

You can see the high ratio of Bt cotton covering 3,851 hectares, which accounts for ninety-six percent of all cotton in the area.

## Densidad de trapeo Gusano Rosado

Pink bollworm trapping density

Algodones Convencional (No Bt) Conventional Cotton (non-Bt)	1 trampa tipo delta con feromona cada 4-00 hectáreas (1 trap/4 hectares)
Algodones Transgénico (Bt) Transgenic Cotton (Bt)	1 trampa tipo delta con feromona cada 8-00 hectáreas (1 trap / 8 hectares)



This slide shows the trap density. You can see we trapped one trap per 4 hectares of cotton on non-Bt, and one per 8 on the transgenic Bt cotton.

## Acciones

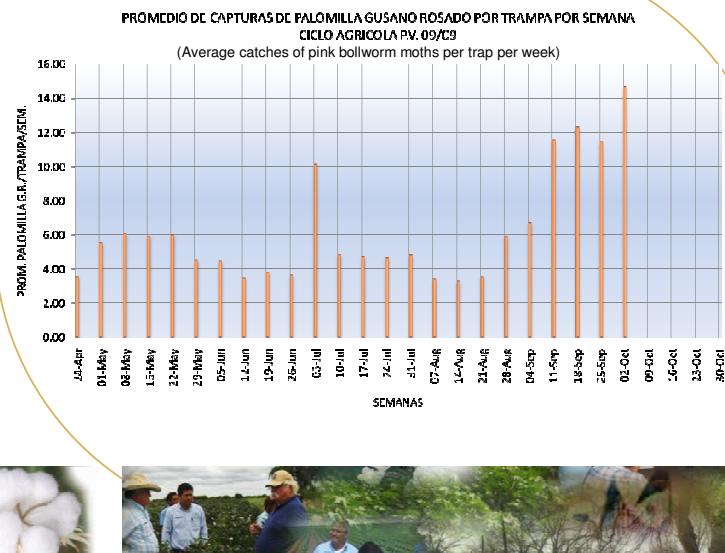
- ❖ Se realizó control etológico en 172-00 hectáreas con amarre de cuerdillas a una densidad de 500 cuerdillas por hectárea realizada en dos etapas. (Control was conducted on 172 hectares with a density of 500 ropes per hectare performed in two stages.)
- ❖ Se realizó aplicación de agroquímico en 23-00 hectáreas para el control de gusano rosado. (Chemical applications were made on 23 hectares to help control pink bollworm.)
- ❖ esta en proceso de recolección de cosecha, desvare y barbecho (we are in the process of collecting crop and fallow)



Control was conducted on 172 hectares with a density of 500 ropes per hectare performed in two stages. Chemical applications were made on 23 hectares to help control pink bollworm. We are in the harvest season and are currently shredding and plowing down their crop.

## Gráfica algodón Transgénico (BT).

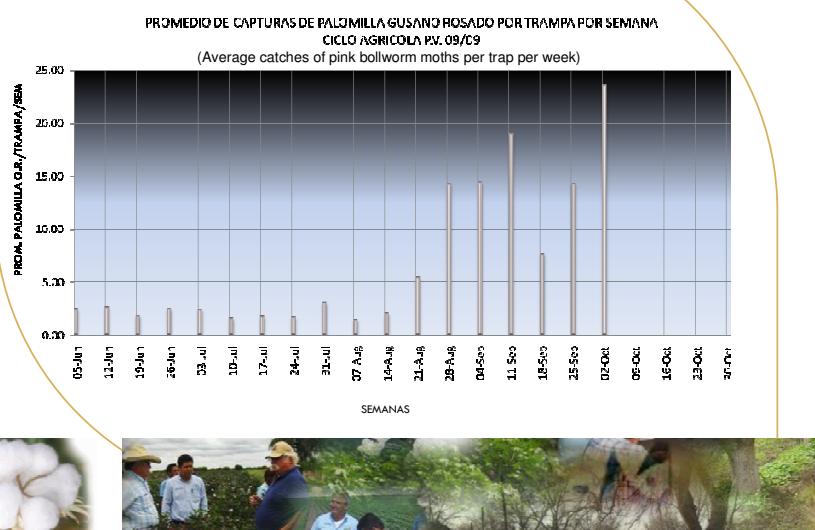
Graph of Transgenic Cotton (Bt)



This slide shows the average number of moths per trap per week captured on Bt cotton for the 2009 season.

## Gráfica algodón Convencional (No BT).

Graph of Conventional Cotton (non-Bt)



This slide shows the average number of moths per trap per week captured on non-Bt cotton for the 2009 season.

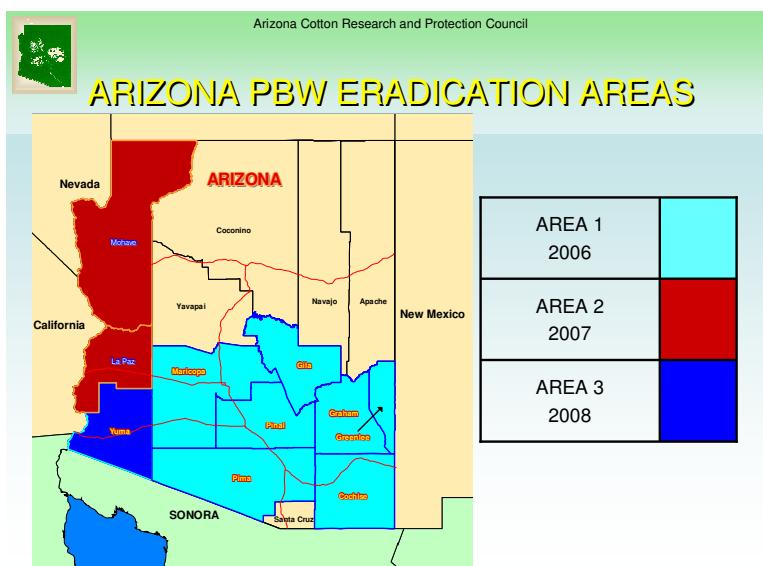
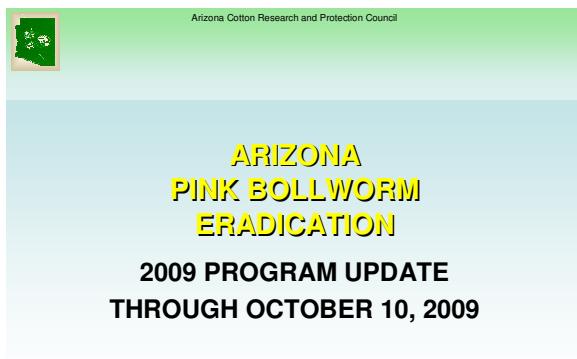
MC. Maria del Rosario Avila was not available for the Coahuila presentation.

Dr. Staten was asked if trapping numbers are skewed due to lack of continuity and consistency. Dr. Staten reported that the numbers are standardized.

Chihuahua has very large fields. They too maximize the use of traps around perimeters. Their rates are fairly close to what we have standardized. Durango and Coahuila are not in the program. Durango has started pheromone treating all of their non-Bt.

You can always reduce everything to moths per trap per night. They report things a little differently across the programs. Ted Boratynski advised that Coahuila and Durango have a common cotton area, which is almost 85% transgenic in that area. They have serious pinky problems.

Dennis Palmer thanked Ted and requested Larry Antilla present his report.



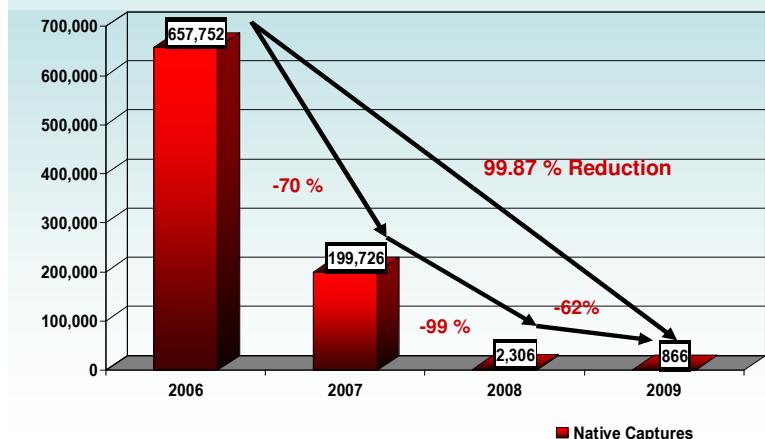
Larry Antilla reported that Arizona is broken down into three zones. This slide references when the pink bollworm programs started moving progressively across the state.

## PBW ERADICATION PROGRAM STATISTICS 2009

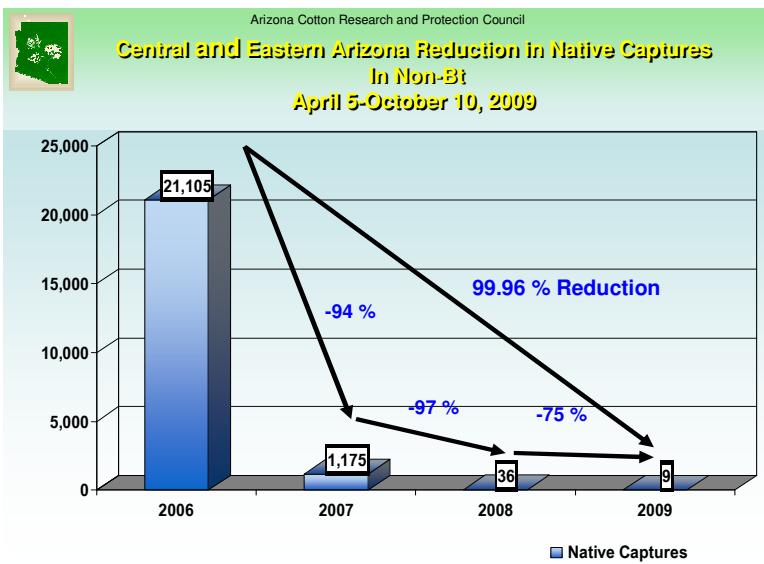
ARIZONA TOTALS		
TYPE	ACRES	FIELDS
BT	144,583.26	4,585
NON-BT	3,077.86	102
OKRA	346.90	14
PIMA	1,595.96	60
TOTAL NBT	4,673.82	162
TOTAL ACRES	149,257.08	4,747
% NBT	3.13%	

In 2009, Arizona had a total of almost 150,000 acres of cotton. They had a very small amount of non-Bt cotton.

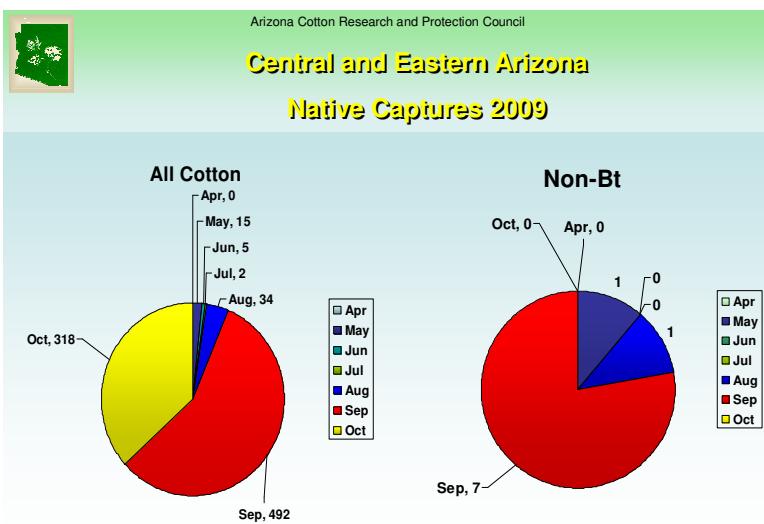
### Central and Eastern Arizona Reduction in Native Captures April 5-October 10, 2009



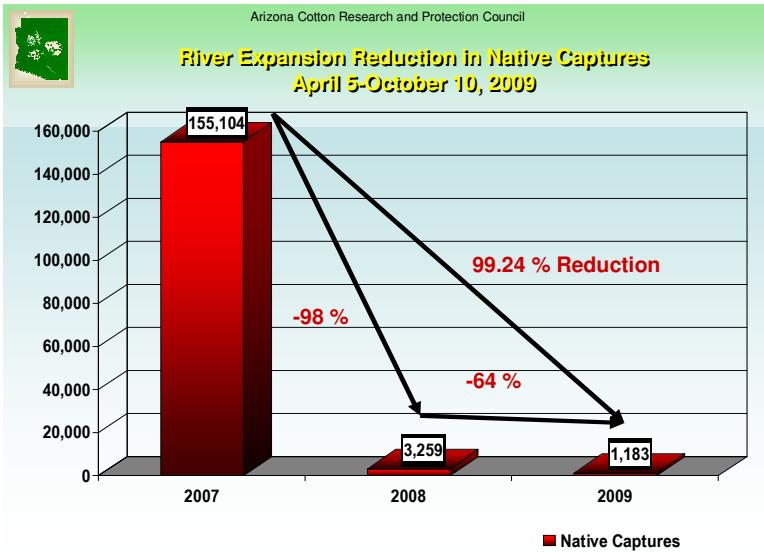
For central/eastern Arizona beginning in 2006, we had over 600,000 total captures. As you can see by 2009, we are at a 99.87% reduction. It is interesting that this leveled out between 2008 and 2009.



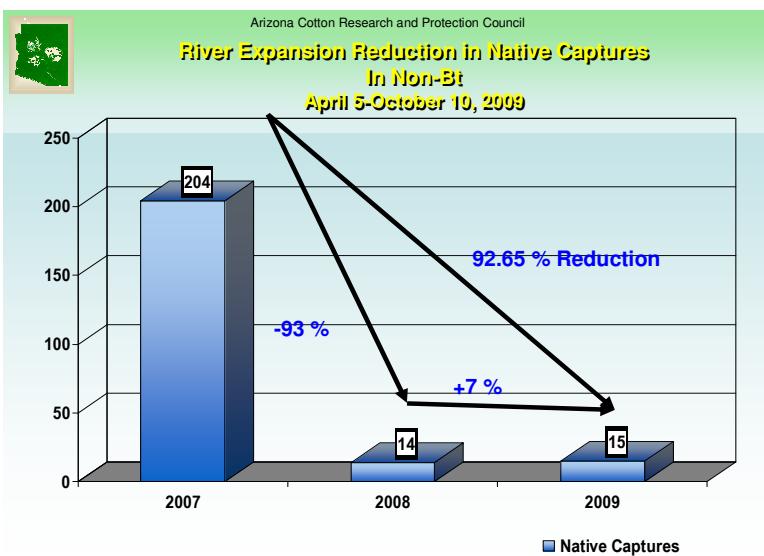
If we look at the captures for central/eastern Arizona in our non-Bt cotton, we are very close to 100% reduction. There was a total of nine captures in the non-Bt. You have to notice that we are sort of at equilibrium. Some of this has to do with migration.



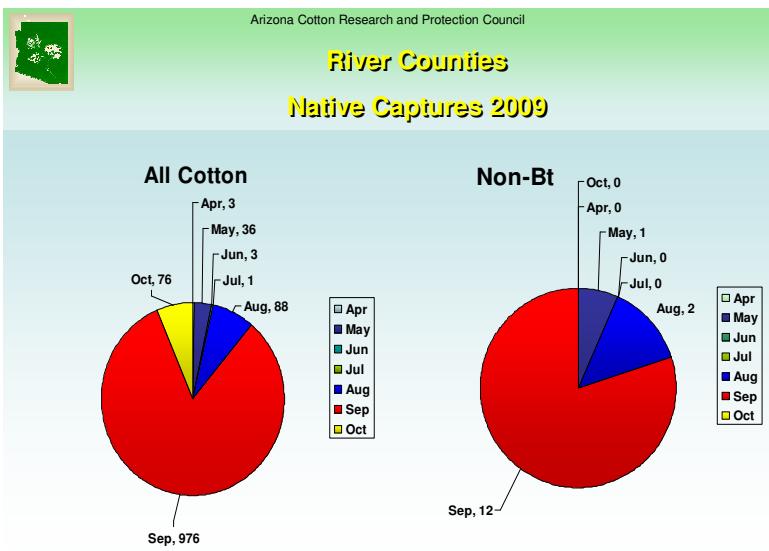
This shows what captures actually occurred in central/eastern Arizona. You can see that the vast majority of those captures occurred in September and October. Almost all of the non-Bt captures occurred in September. This shows the effect of late season movement. There is absolutely nothing in the beginning of the season that would relate to any population structure.



In the River Expansion area which covers the northern two counties, LaPaz and Mohave, we are in year three of the pink bollworm eradication program. A similar slope in reduction of 99.24% has occurred. Again, from 2008 to 2009, it is more of a flat distribution. This is in all cotton.



The same area regarding non-Bt only, we are showing a 92.65% reduction in captures. We caught fourteen in 2008 and fifteen in 2009. We have a fair amount of cotton interfaced that is not experimental.

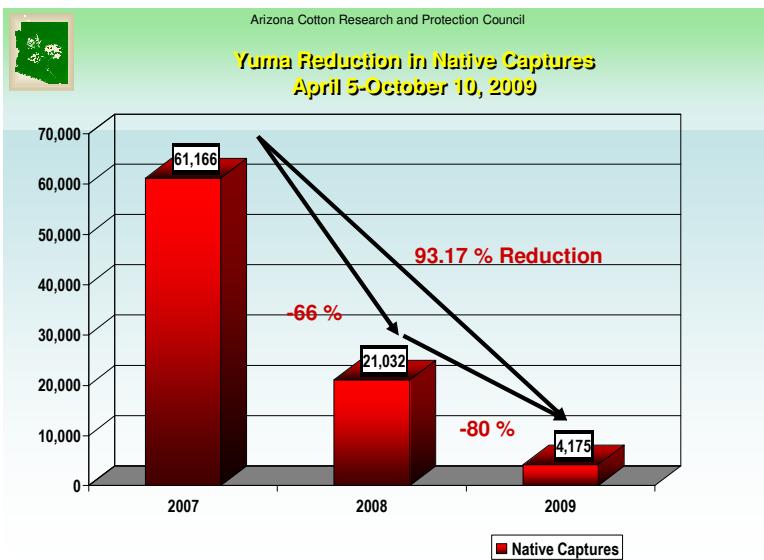


You can see that virtually all of them occurred in September and October, with some in August.

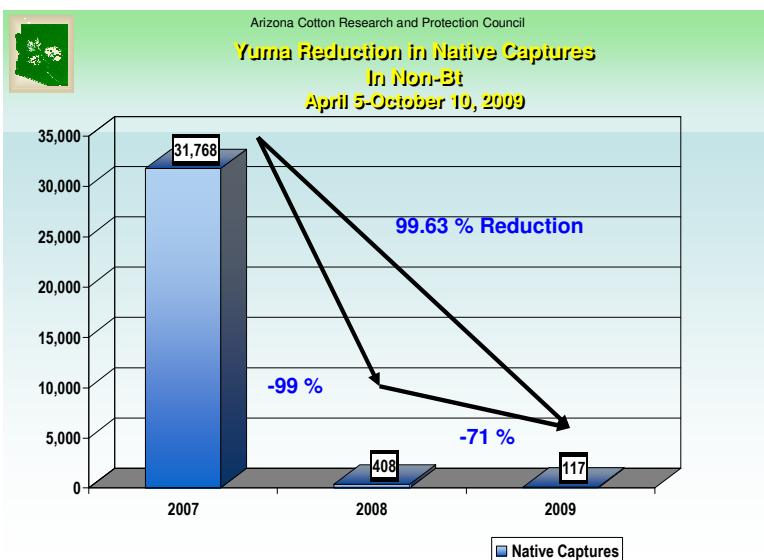
### PBW ERADICATION PROGRAM STATISTICS 2009

YUMA		
TYPE	ACRES	FIELDS
BT	12,239.66	693
NON-BT	305.63	12
OKRA	115.87	7
PIMA	411.76	21
TOTAL NBT	717.39	33
TOTAL ACRES	12,957.05	726

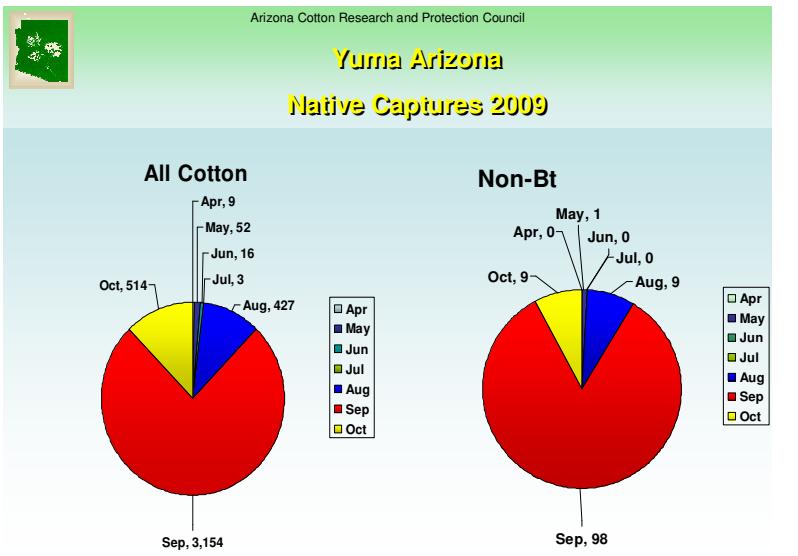
Yuma is our last area of the state to enter the program in 2008. We just completed the second year of the program and have about 13,000 acres of cotton. There is not a whole lot of non-Bt, although we hear that there will be an increase of non-Bt in 2010.



We are currently at a 93.17% reduction rate after two years in Yuma on all cotton.



If you look at the total captures in non-Bt only, there was a 99.63% reduction, although we captured 117 moths.



Again, the vast majority of these captures occurred in August, September and October.

Arizona Cotton Research and Protection Council

**ARIZONA**

**PINK BOLLWORM ERADICATION PROGRAM**

**SUMMARY BOLL DATA**

**2009**

Central and Eastern (Area 1) Boll Data					
Year	Samples	Total Bolls	Total Larvae	% Infested	Reduction
2006	767	55,367	1,126	2.03%	
2007	709	40,075	31	0.08%	97.25%
2008	322	13,240	2	0.02%	93.55%
2009	272	8,325	0	0.00%	100.00%

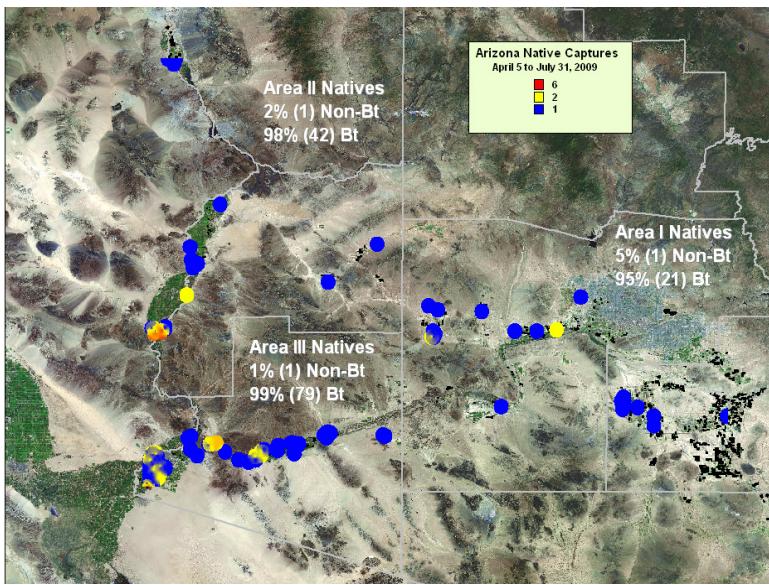
  

River Counties (Area 2) Boll Data					
Year	Samples	Total Bolls	Total Larvae	% Infested	Reduction
2006	19	1,900	784	41.26%	
2007	50	4,750	31	0.65%	96.05%
2008	123	4,200	0	0.00%	100.00%
2009	131	3,275	0	0.00%	

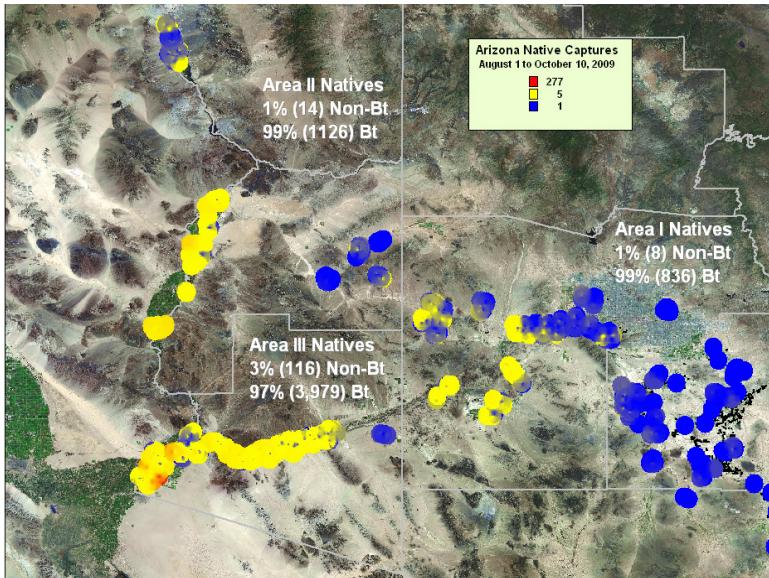
  

Yuma (Area 3) Boll Data					
Year	Samples	Total Bolls	Total Larvae	% Infested	Reduction
2007	54	2,650	44	1.66%	
2008	132	3,550	7	0.20%	84.09%
2009	107	5,300	2	0.04%	71.43%

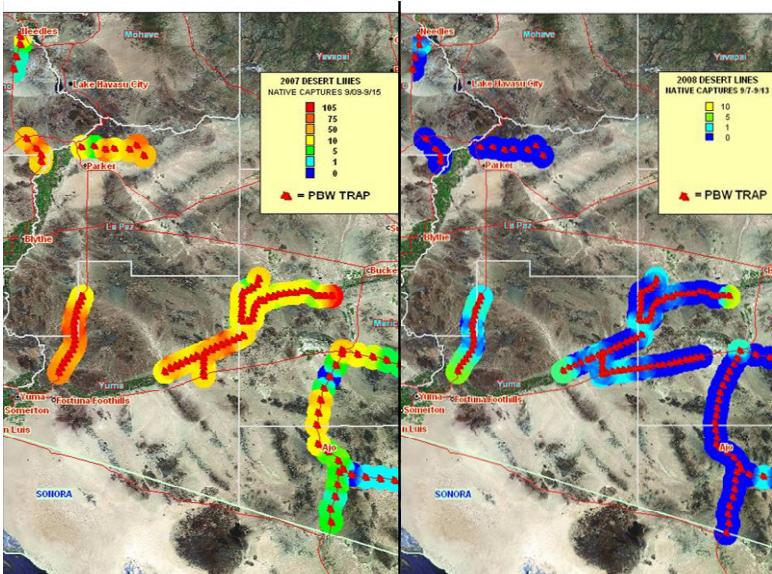
Our supervisors collect bolls from the non-Bt fields every week, eighty or more per field. They are taken back to the office and cracked. In addition, we take samples from fields through out the state and bring them to Dr. Tabashnik to be incubated. This assures us that we are not getting any reproduction out in the fields.



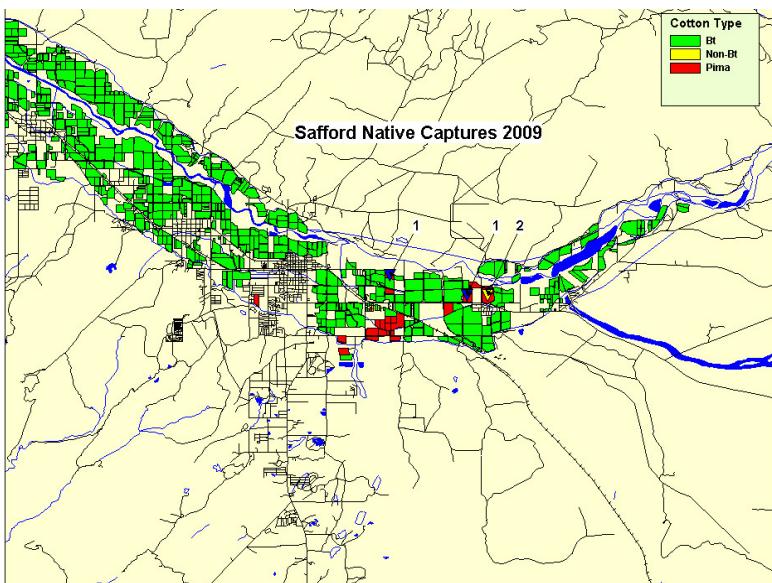
The following slides illustrate the migratory effect. Please notice the progression in the dates as well as the changes in numbers of the color coded scale representing the number of moths. This slide shows April 5<sup>th</sup> through July 31<sup>st</sup>.



This slide shows August 1<sup>st</sup> through October 10<sup>th</sup>. You can see a slight increase in the number of captures (yellow = 5 per trap). There is some movement; nothing particularly frightening. You can see the spill over into Pinal county as they progressively move up from the south. These are virtually all single captures and most all of them are in Bt.



This slide shows how this compares to the same type of approach in looking at desert trap lines or migration studies in 2007 and 2008. In 2007, we saw a large amount of activity in desert trap lines attributed to migration (red = 100+). That was reduced significantly when the program began in 2008. It is showing us in the central part of the state that the programs in Yuma and San Luis and Mexicali, the entire lower Colorado River basin, is making progress and having success.



We do have a few captures in Safford. We had a total of four adult captures. Large numbers of boll samples did not show any indication of any larvae in the field.



Lindy Patton inquired as to what will happen in central/eastern Arizona now that the four year time line has run out. Larry advised that the referendum legally pertained to the ability to collect funds from growers to treat non-Bt cotton. He has a two-tier structured system in Arizona. He has the bale assessment, which is usually \$3/bale, designed to cover all of the monitoring and management.

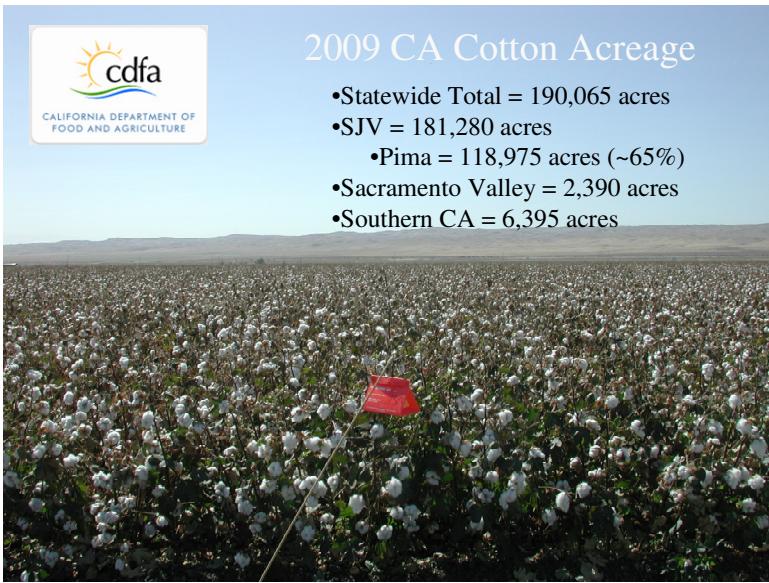
Arizona law called for a \$32 assessment for growers who plant non-Bt which covers the cost of the pheromones, insecticides, etc. Central / eastern Arizona will now loose the ability to collect \$32/acre.

He should be able to control them with steriles now due to the low numbers we see, and he has a contingency fund. If he has to do pheromone treatments, he will be able to. In essence, it should not have any measurable effect on the program.

John Klaus asked what the chances are of the moths captured being false positives. Larry advised they were very certain that the moths were not false positives. With Leighton being able to centralize all moth identification activities, he has the ability to have all moths dissected of genetalia as well as strip testing.

Charles Allen inquired when during the season did Arizona's captures occur in 2007. Leighton advised they were mid-September.

Dennis asked Jim Rudig, California Department of Food & Agriculture, to present his report.

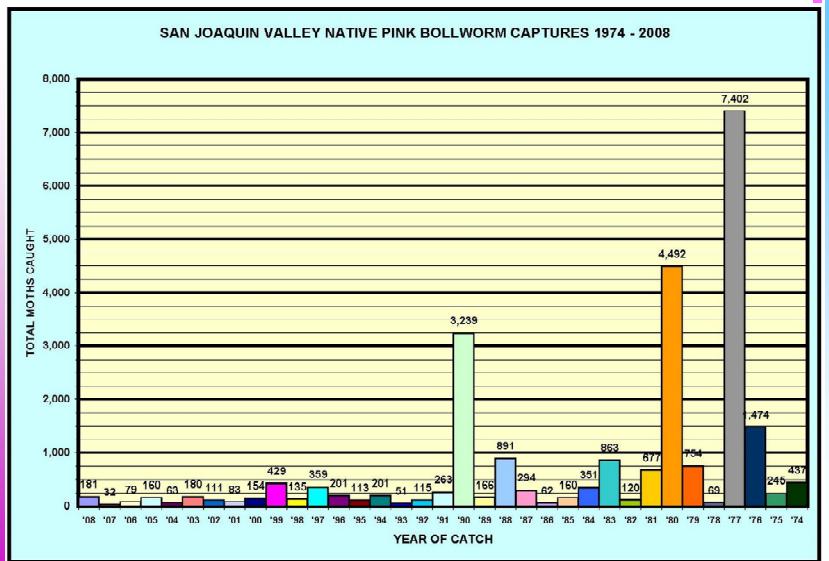


California has a total of 190,000 cotton acres, which is a 29.7% reduction from 2008. There is an increased acreage projection for 2010. There is almost 119,000 acres in Pima cotton.

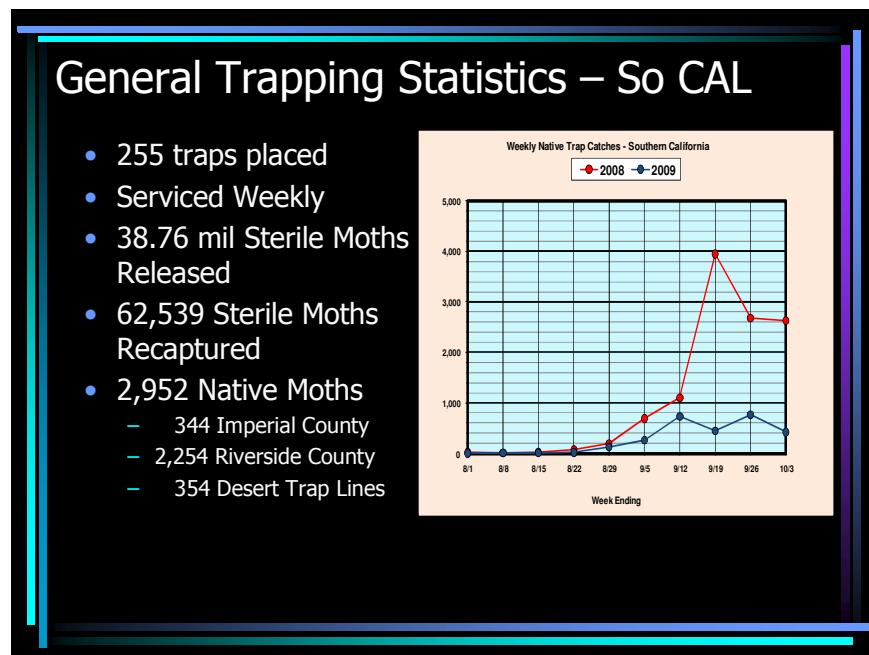
## General Trapping Statistics - SJV

- 2,628 traps placed
- Find Sections Serviced Weekly
- Bi-Weekly Non-Find Sections
- 326 Native Moths
  - 287 Fresno County
  - 11 Kern County
  - 0 Kings County
  - 0 Madera County
  - 29 Merced County
  - 1 Tulare County

The majority of moths are in Fresno county. Based on the heat unit model, four were over-wintering in Merced county. The majority of natives came in the third generation. Approximately 66% of natives were trapped late September and early October. Eighty-six percent of the natives came from one field in Fresno county. He pulled one thousand bolls, and did get emergence.



This graph shows the recaptures from 1974 through 2008. The total of 343 natives that have been trapped to date in 2009, we have not seen since 1999.



In southern California, this graph shows the difference in recaptures from 2008, which is the red line and 2009. You can see we had a significant reduction. A reduction in native moths trapped from 2007 is over 99%.

## Bt Resistance Monitoring

- Boll collection at seven (7) sites in B/PV Valley
- Boll collection at one (1) site in Imperial Valley
- No Resistance observed to date
- Trapping Program in SoCAL & SJV for tobacco budworm (*Heliothis virescens*) & Cotton bollworm (*Helicoverpa zea*)
- No Resistance observed to date

On the Bt resistance monitoring, we have collected 500 bolls at seven sites in the Blythe / Palo Verde Valley and then one site in Imperial Valley. We are trapping in southern California and the San Joaquin Valley for moths that we will send to Monsanto for the Heleothis Survey.

## PBW Budget Allocations Revisited

Dennis thanked Jim for his presentation, and asked the motion on the allocation for the budget be revisited. He refreshed everyone's memory that we had a first and a second and had not voted yet to pass the motion (*original motion from page 14 as follows:*

**"M/S/T      Larry Turnbough moved to accept Bill Grefenstette's allocation of funds as presented in his report. Greg Wuertz seconded the motion.**

***Clyde Sharp asked if we could post-pone the decision until we hear all of the reports. Chairman Palmer agreed."***

Clyde Sharp asked that the allocation breakdown slide of Bill Grefenstette's power point presentation be put back up on the screen.

## **APHIS Direct Costs – 2010** **Projected (\$ millions)**

<b>Sterile Moth Release</b> (CA-.330; AZ-.883; TX-.167)	<b>1.380</b>
<b>Rearing Facility — Salaries &amp; Wages</b>	<b>2.200</b>
<b>Rearing Facility — Operation</b>	<b>2.326</b>
<b>Shipping Sterile Moths</b>	<b>0.250</b>
<b>Total Rearing &amp; Release Costs</b>	<b>6.156</b>
<b>El Paso Debt Payoff</b>	<b>.179</b>
<b>Projected Balance Available</b>	<b>.148</b>

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Clyde expressed concern regarding yesterday and today's reports with the increased moth movement at the end of the year, and not knowing exactly where things are going this next year. Clyde suggested holding the money until the end of the year, as a contingency fund. If moth movement occurs, there will be money to address it. Clyde does not anticipate a major issue. The program is extremely sound and in good shape. However, if we needed to ramp up before the end of the year to take care of any movement, we should hold that pay off as a contingency fund, until we are absolutely certain. At the end of the year, if we have not had needed it, pay off the El Paso debt. Dennis asked if there was any discussion.

Larry Turnbough asked Bill if after all material and bills come in and are paid, does he have an exact figure. Bill Grefenstette answered that there is some discrepancy within the agency that they are working through right now. They expect to have an exact number within the next couple of weeks. As soon as Bill has it, he will provide the Cotton Council with the information and see what they advise.

Bob Hull supported Clyde Sharp's suggestion and felt that would be the best course of action. Dennis asked if Larry had any comments. Larry advised that it will be difficult having a referendum this past year and already having advised the growers that the money was forthcoming. A lot of people weren't growing much cotton, as well as the ones who have been in it for all of these years, and we have \$200+ an acre, to go back to them when they are expecting it. He understands problems have arisen from these late movements, but it's difficult to explain to growers that decision in a way that they will understand.

Clyde advised it's not that he does not want to not give them the money to pay off the debt. The program is more important than the debt, and we have sent over \$900,000 to help recover the debt in the past. If we delay it for six or nine months, it will not hurt either program. He just wants to make sure that we carry this program with the best possible outcome. His intention is to pay off the debt.

Craig Brown suggested that the most prudent way to resolve this is to get a final accounting from APHIS as to what funds are available, and what funds are unallocated versus allocated, and then you may not have to wait because you would have adequate reserves. Then you can reconvene and decide on the final recommendation.

Dennis asked if that was alright with everyone. Everyone agreed. ***The El Paso debt issue was tabled with the intention of reconvening after APHIS has an exact budgetary figure.*** Dennis called for a twenty-five minute break.

## PBW Technical Advisory Committee Report

Chairman Palmer reconvened the meeting and asked for the Technical Advisory Report from Bob Staten. As Bob was getting the power point slides in place, Don Parker advised that the National Cotton Council will be supporting APHIS continuation of a National Coordinator Position that has come from the Boll Weevil Executive Committee, Boll Weevil Action Committee, as well as the Pink Bollworm Action Committee. There will be a request going to Washington D.C. supporting the continuation of the National Coordinator Position and again, would like to express our appreciation of the fine work Bill Grefenstette has done.

Dr. Staten reported the PBW Technical Advisory Committee PAC met yesterday, and had a very good meeting. Don Parker has been instrumental and valuable to this program and is very much appreciated.

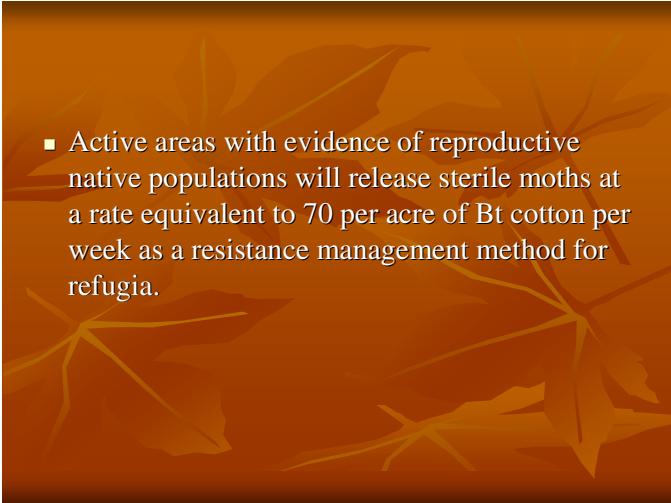
We will discuss the recommendations that were made and the resolutions that were made. The first resolution was to support the new USDA standards for SIT release that have been crafted within the USDA. The TAC committee supports these recommendations and by resolution recommends that the NCC Action Committee also support these resolutions.

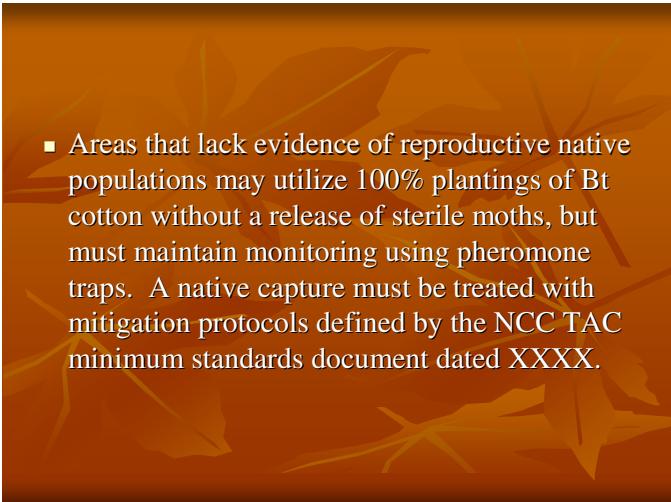


Dr. Staten advised that a lot was done with the issues of sterile insects as refugia, in order to be able to define all of our terminology. Other issues include not getting resistance to Bt, and utilizing resources prudently. Recommendations have always been nine insects per acre per day above any modeling. We recommend minimum reductions, largely where no reproducing pink bollworm are detectable.

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- Counties with cotton production that have affirmed, by grower agreement, participation in the Pink Bollworm Eradication Program may utilize 100% Bt plantings with the appropriate approval of a Section 18 or a Section 24c label.

Dr. Staten read the above slide, advising it simply states where we are. He then read the next two slides.

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- Active areas with evidence of reproductive native populations will release sterile moths at a rate equivalent to 70 per acre of Bt cotton per week as a resistance management method for refugia.

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- Areas that lack evidence of reproductive native populations may utilize 100% plantings of Bt cotton without a release of sterile moths, but must maintain monitoring using pheromone traps. A native capture must be treated with mitigation protocols defined by the NCC TAC minimum standards document dated XXXX.

The minimum standards document we expect to have done today. We have worked on some additional crafting with the assistance from Dr. Tabashnik and will be the source of our next recommendation. We recommend that you support these minimum standards as our first item. Dennis Palmer thanked Dr. Staten and advised that we have a recommendation from our Technical Advisory Committee. We discussed this quite a bit yesterday, but asked if there was any further discussion.

Rick Lavis asked in reference to the first slide, what Dr. Staten meant by “counties” and “grower agreement”. Dr. Staten advised that you can define the things within the county basis, and in Arizona, the zones are defined by county.

Greg Wuertz asked for clarification on criteria to determine proof of a reproductive native population. Dr. Staten advised there are two types of evidence to observe. Sequential trap data called captures could indicate generation potential, or evidence in larvae found in boll samples and elsewhere. This is general in order to give the program management flexibility. This deals with resistance management, not conventional cotton, only Bt cotton. A program manager has the ability to put higher levels of sterile releases if he has a pattern. In central/eastern Arizona, you would definitely have to blanket a fairly large area, even though there would be big holes in it as far as whether or not there is a positive capture in it. You would be releasing over a much broader area. This allows flexibility to reduce assets on Bt cotton in locations addressing late season movement, dealing with it on a fairly short term basis.

Dennis Palmer would like to entertain a motion.

**M/S/P                    Clyde Sharp moved to accept the PBW TAC PAC recommendation to support the new USDA standards for SIT release as presented by Dr. Staten. Greg Wuertz seconded the motion. The motion passed unopposed.**

Dennis Palmer thanked Rick Lavis, Arizona Cotton Grower Association, for his work. Dr. Staten advised that there has been much work done on the Minimum Standards Document, and a lot of e-mails back and forth by the Committee. It was reviewed again very thoroughly. Changes for clarity were the only changes that were made from the document that was sent out. We have redefined eradication terminology within that document significantly so that it is more compatible with maintaining 24c and Section 18 for a longer period of time by using an eradication confirmation terminology to refer to areas like New Mexico and Willcox, AZ. Dr. Staten believes it will serve the program well and is a good document to go forward for discussions with EPA. The TAC Committee supported this document and recommended it for the NCC PBW AC by resolution.

The document was placed on the screen for everyone to view. It is as follows:

## **Minimum Standards for Pink Bollworm Post-Eradication**

As recommended by the  
NCC Pink Bollworm Technical Advisory Committee  
And adopted by the  
NCC Pink Bollworm Action Committee  
October 28, 2009

## BACKGROUND

The Pink Bollworm Eradication Program began in the El Paso/Trans Pecos area of Texas (Phase I) and New Mexico (Phase I, II), and expanded into Arizona (Phase II, IIIA, and IIIB), and Southern California (phase IIIA and IIIB) areas below the historical suppression/containment zone of the San Joaquin Valley (see attached map).

As pink bollworm eradication moves toward completion, modifications in program activities must be addressed. The first step in this process involves a change in organizational focus namely, moving from: 1. active, to 2. confirmation of eradication, and ultimately, 3. post-eradication status. Thus pink bollworm moves from common to eradicated pest status. Concurrent with this change in status is the need to implement a system which identifies minimum standards for program management, while simultaneously providing the flexibility necessary to accommodate the diversity of growing conditions, risk exposure levels, management structures, funding levels, etc. across the region. This document provides the minimum standards for pink bollworm program operations within the attached map in areas identified as Phases I-IIIB. These minimum standards are for programs in confirmation of eradication and post-eradication status.

## I DEFINITION OF ERADICATION

An area may be considered for confirmation of eradication status after a year in which no evidence of a reproducing population is detected. Post-eradication status is obtained when an area has completed four consecutive years with no evidence of reproductive native populations.

## II MAPPING

Accurate knowledge of the location of cotton grown each year in all areas is essential to an effective surveillance system. Necessary reductions in funding and staffing will occur in programs which are in the latter categories of eradication as identified above. This will require long-term commitments to provide the information that is needed to locate and map cotton fields. Program personnel must be able to accurately map cotton fields with the limited resources that will be available. This may involve cooperative interaction with other agricultural organizations such as USDA, Farm Service Agency (FSA), where crop certification information may supplement program personnel data and mapping. At a minimum, program managers should have maps indicating all cotton fields the previous year to begin a program year, and should have updated the cotton field locations by first bloom.

### III TRAP DEPLOYMENT AND DENSITIES

Minimum standards are needed for pink bollworm programs in both confirmation and post eradication pheromone trap surveys. Program managers and each state's organization should be expected to comply with the established minimum standards.

Program managers may, at any time, adopt trapping protocols that are more rigorous than the established minimums.

Detection traps should be placed within the cotton-producing areas of each state.

A The following represents the trapping protocol:

- 1 Year one (confirmation of eradication)
    - a Trapping Density
      - non-Bt – 1 trap/10 acres cotton
      - Bt – 1 trap/40 acres cotton
    - b Trapping cycle – weekly
    - c Trapping duration – pinsquare to defoliation
  - 2 Year two (confirmation of eradication) – If no native captures year one\*
    - a Trapping Density
      - non-Bt – 1 trap/20 acres cotton
      - Bt – 1 trap/160 acres cotton (1/4 section)
    - b Trapping cycle – weekly
    - c Trapping duration – pinsquare to defoliation
  - 3 Year three (confirmation of eradication) – No native captures years one and two\*
    - a Trapping Density
      - All cotton – 1 trap/160 acres cotton (1/4 section)
    - b Trapping cycle – bi-weekly (unless dust/dirt accumulation in trap is an issue)  
requiring weekly service for a period of time
    - c Trapping duration – pinsquare to defoliation
  - 4 Year four (confirmation of eradication) and post-eradication\*
    - a Trapping Density
      - All cotton – 1 trap/square mile with maximum separation of traps
    - b Trapping cycle – bi-weekly (unless dust/dirt accumulation in trap is an issue)
    - c Trapping duration – pinsquare to defoliation

\* If one or more natives are captured in the previous year, management procedures will begin again with Year One procedures. For example, if a native moth is captured in 2010, Year One procedures will be used in 2011. The size of the area returned to Year One procedures will be at least nine square miles encompassing the field where the native moth was captured.

#### **IV TRAPPING QUALITY CONTROL**

Failure to operate an effective program of trapping quality control could pose a serious threat to areas in late stages of eradication. Weaknesses in quality control of trapping may result in expensive, large-scale pink bollworm infestations.

States in both confirmation and post-eradication status must maintain sufficient quality control of trapping. These programs must be in place to assure that traps are being inspected and serviced with fresh lure to assure that traps are being kept clean and functional. Programs must maintain a practice of routinely placing marked pink bollworm specimens in traps to ensure that program personnel find and report all captures. San Joaquin Valley quality control will be used as a model for these procedures.

#### **V DETECTION OUTREACH**

It is strongly recommended that growers, Extension Agents, crop consultants, or other interested parties be encouraged to report pink bollworm damage or presence to program personnel as this can be critically important surveillance. Program managers for each state or region should develop protocols for responding to such reports. These protocols should include clearing reports through the official eradication program organization as with prescribed rapid response on the part of program personnel.

##### **\*\* Program Population Management Tools**

Active eradication programs will utilize multiple approaches to achieve population suppression and eventual eradication. Program managers will employ 1) pheromone mating disruption treatments of cotton fields, 2) encourage maximum allowed use of two gene transgenic Bt cotton's, and 3) release of sterile moths (SIT) to reduce and eventually eradicate native pink bollworm populations. 4) Chemical applications will be utilized only when necessary to achieve native population control.

As programs transition from active eradication to confirmation of eradication and subsequently post eradication, programs shall continue monitoring for native populations while encouraging the maximum allowed use of two gene transgenic Bt cottons to provide a “safety-net” that will minimize the chance of large re-infestation establishment. Mitigation measures for confirmed native captures are described in this document under Minimum Standards When Pink Bollworms are Detected.

#### **VI IDENTIFICATION OF SUSPECT MOTHS**

Following completion of pink bollworm eradication in various states or regions, program staff undergoes natural attrition. The capability to retain program staff to properly identify pink bollworm is extremely important. For the foreseeable future, programs must be able to correctly identify pink bollworm specimens whenever they occur in traps. Experience has shown that one of the best ways to maintain the identification capability of field staff is through the continual use of marked dead specimens placed in random traps across the program area. When these pink bollworm specimens are inconspicuously marked to confirm their intended use, and carefully inventoried to monitor their placement and recovery, they can be a valuable component of an effective surveillance program. To this end, maintenance of the sterile moths rearing facility albeit at a reduced level of production remains a reliable source of dead, marked pink bollworm specimens.

USDA-APHIS maintains a staff of trained “certified identifiers” for a wide range of exotic pests. After pink bollworm has been eradicated from this region of the United States and Mexico, it will be considered such, an “eradicated plant pest”.

USDA-APHIS should establish and maintain a system for certified identification of suspect pink bollworm submissions. Certified identifiers, including APHIS staff or others trained by them, should be available to respond to program needs. Multiple identifiers will be needed to provide redundancy, so that occasional leave or illness of personnel will not delay the confirmed identification of a trapped pink bollworm or other life forms. Until confirmation, suspect moths will be responded to on the basis of best possible local identifier.

Program managers will be provided certified identifiers contact information to notify when a suspect insect has been trapped or field-collected to arrange for timely identification. Electronic images of suspect moths will be e-mailed to the identifier for initial identification. USDA-APHIS will provide instructions to ensure that images obtained and submitted are of proper magnification and clarity, and that the specimen is positioned or dissected in a manner that allows proper identification.

Pre-addressed overnight mailing containers should be provided and used for shipping insect specimens to identifiers for confirmation. USDA-APHIS will provide these as part of its role in identification coordination. The need for rapid confirmation is critical because treatments require immediate response. In addition to adult captures, the presence of immature life forms (larvae or pupae) would also satisfy treatment criteria. USDA-APHIS will develop a manual to train employees on how to contact the identifiers, obtain electronic images of a specimen, e-mail the images for tentative identification, and process and ship the specimen for confirmation.

Systems must also be in place to verify that captured moths are native as opposed to sterile "escapes" from the rearing facility. In this regard, USDA-APHIS should also coordinate the development and transfer of this technology.

## VII MINIMUM STANDARDS WHEN PINK BOLLWORMS ARE DETECTED

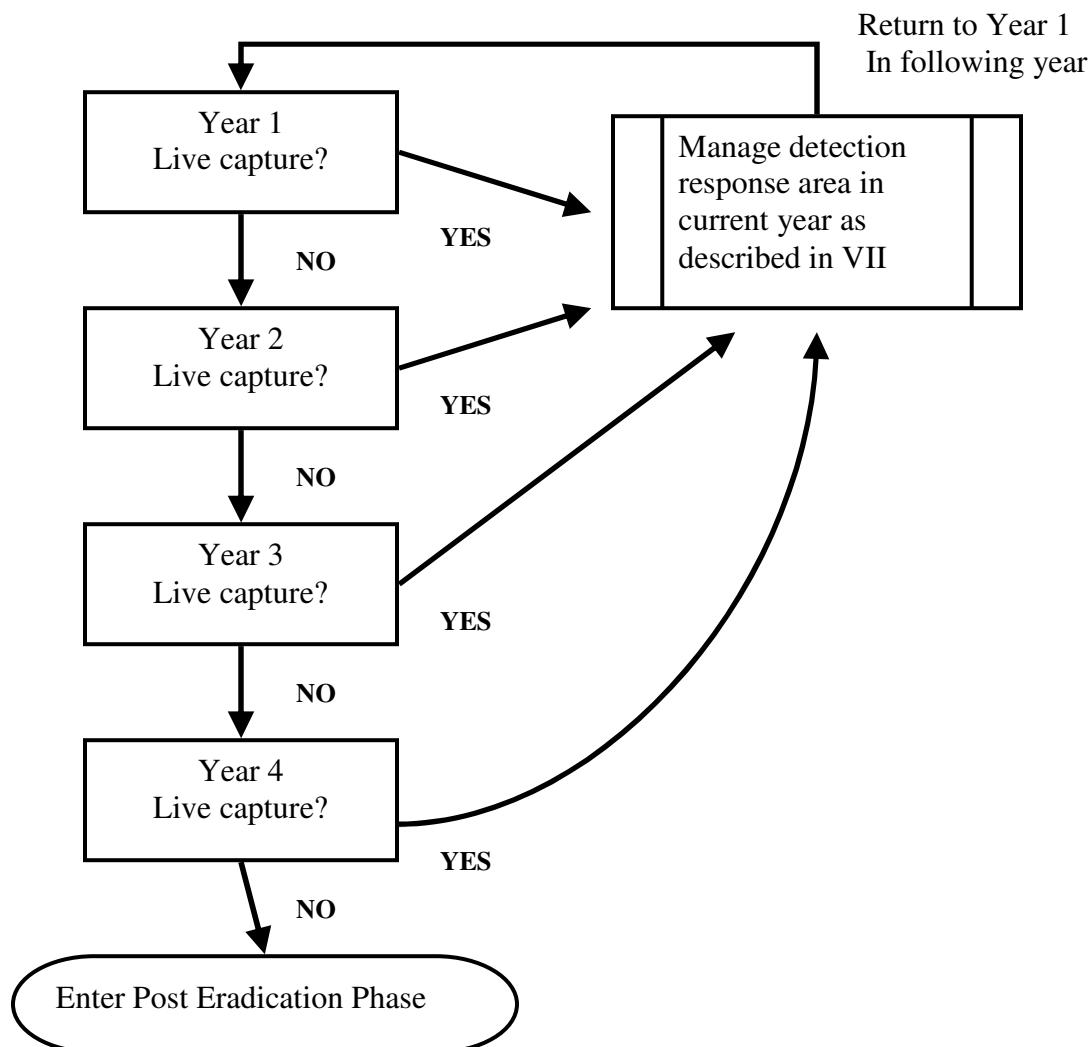
When a suspect moth is trapped, a certified identifier must quickly confirm that it is a pink bollworm. If the capture is in or near non-Bt cotton, within 24 hours, trapping will be increased to at least the density used during the first full year of active eradication in that area (1-10 Acres non-Bt: 1-40 Acres Bt). Traps within this intensively trapped field of find and adjacent fields will be inspected daily for at least three days, then weekly until crop termination.

Capture of 1 or more native moths will trigger at minimum the following actions:

- 1 In the field where the capture occurred, steriles will be released within 48 hours.
  - 2 The 9 square mile area, with a capture at it's center, will be a "detection response area". The following actions will be taken, at a minimum, in all response detection areas:
    - a. Sterile releases
    - b. Insecticide / Pheromone treatments
    - c. If a and b are not completed during the season when captured, then Pheromone treatments and sterile release actions will be initiated the following year on this detection response area.

The minimum response treatment for a field in which one confirmed native pink bollworm moth is captured is a release in the capture field within 48-hours. Within seven days, steriles should be released over the nine square mile area with the capture field as the center. The sterile moth release rate should be the same as the individual area's original non-Bt eradication program rate. Releases will continue until native captures zero out for a minimum of eighty days. Captures occurring equal to or less than 80 days before a crop is completely defoliated will require resumption of release for a minimum of 80 days post-pin head square the following season.

In effect, this produces the following:



Presence of larvae or captures of more than one adult suggesting existence of a reproductive population will immediately trigger at least two spray treatments separated by 5-7 days. Each spray treatment will include a pheromone and conventional insecticide component (or acceptable alternative for organic production). After two or more spray treatments are completed, a high rate pheromone rope system will

be applied on the infested field and all non-Bt cotton within a one-mile radius of the infestation. Additionally, SIT releases will be maintained on all cotton within the nine square miles containing the infested epicenter season long until defoliation. In this case, in the following season, to confirm eradication, all cotton fields in the nine square mile area will be trapped at eradication program levels season long with SIT releases season long. Any evidence of over-wintering population survival would also trigger high rate pheromone treatments on all non-Bt cotton within the nine square mile area.

## Year Four and Beyond – Post-Eradication

Single isolated confirmed pink bollworm captures in or near non-Bt cotton will trigger SIT releases at non-Bt rate on all cotton within a one-mile radius of the capture epicenter. If reproduction is indicated (larvae or generational captures), year one protocols will be implemented.

## VIII SUPPLIES

Program managers and APHIS staff will maintain regular contract with suppliers of pheromone for traps and mating disruption, delta traps, and stakes to ensure that adequate supplies of these critical program components are available each year. Also needed are sources for elisa test kits, and sterile moth strip test supplies. It will also be necessary to maintain the sterile moth production facility for a multi-year period with the capacity to maintain production of at least 500,000 sterile moths per day and the ability to expand as needed.

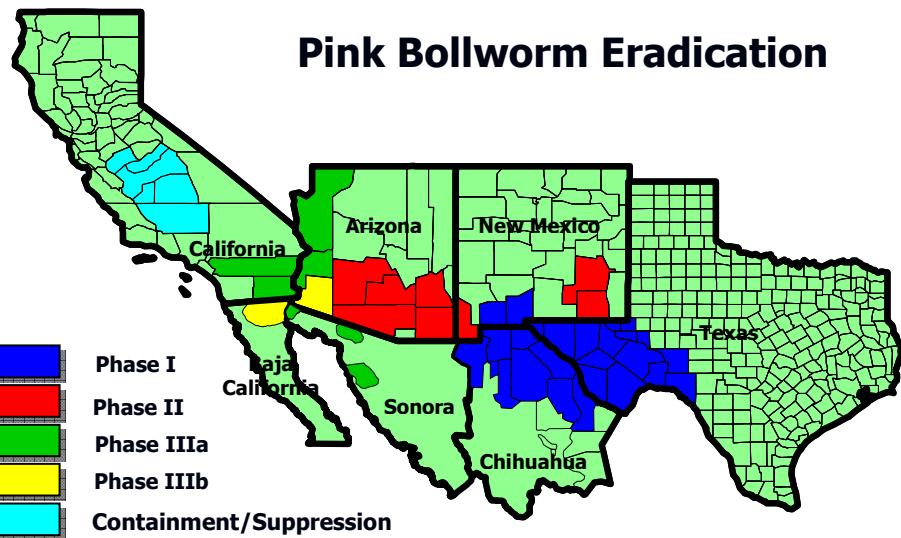
## IX POST ERADICATION FUNDING

Continued programmatic review is of the utmost importance. This review will be needed to keep all post-eradication activities at critical levels. It is anticipated that some level of cost share between states and USDA-APHIS will be necessary to ensure the maintenance of minimum detection and response standards post-eradication. Each state or entity should establish and maintain a contingency fund at a level of sufficiency to be able to address the immediate response costs associated with pink bollworm reintroductions. Further details are beyond the scope or authority of the Technical Advisory Committee. Reserve funding should be based on reaction to one epicenter and the subsequent nine square mile release of sterile moths and treat with pheromone.

### Assumption:

- 9 square miles at 50% cotton (non-Bt) = 2,880 acres
- at 400 steriles/day/acre = 1,150,000 = \$16,000/week
- for 12 week period = \$192,000
- release cost 1 hour/day x 80 at \$350/hour = \$28,000
- Rope on 320 acres x \$25 = \$8,000
- Traps, stakes, lure, and trapper(s) = \$45,000
- Total = \$323,000

Attachment: Map indicating the areas of the Pink Bollworm Eradication Program.



Dennis Palmer asked if there was any discussion on this. Bob Hull asked if this would be an “as-is” form, or something that can be modified in the future? Dr. Staten advised that EPA will require an “as-is” form, and we will need that in order to bring this to Washington next week. Dennis advised that there will be a trip to Washington D.C. next week. Clyde Sharp, Don Parker and Dennis Palmer will be going, as well as Keith Menche and John McGuire. They will meet with Steve Owens, from Arizona, with the EPA. He is somewhat of an Assistant Director. This will be very useful in our discussions in trying to obtain the Section 18 and 24c’s. Dennis asked if there was any more discussion.

**M/S/P** **Clyde Sharp moved to accept the PBW Minimum Standards Document in its present form as presented by Dr. Staten (above). Larry Turnbough seconded the motion. The motion passed unopposed.**

Dr. Staten advised that the TAC Committee listened very carefully to a report by Dr. Zink, with assistance from staff, ACRPC personnel, and others. The question before the Committee was *whether or not we were ready to make a recommendation that it be moved into the Rearing Facility*. That is a very large decision. You can not mix strains within the Rearing Facility. It is a very large commitment. Dr. Zink did not know that they intended to do further work on their analysis and further work in crafting a complete report. Steve Naranjo pointed out we definitely have to be looking at it in terms of the benefit cost both by a financial and biological analysis basis. It was agreed there would be more of that done. No recommendations were forthcoming. *The decision was tabled pending another meeting for the Action Committee when all of the data is available.* There is no action at this time that the Board needs to take at this time. Dr. Staten advised we do have a lot of work by the Board in the administrative issue areas concerning costs and regulatory issues. That is forthcoming on the agenda.

The PBW TAC also reviewed the issues of migration, very late season finds, particularly acute in Texas. The TAC also noted the need for strategic planning and program planning in order to start considering the long term ramifications of that and how it fits within the post-eradication format for everything that

is in the eradication program now. It's very obvious there will be a need for long-term planning. Dr. Staten does not feel it requires a resolution, but probably assignments.

Lastly, the TAC supported by resolution the initial moth distribution for 2010 season as presented to the Committee. There will be a lot of thinking about this once we get into the season and see where the acreages are. We have to make a tentative allocation. It would be appropriate for the Committee to give a resolution of support to the Action Committee for moth distribution.

Dennis added that it may be changed a little bit in the future due to acreage variations, but it is a good starting point. Dennis asked what the total amount was last year. Dr. Staten answered 28 million, which is 8 million less than last year. There was no more discussion.

**M/S/P** Bob Hull moved to accept the recommendation of the PBW TAC concerning the initial 2010 pink bollworm distribution and release rates with the understanding that the figures may change slightly due to acreage variations. Greg Wuertz seconded the motion and the motion passed unopposed.

Dennis Palmer requested Don Parker discuss the DS Red issues. Don advised that the PBW TAC did not have a recommendation coming forward. He did want to make sure the Committee is updated concerning the issues they will have to consider concerning DS Red. If we were to approve the use of DS Red, how quick would we be able to get DS Red into the lab facility and operational. In order to accomplish that goal, we would have to go through USDA BRS Biological Review Services and get permitted, which takes up to twelve months. After conference calls and discussions, APHIS took the lead on the permit and submitted it to BRS. As part of the permit process, once they complete their initial report, it is posted and open to the public for comments.

During our discussions, they advised us that we would have to talk to the organic program about this as well, due to another law called an “equal law”? They suggested to us that we may want to talk to the organic program ahead of time, rather than BRS going to them first. We then contacted the National Organic Program. They advised us that they have certain standards. In their initial reply, they advised us that a transgenic insect on an organic crop would violate the organic rules, and that the farmer effected would loose their three-year certification and their crop could not be marketed as organic. We then obtained and reviewed all of their regulations.

We found a clause for an eradication program, emergency pest program, there is regulation that states that the person will not lose their three-year certification. However, if that organism (genetically engineered insect in this case) comes into contact with the plant part to be harvested, then they could not market as organic. They went back and after review, conceded that point.

When we tried working our way up the organization, there were new appointments and new personnel coming in. Right now they are not saying anything. Sometimes an organization will want to wait until the new administrator gets in to see what position they will take. Our intention is to pursue this matter and follow up with them. As it stands right now, if the transgenic comes into contact with the organic crop, it will prohibit that person from selling the crop as organic.

Don advised that in a previous discussion, he asked Dr. Staten if he were asked how far a transgenic moth can fly, how he would answer. There are a lot of issues around this. Oxitec has provided us some other information. Don will work in keeping Committee members apprised of information concerning this issue. Don wanted to invite Oxitec to talk to the Committee concerning what would Oxitec expect from the program as the charge for that technology should the Committee decide to move DS Red into the lab. Don asked Ann Kramer to come forward.

Steve Naranjo asked how the regulation read. If it says the transgenic insect coming into contact with the harvestable portion of the plant, does that mean that if the insect lands on the boll it can not be marketed as organic, but if it lands on the leaf, it's okay? Don stated that his first thought was whether or not it would be possible to shut down our releases before we have open bolls. Then Dr. Staten advised him that they are releasing about two months after the first open boll.

Steve asked how the regulations read regarding monitoring the presence and how is it enforced? Is it voluntary by the grower or is it some outside body? Don advised that the more important issue when thinking about this is always having to consider what grounds could be the basis for a lawsuit. Dr. Staten commented that a question for exploration could be would the monitoring be done at the gin or after the commodity exits the field. If you are trying to prove it's in the fiber and in the lint and in the seed, you would think that it would be required that it is monitored there and not in the field. That might be where you could live with this. Don stated that he could research that, but that they probably wouldn't accept that. They would probably say if we can catch it in the field with open bolls, then they could say that the harvested crop has been exposed.

Roger Haldenby advised that there is nothing to transfer into the lint or onto the cotton plant. It is a common practice in the Texas program, and there is a three-year transition period before anyone can get into organic. It is not economical for someone to get into organic production. We do have a perception that a pesticide applied drifting off to a crop is going to create a situation where that organic crop is contaminated and can't produce. It is a perception rather than a reality. A moth flying too close to an okra field or cotton boll is ludicrous. It is a perception.

Don advised that a contaminant is not a regulatory concern. The regulation just broadly says excluded items include anything that has been genetically altered in a manner that would not have occurred naturally. That means if you genetically alter a cotton plant to where it uses one-half of the nitrogen and one-half water, even though that would be one of the most environmentally beneficial things we have seen in a long time, it would be an excluded item for organic production.

Jim Rudig advised that when he spoke to the California and OP Group, they talked about deliberately applying genetically modified steriles to the field. They said that as long as we didn't do that, they wouldn't have a problem with it. We have so few organic cotton fields in California. Upon inquiry, Jim further clarified that it was the State of California that had provided that answer. Rick Lavis inquired what if there was an occasion where you accidentally flew over one of the fields. Jim advised that the crop that the field that was flown over could not be marketed as organic that year, however it would not exclude them from their three-year certification.

Don concurred that is consistent with the national position. He also advised that the national program immediately started asking questions concerning how far the insects fly and asked if we would be able

to provide them with reports regarding that. It was their first question. Upon inquiry, Don answered that they did not question them concerning Pheromone Rope. Dr. Staten advised that the Rope is the only formulation he is aware of that is registered as organic. Michelle Walters added that it is probable because it is potentially retrievable.

## DS Red

Don Parker requested Ann Kramer, Oxitec come forward and give her presentation.

### Oxitec

October 28, 2009

Ann thanked the Committee for allowing her to make a presentation. She works for Oxitec, a technology company in England. They have worked in collaboration with USDA in Phoenix since 2002, when Dr. Staten and Dr. Miller initially invited them to join a cooperative program.

#### Oxitec USDA Pink Bollworm Project

- Collaboration since 2002
- Objective to develop new strains with traits:
  - Improved marker which is heritable
    - Minimise costs of misidentification
    - Identify F1 steriles
  - Reduce or replace irradiation
    - More vigorous strains
    - No need to replace irradiator when it next needs replenishing
  - Improved biosecurity
    - Rearing facility hazard reduced
- Development of basic tools and early strains 02-05
- Focus on development of marker strain since 2006

Oxitec confidential

That initial program had a couple of objectives including to define technologies which would improve the strains that we use in the SIT program. One target was to find an improved marker in order to reduce the risk of misidentification in the field, and the cost associated with that. The marker should be heritable, so that in addition to being able to identify this years release against a native, you could identify a native from the very occasional F1 steriles progeny release moth. In addition, she was looking to reduce or replace irradiation, in order to produce more vigorous moths which would improve the cost

effectiveness to the program. She would also get rid of the need to replace that irradiator every five or so years, which is a huge cost.

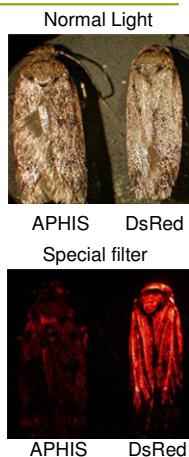
### Cost of Misidentification

- During suppression program cost of misidentification is an increase in sterile release or pheromone application
  - CDFA \$5-11K per misidentified moth in SJV
- As eradication progresses the cost is much higher - maintaining the eradication program one extra year is hundreds of thousands of dollars
- Once eradication complete then the cost is high
  - that of unnecessary treatment or quarantine

In early phases of eradication, the cost of misidentification may be \$5-11,000 according to Greg Simmons. As the eradication progresses, the cost becomes much higher. If you need to prolong eradication in one area due to misidentification, it could be hundreds of thousands of dollars.

### DsRed Marker

- Strains contain a fluorescent marker
  - Visible under special filter
  - Compatible with Calico red
  - PCR available as a third identifier
  - Still irradiated at 20 KR
- DNA introduced into APHIS strain
  - 3 years of field and rearing testing (CPHST)
  - Marker gives excellent performance after up to 2 weeks in the field or 2 months in the lab
  - Field/rearing performance similar to APHIS



The product tested contains a fluorescent marker. It is a non-toxic and completely safe protein from marine coral. It's commonly used in genetic industries and has never had any adverse effect. It is visible under a special filter, and compatible with Calico dye currently used in the program moth. There's a possibility and intention to use both. If there's any doubt, a molecular test called PCR provides an unambiguous answer. The DNA has been introduced into the moth. We expect to see is a good marker providing robust performance. CPHST has done three years of field and mass rearing tests. The marker has provided excellent performance up to two weeks in the field, and two weeks in lab, which is much longer than what is needed by the program.

## Oxitec License to Program

- ❑ License to use technology including third party IP that is included (e.g, DsRed protein)
  - ❑ Basic support package of up to 20 days of technical, regulatory, communications and back-up strain maintenance included
  - ❑ Additional training or PCR services for additional fee

Strain	\$/million moths	Annual minimum
DsRed	55	\$225,000
RIDL	100	\$400,000

Ernie Miller did a mass rearing trial in the main facility earlier this year, and found some differences, perhaps in reduction, in egg laying. There is a potential cost of up to \$132,000 that he may be able to overcome with process changes and adaptation.

They have spent a fair amount of their own resources over the years. Notice that if the program decides to advance this strain, some of the hurdles will still need to be overcome. They do have obligations to their investors, so she has made a proposal to Don which is completely consistent with proposals that they have made to him over the last two years.

Oxitec would grant a license to the program in order to use Oxitec's technology. As part of that, they would also include up to twenty days of support.

They have been working with these strains for a number of years, and are not just working in moths. They are working in fruit flies, mosquitoes, etc., all over the world and have a fair amount of expertise available to the program in order to ensure that this would be a successful switch over. Any additional services would be an extra. They propose \$55 per million moths, but with a minimum annual of \$225,000.

We really don't have the genetically sterile moths today. They are available in the lab. They haven't been field tested. It would be sensible to give a price for that as well, which is shown here at \$400,000 at the annual minimum with those additional benefits.

## Development of fluorescent viewing apparatus

- Traps can be screened by eye
- Easier and cheaper than with a fluorescence microscope
- Prototypes available – estimated cost @ \$6,500 per unit



Oxitec confidential

Leighton's covered this earlier today, concerning the need for any additional apparatus. In terms of viewing in the field, you will need equipment with a filter. The microscope they have here in the CPHST lab cost approximately \$20,000. It is useful to have something robust that you can view by eye that is easier and cheaper than a fluorescent microscope. We worked out some prototypes with an optics company and have an estimated cost of about \$6,500. Leighton's cost is \$8,000 so the cost for a gadget like this is in the same ballpark.

Dr. Staten asked if Ann would have a ballpark estimate for what one could expect per sample for PCR. Ann reported that she did provide that to Don, and does not remember the figure right now, but will provide it to Dr. Staten today. She advised that clearly, it is more sensible to do PCR in the U.S. because you want a quick turn around and we are in England. There may be an interim period where we would transfer the technology, perhaps in year one, but the goal would be to have a lab in the U.S.

Don asked if there were any other questions. There were not.

Don stated that BRS has not finished reviewing the plan. At one point, BRS had reviewed another permit where they discussed including extra monitoring around the facility. In that scenario however, it was for trying to keep two strains, and we are not sure what the BRS requirements may be for our permit request. At this point, we are unable to provide an accurate figure for the extra cost for the facility.

Dennis requested clarification and stated that first, you would irradiate these moths, but they are red sterile. Ann answered that they are not. Don advised that these group of moths just have a fluorescent protein, so they are not red sterile. Dennis verified that everything would continue to be irradiated. Ann Kramer agreed.

Jim Rudig restated that the permit could take up to twelve months. Is there going to be a requirement for an Environmental Impact Statement? Don Parker reported that an EIS is part of it and that is why they are doing a full sequence. We also provided other information including maps of the counties

where cotton production occurred, and the states that are participating in pink bollworm eradication. We did this in order to help expedite their work in looking at the data species in those areas.

Clyde asked what we are doing in working with the organic people in trying to get through this problem. Don reported that currently Keith Menche is trying to get them an appointment with a higher level person within the organic program in order to discuss this in more detail and find some resolution. It has been a standstill since the change in personnel, but we are continuing to work towards that.

Dr. Staten verified that we are going to continue and encourage pursuit towards the permit to release DS Red, whether it be this year or next. It is very important that we do that and go after the permits. If there is further work to be done, it can be done without a six-month lag and a huge number of man hours in trying to get just small permits through. Dr. Staten strongly encourages that we keep the pressure on by continuing to go after the permit for general release. Don advised that the permit request has been submitted by Ernie Miller, APHIS. They are continuing the permit process at this time. Ernie advised that the request is for a five-year permit.

Larry Antilla advised that in conjunction with Dr. Zink's presentation of data on the DS Red, they do have further analysis to perform. CPHST would be willing to pursue additional work if the industry so desired. Would it be appropriate at this point for the Committee to note that there is still interest in this and to continue to encourage CPHST to do whatever work is necessary. Dr. Staten asked if that would be the same resolution as last year. Don advised that the position that the Committee had taken last year was that the Committee urged the continued research and development of this technology. Don stated that if the Committee wanted to restate that position, now would be the appropriate time. Dr. Staten asked for and was provided with last years resolution. Don stated that if the Committee has not changed their position, that position stands. Dr. Staten agreed. Don stated that it could be reiterated if the Committee desires. Don reported that at the discussion with CPHST earlier this year, we did state to them that the position of the Action Committee was that we would encourage CPHST to continue the development of that work and that until the Action Committee adopted a different position, that would be the standing position.

*Dennis advised, last year Larry Turnbull moved that we continue DS Red research, research on transgenic insects, as well as the exploration of other marker technology, as exemplified by trace element analysis. Clyde Sharp seconded the motion. The motion passed unopposed. Dennis asked if there was any discussion.*

M/S/P              **Bob Hull asked if it would be possible to add something to the recommendation (referenced above) that includes a request that we work with the organic cotton industry, as well as to find a way to move forward with these advanced technologies and cooperate with the organic industry in a way that's complimentary for both parties. Greg Wuertz seconded the motion and the motion passed unopposed.**

## Post Eradication Issues

Dennis requested that Don report on Preparing for Future Phases. Dennis advised that this is probably a continuation, but not an end to the program. We will get to the point where we need to ratchet down where we need to know what type of funding levels we will need to stay in the monitoring phase as well

as which direction we will go as we get closer to the end. We have come so far, with such great results. As we near the end, this is a new project for all of us. In doing that, Dennis would like to appoint a Committee of Program Managers, along with Ernie Miller, and Bob Staten as Chairman. The purpose of the Committee would be to give us specific recommendations on funding levels and other avenues as to which direction we should go as we get to the end of this program and answer those questions. Dennis asked if they would accept the challenge. They did. Dennis added that he felt it was critical to where we are going to have some direction from our scientists. Dennis asked if there was any discussion. There was none. Concern was expressed over Bill Grefenstette's leaving. Dennis requested, and Bill agreed to be a part of it as long as he could assist.

Dennis asked if there was anything else that Committee members wanted to contribute or discuss that has not been gone over. There was none.

Dennis asked if members would like to have next year's meeting held here at the same place. Dennis thanked the translators, hotel staff and Don Parker. Dennis asked if there was anything else anyone wanted to go over. There were no comments.

**M/S/P**      **Clyde Sharp moved to adjourn. Bob Hull seconded the motion and the motion passed unopposed.**

## **Minimum Standards for Pink Bollworm Post-Eradication**

As recommended by the  
NCC Pink Bollworm Technical Advisory Committee  
And adopted by the  
NCC Pink Bollworm Action Committee  
October 28, 2009

## BACKGROUND

The Pink Bollworm Eradication Program began in the El Paso/Trans Pecos area of Texas (Phase I) and New Mexico (Phase I, II), and expanded into Arizona (Phase II, IIIA, and IIIB), and Southern California (phase IIIA and IIIB) areas below the historical suppression/containment zone of the San Joaquin Valley (see attached map).

As pink bollworm eradication moves toward completion, modifications in program activities must be addressed. The first step in this process involves a change in organizational focus namely, moving from: 1. active, to 2. confirmation of eradication, and ultimately, 3. post-eradication status. Thus pink bollworm moves from common to eradicated pest status. Concurrent with this change in status is the need to implement a system which identifies minimum standards for program management, while simultaneously providing the flexibility necessary to accommodate the diversity of growing conditions, risk exposure levels, management structures, funding levels, etc. across the region. This document provides the minimum standards for pink bollworm program operations within the attached map in areas identified as Phases I-IIIB. These minimum standards are for programs in confirmation of eradication and post-eradication status.

## I DEFINITION OF ERADICATION

An area may be considered for confirmation of eradication status after a year in which no evidence of a reproducing population is detected. Post-eradication status is obtained when an area has completed four consecutive years with no evidence of reproductive native populations.

## II MAPPING

Accurate knowledge of the location of cotton grown each year in all areas is essential to an effective surveillance system. Necessary reductions in funding and staffing will occur in programs which are in the latter categories of eradication as identified above. This will require long-term commitments to provide the information that is needed to locate and map cotton fields. Program personnel must be able to accurately map cotton fields with the limited resources that will be available. This may involve cooperative interaction with other agricultural organizations such as USDA, Farm Service Agency (FSA), where crop certification information may supplement program personnel data and mapping. At a minimum, program managers should have maps indicating all cotton fields the previous year to begin a program year, and should have updated the cotton field locations by first bloom.

### III TRAP DEPLOYMENT AND DENSITIES

Minimum standards are needed for pink bollworm programs in both confirmation and post eradication pheromone trap surveys. Program managers and each state's organization should be expected to comply with the established minimum standards.

Program managers may, at any time, adopt trapping protocols that are more rigorous than the established minimums.

Detection traps should be placed within the cotton-producing areas of each state.

A The following represents the trapping protocol:

- 1 Year one (confirmation of eradication)
  - a Trapping Density  
non-Bt – 1 trap/10 acres cotton  
Bt – 1 trap/40 acres cotton
  - b Trapping cycle – weekly
  - c Trapping duration – pinsquare to defoliation
- 2 Year two (confirmation of eradication) – If no native captures year one\*
  - a Trapping Density  
non-Bt – 1 trap/20 acres cotton  
Bt – 1 trap/160 acres cotton (1/4 section)
  - b Trapping cycle – weekly
  - c Trapping duration – pinsquare to defoliation
- 3 Year three (confirmation of eradication) – No native captures years one and two\*
  - a Trapping Density  
All cotton – 1 trap/160 acres cotton (1/4 section)
  - b Trapping cycle – bi-weekly (unless dust/dirt accumulation in trap is an issue)  
requiring weekly service for a period of time
  - c Trapping duration – pinsquare to defoliation
- 4 Year four (confirmation of eradication) and post-eradication\*
  - a Trapping Density  
All cotton – 1 trap/square mile with maximum separation of traps
  - b Trapping cycle – bi-weekly (unless dust/dirt accumulation in trap is an issue)
  - c Trapping duration – pinsquare to defoliation

\* If one or more natives are captured in the previous year, management procedures will begin again with Year One procedures. For example, if a native moth is captured in 2010, Year One procedures will be used in 2011. The size of the area returned to Year One procedures will be at least nine square miles encompassing the field where the native moth was captured.

## IV TRAPPING QUALITY CONTROL

Failure to operate an effective program of trapping quality control could pose a serious threat to areas in late stages of eradication. Weaknesses in quality control of trapping may result in expensive, large-scale pink bollworm infestations.

States in both confirmation and post-eradication status must maintain sufficient quality control of trapping. These programs must be in place to assure that traps are being inspected and serviced with fresh lure to assure that traps are being kept clean and functional. Programs must maintain a practice of routinely placing marked pink bollworm specimens in traps to ensure that program personnel find and report all captures. San Joaquin Valley quality control will be used as a model for these procedures.

## V DETECTION OUTREACH

It is strongly recommended that growers, Extension Agents, crop consultants, or other interested parties be encouraged to report pink bollworm damage or presence to program personnel as this can be critically important surveillance. Program managers for each state or region should develop protocols for responding to such reports. These protocols should include clearing reports through the official eradication program organization as with prescribed rapid response on the part of program personnel.

## \*\* Program Population Management Tools

Active eradication programs will utilize multiple approaches to achieve population suppression and eventual eradication. Program managers will employ 1) pheromone mating disruption treatments of cotton fields, 2) encourage maximum allowed use of two gene transgenic Bt cotton's, and 3) release of sterile moths (SIT) to reduce and eventually eradicate native pink bollworm populations. 4) Chemical applications will be utilized only when necessary to achieve native population control.

As programs transition from active eradication to confirmation of eradication and subsequently post eradication, programs shall continue monitoring for native populations while encouraging the maximum allowed use of two gene transgenic Bt cottons to provide a “safety-net” that will minimize the chance of large re-infestation establishment. Mitigation measures for confirmed native captures are described in this document under Minimum Standards When Pink Bollworms are Detected.

## VI IDENTIFICATION OF SUSPECT MOTHS

Following completion of pink bollworm eradication in various states or regions, program staff undergoes natural attrition. The capability to retain program staff to properly identify pink bollworm is extremely important. For the foreseeable future, programs must be able to correctly identify pink bollworm specimens whenever they occur in traps. Experience has shown that one of the best ways to maintain the identification capability of field staff is through the continual use of marked dead specimens placed in random traps across the program area. When these pink bollworm specimens are inconspicuously marked to confirm their intended use, and carefully inventoried to monitor their placement and recovery, they can be a valuable component of an effective surveillance program. To this end, maintenance of the sterile moths rearing facility albeit at a reduced level of production remains a reliable source of dead, marked pink bollworm specimens.

USDA-APHIS maintains a staff of trained “certified identifiers” for a wide range of exotic pests. After pink bollworm has been eradicated from this region of the United States and Mexico, it will be considered such, an “eradicated plant pest”.

USDA-APHIS should establish and maintain a system for certified identification of suspect pink bollworm submissions. Certified identifiers, including APHIS staff or others trained by them, should be available to respond to program needs. Multiple identifiers will be needed to provide redundancy, so that occasional leave or illness of personnel will not delay the confirmed identification of a trapped pink bollworm or other life forms. Until confirmation, suspect moths will be responded to on the basis of best possible local identifier.

Program managers will be provided certified identifiers contact information to notify when a suspect insect has been trapped or field-collected to arrange for timely identification. Electronic images of suspect moths will be e-mailed to the identifier for initial identification. USDA-APHIS will provide instructions to ensure that images obtained and submitted are of proper magnification and clarity, and that the specimen is positioned or dissected in a manner that allows proper identification.

Pre-addressed overnight mailing containers should be provided and used for shipping insect specimens to identifiers for confirmation. USDA-APHIS will provide these as part of its role in identification coordination. The need for rapid confirmation is critical because treatments require immediate response. In addition to adult captures, the presence of immature life forms (larvae or pupae) would also satisfy treatment criteria. USDA-APHIS will develop a manual to train employees on how to contact the identifiers, obtain electronic images of a specimen, e-mail the images for tentative identification, and process and ship the specimen for confirmation.

Systems must also be in place to verify that captured moths are native as opposed to sterile “escapes” from the rearing facility. In this regard, USDA-APHIS should also coordinate the development and transfer of this technology.

## VII MINIMUM STANDARDS WHEN PINK BOLLWORMS ARE DETECTED

When a suspect moth is trapped, a certified identifier must quickly confirm that it is a pink bollworm. If the capture is in or near non-Bt cotton, within 24 hours, trapping will be increased to at least the density used during the first full year of active eradication in that area (1-10 Acres nonBt: 1-40 Acres Bt). Traps within this intensively trapped field of find and adjacent fields will be inspected daily for at least three days, then weekly until crop termination.

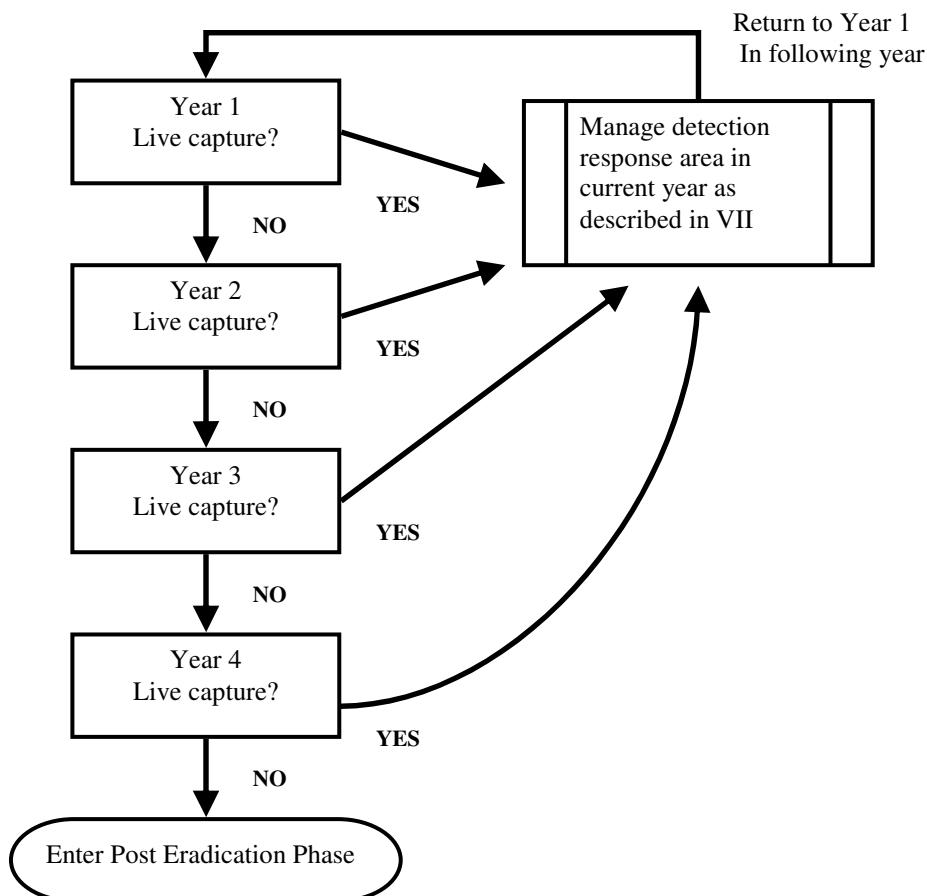
Capture of 1 or more native moths will trigger at minimum the following actions:

- 1 In the field where the capture occurred, steriles will be released within 48 hours.
  - 2 The 9 square mile area, with a capture at it's center, will be a "detection response area". The following actions will be taken, at a minimum, in all response detection areas:
    - a. Sterile releases
    - b. Insecticide / Pheromone treatments

c. If a and b are not completed during the season when captured, then Pheromone treatments and sterile release actions will be initiated the following year on this detection response area..

The minimum response treatment for a field in which one confirmed native pink bollworm moth is captured is a release in the capture field within 48-hours. Within seven days, steriles should be released over the nine square mile area with the capture field as the center. The sterile moth release rate should be the same as the individual area's original non-Bt eradication program rate. Releases will continue until native captures zero out for a minimum of eighty days. Captures occurring equal to or less than 80 days before a crop is completely defoliated will require resumption of release for a minimum of 80 days post-pin head square the following season.

In effect, this produces the following:



Presence of larvae or captures of more than one adult suggesting existence of a reproductive population will immediately trigger at least two spray treatments separated by 5-7 days. Each spray treatment will include a pheromone and conventional insecticide component (or acceptable alternative for organic production). After two or more spray treatments are completed, a high rate pheromone rope system will be applied on the infested field and all non-Bt cotton within a one-mile radius of the infestation. Additionally, SIT releases will be maintained on all cotton within the nine square miles containing the infested epicenter season long until defoliation. In this case, in the following season, to confirm eradication, all cotton fields in the nine square mile area will be trapped at eradication program levels season long with SIT releases season long. Any evidence of over-wintering population survival would also trigger high rate pheromone treatments on all non-Bt cotton within the nine square mile area.

#### Year Four and Beyond – Post-Eradication

Single isolated confirmed pink bollworm captures in or near non-Bt cotton will trigger SIT releases at non-Bt rate on all cotton within a one-mile radius of the capture epicenter. If reproduction is indicated (larvae or generational captures), year one protocols will be implemented.

### VIII SUPPLIES

Program managers and APHIS staff will maintain regular contract with suppliers of pheromone for traps and mating disruption, delta traps, and stakes to ensure that adequate supplies of these critical program components are available each year. Also needed are sources for elisa test kits, and sterile moth strip test supplies. It will also be necessary to maintain the sterile moth production facility for a multi-year period with the capacity to maintain production of at least 500,000 sterile moths per day and the ability to expand as needed.

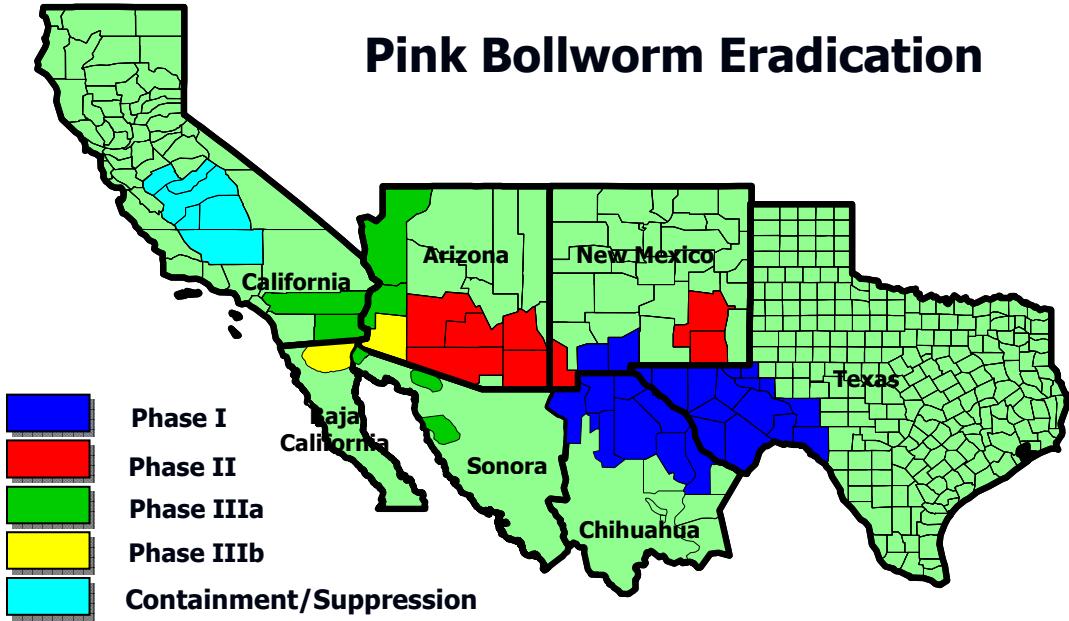
### IX POST ERADICATION FUNDING

Continued programmatic review is of the utmost importance. This review will be needed to keep all post-eradication activities at critical levels. It is anticipated that some level of cost share between states and USDA-APHIS will be necessary to ensure the maintenance of minimum detection and response standards post-eradication. Each state or entity should establish and maintain a contingency fund at a level of sufficiency to be able to address the immediate response costs associated with pink bollworm reintroductions. Further details are beyond the scope or authority of the Technical Advisory Committee. Reserve funding should be based on reaction to one epicenter and the subsequent nine square mile release of sterile moths and treat with pheromone.

#### Assumption:

9 square miles at 50% cotton (non-Bt) = 2,880 acres  
- at 400 steriles/day/acre = 1,150,000 = \$16,000/week  
- for 12 week period = \$192,000  
- release cost 1 hour/day x 80 at \$350/hour = \$28,000  
- Rope on 320 acres x \$25 = \$8,000  
Traps, stakes, lure, and trapper(s) = \$45,000  
Total = \$323,000

Attachment: Map indicating the areas of the Pink Bollworm Eradication Program.



## Resolution Summary / Recommendations

M/S/P	Bobby Hull motioned to accept the 2008 NCC PBW Action Committee minutes as written. Greg Wuertz seconded the motion and the motion passed unopposed.....	3
M/S/T	Larry Turnbough moved to accept Bill Grefenstette's allocation of funds as presented in his report. Greg Wuertz seconded the motion. Clyde Sharp asked if we could post-pone the decision until we hear all of the reports. Chairman Palmer agreed.....	14
	<i>The El Paso debt issue was tabled with the intention of reconvening after APHIS has an exact budgetary figure.....</i>	63

M/S/P Clyde Sharp moved to accept the PBW TAC PAC recommendation to support the new USDA standards for SIT release as presented by Dr. Staten. Greg Wuertz seconded the motion. The motion passed unopposed..... 65

M/S/P Clyde Sharp moved to accept the PBW Minimum Standards Document in it's present form as presented by Dr. Staten (pgs. 66 - 72). Larry Turnbough seconded the motion. The motion passed unopposed.....72

“....The question before the Committee was ***whether or not we were ready to make a recommendation that it be moved into the Rearing Facility.*** That is a very large decision....”

“....No recommendations were forthcoming. ***The decision was tabled pending another meeting for the Action Committee when all of the data is available.*** There is no action at this time that the Board needs to take at this time”.....72

M/S/P Bob Hull moved to accept the recommendation of the PBW TAC concerning the initial 2010 pink bollworm distribution and release rates with the understanding that the figures may change slightly due to acreage variations. Greg Wuertz seconded the motion and the motion passed unopposed.....73

*Dennis advised, last year Larry Turnbull moved that we continue DS Red research, research on transgenic insects, as well as the exploration of other marker technology, as exemplified by trace element analysis. Clyde Sharp seconded the motion. The motion passed unopposed. Dennis asked if there was any discussion.*

M/S/P Bob Hull asked if it would be possible to add something to the past year's recommendation (*referenced above*) that includes a request that we work with the organic cotton industry, as well as to find a way to move forward with these advanced technologies and cooperate with the organic industry in a way that's complimentary for both parties. Greg Wuertz seconded the motion and the motion passed unopposed..... 79

**M/S/P** Clyde Sharp moved to adjourn. Bob Hull seconded the motion and the motion passed unopposed..... 80