

# Lower Rolling Plains Pest Management News

Jones

Mitchell

Nolan

Scurry

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## General Situation

Now that the dust has settled from the storms last week, some have significant losses while others are thankful they did not have much damage. Rain showers this past week and on Monday added another 1 inch of moisture in some places. Overall, moisture is very good, but in Southwest Mitchell county, producers are still looking for a rain. Cotton, which was not severely damaged, is growing well. We have all stages of cotton, from cotelydon to 1/3 grown squares. I have not come across any fields with blooms. Also, growth stages of sorghum fields are from just being planted to having just finished blooming.

Last week in the newsletter, I included information concerning replanting and planting alternative crops. I would like to mention one other possible option. While talking with Mr. Greg Gruben, County Extension Agent—Scurry Co., he commented on planting Blackeyed peas, following cotton. Since peas are a legume, like guar, it could be used to add nitrogen to the soil. Peas could be either planted as a green crop and plowed into the soil, grazed, or taken to harvest. However, be sure to contact your FSA office for any restrictions or conflicts that would limit the use of planting peas.

## Insect Pests

Cotton insect pest numbers are generally light across the four counties in the IPM program. Thrips numbers average less than 1 per each true leaf in pre-squaring cotton and are not a concern in cotton that is squaring. However, several thrips ( up to 3 per true leaf) have been found in seedling cotton that had been replanted. These thrips were causing damage to the young leaves. Fields, such as this, may warrant being treated to prevent any further damage and delay in maturity. Suggested insecticides for control are Orthene 90 S @ 1.5-3.0 oz./acre, Bidrin 8E @ 1 gal./40-60 acres, and dimethoate 4E @ 4-8 ozs./acre.

In fields with squaring cotton, cotton fleahopper numbers are fairly low. The highest counts have been 15 per 100 terminals and the square sets are, also, good with numbers from 85% to 100%. If numbers and damage continue to be minimal, fleahopper treatments may not be needed. **But**, with the variability in growth stages from field to field and even within the field, fleahoppers are still a concern. Some fields are close to setting squares, but others will not begin setting squares for another three (3) to four (4) weeks. This means fields may not begin to bloom until the end of July thru late August. Since soil moisture is generally good now, the first three weeks of squaring may be worth protecting from fleahopper feeding. Our current management guide suggest control be implemented during the first week of squaring, when there are 25 to 30 cotton fleahoppers per 100 terminals



Cotton Fleahopper Adult—close up

Photo: James Smith - Mississippi State University

combined with less than 90 percent square set. In the second week of squaring, when there are 25 to 30 cotton fleahoppers per 100 terminals combined with less than 85 percent square set. And, starting with the third week of squaring up to first bloom, treat when there are 25 to 30 cotton fleahoppers per 100 terminals combined with less than 75 percent square set. Recent research indicates the percentage square set during the first and second week of squaring could be lowered to 75% to 80%. But, for late planted fields or replanted fields the previous square set percentages may need to be utilized for making treatment decisions. Also, results from the studies suggest waiting until the second week of squaring to apply a single insecticide application may be better than making a single application during the first week of squaring. This may be because there are very few fruiting positions and number of square during the first week of squaring.

We have had a week of trapping cotton bollworm and tobacco budworm moths. Tobacco budworm moth numbers have been very low (no more than 3 caught in a trap at any time). The following table shows cotton bollworm moths are active, but very few eggs have been found in fields.

Cotton Bollworm Moth Capture

| Date    | Jones Co.—<br>Plainview | Jones Co.—<br>Stamford | Nolan Co. | Mitchell Co. | Scurry Co. |
|---------|-------------------------|------------------------|-----------|--------------|------------|
| June 23 | 112                     | 50                     | 27        | -            | -          |
| June 26 | 62                      | 50                     | 17        | 49           | -          |
| June 30 | 70                      | 157                    | -         | 93           | 39         |
| July 1  |                         |                        | 67        |              |            |

Grain sorghum fields in the whorl growth stages show signs of caterpillar damage. Leaves are ragged from "shot holes" where larvae (cotton bollworms and fall armyworms) feed in the whorl. Although this makes the plant look bad, most whorl feeding does not cause significant yield loss and control efforts are rarely justified. Often times when the damage leaves have grown out of the whorl, larvae have left the whorl to pupate. Some larvae may still be found by pulling the whorl leaves from the plant and unfold the leaves. Insecticide treatments can be warranted when leaf area is reduced by 30 percent and when the growing point or grain heads are damaged.

The greatest damage is when caterpillars feed on developing grain from flowering to soft dough growth stages. Small larvae feed on the flowering parts and will hollow out kernels, but the greatest amount of damage is caused from larger larvae eating whole kernels. The last two larval stages (greater than 1") cause 80 percent of the damage. Small larvae are subject to high mortality from predators, parasitism, diseases, and cannibalism of each other. Therefore, treatment decisions should be based on the number and size of larvae sampled. The beat bucket technique can be used to estimate headworm densities. Shake grain heads vigorously against the sides of the bucket. Larvae will fall into the bucket. Sample at least 30 plants from a field and for fields larger than 40 acres take at least one sample per acre. Record the number of small larvae (< 1/4 inch long), medium sized (1/4 to 1/2 inch long), and larger (greater than 1/2 inch long). Divide the total number of medium or large headworms by the number of heads sampled to get the average number of headworms per head. Then multiply the average number of headworms per head by the number of heads per acre to calculate the number of headworms per acre.

Studies have shown that a corn earworm (cotton bollworm) larva will consume about 0.010252 pounds (4.65 grams) of grain during its development in the sorghum head. However, estimating the economic injury level for headworms is complicated because the potential yield loss varies with the size of the larvae. That is why it is necessary to record the number of small, medium-size and large headworms.

Small larvae (up to 1/4 inch) consume very little grain (about 10 percent of the total) and about 80 percent of them die in this stage. Therefore, small larvae should not be considered in determining the economic injury level. If most headworms are this size, sample the field again in 3 to 4 days.

If most of the larvae are larger than 1/4 inch at that later time, determine which size (medium-size or large) is most common, the corresponding equation below can be used to calculate the economic injury level for your treatment costs and anticipated grain value.

If the infestation consists of about equal numbers of medium-size and large headworms, use this equation:

$$\text{Potential loss (no. of large larvae/acre X (as lbs/acre) = 0.010252) + (no. of medium-size larvae/acre x 0.19 X 0.010252)}$$

Treatment would be economically justified if the value of the potential loss (loss in pounds per acre X dollars per pound of grain) exceeded the treatment cost per acre.

Most corn earworm larvae larger than 1/2 inch will survive to complete development, and these large larvae are most damaging; they consume 83 percent of the total grain consumed during larval development. About 19 percent of medium-size larvae (1/4 to 1/2 inch long) survive beyond this stage. Thus, the potential grain loss from medium-stage larvae is only 10 percent of the potential loss from large larvae.

Two ways to determine the economic injury level are presented. Both use the same factors and yield the same results. The first method uses the equations below to present the threshold as the number of larvae per head, while the second method shows the results in table format as the number of larvae per acre. The number of larvae per acre can be divided by the number of heads per acre to yield the mean number of larvae per head as an economic injury level.

Economic injury level for large larvae:

$$\text{Number of large larvae per head} = \frac{\text{Cost of control as \$ per acre X 9754}}{\text{Grain value as \$ per cwt X Heads per acre}}$$

Economic injury level for medium-size larvae:

$$\text{Number of medium-size larvae per head} = \frac{\text{Cost of control as \$ per acre X 9754}}{\text{Grain value as \$ per cwt X heads per acre X 0.19}}$$

**Bottom line use either of these two equations to determine the number of larvae per head or use the tables (next page) to determine the economic injury level for your field.**

An insecticide application of a pyrethroid (cyfluthrin, cyhalothrin, esfenvalerate, zeta-cypermethrin) at a high rate should provide excellent control of headworms (Table 3). Last year an application of Lorsban 4E at 2 pts/acre provide very good control. Other insecticides listed in our guide for headworm control are carbaryl (Sevin) and methomyl (Lannate).

**Table 1.** Economic injury level for **medium-size (1/4 to 1/2 inch) corn earworm larvae** shown as the number of larvae per acre. When the number of larvae per acre exceeds the number in the table at a given cost of control and value of grain per cwt, the value of the protected grain exceeds the cost of control.<sup>1</sup>

| Control cost<br>\$/acre | Grain Value (\$/100 lbs.) |        |        |        |
|-------------------------|---------------------------|--------|--------|--------|
|                         | 6.00                      | 7.00   | 8.00   | 10.00  |
| 6                       | 51,500                    | 44,750 | 38,250 | 31,250 |
| 8                       | 68,500                    | 58,000 | 51,500 | 41,750 |
| 10                      | 87,750                    | 73,750 | 64,500 | 51,500 |
| 12                      | 102,750                   | 88,250 | 77,750 | 62,000 |

<sup>1</sup> This table assumes 81% of the medium-size larvae will die in that stage and not contribute to additional yield loss.

**Table 2.** Economic injury level for **large (longer than 1/2 inch) corn earworm larvae** shown as the number of larvae per acre. When the number of larvae per acre exceeds the number in the table at a given cost of control and value of grain per cwt, the value of the protected grain exceeds the cost of control.<sup>1</sup>

| Control cost<br>\$/acre | Grain Value (\$/cwt) |        |        |        |
|-------------------------|----------------------|--------|--------|--------|
|                         | 6.00                 | 7.00   | 8.00   | 10.00  |
| 6                       | 9,750                | 8,500  | 7,250  | 5,750  |
| 8                       | 13,000               | 11,000 | 9,750  | 7,750  |
| 10                      | 16,250               | 14,000 | 12,250 | 9,750  |
| 12                      | 19,500               | 16,750 | 14,750 | 11,750 |

<sup>1</sup> This threshold table assumes all larvae will survive and complete development.

## Grower Meetings

| <b>Monday –July 7</b>   | <b>Tuesday—July 8</b>   | <b>Wednesday—July 9</b>                                      | <b>Thursday—July 10</b>                                 |
|---|---|--|---|
| Scurry County<br>Farmers Coop Gin –<br>E Hwy 180<br>8:30 a.m. | Nolan County<br>Central Rolling Plains<br>Coop Gin<br>8:30 a.m. | Mitchell County<br>Producers Coop Gin<br>office<br>8:30 a.m. | Jones County<br>Farmers Coop Gin—<br>Anson<br>8:30 a.m. |

**Table 3. Suggested insecticides for controlling corn earworm (cotton bollworm) and fall armyworm on sorghum.**

| Insecticide                         | Concentrate/unit area | Days from last application to: |                   |
|-------------------------------------|-----------------------|--------------------------------|-------------------|
|                                     |                       | Harvest                        | Graze             |
| Carbaryl<br>(Sevin®)<br>(4F)        | 32-64 oz.             | 21                             | 14                |
| (80S or 80WSP)                      | 1.25-1.8 lb.          | 21                             | 14                |
| (4XLR+)                             | 32-64 oz.             | 21                             | 14                |
| Cyfluthrin<br>(Baythroid® 2E)       | 1.3-2.8 oz.           | see remarks                    | see remarks<br>14 |
| Cyhalothrin<br>(Karate® 1E)         | 2.56-3.84 oz.         | see remarks                    | see remarks       |
| (Warrior® 1E)                       | 2.56-3.84 oz.         |                                |                   |
| Esfenvalerate<br>(Asana® XL)        | 5.8-9.6 fl. oz.       | 21                             |                   |
| Methomyl<br>(Lannate®)<br>(2.4LV)   | 12-24 oz.             | 14                             | 14                |
| (90WSP)                             | 4-8 oz.               | 14                             | 14                |
| Zeta-cypermethrin<br>(Mustang Max®) | 1.75-4.0 fl. oz.      | 14                             | 45                |

Remarks

*Cyfluthrin*. If one or two applications are made, green forage may be fed or grazed on the day of treatment. If three applications are made, allow at least 14 days between last application and grazing. *Cyhalothrin*. Do not graze livestock in treated area or harvest for fodder, silage or hay.