

ARIZONA PINK BOLLWORM ERADICATION PROGRAM UPDATE 2012**Leighton Liesner****Larry Antilla****Michael Whitlow****Joahna Solis****Arizona Cotton Research & Protection Council****Phoenix, AZ****Robert T. Staten****USDA, APHIS, PPQ, CPHST - Retired****Phoenix Laboratory****Phoenix, AZ****Abstract**

The Pink Bollworm eradication program in Arizona has shown great success from inception in 2006. The Arizona program is part of an ambitious international program to eradicate the Pink Bollworm, *Pectinophora gossypiella* (Saunders) from the United States and Northern Mexico. Program results have shown progressive reduction each year as program tactics have become more advanced and refined. The 2012 program results represent a new era in Arizona Pink Bollworm eradication and set the stage for confirmation of eradication activities in 2013 and beyond.

Introduction

The following updates the progress of the 2012 Pink Bollworm eradication effort in Arizona. Background information including methods and materials can be found in previous Beltwide proceedings; information provided here will be generalized and focused on current program results.

Results

Arizona cotton acreage for 2012 totaled 203,110 (24% decrease over 2011), conventional cotton comprised 7,364 (3.63%) of the total acreage. Yuma County (Area III) conducted year five of eradication activities. La Paz and Mohave counties (Area II) completed year six eradication activities. Central and eastern Arizona (Area I) completed a seventh year of eradication activities (Figure 1). In the three zones, 3,868 traps were checked weekly.

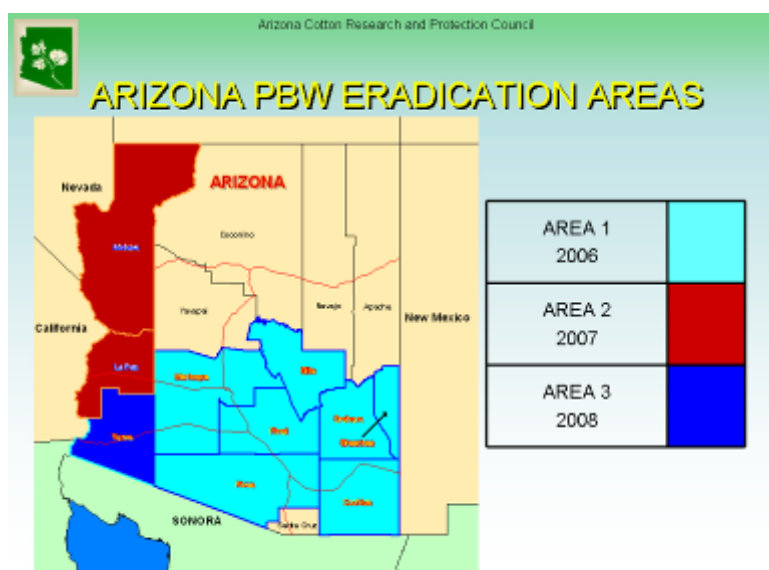


Figure 1. Arizona program areas

Program results are primarily measured in terms of native moth captures and boll sampling for immature life forms of the Pink Bollworm, the latter is considered the most direct measurement. Although two or more years had passed since immature life forms had been found, in 2011, large numbers of suspect moths were captured in Area I and Area II program areas (Figure 2).



Figure 2. 2011 Native capture distribution

In response program leadership took a multifaceted approach in addition to the traditional techniques and protocols in 2012. Dye levels in the sterile moth rearing diet and therefore the field released moths were increased to aid in detection. Strontium was added to the diet and a protocol relying on instrumentation developed to assist in differentiation in cases where diminished levels of dye were suspected in recaptured moths. The irradiation dose used to sterilize release insects was increased from 20 kilorad to 25 kilorad to mitigate any potential changes in the moth component due to enhancements in rearing, colony adaptation or changes in equipment. In addition to maximum use of Bt cotton and sterile insect releases, pheromone rope was applied to all conventional cotton acres statewide.

In Central and Eastern Arizona (Area I), no native moths were captured in 2012 (Figure 3), and no immature Pink Bollworm life forms were detected in targeted boll sampling or boll incubation mirroring results in the previous 3 years (Figure 4).

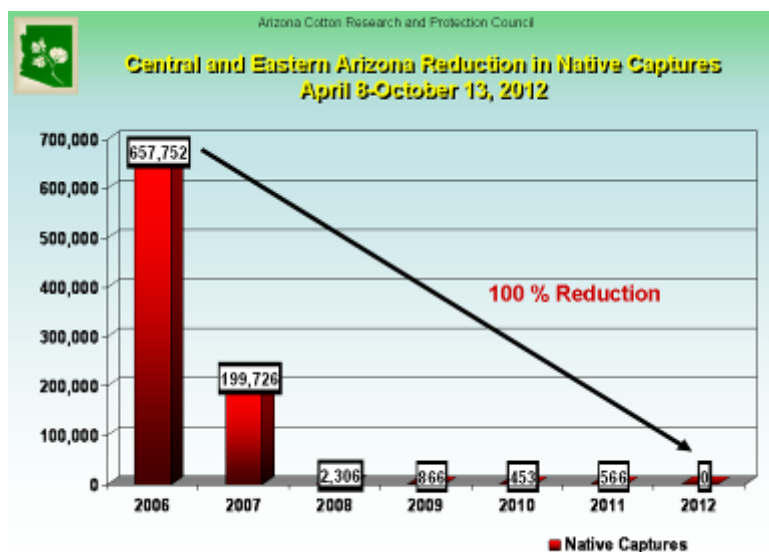


Figure 3. Area 1 native moth captures

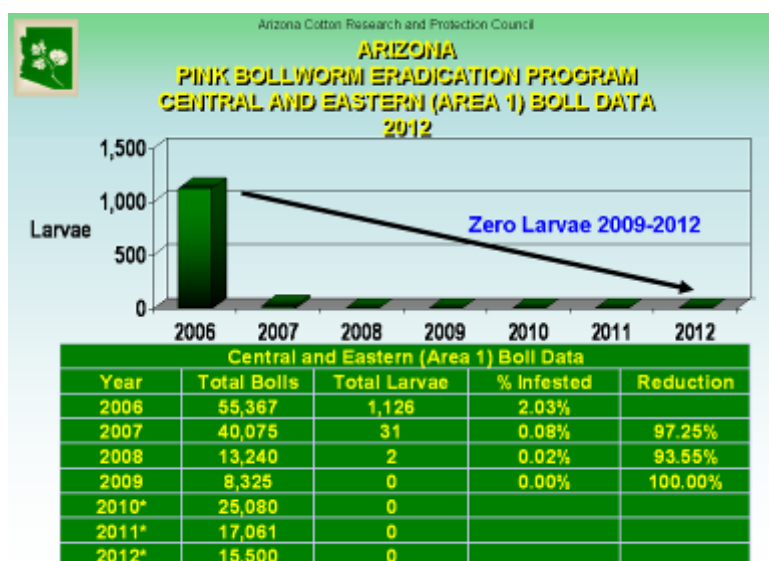


Figure 4. Area I boll data

In the river counties of La Paz and Mohave (Area II), zero native moths were captured in 2012 (Figure 5), and no immature Pink Bollworm life forms in targeted or incubated boll samples as in the previous four years (Figure 6.)

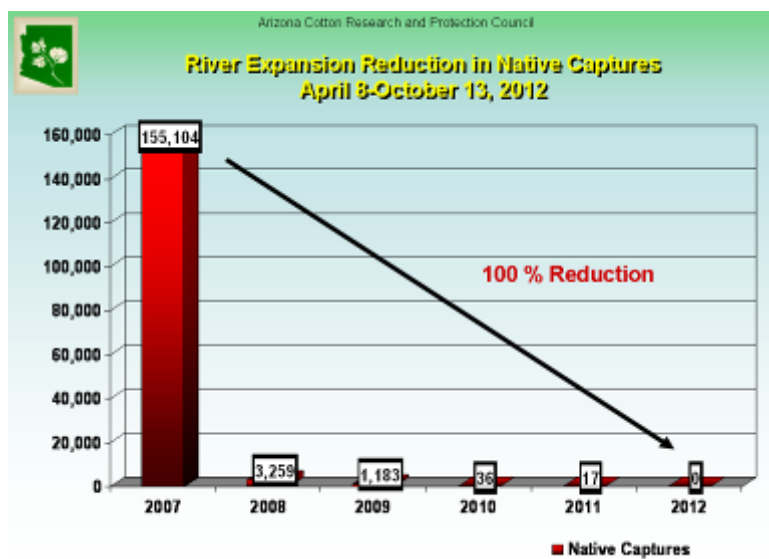


Figure 5. Area II native moth captures

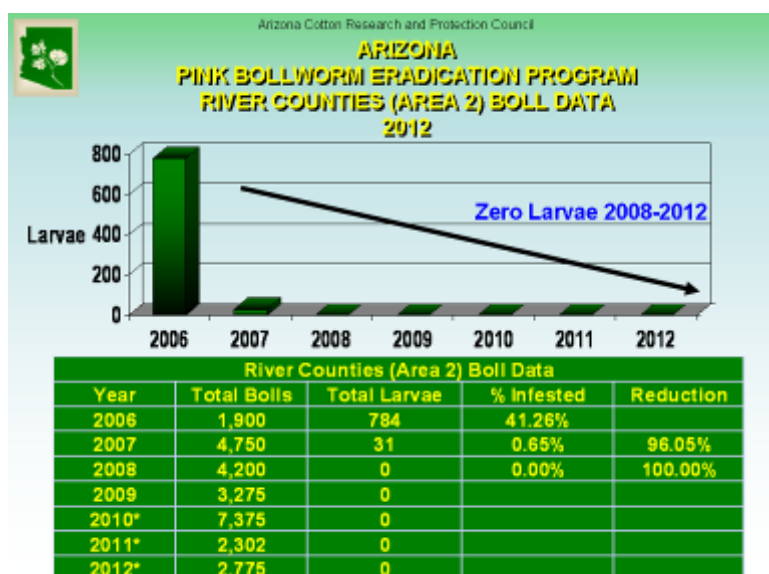


Figure 6. Area II boll data

In Yuma (Area III), a single native moth was captured in April, in a Bt field, prior to the development of cotton in the region to a stage capable of providing host material for Pink Bollworm (Figure 7). Targeted and incubated boll samples provided no indication of immature Pink Bollworm life forms in Area III for the third year (Figure 8).

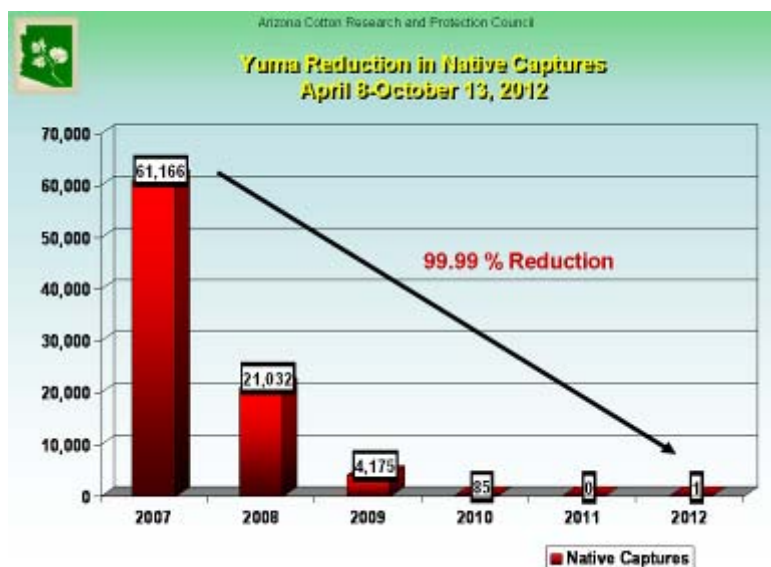


Figure 7. Area III native moth captures

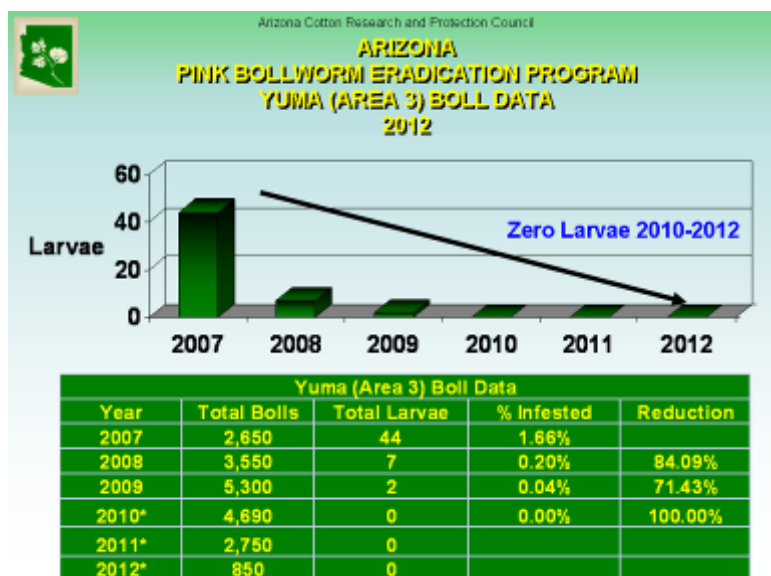


Figure 8. Area III boll data

For the second year, desert line traps distributed across the Southwest portion of the state captured zero native insects indicating a general absence of Pink Bollworm in Arizona and the adjoining areas of California and Mexico making up the Colorado River Basin (Figure 9).



Figure 9. Arizona desert line trapping

Sterile moth releases were limited to high risk areas (Area III) and cotton producing areas within nine square miles of any suspect native moth captures in 2011 (Figure 10).

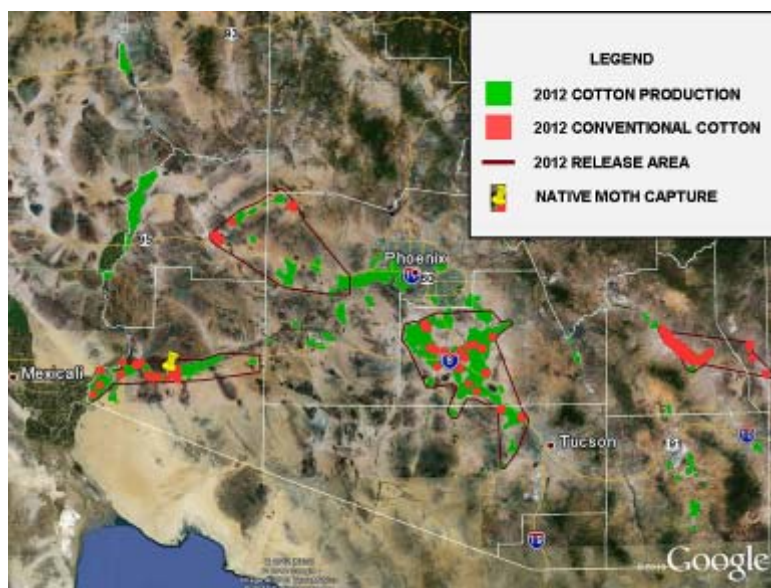


Figure 10. 2012 Sterile release and cotton production detail

Twenty nine suspect moths from across Arizona were captured in 2012; strontium analysis indicated these moths were most likely sterile insects with diminished levels of dye. Continued advances in diagnostics, marker technology and sterile insect delivery will be critical to program completion. On the basis of the 2012 program results the entire state of Arizona will enter the confirmation of eradication phase of Pink Bollworm eradication in 2013. The maximum use of Bt cotton will continue to be key in protecting program advances. Trapping and boll sampling will continue at prescribed levels to document any potential for native moth presence in Arizona cotton. As a precaution, limited sterile moth releases will be conducted in Western portion of area III. Continued

improvement of program components, protocols and diagnostics is essential to maintaining current program success and enhancing program sustainability in the future.

Conclusions

Although challenges still remain, the current program results are very exciting and highly encouraging. Program efforts will continue with cautious optimism and focused diligence to effectively validate program results and maintain program advances.