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Bean leaf beetles feeding on pods?

*Late season thresholds updated*

By most accounts, 1997 has been a year of high bean leaf beetle populations. Fields in eastern Nebraska have been treated in the last several weeks to prevent leaf defoliation and pod feeding. In many cases, however, beetles may still be present and farmers are wondering if levels warrant further treatment to prevent pod damage.

Two generations of bean leaf beetles develop in Nebraska. The second generation overwinters as adults and these beetles are the ones seen early in the year feeding on seedling soybeans. These beetles feed, mate, lay eggs and die in early to mid June. There is usually a distinct period from mid June to early July when few if any beetles are present, before the first generation emerges. Total developmental time from egg to adult can range from 25 to 40 days. Because of this range, it is common to see adults from the first generation and the second generation in the field at the same time. The generations “overlap” and beetles will be present at some levels from mid July until the end of the growing season. Because of this overlap it is important to monitor beetles regularly to determine population shifts and to better plan management.

After full pods are formed and seeds begin developing, soybeans are most susceptible to yield loss from pod feeding. Small numbers of beetles can cause economic yield loss. Pod feeding also may contribute to the development of seed fungi and resulting discoloration, which can result in dockage at the grain elevator.

Now is the time to make treatment decisions regarding bean leaf beetle pod feeding. Take samples before significant pod feeding occurs, but after second generation beetles have emerged. By this time, most second generation bean leaf beetles should have emerged and beetles numbers should be near their highest levels for the summer. Beetle numbers will slowly decline as beans mature and beetles move to overwintering sites.

Perhaps the easiest and best way to sample beetles is with a shake (or drop) cloth. A shake cloth is a 3 x 3 foot piece of muslin or plastic attached on each side to dowel rods. Hold one rod against the base of the plants and lay the cloth between the rows. Shake the plants against the cloth to knock off the insects and count the beetles. Remember to estimate the number per row foot, so

*(Continued on page 161)*
Updates

CPMU Dec. 2-3

The 1997 Crop and Pest Management Update Conference will be December 2-3 at the Kearney Ramada Inn. Additional information will be distributed in future Crop Watch issues.

Hergert Center director

Gary W. Hergert, an agronomist at the University of Nebraska West Central Research and Extension Center in North Platte, has been named the Center’s interim director. Richard T. Clark of North Platte, agricultural economist at the center, has been appointed interim associate director of the center.

The appointments took effect Aug. 16 and will last for one to two years, said Darrell Nelson, dean and director of NU’s Agricultural Research Division. A search for a permanent director will be launched in about a year, Nelson said.

Hergert succeeds Pete Jacoby, who will become an associate dean of the College of Agriculture and Home Economics at Washington State University at Pullman.

Hergert is a professor of agronomy and has been the Center’s associate director. He specializes in researching soil fertility and management and is a Cooperative Extension soils specialist. Hergert’s role as director will be fulltime.

Clark, a professor of agricultural economics, will divide his time between his associate director duties and his current extension and research responsibilities. He helps farmers and ranchers with management and marketing information and conducts research on cropping and livestock. He joined NU in 1985.

Rules change for atrazine with proso millet in fallow

Annual broadleaf and grass weed control in fallow situations prior to planting is a prerequisite to the next crop’s success. Western growers are particularly concerned about controlling downy brome and Japanese brome grass in fallow situations.

Until recently, farmers could use atrazine alone or tank-mixed with other products for a variety of crops including proso millet. Growers should be aware, however, that proso millet has been removed from the atrazine label and, thus, atrazine used either alone or in combination with other products is not allowed under current label language. This language reads, in part:

“... do not plant any crop other than those on this label within 18 months following treatment.”

Older labels allowed the use of up to three pounds of atrazine in the fall in fallow situations. Confusion has arisen as to whether lower rates of atrazine, i.e. less than one pound tank-mixed with other products would still be legal. As the “do not” statement above does not specify a minimum treatment rate, it must be assumed that all treatment rates apply to this prohibition.

Please contact the Nebraska Department of Agriculture at (402) 471-2394 if you have any questions concerning this or other label interpretations.

Geir Friisoe, Manager
Pesticide Program, Nebraska Department of Agriculture

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Lisa Brown Jasa, Editor

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

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Lincoln, NE 68583-0816

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406 Plant Science Bldg.
Lincoln, NE 68583-0722

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

UNL Department of Agricultural Meteorology
236 L.W. Chase Hall
Lincoln, NE 68583-0728
Bean leaf beetle
(Continued from page 159)

if you use a three-foot shake cloth divide your total by three. Also, sample through the field in several areas to get a good estimate of the population. In narrow row beans you can still sample with a shake cloth, but the procedure is slightly different. Set the rod at the base of the row of plants you want to sample. Lay part of the cloth on the ground and hold the rest of the cloth upright or over the opposite row to be sampled. Shake the soybeans against the upright cloth, and then count the beetles knocked down on the bottom of the cloth.

Good economic treatment thresholds are available for bean leaf beetles on late stage soybeans. Thresholds are based on the number of beetles needed per foot of row, which varies according to total application cost and the crop value per bushel. These threshold numbers are the same for any yield goal since the formula is based on the reduction of seed weight per beetle.

Tables 1 and 2 on page 162 show economic thresholds for beans in 30-inch rows and 7-inch rows. To use the tables find the number that fits both crop value and application costs. For example, if you set the value of your soybeans at $6.00 per bushel and your application costs are $9.00, you would need 6.8 or more beetles per foot of row to justify an application in 30-inch row beans, or 1.59 or more beetles per foot of 7-inch row beans.

Where to get sweep nets

After all the insect problems in alfalfa and soybeans this year, it should be obvious that anyone serious about insect management in these crops should possess a sweep net, yet it is surprising that so few farmers and advisors have them. It is an essential tool. Sweep nets range in price from about $20 to $80 depending on type and quality. Some sources for sweep nets are:

1) Bio-Quip Products. 17803 LaSalle Avenue, Gardena, CA 90248-3602, (310) 324-0620, e-mail: bioquip@aol.com
2) Gempler’s. 211 Blue Mounds Road, P.O. Box 270, Mt. Horeb, WI 53572, (800) 874-4755.
3) Great Lakes IPM Inc. 10220 Church Road NE, Vestaburg, MI 48891, (517) 268-5693.

Mid-summer drought takes its toll, officials learn

The dry weather during June and July is reflected in preliminary yield estimates presented at a recent meeting of the governor’s Climate Assessment Response Committee. The group, which assesses the state’s agricultural situation in response to climate changes, heard that dryland corn production, predicted to reach 93 bushels per acre, would be 20 bushels below last year’s yields. Irrigated yields are forecast for 151 bushels/acre, down three bushels/acre from last year. Further declines are likely if precipitation fails to meet crop water use demands.

Above normal precipitation was recorded across much of central, east central, and south central Nebraska during the first two weeks of August. Precipitation averaged 2 inches for the period across this region, with isolated 5-inch totals in the Grand Island and Hastings areas.

Sections of northeast, southeast, and west central Nebraska failed to receive normal precipitation. Many producers noted that subsoil moisture deficits were beginning to appear across these areas. Although there were substantial rains, Nebraska Agricultural Statistics reported that subsoil moisture levels showed little improvement. Most improvements were confined to the top foot of soil profiles.

Temperatures for mid August were as much as 10°F below normal and gave irrigators a much needed break. This week’s return to above normal temperatures and below normal precipitation however will rapidly deplete any short-term benefits from the recent stretch of cool wet weather.

As of August 19, 56 counties had been approved for emergency CRP grazing.

The CARC will meet October 7 to assess the beginning of the fall recharge period. This meeting will concentrate on defining areas where inadequate subsoil moisture may lead to yield reductions during the 1998 growing season.

Keith Jarvi, Extension Assistant
Integrated Pest Management
Northeast Research and Extension Center
Leon Higley
Research Entomologist
John Witkowski, Extension Entomologist, Northeast Research and Extension Center

Al Dutcher
State Meteorologist
Agricultural Meteorology
**Bean leaf beetle thresholds** *(Continued from page 161)*

Table 1. Economic thresholds in beetles-per-row foot for R5-R6 (beginning and full seed) soybeans in 30-inch rows.

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Table 2. Economic thresholds in beetles-per-row foot for R5-R6 (beginning and full seed) soybeans in 7-inch rows.

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**Insecticides registered for bean leaf beetles**

*Be aware that most have preharvest intervals of 14 or more days.*

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<td>Lorsane 4E</td>
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<td>Penncap-M</td>
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<td>Warrior 1 EC</td>
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Making silage

• Assessing your crop
• Managing the process

This season some Nebraska producers may be considering whether to harvest hail and drought-damaged corn and sorghum for silage. Several factors need to be considered. In this issue, two UNL Extension specialists address how to assess the feed value of silage; how to harvest and store silage, and how to assess the economics to aid in decision-making. In assessing the situation, they recommend: evaluating the crop (moisture, nitrate, feed value), finding a market or use, and determining the most profitable method of harvest.

Assessing the situation

Making silage is appropriate if you have a use or market for the crop. Ten to fifteen years ago when many farmers also raised cattle, finding a market was relatively easy. Now you may need to contact livestock feeders, dairies, or nearby cattle producers. While feed yards may buy some silage, often they may not find it economical to store it and are apt to buy in limited quantities. On the average, silage is more consistent in feeding quality than dry hay.

You also need to examine whether your crop will make good silage. If a crop is severely drought-stressed, be sure there’s enough moisture in the total plant to make good silage. Usually 60-65% moisture is best. If it’s too dry, haying is a possibility. To test for moisture in the field, cut and chop a small quantity. Take a handful and squeeze it tightly. If juice runs out, the moisture level is probably higher than it should be. Wait or add dry feed like ground grain to absorb the moisture when ensiling. If you squeeze it into a ball and it falls apart easily, it’s probably too dry and needs to be blended in a wetter feed. If it doesn’t drip and stays in a ball when released, it’s just about right.

The feeding value of drought silage has been shown to be equivalent to and sometimes higher than normal silage. It’s usually higher in protein and similar to normal silage in its energy value.

To market your product, you’ll need to estimate its value and price. A general formula for estimating the out-of-bunker price is:

\[ \text{Bushel price of corn} \times 10 = \text{per ton price of silage, based on 65\% moisture.} \]

For example, if corn is selling for $2.50 a bushel, multiply that by 10 to get the per ton price of the silage.

If the buyer is going to cut and chop the product in the field, the formula changes:

\[ \text{Bushel price for corn} \times 8 - \text{the cost of harvest and hauling (which usually averages$4-$5 a ton)} = \text{per ton price of silage. (This is generally equal to about six times the bushel price.)} \]

Remember too that the price may be discounted if the ear is immature or not poorly developed.

Another option is to sell the crop as hay. With hay selling for $60-$100 a ton, it may be worth more as hay than as silage. Pricing is tied to current prices for other hay crops. A test for total digestible nutrient and protein would be worthwhile in setting the hay price since often its nutritional value may be very comparable to other hays.

Nitrates

Drought-stressed corn is likely to be high in nitrates, which can be extremely toxic to cattle. If the crop was heavily fertilized, but the plant wasn’t able to use the nitrogen because of drought pressures, it will accumulate in the plant in the form of nitrates. Levels will be especially high in the stalk. If you’re planning to harvest drought-damaged corn or sorghum for silage, it’s important to have it tested for nitrates. A high-nitrate silage can be successfully mixed with other feeds to lower the overall nitrate level. If you’re feeding greenchop, chop and feed only as much as can be used in one day. In the 24-72 hour period following cutting, nitrates are converted to nitrites, which are much more toxic to cattle. After about 28 days, the silage will reach the full fermentation stage and be safe for use.

Making silage

Corn that is damaged early in the growing season but can still regrow can be harvested as silage and will possibly make a grain crop, depending on the severity of the damage.

For corn plants damaged by hail later in the growing season, other factors may need to be considered. If the corn plant still has not lost the major portion of its leaves and is green, then the kernels of corn will continue to fill and the corn plant can be harvested later for silage. However, if leaf loss is very large and stalk damage is great enough that the plant appears to be heavily (Continued on page 164)
Making silage  (Continued from page 163)

stressed, dying and drying out, then it would be beneficial to harvest the corn plant as silage when the plant reaches proper moisture. This usually takes one to two weeks.

The energy value of silage from severely damaged corn plants will be one-half to two-thirds (stalks only) the value of normal silage depending on plant maturity. However, protein content may be greater in silage from damaged corn plants due to the immature stage of plant development.

Stage of maturity is important for good silage for two reasons: 1) maximum production of digestible nutrients and 2) moisture content. Corn has maximum feeding value and the most desirable moisture content at physiological maturity, or at the formation of the black layer in the kernel.

Harvesting the corn crop two weeks before physiological maturity will often result in a 20% reduction in dry matter yield. However, total digestible nutrients are not decreased quite as much by early harvest because the fiber in the stalk is more digestible when harvested earlier.

When several days will be involved in silage harvest, start chopping when about 75% of the ears are dented and the moisture content of the green chop is in the high 60s. Delaying harvest could result in enough ear drop, stalk breakage, and lodging to more than offset losses of potential yield from early harvest.

For those producers putting up their own silage this year, remember these three factors:

1) chop at the right moisture;
2) eliminate oxygen; and
3) encourage rapid fermentation to lower silage pH.

Silage moisture should be about 65-68% in bunkers; 62-65% in upright towers; and 60-70% in bags. Silage which is chopped too wet will run or seep, carrying away many valuable nutrients. Also, silage that is too wet when stored will be sour, smelly and unpalatable. Silage chopped too dry usually develops some mold and heat.

Length of chop is important to quality of the packing. Generally, most forage harvesters will chop corn or sorghum silage at 1/4-3/8 inch when moisture is above 65%. For dairy cattle, the chop length should be 3/8-1/2 inch. With a 3/8 inch chopping length, over 90% of corn kernels will be broken and passage of whole kernels into the manure will be minimal.

Proper moisture, rapid filling, tight packing, uniform distribution, and correct length of cut all will help force air out of the silage and eliminate oxygen. Cover the silage with plastic to prevent oxygen from entering and possibly spoiling the outside two or three feet.

There are several ways to encourage rapid fermentation to lower silage pH, including maintaining proper moisture content, tight packing and the use of inoculants to speed fermentation and reduce storage losses. The pH of the silage should be reduced rapidly to a level of 3.8 to 5.

Fermentation starts and ends more quickly with inoculated silage so more silage remains for feeding. Inoculants have changed over the years and the new products tend to have more effective strains of fermentation bacteria and produce slightly better quality silage. Inoculants will consistently improve wet silage, especially sorghum silage. If you start chopping a little early to prevent silage from being too dry at the end, inoculants should help.

When selecting an inoculant, make sure it includes live bacteria and provides at least 100,000 colony forming units per gram of wet forage.

Terry Mader, Extension Beef Specialist, Northeast Research and Extension Center
Bruce Anderson
Extension Forage Specialist

Plant and Pest Diagnostic Clinic update

Blister beetles from various crop sources were submitted to the PPD Clinic this week for diagnosis. During late summer, black, ashgray or striped blister beetles can be found feeding together on the foliage of tomato, potato, soybean, alfalfa and other crops and weeds. When handled, blister beetles secrete a natural toxin called cantharidin, which causes watery blisters to form. Their presence in alfalfa is a concern because livestock, particularly horses, can develop severe reactions or even die after eating hay that contains dead blister beetles or body parts.

Lace bugs are becoming a nuisance outdoors where they congregate on structures and annoy people. They originate from huckleberry, ash, sycamore, oak and other woody hosts. Adults are small, black, and have flat, lacey wings. When they land on the skin, they tend to bite. Their activity can persist until late September.

Yellowjacket wasps are rapidly increasing in late summer. As colonies reach peak numbers and produce new queens for overwintering, yellowjacket workers become more defensive of intruders that come too close to their nest. Workers are also more abundant and active as they seek insects and sweets for food and wood or paper fibers for nest-building. Take note of nest locations and be prepared to treat if yellowjackets pose a risk to children or pets, or contact a professional pest control operator.

Jim Kalisch, Extension Assistant
Integrated Pest Management
Assess infestation in winter wheat
Grasshoppers may require fall treatment

The high number of grasshoppers in western Nebraska is likely to cause problems this fall as the winter wheat crop is trying to establish. Wheat growers should evaluate their grasshopper control options now and plan accordingly.

Grasshopper numbers will drop through the fall, and most will die off with the first hard freeze; however, much winter wheat will be established before they’re gone. Thresholds for control of grasshoppers in fields and field margins indicate that control would likely be needed if populations are above seven grasshoppers per square yard in the field or above 20 per square yard in field margins. These thresholds may need to be modified for grasshopper control in winter wheat because the amount of leaf material available for the grasshoppers to eat is quite minimal. Also, grasshoppers are full grown now and can quickly consume a great deal of plant material. Because of these factors, light to moderate infestations in the field and borders can cause reduction or loss in stand in winter wheat field borders.

The options available for grasshopper control are outlined below along with each of their advantages and disadvantages.

1. Furadan 4F
   - * registered for use as border treatment under Special Local Needs (SLN) label at 0.25-0.5 oz/1000 row feet; higher rates most effective
   - * border treatment only (up to 60 feet); only 10-20 feet border treatment needed unless very extreme grasshopper pressure
   - * injected directly into furrow through microtube or with liquid fertilizer
   - * can be tank-mixed with liquid fertilizer (safety, mixing, compatibility, see disadvantages below)

   **Advantages:**
   - protection at emergence
   - most effective and consistent control
   - does not need water to activate

   **Disadvantages:**
   - safety concerns; should best be used in closed/semi-closed system
   - cost of injection/application equipment
   - tank mixing
     - proper safety precautions
     - mixture needs constant agitation or it will settle
   - compatibility problems possible; contact Furadan sales person for information on special formulation for improved compatibility

2. Granular materials at planting (Thimet and DiSyston)

   * Thimet 15G, 20G - applied in furrow at 1.6 (15G) or 1.2 (20G) oz / 1000 row feet
   * DiSyston 15G - applied in furrow at 1.6 oz / 1000 row feet

   **Advantages:**
   - protection at emergence

   **Disadvantages:**
   - granules may not be as effective under dry conditions; it is best if granules have moisture after planting to activate
   - for best results, use metering equipment for planter (e.g., Gandy boxes); do not mix with seed in planter box; grass seeder can be used
   - potential for phytotoxicity, especially if not metered out correctly

3. Gaucho seed treatment (recently registered); registered up to 4 oz. per hundred pounds of seed
   * 2 oz. rate likely the compromise between effectiveness and cost

   **Advantages:**
   - ease of handling
   - plants protected from emergence

   **Disadvantages:**
   - seed must be treated by certified seed treater; cannot be mixed by the farmer
   - expensive for a seed treatment; comparable cost to other insecticides
   - effectiveness has not been clearly demonstrated

4. Bait
   * Sevin 2% and 5% bait available
   * applied with bait blower or whirly-bird type spreader
   * need even distribution and re-application

   **Advantages:**
   - provide protection before and during emergence

   **Disadvantages:**
   - short residual; effectiveness lost in rain, reapplication necessary
   - uniform application difficult

(Continued on page 166)
Grasshoppers (Continued from page 165)

5. Border treatments
   * best timing for application is just as the wheat emerges
   * use in non-crop borders - Asana, Orthene
   * use in growing wheat - Lorsban, Furadan, Cygon, Warrior

Advantages:
- assuming a sprayer is available, no costly equipment is needed
- treat only if needed

Disadvantages:
- timing critical; reapplication may be needed
- very little leaf area available on emerging wheat for residual activity

6. Grasshopper damage potential will decrease through the fall. Plant later in areas of high grasshopper activity to reduce damage potential.

7. Plan to replant borders later in fall after maximum grasshopper activity subsides. A hard freeze will dramatically reduce the grasshopper numbers and minimize the damage potential. If the freeze occurs early enough, damaged borders can be replanted.

8. The seeding density in borders can be increased to allow for more plants emerging and may allow for a reasonable stand surviving after grasshopper damage has run its course.

Grasshopper control in winter wheat will likely be a compromise between effective control and what will be affordable. A combination of several of the above tactics may allow for effective enough control to minimize the impact of the grasshoppers.

Gary Hein
Extension Entomologist
Panhandle Research and Extension Center

Precipitation
(% = percent of average)

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Degree day accumulations for wheat, corn, soybeans and sorghum*

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*Growing degree days to maturity for early season (1), mid season (2) and late season (3) crops:

MC = maturity class
Corn: MC1 = 2400; MC2 = 2500; and MC3 = 2750
Wheat: MC1 = 1600; MC2 = 1840; and MC3 = 2000
Soybeans: MC1 = 1950; MC2 = 2360; and MC3 = 2450
Sorghum: MC1 = 2125; MC2 = 2200; and MC3 = 2369