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INSECTS AND WEEDS IN FOCUS

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THE SORGHUM MIDGE AND ITS CONTROL

Most damage by the sorghum midge occurs in sorghum that blooms 3 to 4 weeks later than other fields in a particular community. In the Corpus Christi area that time is usually the first or second week of June. In other words it is time to start checking sorghum on a daily basis for the presence of midge females laying eggs in blooming sorghum. Again, sorghum midge will move from the early blooming fields which show little damage to the later blooming fields where damage is often very heavy. For all practical purposes they can only lay eggs in that part of a sorghum head exhibiting yellow anthers (bloom) since the glooms are open enough for the female to deposit eggs with the developing seed and upon hatching the grub will destroy the seed. Each female will lay between 50 and 250 eggs in her 24 hour lifetime; some may survive for 48 hours.

Sorghum Midge

It is best to scout for the midge in early morning, but if none are found then it is advisable to return during the period from about 10 am to just after noon to make sure some did not arrive latter. The females emerge from the pupae in the older fields about daybreak, mate, and them begin to migrate to find susceptible sorghum on which to lay eggs.

Closely inspect heads in the yellow anther area for the midge. It takes about 9 days for all florets on a head to pollinate with the 2nd through the 6th day being most important for an individual head (Table 1).

Table 1. Average daily rate of grain sorghum pollination on single head

Day	Percent of Florets Pollinating
1	3.7
2	18.0
3	28.0
4	29.0
5	15.0
6	5.0
7	1.3
8	0.2
9	0.2

However, the susceptible period of an entire field must be considered. In a fairly uniform blooming field it generally takes about 24 days with many taking 16 to 18 days to complete bloom. Table 2 represents the percent of floret bloom by days for a generalized field which shows most of the sorghum susceptible (blooming) from the 3rd through the 14th day after the first anthers are observed. Potential daily loss is presented for a 5 thousand pound per acre crop. This is somewhat misleading in that the loss would only occur if 100 percent of the florets were infested each day. This level of damage may be closely approached if midge numbers are high.

Now consider control when midge numbers exceed near 1 per head. For more exact economic injury levels refer to Table 3 or use the formula to calculate your own situation. Note that the damage level is based upon the number of flowering heads per acre which could be estimated if you know your plant population and how the field is generally blooming. It seems to me that our local plant populations range from 50 to 60 thousand per acre.

The labeled pyrethroid insecticides which include, among others, Baythroid, Karate, Warrior, Asana, and Mustang Max are very effective in controlling sorghum midge. Remember that "new" female midge will be moving into the field each day which will mean one would see midge the day after treatment but unless rainfall

occurred control would continue through the first 72 hour period. If midge are still moving into the sorghum at 72 hours after treatment in enough numbers, additional treatment is suggested. Under heavy pressure extended

Table 2. Grain Sorghum Pollination-Floret"Bloom" in Field on Daily Basis

Day	Percent of Florets Blooming	Amount of Grain (Value)[1/] 5,000 lb./A.
1	0.1	5 ($0.30)
2	1.1	55 (3.30)
3	3.2	160 (9.60)
4	5.0	275 (16.50)
5	7.2	360 (21.60)
6	9.2	460 (27.60)
7	12.2	610 (36.60)
8	14.0	700 (42.00)
9	13.3	665 (39.90)
10	10.1	505 (30.30)
11	7.2	360 (21.60)
12	6.3	315 (18.90)
13	4.0	200 (12.00)
14	3.0	150 (9.00)
15	1.8	90 (5.40)
16	1.0	50 (3.00)
17	0.5	25 (1.50)
18	0.3	15 (0.90)
19	0.5	25 (1.50)
20	0.1	5 (0.30)
21	0.02	1 (0.06)
22	0.01	.5 (0.03)
23	0.002	.1 (0.01)
24	0.002	.1 (0.01)

[1/]Based on $6.00/cwt.

control has not been achieved even with the pyrethroid insecticides. Note also that these materials will control headworms especially the corn earworm. They will also provide some control of the rice stink bug. However, it is my experience that the pyrethroids are as a group weak on the rice stink bug.

Table 3. Estimated economic injury levels for sorghum midge for a fange of factors. (This table is only a guide. Use the equation in the text to estimate the economic injury lever in your field.)

Control Cost, $/acre	Crop Value $100 lbs.	Economic injury level- mean number of midges/flowering head: Flowering Heads = 18,000/acre	Flowering Heads = 45,000/acre	Flowering Heads = 67,500/acre
5	6	1.6	0.6	0.4
5	7	1.3	0.5	0.34
5	8	1.2	0.5	0.3
6	6	1.9	0.8	0.5
6	7	1.6	0.7	0.4
6	8	1.4	0.6	0.35
7	6	2.2	0.85	0.6
7	7	1.9	0.75	0.5
7	8	1.6	0.65	0.45

$$\text{Number of sorghum midges per flowering head} = \frac{\text{(Cost of control as \$ per acre) x 33256}}{\text{(Value of grain as \$ per cwt) x (Number of flowering heads)}}$$

COTTON FLEAHOPPER NUMBERS REMAIN HIGH IN SOME GROWING REGIONS

Many cotton fields are generally beyond the stage requiring fleahopper control as they are in the second week of bloom. However, younger fields susceptible to fleahopper damage do exist in the region.

The heaviest cotton fleahopper infestations that I observed have been in the El Campo area in one of our fleahopper control studies (Table 4). Last week with a change in wind direction as it began to blow from the north, adult fleahopper numbers rapidly increased on Friday, May 28 at 7 days after treatment 2 and since we were delayed in treating, their numbers continued to increase through 10 days after treatment 2 (May 31). We finally treated on June 1; it will be interesting to see what happens in the plots over the next 2 week period and later determine how much was lost to these high numbers. There are several things to note in the study: (1) The Orthene rate being used is 8.0 oz/acre. (2) We were still seeing statistically fewer fleahoppers in the treatments even with the high numbers. (3) The fewest number of fleahopper (numerically) at 10 DAT-2 was in the Centric treated cotton. It may turn out that we are achieving better control than indicated by the high numbers. Plant mapping and the yield data should tell the final story if all goes well with the production year.

Table 4. Total Fleahoppers (nymphs & adults) in an insecticide evaluation study, Michael Watz Farm, Wharton County, TX, 2010.

Treatment[1/] (rate)	3 DAT-2[1/]	7 DAT-2	10 DAT-2
Centric 40WG (1.25 oz/acre)	0.0[b]	16.3[b]	21.3[c]
Intruder 70WP (1.0 oz/acre)	0.0[b]	20.0[b]	65.0[b]
Trimax Pro 4.44 (1.25 oz/acre)	0.0[b]	13.8[b]	52.5[bc]
Orthene 97 (8.0 oz/acre)	0.0[b]	16.3[b]	35.0[bc]
Bidrin 8E (3.2 oz/acre)	3.8[b]	35.0[b]	65.0[b]
Bidrin 8E+Discipline 2EC (1.6+2.6 oz/acre)	0.0[b]	31.3[b]	66.3[b]
Discipline 2EC (5.2 oz/acre)	0.0[b]	25.0[b]	45.0[bc]
Nontreated	55.0[a]	68.8[a]	130.0[a]
LSD (P=0.05)	24.75	28.90	33.73
P > F	.0014	.0145	.0001

Means in a column followed by the same letter are not significantly different by ANOVA.
[1/]DAT = Days After Treatment

CONSIDER OTHER COTTON ARTHROPODS

Spider mites had been observed in fields where very dry conditions existed, but rainfall the night of June 2 should help to reduce that threat. It has always been difficult for me to know when to apply a miticide since just at the time their numbers become alarming, the infestations often begin to decline. We treated at the Research and Extension Center one year and left areas with no treatment. There were no differences in look of the cotton about a week later or yield at the end of the season.

Leafminers also present a problem in that just as they reach alarming numbers the infestation abruptly ends due to high parasitism rate. This parasitism occurs even where insecticides have been used. To determine parasitism I have to examine leaves under a microscope to see if the parasites are there. The leaf miner is another pest that I have no real feel of how to handle with insecticide.

Cotton aphids will probably increase in numbers as they do every year about this time. My advice it to watch the population build to at least 50 per leaf on average and do not consider control until the infestation is at that level and building for over 10 to 14 days. Even after becoming alarmed at their numbers never treat on that day. Wait for 48 hours and go back to the field to determine if their numbers have begun to decline. Look for parasitized aphids (mummies), presence of predators, or the start of the fungus that takes out aphids. If the mummies have exit holes where the adult parasitic wasp has emerged the aphid infestation is usually over. Where about 20% of the aphids are mummies, it has been my experience that a very rapid decline will be observed in aphid numbers.

I have had only one field study where aphids caused a clear yield decrease. In that case the infestation persisted for 20 days in cotton during the heavy bloom period. Over 200 lb lint per acre was gained in that case with 0.6 oz/acre Intruder.

Where a few aphids have been observed many predators are building in number at this time to include big-eyed bugs, minute pirate bugs, damsel bugs, lacewings (all stages are noticeable), and the parasitic wasps.

WALNUT CATERPILLAR ON PECAN

Walnut caterpillars have been found defoliating pecan trees in Victoria and my be present in other areas of the Coastal Bend. Females lay eggs in masses in a single layer on the undersides of leaves. These egg masses are laid in a single layer and are free of scales or hairs and are very visible from a distance. Some control on small trees can be achieved by removing the leaves with the egg masses. Each female moth will deposit one egg mass containing 600 or more eggs. Larvae at first feed in groups, but in the last larval stage they feed more individually and will consume 80% of their foliage intake during the last 5 days. Great damage can occur very fast in this situation. Several generations can occur in one year. Confirm, Intrepid and other materials are labeled for control of this caterpillar.

INTERESTING INSECTS - WHAT IS A BUG?

To an entomologist, a "bug" is only one of the 35,000 or so species of the order Hemiptera. Hemiptera means "half wing" and is the only true bug, although the name "bug" is loosely applied to most small insect like creatures by the general public. Members of Hemiptera are characterized by their sucking mouthparts which originate from the tip of their head. True bugs have a stylet (a mouth shaped like a straw) that they use to suck plant juices or in the case of predatory members of the order to suck liquids from other insects. Their forewings have thick bases and membranous tips as a unique characteristic. The hind wings are usually clear and tucked underneath the front wings when they are not flying.

For more information contact:

Roy D. Parker
Extension Entomologist
rd-parker@tamu.edu

Dan D. Fromme
Extension Agronomist
d-fromme@tamu.edu

10345 Hwy 44
Corpus Christi, TX 78406
(361) 265-9203
Fax (361) 265-9434

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