

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

Luanne Coziahr, Ben Doupnik, Eric Kerr, John Watkins, David Wysong

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

Alex Martin, Bob Stougaard, Bob Klein, Gail Wicks, Bob Wilson, Russell Moomaw, Fred Roeth