

Seasonal Moth Trapping for Detection of Adult Flights for Southwestern Corn Borer, Western Bean Cutworm, and Fall Armyworm in the Texas Panhandle

Final Report
December 31, 2011

Dr. Ed Bynum
Extension Entomologist
Texas AgriLife Research and Extension Center
6500 Amarillo Blvd., West
Amarillo, TX 79106
(806) 677- 5600 (FAX 806-677-5644)
Ebynum@ag.tamu.edu

Collaborators

Mr. Rick Auckerman, CEA-Ag, Deaf Smith County
Mr. Mike Bragg, CEA-Ag, Hartley/Dallam Counties
Mr. Brandon Boughen, CEA-Ag, Potter County
Mr. Brad Easterling, CEA-Ag, Sherman County
Mr. Marcel Fischbacher, CEA-Ag, Moore County
Mr. David Graf, CEA-Ag, Swisher County
Mr. Brandon McGinty, CEA-Ag, Gray County
Mr. J. D. Ragland, CEA-Ag, Randall County
Mr. J. R. Sprague, CEA-Ag, Lipscomb County
Mr. Scott Strawn, CEA-Ag, Ochiltree County
Ms. Kristy Synatschk, Hutchinson County

Introduction

There are approximately 1 million acres of corn grown in the Texas High Plains yearly. Producers that plant non-Bt corn for refuge requirements and for human food consumption are vulnerable to heavy damage from southwestern corn borer (SWCB), western bean cutworm (WBC), and fall armyworm (FAW) infestations. Depending on the Bt-corn hybrid a producer plants, a certain percentage of the corn acreage has to be planted to non-Bt corn hybrids as a refuge to prevent these corn pests from developing resistance to the Bt corn toxins. For corn grown in cotton producing areas (south of Amarillo, TX) the refuge acreage is 20% to 50% non-Bt corn. Fields in non-cotton areas (north of Amarillo, TX) the refuge area is 5% to 20% non-Bt corn. Also, some of the Bt corn hybrids do not provide 100% protection against WBC and FAW infestations resulting in corn kernels being damaged from larvae feeding in the ear. Recently, there has been an increased incidence of damage even in the Bt-Herculex corn hybrid. Some food grade corn hybrids do not have the Bt technology and if a producer selects these hybrids to plant then 100% of the corn acreage is susceptible to damage from these pests.

Therefore, if just 20% of all corn grown on the Texas High Plains there can be 200,000 acres of corn annually not protected from these corn pests.

Knowing the moth activity during the growing season is critical to making informed management decisions. The activity of these three corn pests can occur at different times and at different infestation levels depending on seasonal weather conditions. This makes it difficult for producers, crop consultants, local ag suppliers, and ag-aviators to know when there will be damaging infestations and when to make timely insecticide applications for optimum control to minimize economic losses. Therefore to assist producers, crop consultants, local ag suppliers, and ag-aviators with knowing when these pests are active, a network of Texas AgriLife Extension County Extension Agents (CEA) across the Texas High Plains (Panhandle Region) was organized to monitor the moth flight activity of SWCB, WBC, and FAW.

Objective

To provide current real time information to corn producers, crop consultants, local ag suppliers, and ag-aviators throughout the Texas High Plains about the activity of Southwestern corn borer (SWCB), Western bean cutworm (WBC) and fall armyworm (FAW) moth flights during the 2011 growing season.

Method and Materials

Eleven county extension agents setup pheromone bucket style traps in 12 Texas Panhandle counties to monitor the abundance and duration of the moth activity. A total of 54 traps (one per pest species) were setup in 18 corn producers' fields and were monitored weekly from June until the end of August. A spreadsheet with graphs was setup on google documents so each of the county extension agents could post data from their counties. Trap catches from each field in a county was summarized and made available weekly to producers, crop consultants, local ag suppliers, and ag-aviators through phone calls and text messages from the local county extension agents, newspaper articles, county extension agent newsletters, the Texas AgriLife Extension Panhandle Pest Update newsletters, and postings on the Texas AgriLife Extension website Insect Surveys (<http://amarillo.tamu.edu/facultystaff/ed-bynum/insects/>). Also, weekly reports were provided to the Texas Corn Producers Board for their distribution to corn producers.

Results and Discussion

Moth Trapping

Moth trap catches during the 2011 corn growing season for SWCB, WBC, and FAW are shown in figures 1 to 3, respectively. SWCB moths increased to extremely high numbers in Deaf Smith County and continued for an extended period of time from July 18 to August 29. In Dallam County high numbers of SWCB moths were also trapped from July 25 to August 15 (Fig. 1). Comparatively, moderate SWCB activity was recorded in Sherman County while the remaining counties had relatively low levels of SWCB moth activity. WBC moth activity was predominately high from June 27 to July 18 in Dallam and Hartley counties while Sherman County had slightly lower but still potentially damaging levels (Fig. 2). Although moth trap catches were not extremely high in Moore County, trap catches at one location showed WBC were active the last week of June. The rest of the counties had nominal to no activity of WBC. Moth activity

of FAW began with relatively high numbers as shown by trap numbers June 6 in several counties, but activity drop to low levels until moths became active again the last of August (particularly in Lipscomb County) (Fig 3). These moth trapping data demonstrate the variability and differences of flight patterns of the three moth species. Monitoring moth activity revealed that counties like Gray, Hutchinson, Lipscomb, Ochiltree, Potter, Randall, and Swisher had little to no activity of these moths and posed no threat to corn this year. In contrast, Deaf Smith, Dallam, Hartley, and Sherman counties had significant moth activity that posed a threat to corn fields. By monitoring the different moth activity and reporting the findings to producers, crop consultants, local ag suppliers, and ag-aviators, they were able to assess when infestations were a potential threat and when activity was not a threat.

Questionnaire

A questionnaire was drafted to assess the value of the moth trapping project. The county extension agents distributed the questionnaire to individuals that had traps in their fields or to individuals that knew about the moth trapping project. If these individuals were to respond negatively to the project then we would know there would not be a need to continue monitoring moth activity. To date 11 individuals have responded to the survey. Four are producers, two are ag-aviators, one is an ag supplier, one is a crop consultant, one is a crop consultant and ag-aviator, one is a crop consultant and ag supplier, and one is a crop consultant and producer.

One (9.1%) rated the value of the moth trapping data as somewhat important while 6 (54.5%) rated it important and 4 (36.4%) rated the data as very important. It was interesting that the individual rating the project as somewhat important was from Ochiltree County where there was very little moth activity for any of the moth species monitored.

One question asked if the moth trapping data helped determine when moth activity was a threat or not a threat to pending infestations. Five of the 11 individuals checked that moth trapping helped them determine that moth activity was a threat. Five indicated it helped them determine when the moth activity was not a threat while one indicated the data helped to determine when moth activity was a threat and when they were not a threat.

A secondary question asked if moths were not a threat then was a spray application prevented. Four checked yes, one checked no, and two were not sure. This indicates the data was important in preventing spray applications when moths were not a threat.

Another secondary question asked if moths were a threat then how did the information influence management decisions. Some individuals checked more than one answer. Six responded that they scouted fields more frequently. Three responded that the information helped in making better timing of spray applications. One checked that the information changed his spraying practices and one checked that it increased the number of spray applications to protect corn from damaging infestations.

One question asked how many acres were potentially at risk from each of the moths monitored. The number of acres given was dependent on whether they were a producer, crop consultant, etc.

For SWCB, all 11 responders reported acres at risk were from 125 to 30,000 with 20% to 100% being non-Bt corn.

For WBC, 6 responders reported acres at risk were from 125 to 10,000 with 20% to 60% being non-Bt corn.

For FAW, 5 responders reported acres at risk were from 125 to 10,000 with 20% to 60% being non-Bt corn.

The last question asked how they got the moth trapping information during the season. Eleven got information from phone calls, text messages from local CEA. Three got information from CEA newsletters. Two responders each got information from news articles, the Texas AgriLife Extension Panhandle Pest Update Newsletter, or the Texas AgriLife Extension website where the Insect Surveys were posted weekly.

After the growing season was completed the results of the moth trapping survey project was reported to producers at several meetings sponsored by the county extension agents. These meetings were in Dalhart, Canyon, and Dumas. Also, the moth trapping project was reported in conjunction with Dr. Jerry Michels' presentation on his development of a model to predict moth activity during the Texas A&M 27th Annual Panhandle Farm and Ranch Management Symposium.

Figure 1. Southwestern Corn Borer 2011

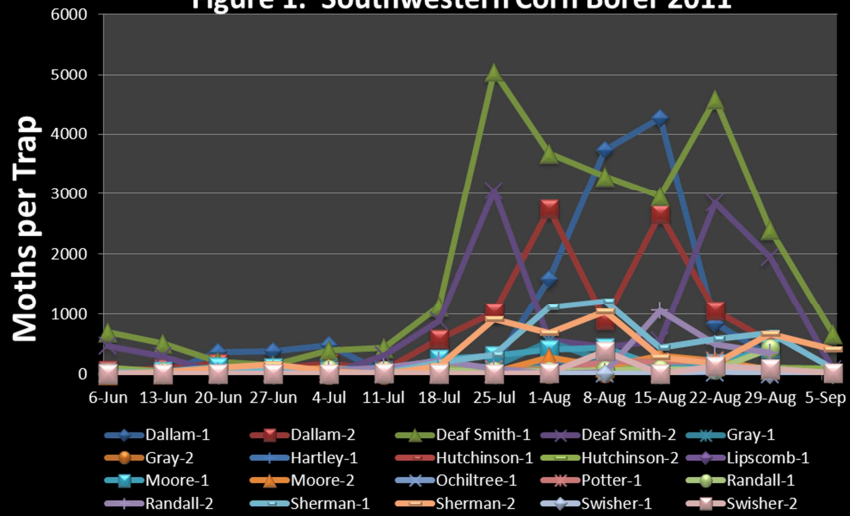


Figure 2. Western Bean Cutworm 2011

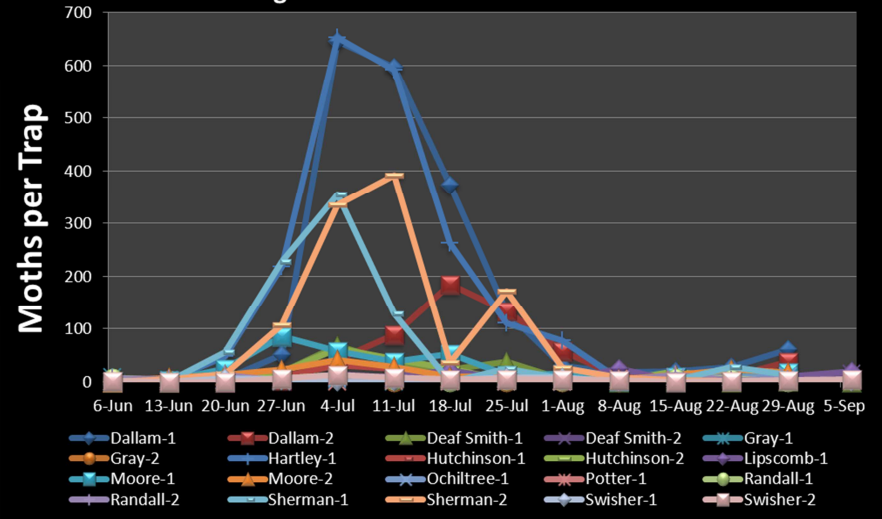


Figure 3. Fall Armyworm 2011

