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CropWatch No. 95-21, Aug. 25, 1995

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CROP WATCH

University of Nebraska Cooperative Extension
Institute of Agriculture and Natural Resources

No. 95-21
Aug. 25, 1995

Spider mite numbers, damage increasing

Many counties in northeast and western Nebraska are reporting that spider mite numbers and damage are increasing, particularly on corn and soybeans. The recent hot, dry weather stresses the crops and favors the spider mites over their natural enemies. Growers are considering whether to treat stressed crops, some of which may be close to physiological maturity. Those who choose to treat them need to consider whether they want to treat the entire field or use a spot treatment. These are not easy decisions, particularly when dealing with a pest as difficult to control as the spider mite. In some years, cool, moist weather in August has allowed natural spider mite enemies to gain a foothold and eventually wipe out spider mite colonies. Unfortunately, we have not been having this kind of weather lately. Irrigated crops are less likely to suffer major spider mite damage.

Generally the Two-Spotted Spider mite is found in soybeans, while the Banks Grass Mite and/or the Two-spotted Spider Mite is in corn. It's important that corn growers scout their fields to determine which mite species they are dealing with because it's easier to control the Banks Grass Mite than the Two-spotted Spider Mite.

As is always the case with spider mites, larger than normal volumes of carrier are necessary to obtain better plant coverage. Remember, the mites are on the undersides of the leaves and have webbing which may protect them and make control even more difficult.

For more information and help determining how to manage spider mites, refer to the *Insect Management Guide for Nebraska Corn and Sorghum* (EC94-1509), the *Insect Management Guide for Nebraska Alfalfa, Soybeans, Wheat, Range, and Pasture* (EC95-1511), and *Spider Mite Management in Corn and Soybeans* (G93-1167). These publications are available from your University of Nebraska Cooperative Extension office.

Steve Danielson
Extension Entomologist

Inside

Sooty stripe in sorghum

Last week I made a disease survey trip through southeast and south central Nebraska, stopping in corn and sorghum fields to see whether foliar diseases were developing. In general, the corn crop looked pretty good, although I found a light incidence of common rust, yellow leaf blight, and one or two other relatively minor leaf diseases in most fields. Gray leaf spot was seen in a few corn fields in southern Fillmore and northern Thayer counties.

Of greater interest was the incidence and extent of sooty stripe in a high percentage of sorghum fields examined. Last year this disease developed rapidly toward the end of the growing season, and it might again this year. The leaf spots are easy to recognize: small lesions gradually enlarge from circular brown spots with a yellow halo to elongated or spindle-shaped spots with straw-colored centers and reddish purple to tan margins. Fully developed lesions are 2 to 5 inches long and 0.5 to 0.75 inches wide. The spots are regular in outline and strongly bordered with a yellow margin. As they mature, numerous small, black fruiting bodies (sclerotia) of the fungus develop in the center of the spots, giving them a "sooty" appearance. Lesions are first seen on the lower, older leaves, then on

(Continued on page 159)

Prevention easiest route to lagoon upkeep

Weeds can be an aggravation for homeowners with sewage treatment lagoons. Aquatic plant growth is favored by the nutrient-rich lagoon areas, shallow water along the edge and warm temperatures. Common cattail, duckweed and trees such as willow are common lagoon weeds which increase organic loading, provide habitat for flies and mosquitoes, and decrease lagoon activities by blocking wind and sunlight.

Prevention is the best management against aquatic weeds in home sewage treatment lagoons. Mid-summer temperatures favor high evaporation rates, and if this loss is not balanced by water entering the lagoon from the household, the lagoon's water volume may drop below adequately functioning levels. Maintaining a water depth of 2 or 3 feet not only allows sewage decomposition, but lagoon edges will be the only areas where weeds can emerge, making treatment considerably easier. Also, maintain a good sod cover around the lagoon. This prevents erosion and, by mowing it closely, removes additional insect pest habitat and organic loading material.

Inspect the lagoon periodically to identify weed problems early, as they will be easier to correct in their infancy. Mechanical removal is most effective shortly after weeds emerge. Simply pull, cut, or rake young plants to discourage establishment.

There are few aquatic herbicides available to put directly into the lagoon system. Algae play a key role in lagoon decomposition activities and caution must be used in herbicide selection to avoid injuring algae populations. Avoid adding agents containing copper, such as Reward, or 2,4-D directly to the water, as this could do more harm than good. One herbicide labeled for wastewater treatment facilities is Rodeo (glyphosate), which will control or suppress a variety of emerged plants.

In the event a lagoon goes unnoticed for some time and weeds take over, it is important to correctly identify the weeds to control them most efficiently. A lagoon covered with duckweed should be raked as much as possible, and with the help of a brisk wind, the infestation generally won't require additional investments. If trees are a major problem along the lagoon edge, cut them down, remove the top, and paint the stump with 2,4-D LV Ester (4EC) to discourage regrowth.

A heavy stand of cattails presents a challenge and may warrant the need for chemical control. Apply Rodeo directly to emerged vegetation and preferably when the plants are actively growing. Treat promptly after "heads" appear, since later treatment may allow mature seeds to escape control and cause future weed problems. Finally, read the herbicide label carefully, as several restrictions apply to aquatic use.

Marty Williams
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Lancaster County
Alex Martin
Extension Weeds Specialist

CROPWATCH

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Lisa Brown Jasa, Editor

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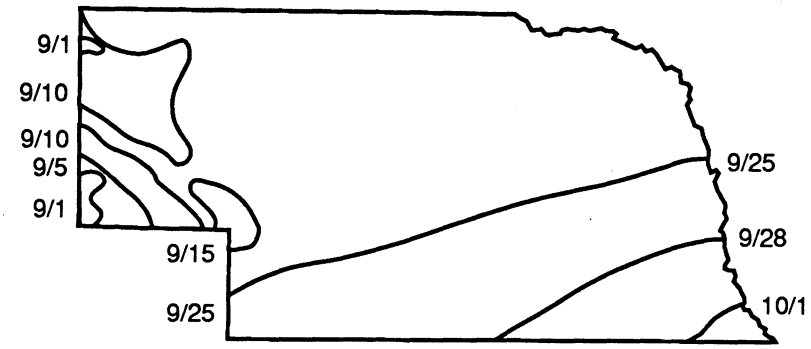
This fall adjust cultural practices to reduce risk of wheat disease

Now is the time to get the jump on preventing wheat streak mosaic, crown and root rot or leaf rust losses in the 1996 winter wheat crop. Good cultural practices in the fall — such as post-harvest weed control, resistant varieties, proper planting date, good seed quality and seedbed preparation — can reduce disease risk.

Two key factors in reducing the threat of wheat streak mosaic are to control volunteer wheat and grass weeds in stubble fields and to plant at the proper time. Planting early next to a weedy stubble field is asking for trouble. A variety of tillage/herbicide combinations can be used to control weeds. See Figure 1 for the preferred dates of seeding.

Healthy roots and crowns are critical to wheat's ability to tiller and produce large heads. When diseased they fail to deliver the appropriate balance of nutrients, water and growth factors during the early stages of growth. This can cause loss of stands and/or poor tillering and fewer and smaller heads. A loose seedbed and prolonged moisture stress coupled with high soil temperatures in the fall often result in early infection of crowns and roots. Planting good quality seed into a firm mellow seedbed at the proper time minimizes these risks.

Variety selection is often based on yield potential, but even the best yielding varieties can fail if they are disease susceptible. In eastern and central Nebraska, leaf rust is always a potential threat. Planting leaf rust resistant varieties spreads t risk and eliminates the decision to spray with a fungicide in May to minimize rust losses.



(Panhandle only)

Elevation (ft)	Planting Date
3500	Sept. 15
4000	Sept. 10
4500	Sept. 5
5000	

Fig. 1 Recommended average seeding dates for winter wheat.

Southwestern and western Nebraska wheat producers should have at least part of their fields planted to varieties that are less susceptible to wheat streak mosaic. These would include Alliance, Centura, Longhorn, Ogallala, Redland, Thunderbird, Vista and 2163.

Table 1 on page 161 gives a brief summary of how cultural practices affect wheat diseases.

John E. Watkins
Extension Plant Pathologist

1996 *Herbicide Guide* revisions: It's now or never

Farmers, extension educators, industry representatives, and all other users of our *Herbicide Use Guide*: Now is the time to submit your suggestions for our 1996 edition. We appreciate your previous input. You have helped make the Nebraska *Herbicide Use Guide* a most useful weed control aid for farmers, dealers, applicators, farm managers, consultants, extension educators, and others.

Please send your suggestions for the 1996 *Herbicide Use Guide* by Sept. 1 to the Agronomy Department — Weed Science, Attention: John McNamara, 362 Plant Science Building, University of Nebraska, Lincoln, NE 68583-0918.

Alex Martin
Extension Weeds Specialist
John McNamara
Extension Assistant
Weed Science — Agronomy

Wheat disease *(Continued from page 160)*

Table I. How cultural practices influence wheat diseases.

Cultural practice	*Wheat diseases influenced*	*Best management practices*	*Other control options*
Varieties	Rusts	Resistant varieties	Foliar fungicide
	Soil-borne wheat mosaic	Resistant varieties	Proper planting date
Seed quality	Loose smut	Certified seed	Seed treatment fungicide
	Common bunt	Certified seed	Seed treatment fungicide
	Scab	Certified seed	Seed treatment fungicide
	Black point	Certified seed	Seed treatment fungicide
Seedbed	Root and crown rot	Firm/mellow seedbed and proper planting date	Seed treatment fungicide
Planting time	Root and crown rot	Firm/mellow seedbed and proper planting date	Seed fungicide treatment
	Wheat streak mosaic	Proper planting date and good post-harvest weed control	Tolerant varieties
	Soil-borne wheat mosaic	Resistant varieties	Proper planting date
	Barley yellow dwarf	Proper planting date	Tolerant varieties
	High Plains virus	Proper planting date and post-harvest weed control	None
	Cephalosporium stripe	2-year rotation and tolerant varieties	Proper planting date
Residue management and post-harvest weed control	Wheat streak mosaic	Proper planting date and post-harvest weed control	Tolerant varieties
	Tan spot and Septoria diseases	Foliar fungicide and rotation	Stubble mulching
	Cephalosporium stripe	2-year rotation and tolerant varieties	Proper planting date

Precipitation

	8/14-8/20			*9/1-8/20*		
	Act.	*Nrm.*	*%*	*Act.*	*Nrm.*	*%*
Ainsworth	.12	.63	19	24.93	21.44	116
Alliance	.00	.35	0	16.29	15.86	103
Arthur	.00	.42	0	20.08	18.00	112
Beatrice	2.41	.91	265	31.52	28.78	110
Central City	.46	.56	82	17.90	25.48	70
Clay Center	.63	.70	90	25.58	25.97	98
Concord	.38	.63	60	22.42	26.53	84
Curtis	.31	.49	64	13.41	20.03	67
Elgin	1.18	.63	187	16.19	24.12	67
Gordon	.00	.39	0	19.53	17.35	113
Grant	.20	.49	40	17.23	18.42	94
Holdrege	.35	.63	56	21.11	24.15	87
Lincoln	.57	.77	74	23.25	27.03	86
McCook	.63	.56	112	15.65	19.83	79
Mead	.28	.98	28	20.35	33.36	61
North Platte	.00	.41	0	17.17	18.73	92
O'Neill	.28	.63	44	23.04	22.70	101
Ord	3.27	.77	424	27.32	23.04	119
Red Cloud	1.39	.70	199	25.5	25.24	101
Rising City	.31	.70	45	23.66	25.37	93
Scottsbluff	.00	.22	0	17.00	14.92	114
Shelton	.36	.63	57	24.18	23.87	101
Sidney	.00	.42	0	22.60	15.54	145
Tarnov	.71	.67	106	22.09	24.89	89
West Point	.60	.77	78	15.71	27.36	57

The last irrigation: how much is enough

Determining when to apply the last irrigation of the season is an important water management decision. An unneeded irrigation could waste one to three inches of water and two to five gallons of diesel fuel per acre. On the other hand, one extra irrigation could mean an increase of several bushels per acre in crop yield.

Irrigation management near the end of the season should accomplish two goals:

1. Ensure there is enough soil moisture available in the root zone to carry the crop to maturity and to produce optimum yields.

2. Allow the soil moisture reservoir to be depleted as far as possible to allow room for storing off-season precipitation and to minimize fuel, labor, and water demands for the present season.

Although these requirements appear to conflict, the decision can be made if adequate field information is available or is predictable. The following information is necessary to predict the date of last irrigation:

- Predicted crop maturity date
- Predicted crop water use from now to maturity
- Remaining usable moisture in the root zone
- Probability of significant amounts of rainfall before crop maturity.

Obviously, rainfall is difficult to predict, but crop maturity and crop water use can be. The remaining usable moisture in the crop root zone can be measured.

Corn, sorghum and soybean plants require some moisture up to the time of physiological maturity. Since some of the moisture can come from the soil moisture reservoir, the last irrigation can usually be applied two to four weeks before physiological maturity. Typical water requirements between a given stage of growth and physiological maturity are shown in Table I on page 163.

The remaining usable moisture in the root zone is the difference between the current soil water balance (status) and the minimum allowable soil water balance at maturity. Typically, 60% of the available moisture in the top four feet of the root zone can be depleted at crop maturity and not reduce grain yield. Table II gives typical minimum allowable soil balances for common soil textures.

With the predicted water requirement and current soil water balance, the remaining irrigation need can be predicted using simple calculations (*see worksheet below*).

If the necessary information isn't available, Table III on page 163 provides general guidelines for the last irrigation. It assumes that the root zone is completely refilled during the last irrigation.

For more information, see NebGuides G84-690 *Estimating Soil Moisture by Appearance and Feel,* and G82-602, *Predicting the Last Irrigation for Corn, Grain Sorghum and Soybeans.*

DeLynn Hay
Extension Irrigation Specialist

Worksheet to determine need for last irrigation

	Example	
Field		
Date	8-20	
Crop	CORN	
Soil type	BOTTOMLAND SILT LOAM	
1. Present stage of growth.	BEGINNING DENT	
2. Water required to crop maturity, in inches (*Table I*).	5.0	
3. Current soil water balance, in inches.	9.5	
4. Minimum allowable balance, in inches (from *Table II*).	4.0	
5. Remaining usable moisture, in inches (line 3 minus line 4).	5.5	
6. Irrigation requirement assuming no rainfall, in inches (line 2 minus line 5)	NONE	

Note: If line 5 is greater than or equal to line 2, more irrigation is not needed.

Last irrigation (Continued from page 162)

Table I. Normal water requirements for corn, grain sorghum and soybeans between various stages of growth and maturity in Nebraska.

Stage of growth	*Approximate number of days to maturity*	*Water use to maturity* (inches)
Corn		
Blister kernel	45	10.5
Dough	34	7.5
Beginning dent	24	5.0
Full dent	13	2.5
Physiological maturity	0	0.0
Grain Sorghum		
Half bloom	34	9.0
Soft dough	23	5.0
Hard dough	12	2.0
Physiological maturity	0	0.0
Soybeans		
Full pod development (R4)[a]	37	9.0
Beginning seed fill (R5)	29	6.5
Full seed fill (R6)	17	3.5
Beginning maturity (R7)	0	0.0

[a]The R-number corresponds to the soybean growth stage.

Table II. Allowable soil moisture deficits and minimum allowable balances at physiological maturity.

	Available water capacity (inches/foot)	*Minimum allowable balance in top 4 feet of soil profile*[a] (inches)
Silty clay loam	1.6	2.6
Upland soil loam	2.0	3.2
Bottomland silt loam	2.5	4.0
Very fine sandy loam	1.8	2.9
Sandy loam	1.4	2.2
Fine sands	1.0	1.6

[a]Based on depletion of 60% of the available water.

Table III. Guidelines for determining date of last irrigation, assuming the root zone is completely refilled at that time.

	Stage of growth for last irrigation		
Soil type	*Corn*	*Sorghum*	*Soybeans*
Silty clay loam	4 days after beginning dent	4 days after soft dough	1 day after full seed fill
Upland soil loam	1 day after beginning dent	1 day after soft dough	9 days after beginning seed fill
Bottomland silt loam	5 days after dough stage	10 days after half bloom	4 days after beginning seed fill
Very fine sandy loam	3 days after beginning dent	3 days after soft dough	11 days after beginning seed fill
Sandy loam	6 days after beginning dent	6 days after soft dough	3 days after full seed fill
Fine sands	1 day after full dent	10 days after soft dough	6 days after full seed fill

Nebraska crop update

Above normal temperatures promoted rapid crop development last week, but corn and sorghum continued two to three weeks behind normal. Heavy rainfall in southeast Nebraska helped boost dryland crop prospects; however most other dryland areas were short of moisture.

Irrigated corn was rated at 69% good or excellent and dryland corn was rated at 19% good to excellent. As of Sunday, 12% of the crop had reached the dough stage, compared with 94% last year and an average of 71%, putting the crop about 19 days behind the five-year average.

Soybean condition was rated at 1% excellent, 31% good, 41% fair, 22% poor, and 5% very poor. Statewide, 69% of the acreage had set pods, compared to 99% last year.

Sorghum condition was rated at 1% excellent, 33% good, 49% fair, 16% poor and 1% very poor. Sorghum was thought to be about 14 days behind average development.

Alfalfa condition was rated at 3% excellent, 40% good, 41% fair, 6% poor, and 3% very poor.

Nebraska Agricultural Statistics Service

Nebraska weather data*

Site	Growing degree days**			Evapotranspiration rates for corn					
	May 14	*May 28*	*June 10*	Corn emergence	ET prior	ET last three	ET on	ET next three	ET next
Base***	50	50	50	date	week	days	Aug. 20	days	week
Ainsworth	1747	1647	1494	5/25	0.28	0.27	0.28	0.30	0.32
Alliance	1460	1386	1278	5/25	0.32	0.27	0.22	0.31	0.34
Arthur	1602	1519	1393	5/25	0.31	0.32	0.30	0.33	0.33
Beatrice	2040	1910	1708	5/25	0.19	0.25	0.22	0.30	0.30
Central City	1908	1788	1608	5/25	0.19	0.24	0.19	0.30	0.31
Clay Center	1923	1803	1619	5/25	0.19	0.25	0.22	0.31	0.31
Concord	1867	1740	1577	5/25	0.26	0.32	0.25	0.32	0.30
Curtis	1791	1691	1532	5/25	0.36	0.36	0.30	0.37	0.37
Elgin	1851	1736	1577	5/25	0.25	0.29	0.22	0.32	0.32
Gordon	1492	1414	1304	5/25	0.35	0.30	0.32	0.32	0.35
Grant	1644	1553	1409	5/25	0.26	0.25	0.28	0.32	0.35
Holdrege	1874	1759	1580	5/25	0.28	0.32	0.24	0.34	0.34
Lincoln	2153	2011	1805	5/25	0.21	0.30	0.24	0.32	0.31
McCook	1881	1766	1589	5/25	0.36	0.35	0.32	0.37	0.38
Mead	2048	1908	1708	5/25	0.22	0.30	0.22	0.31	0.30
North Platte	1742	1646	1493	5/25	0.32	0.32	0.30	0.33	0.34
O'Neill	1740	1634	1473	5/25	0.29	0.30	0.28	0.32	0.32
Ord	1835	1730	1569	5/25	0.23	0.27	0.21	0.31	0.32
Red Cloud	1995	1871	1677	5/25	0.25	0.32	0.24	0.34	0.33
Rising City	1965	1839	1654	5/25	0.19	0.26	0.22	0.30	0.30
Scottsbluff	1557	1481	1360	5/25	0.30	0.26	0.20	0.32	0.36
Shelton	1900	1782	1606	5/25	0.20	0.24	0.21	0.30	0.32
Sidney	1491	1417	1311	5/25	0.36	0.35	0.33	0.36	0.36
Tarnov	1859	1737	1563	5/25	0.21	0.27	0.18	0.31	0.31
West Point	1958	1823	1646	5/25	0.22	0.29	0.22	0.30	0.29

*Data compiled up to Aug. 20, 1995

**Corn tasseling/silking normally begins at approximately: 1200 GDDs (short season); 1300 GDDs (mid season); or 1400 GDDs (long season)

***Base 50 is used for corn, sorghum and soybean production.

Coming soon:

- Wheat test results
- Vertebrate pest control after CRP
- Minimizing compaction during harvest
- Post CRP hay and pasture options

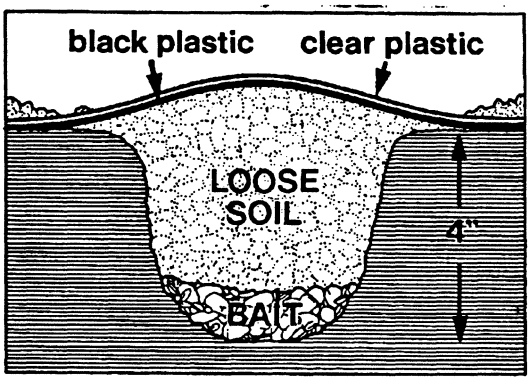
Tips to managing seed-attacking insects on post-CRP crops

Some early season damage to row crop seeds and seedlings from wireworms, seedcorn maggots, white grubs, and other insects occurs every year in Nebraska. These pests will also impact crops being planted into fields coming out of CRP. The severity and the area affected will vary greatly, depending on the species involved, previous vegetation, and weather conditions. Traditionally, insecticides and seed treatments have been used to manage these insects. While effective when applied properly, unnecessary insurance treatments reduce the farmer's net return. Monitoring traps can help improve management.

Seed attacking insects

Wireworms, seedcorn maggots, and white grubs are the most common seed and seedling attacking insects when crops are planted in fields previously in grass or pasture. Seedcorn maggots attack the seeds of many crops before or just at germination, preventing germination by killing the newly emerging coleoptile. Use seed treatments to prevent this damage.

Wireworms feed on the seeds and roots of corn, sorghum, small grains, grasses, soybeans, dry beans, sugar beets, potatoes, and various other root crops. Wireworm feeding may reduce seed germination or produce weak seedlings. Wireworms eat the germ of the seeds or hollow them out completely, leaving only the seed coat. Larvae boring into the underground (mesocotyl) portion of the stem cause seedlings to die or become stunted. Planter box seed treatments will reduce damage to seed, but will not protect emerged plant parts. Under heavy infestations of wireworms a granular soil insecticide may be necessary. Bait stations may be used to assess levels of wireworm infestation before planting. The bait consists of germinating corn and wheat seeds. Substances produced by the seedlings attract the wireworms to the bait. Bait stations should be set up two to four weeks before the planned planting date. They should be placed randomly throughout the field with a minimum of ten stations per field. Be sure to place stations in different parts of the field (areas with different soil types, low or high spots, etc.) to obtain a representative sample. If you find an average of one or more wireworms per bait station, use an infurrow application of a labeled soil insecticide. If wireworms are present at low levels (less than one per station), a planter box seed treatment should be sufficient to prevent serious damage.



Wireworm bait station

White grubs feed on roots deeper in the soil. Crop emergence may appear normal in the beginning; however, later the stand becomes thin or patchy. Crop roots are usually chewed off. White grubs can only be controlled by granular soil insecticides.

1995 research results

During research conducted this spring at Northeast Research and Extension Center near Concord, 24 wireworm bait traps were distributed throughout the CRP plot area. Six wireworms were captured before planting so only a seed treatment was used. Seed treatments are low cost alternatives to soil insecticides for seed and seedling insect control. Granular insecticides were not used because of the low wireworm count and rootworms were not expected to be a problem because the corn did not follow corn in the field. Stands were not affected by seedling insects. The plots did not require a rescue treatment for cutworms.

For more information see NebGuides, G80-501 *Corn Cutworms*, G91-1023 *Insects that Attack Seeds and Seedlings of Field Crops*, and Extension Circular EC94-1509 *Insect Management Guide for Nebraska Corn and Sorghum*.

Keith Jarvi
IPM Extension Assistant
Northeast District

Sooty stripe

(Continued from page 157)

upper leaves if weather patterns continue to favor fungal spread and development.

Disease management strategies include crop rotation or destruction of infected leaf debris as a means of reducing initial inoculum originating from the overwintering sclerotia, and the use of genetically resistant varieties where available.

David Wysong
Extension Plant Pathologist