Results of a Two-year Pink Bollworm Survey in the Southern Plains of Texas and New Mexico

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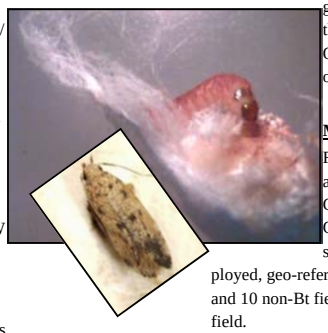
Abstract

In 2009, Texas Boll Weevil Eradication Foundation trapped 669 native pink bollworm (PBW) moths which migrated into the El Paso/Trans Pecos (EP/TP) PBW eradication zone. PBW surveys were conducted in the fall of 2010, the spring of 2011 and the fall of 2011 to determine locations of populations and routes of migration into the EP/TP zone. Cotton fields in the southern plains region of Texas and New Mexico and non-cotton producing areas between these fields and cotton fields in the EP/TP zone were surveyed for PBW moths. The areas surveyed have experienced PBW infestations in the recent past and 1.3 million acres of cotton planted in them annually. This poster will focus on trapping results from the fall of 2011 which confirmed previous results showing PBW populations in the southern plains region were limited to only a few fields of cotton in southern Midland County.

Introduction

Pink bollworm (PBW) is one of the world's most important cotton pests. Losses to PBW prior to the availability of Bt cotton and the initiation of the PBW eradication program were estimated at $32 million per year (NCC 2001).



PBW eradication began in the El Paso/Trans Pecos (EP/TP) zone in Texas in 2001 and is nearing completion. It is threatened by PBW migration from the southern plains of Texas and New Mexico, areas not in the PBW eradication program.

In 2007 and 2008, no PBW moths were caught in the Pecos Work Unit, located on the east side of the EP/TP zone. In 2009, however, 669 native PBW moths were caught on Bt cotton fields between late September and the end of November. The question was, "Where did these moths come from?"

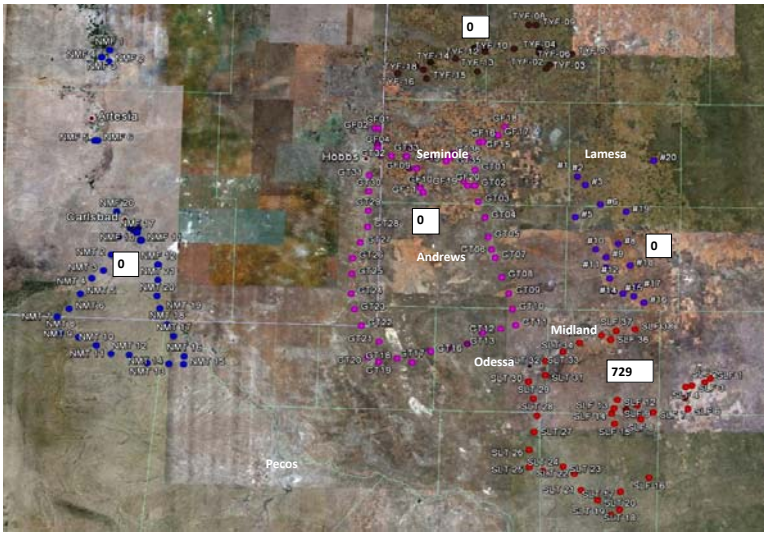


Figure 1. Southern Plains region of Texas and New Mexico showing pink bollworm trap locations and pink bollworm trap captures during the fall of 2011.

The primary objective of this project was to investigate what locations and which cultural practices were consistent with PBW presence in southern plains cotton fields. A second objective was to investigate patterns of PBW movement into the EP/TP zone. Data from these studies will be used to develop a model of pink bollworm populations in the southern plains region, which may provide information necessary to develop area-wide control efforts.

Trapping in the fall of 2010 and in the spring and summer of 2011 detected a localized PBW infestation in southern Midland County, TX. Fall 2010 trapping, no PBW moths were caught in the Pecos Valley of New Mexico or the trap line to the south of this area. A single PBW moth was caught in Gaines County, TX and none were caught on the trap line south of Gaines County. Seven PBW moths were caught in Martin County. Three were caught on a southern Martin County, Bt cotton field and four other fields caught a single PBW moth. Of those fields, two were Bt cotton and two were non-Bt cotton. None of the Martin County fields caught moths on multiple weeks. Eleven fields in Midland, Glasscock and Upton Counties caught PBW moths in the fall of 2010. A total of 1,434 moths were caught. Eighty-five percent of the captures were on two non-Bt, organic fields. Ninety-nine percent of the captures were within 5 miles of the "epicenter" organic fields.

In the spring and summer of 2011, traps were run on the Midland, Glasscock and Upton County fields which had caught PBW moths the previous fall. Nine of these fields (90 percent) caught moths. A total of 119 moths were caught. As in the previous fall, the majority of the PBW moths were caught in the "epicenter" non-Bt, organic fields that caught high numbers of PBW the previous fall. Eighty-six percent of the total moths captured in 2011 spring/summer trapping came from these two fields. One hundred and eleven moths (93 percent of the total) were caught within five miles of the "epicenter" fields.

Materials and Methods

From mid-September to early November, 2011, a trapping study was conducted in five areas of the southern plains. Trapping was conducted in the Pecos Valley NM, Gaines County TX, Terry/Yoakum Counties TX, Dawson/Martin Counties TX and Midland/Glasscock/Upton Counties TX. These areas border the EP/TP zone on the north and east sides. Delta Sticky Traps baited with gossyplure impregnated rubber septa were deployed, geo-referenced and serviced weekly. The protocol was to trap – one trap per field – 10 Bt fields and 10 non-Bt fields, if possible, in each area. Cultural data and producer data was collected on each field.

Three highway trap line loops - traps at five mile intervals - were established. Traps were geo-referenced and each trap line extended from southern plains locations into the EP/TP zone and back. Traps were inspected weekly. Three trap lines were established 1. south of Carlsbad, NM; 2. south of Seminole, TX and 3. south of the Midland-Odessa, TX area.

Results

Total trap captures are shown in Figure 1. No PBW moths were caught during fall trapping in four of the five areas trapped (Figure 1). No PBW moths were trapped in Pecos Valley, NM, and none were caught in the following Texas locations: Terry and Yoakum Counties, Gaines County and Dawson and Martin Counties. Seven hundred and twenty-nine PBW moths were caught on seven fields near the Midland/Upton county line in the locations which caught PBW in the fall of 2010 and the spring/summer of 2011 (Figure 2). The "epicenter", organic, non-Bt cotton fields caught 97 percent of the moths trapped in the fall of 2011. Ninety-nine percent of the moths were caught within five miles of the two organic, non-Bt fields.

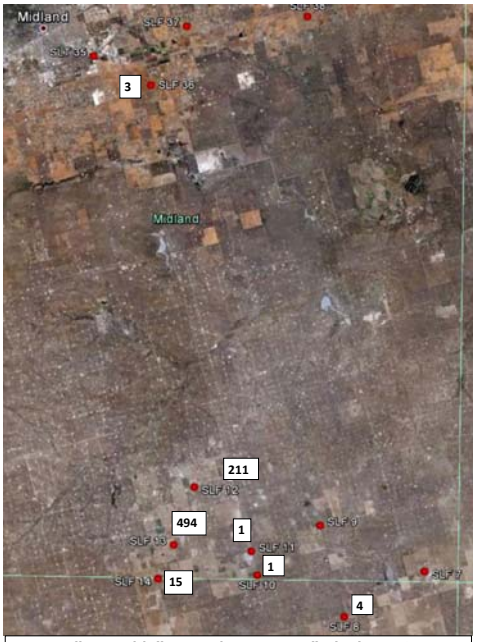


Figure 2. Fall 2011 pink bollworm moth captures in Midland and Upton Counties.

Discussion

All three trapping studies (fall 2010, spring/summer 2011 and fall 2011) identified the same area in southern Midland County as the only area in the region in which PBW moths were consistently caught. Two non-Bt, organic fields have consistently been at the epicenter of the population. These fields appear to be the only source of PBW 1.3 million acres of cotton grown in the area surveyed. Preliminary plans are being made to eradicate PBW from the infested area in southern Midland County.

References

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