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CROP WATCH

University of Nebraska Cooperative Extension
Institute of Agriculture and Natural Resources

No. 94-14
July 15, 1994

Correct timing of insecticide is critical

Western bean cutworm moths in flight

Western bean cutworm moths were first found during the last week of June in a light trap near North Platte and in a pheromone trap near York. These large "miller" moths are dark brown and have a white stripe on the leading edge of the front or upper wing.

Mated females lay eggs on corn or dry edible bean leaves. Corn fields in later stages of development are most attractive to the females for egg laying. Eggs are laid in masses of 5 to 200, on the upper surface of the top leaves. When first laid, the eggs are white and dome shaped. As the eggs develop they turn tan, then purple just before hatching.

Recently hatched larvae are about 1/4 inch long and are dark brown with a faint diamond shaped pattern on their backs. As the larvae grow they become tan to pinkish brown and when mature are about 1 1/2 inches long. When the eggs hatch, the larvae first feed on pollen and then move to the corn ears or bean pods. The larvae will feed there for about two

Extended coverage

As part of a trial to extend dissemination of crop production and pest management information, some *Cropwatch* stories may appear on electronic agricultural news services, such as DTN or FarmDayta, in future weeks.

months before they drop to the soil to form an overwintering chamber. Through the five larval instars considerable feeding damage can occur. In corn, one larvae per plant usually will not cause severe damage but the ears may host up to ten larvae which can significantly reduce yield. Scouting for the western bean cutworm should have begun at moth flight. To scout for western bean cutworm eggs in corn, check twenty consecutive plants in each of five locations in a field. If eight percent of the plants have an egg mass or young larvae are found in the tassel, consider applying an insecticide.

The timing of an insecticide application is critical. If the tassel has not emerged when the larvae hatch they will move into the whorl and feed on the developing pollen granules in the tassel. As the tassel emerges, the larvae will migrate down the plant to the green silks. The larvae will move down the silk channel and feed on the developing ear. Once the larvae reach the ear tip, control is difficult.

If an insecticide treatment is needed, time it to occur when 90% to 95% tassel emergence has occurred. If the tassels have already emerged, apply when 70% to 90% of the eggs have hatched. Scouting procedures and economic thresholds for the western bean cutworm in field beans are not well developed. If adjacent corn fields

require an insecticide to control, it would be wise to treat the bean fields as well.

If an insecticide application is needed, corn fields should be checked for the presence of spider mite colonies. If mites are found, choose an insecticide that will not stimulate mite reproduction. Products that contain permethrin (Pounce, Ambush) or esfenvalerate (Asana) have been associated with increased mite reproduction. Other products labelled for western bean cutworm control on corn include Sevin 80S and XLR Plus, Lorsban 4E, and PennCap-M. See EC 94-1509, *Insect Management Guide for Nebraska Corn and Sorghum*, or the label for information on rates and restrictions for these products.

**Ron Seymour, Extension
Assistant, North Platte
Robert Wright, Extension
Entomologist, Clay Center**

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Capture 2EC approved for corn

Capture 2EC insecticide/miticide has been granted a specific Section 18 exemption until Sept. 15 for use in corn to control spider mites.

The directions for product use indicate that it can be used to control two-spotted spider mites and Banks grass mites in field corn, popcorn, and seed corn at a rate of 0.08 pounds active ingredient per

acre or 5.12 fluid ounces of formulation per acre. Two applications can be made in a minimum of 2 gallons of total spray volume per acre. The product can only be applied aerially by or under the direct supervision of a certified commercial applicator.

Spider mites are now present in corn in a number of locations in Nebraska. In the York area, many fields have spider mites in the outside rows only, however, a few fields have mites throughout. In some cases, predator mites, which are natural enemies of the spider mites, are keeping the damage at tolerable levels. Growers are urged to avoid unnecessary insecticide

applications to save money and to preserve the beneficial mite populations.

In general, hot and dry weather that stresses the corn is likely to favor spider mites and lead to more crop damage. Cool, moist weather favors the predator mites and reduces the likelihood of severe crop damage.

For additional information regarding the use of Capture 2EC, contact the Department of Agriculture at (402) 471-6851 or FMC Corporation at (402) 592-5090.

Steve Danielson
Extension Entomology Specialist
Lincoln

Panhandle insect numbers increasing

Insect problems are developing in the Panhandle. Grasshopper activity has increased over the last few weeks to significant levels in many areas. Because of the dry conditions grasshopper survival has been high and the grass in the ditches, pastures and rangeland have dried down and left little green forage for the grasshoppers. As a result they are moving into adjacent areas including field crops, hay meadows, and gardens.

Significant populations of banks grass mites have been seen on corn with colonies found on the lower five to seven leaves and the lower leaves yellowing. Many of these plants have not yet tasselled or are just beginning to tassel. Monitor corn fields for the development of banks grass mite populations and two-spotted spider mites.

We also have seen an unusually large number of Mexican bean beetle adults and resulting egg masses in the dry bean fields. Damage from this first generation will likely be greater than normal when peak larval feeding develops in a few weeks.

Gary Hein, Extension
Entomologist, Scottsbluff



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Lisa Brown Jasa, Editor

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Traps help provide accurate numbers

Scout for corn rootworm beetles

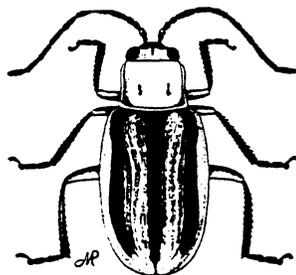
Adult western corn rootworm beetles began to emerge during the week of June 27 at several locations across Nebraska (Concord, Mead, Clay Center and North Platte). I observed a northern corn rootworm adult July 5 at Clay Center.

Both the northern and western corn rootworms are about 1/4 inch long, but western corn rootworm adults are pale yellow-green beetles with a black stripe on each wing cover. Northern corn rootworm beetles vary in color from light green to tan, with no stripes.

Beetles emerging before silk emergence may feed on corn leaves. They feed by scraping the surface tissue, leaving a white parchment-like appearance. Once silks emerge this is the favored food. There are no thresholds for silk-clipping damage based on beetle numbers, because damage levels are not correlated well with beetle densities. Usually an average of at least 10 beetles per ear are required to seriously affect pollination. Severe silk feeding at 25-50% pollen shed may indicate the need to apply an insecticide.

During late July and August these beetles will be laying eggs in corn fields. These eggs overwinter in the soil, hatch into rootworms in the spring, and feed on corn roots if continuous corn is grown. However, not all continuous corn fields have economic infestations of corn rootworms. Weekly scouting of adult rootworm beetles in July and August will help you determine whether a rootworm insecticide will be needed next year. People who control adult beetles should base treatment decisions and timing on field scouting.

Begin scouting for corn rootworm beetles in mid-July and continue scouting weekly until



Western corn rootworm beetle

threshold levels are exceeded or beetle activity stops. Examine 50 plants per field, taking samples from each quarter of the field. Sampled plants should be several paces apart, so that examining one plant doesn't drive beetles off of the next plant to be sampled. The most reliable method is to examine the whole plant for beetles. Beetles may hide behind leaf sheaths or in the silks, so care is required to observe all beetles. An alternative method is check for beetles only in the ear zone (the area including the upper surface of the leaf below the primary ear and the under surface of the leaf above the primary ear).

In continuous corn if beetle counts exceed 18,000 beetles per acre or 0.75 beetle per plant (based on a 24,000 plant population), damaging populations of corn rootworms are possible in that field next year. In first year corn, there is a higher proportion of female beetles, so the threshold is lowered to 13,500 beetles per acre, or 0.5 beetles per plant (based on 24,000 plant population). For different plant populations you will need to use a different threshold for control (see NebGuide G86-774, *Western Corn Rootworm Soil Insecticide Treatment Decisions Based on Beetle Numbers*). People scouting with the ear zone method should divide the

above thresholds in half, since on average only 50% of the beetles on a plant are counted using this method.

In addition to visual scouting methods for rootworm beetles, yellow sticky traps may be used. Research conducted in Iowa identified an unbaited Phercon AM trap as the best trap among several tested. Attach traps to the corn plant at ear height and leave in the field for a week. Use 12 traps per field, spread out over the whole field. If beetle counts exceed an average of six beetles per trap per day, consider treatment. If beetle counts are below this level, continue sampling until the threshold is exceeded or beetle activity stops. Some advantages of using traps over visual examination include: 1) traps catch beetles over an extended time and are not influenced by time of day or weather; and 2) counts are not influenced by the experience or skill of the sampler. Traps, which cost about \$1 each, are available from several sources including: the manufacturer, Trece, (408-758-0204); Great Lakes IPM (517-268-5693); Pest Management Supply, Inc., (800-272-7672).

Damage can be prevented in the future by rotating out of corn or using an insecticide at planting or cultivation. Fields remaining below the threshold level will not need to be treated with a rootworm insecticide next year.

Individuals using adult beetle control programs should begin treatments when the beetle threshold is exceeded and 10% of the female beetles are gravid (abdomen visibly distended with eggs). Checking for gravid beetles is an

(Continued on page 100)

Modify ET numbers when scheduling irrigations on wind damaged corn

Many southcentral Nebraska farms experienced some crop damage from high winds over the Fourth of July weekend. In most cases these crops are salvageable and will likely need irrigation later. The crop water use (ET) estimates from the weather stations will probably not be representative of wind damaged corn. This is because:

- a) wind damaged leaves have lessened water transfer capabilities,
- b) plants with broken stalks transfer little or no water,
- c) weeds resulting from the less dense canopy will increase water use,
- d) the plants that remain and are healthy will have increased

transpiration due to increased energy in a less dense canopy, and

- e) soil evaporation will be increased with the less dense canopy.

In some cases factors a) and b) may be offset by factors c), d), and e) making the published crop water use values acceptable. In most cases, though, this will not occur and your best bet is to probe fields individually and use the appearance-and-feel technique (NebGuide G84-690) to estimate the up-to-date root zone water status.

Increase sampling frequency to get a feel for the amount of water being used in a two- or three-day period. You also may have to increase the number of samples

you take at each location, especially if crop damage is not uniform. If the damage varies by large regions in the field, you may want to treat these areas differently when irrigating. Use the appearance-and-feel information to adjust the published crop water use values to fit the wind damaged conditions at each field. Use the same allowable root zone water depletions for wind damaged corn as for healthy corn. Remember it is most important to avoid water stress during the tasseling-silking growth stages.

Joel Cahoon, Water Management Engineer, Clay Center

Corn rootworms

(Continued from page 99)

important point since the first beetles to emerge are mostly male, and females require at least 10-14 days of feeding before they are able to lay eggs. Treatments applied too early may be ineffective if large numbers of females emerge after the residual effectiveness of the treatment has dissipated. Monitor fields weekly after treatment for rootworm beetles. If beetle numbers exceed 0.5 beetles per plant, retreatment is warranted. Late maturing fields are particularly susceptible to corn rootworm beetles moving into them from nearby earlier maturing fields.

Rates and restrictions of registered insecticides for adult corn rootworm control can be found on the label or in EC 94-1509, *Insect Management Guide for Nebraska Corn and Sorghum*, available at your local University of Nebraska Extension office.

Bob Wright, Extension Entomologist, Clay Center

Grasshopper numbers growing

Grasshoppers are abundant in many locations across Nebraska and are beginning to approach infestation levels that will damage crops. Most grasshoppers are in the nymph or immature stages and are not able to fly. They do have the ability to walk or hop from place to place, and are moving from weedy areas to crops to find additional food.

Crop producers are urged to examine weedy areas adjacent to crop fields so that grasshoppers can be controlled if necessary before they enter fields in large numbers. When grasshoppers are at densities of 20 or

more per square yard in field borders, consider using an insecticide labeled for the situation. In non-crop areas, acephate (Orthene), carbaryl (Sevin), diazinon, esfenvalerate (Asana XL), and malathion insecticides are registered for control of grasshoppers.

For information regarding grasshopper control in field crops, refer to the Insect Management Guide for the crop(s) of interest, available at your local University of Nebraska Cooperative Extension Office.

Steve Danielson
Extension Entomology
Specialist, Lincoln

Leaf nitrogen testing not always reliable

Recent research indicates that analyzing corn leaves to determine the plant's nitrogen content may not be a reliable indicator.

The practice of sampling the leaf opposite and below the primary ear of corn at silking for nitrogen content was first proposed in 1946. Since then, numerous studies have evaluated using the nitrogen content of this leaf as an indicator of nitrogen status in corn. Sometimes the practice is used to monitor the nitrogen status of corn. It is usually suggested that the nitrogen content of the leaf (i.e., critical level) should be near 2.7 to 3.0% at silking time.

A recent study evaluated the sensitivity of using this method for monitoring the nitrogen status of corn. Results indicated that the nitrogen content of the corn leaf at silking can be quite variable, and the practice of using a single critical value for determining nitrogen status of corn is not reliable. The researchers found that the published critical values of 2.7 to 3.0% are questionable because in their studies the nitrogen content of the leaf at silking was rarely higher than 3.0% even

Results indicated that the nitrogen content of the corn leaf at silking can be quite variable, and the practice of using a single critical value for determining nitrogen status of corn is not reliable.

when fertilizer nitrogen was applied at rates much greater than those needed for attaining maximum grain yields.

The major disadvantage of leaf nitrogen testing at silking is that it is a post mortem test — if a deficiency is found it is too late to correct the problem this year.

Usually, leaf nitrogen testing is used as a long-term management tool to prevent problems from occurring in future corn crops. The variability indicated by the recent research, however, indicates that the only reasonable method of using leaf nitrogen testing as a management tool is to compare the leaf nitrogen concentration of the area in question with the leaf nitrogen concentration of an area that is known to have adequate nitrogen. It is imperative that these two areas have similar management histories and the same corn hybrid.

If the leaf nitrogen content of the area in question is consistently (more than just one year) less and the yields are consistently lower than those in the adequately fertilized area, the fertilizer management practices in this area may need to be modified. If the leaf nitrogen concentration of the area in question is considerably less than the adequately fertilized area, leaf nitrogen testing is probably not needed because the visual deficiency symptoms will be great enough to show that more fertilizer nitrogen is needed.

It would appear that in most situations leaf nitrogen testing at silking is of questionable value. However, if this practice is used, use caution when interpreting the results and be sure to compare the results with an area that contains adequate fertilizer nitrogen.

Gregory D. Binford, Soil Fertility Specialist, Scottsbluff

Widespread rains timed right for corn

The past two weeks have brought substantial rains to Nebraska and the majority of the corn belt, with totals exceeding 3 inches over many sections of eastern Nebraska. The timing of the rains couldn't have been more crucial, as the corn crop is now entering pollination.

Private consulting firms have estimated the total U.S. corn crop at 8.8 to 9.2 billion bushels as of July 1. This would be a substantial increase over 1993 yields and help alleviate concerns about potential

grain shortages. Although the nations' corn crop looks healthy, some counties in Nebraska won't contribute significantly to stockpiles. Initial reports indicate several counties in northeast Nebraska have experienced widespread hail damage. The July 4th weekend storms also caused significant wind damage near Sutton. Greensnap was prevalent, but estimates on crop losses are still being surveyed.

Aside from isolated reports of damage, all crops in Nebraska have

benefited from the recent rains. The Panhandle and Southwest districts have received some rain but are still too dry. Weather forecasts for the next ten days indicate a wetter than normal pattern coupled with above normal temperatures.

Soil moisture projections indicate that eastern Nebraska dryland grain producers have at least 7 inches of available soil water.

Al Dutcher
State Climatologist
Agricultural Meteorology

Nebraska weather data as of July 10

Accumulated from	Growing degree days*				Precipitation***				Emer Date	Evapotranspiration rates					
	Fahrenheit, Base 50**				7/4-7/10		4/1-7/10			Prior Week	Prior 3 Days	7/10	Next 3 Days	Next Week	Days*****
	5/1	5/10	5/20	5/31	Act	%****	Act	%****							
Ainsworth	1199	1129	949	765	2.95	383	10.71	106	5/5	.27	.29	.36	.34	.35	3
Alliance	1112	1033	868	717	.32	60	3.33	38	5/5	.30	.35	.39	.37	.37	5
Arthur	1160	1084	923	752	1.81	235	7.67	81	5/5	.33	.38	.52	.38	.37	8
Beatrice	1378	1316	1148	928	.61	73	10.43	87	5/5	.29	.31	.36	.34	.35	5
Central City	1355	1293	1113	889	.83	108	8.12	68	5/20	.28	.29	.36	.35	.36	1
Clay Center	1361	1299	1127	916	.79	102	11.10	94	5/5	.28	.29	.35	.34	.36	5
Concord	1259	1208	1040	837	1.19	155	8.52	72	5/20	.25	.28	.35	.32	.32	1
Curtis	1315	1240	1070	881	.84	109	4.47	43	5/5	.38	.40	.53	.41	.41	7
Elgin	1252	1196	1025	819	.04	5	8.15	70	5/20	.26	.30	.37	.34	.35	2
Gordon	1102	1032	863	716	1.57	225	7.56	82	5/20	.29	.34	.42	.35	.34	3
Grant	1271	1192	1023	837	.94	135	3.27	34	5/5	.41	.41	.53	.42	.43	4
Holdrege	1346	1274	1105	905	.99	122	9.85	86	5/5	.34	.35	.45	.37	.38	5
Lincoln	1445	1382	1202	967	.75	97	10.38	89	5/5	.29	.31	.36	.34	.35	5
McCook	1389	1305	1125	928	.83	107	5.04	52	5/5	.38	.39	.53	.41	.41	7
Mead	1352	1289	1118	900	1.02	122	14.99	104	5/5	.28	.29	.34	.33	.34	3
North Platte	1257	1183	1012	827	1.26	180	7.56	77	5/5	.33	.34	.47	.37	.38	7
O'Neill	1201	1138	970	785	1.93	251	12.52	119	5/20	.26	.29	.36	.33	.34	1
Ord	1291	1224	1052	853	2.76	394	11.26	109	5/20	.27	.30	.38	.34	.35	3
Red Cloud	1376	1311	1147	940	1.72	205	8.28	73	5/20	.34	.35	.43	.37	.38	4
Rising City	1337	1280	1112	893	1.46	208	11.54	110	5/5	.25	.26	.31	.32	.35	3
Scottsbluff	1219	1125	954	783	.24	48	3.43	45	5/5	.28	.32	.35	.37	.38	6
Shelton	1373	1308	1125	904	1.80	281	9.56	86	5/5	.29	.30	.36	.35	.37	4
Sidney	1154	1073	919	755	.63	112	6.30	74	5/5	.39	.40	.45	.41	.40	8
Tarnov	1270	1212	1047	843	2.20	286	9.92	84	5/5	.27	.28	.34	.33	.35	3
West Point	1347	1283	1109	889	2.32	332	10.12	81	5/20	.24	.28	.32	.32	.32	3

*Tasseling/silking normally begins at approximately: 1200 GDD's (short season); 1300 GDD's (mid season); or 1400 GDD's (long season)

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

***Precipitation is a seven-day summary ending on July 10.

****Percent of normal precipitation levels.

*****Days indicates number of days ahead or behind normal, relative to accumulated growing degree days on July 10.