

Questions and Answers: Boll Weevil Eradication

The cotton boll weevil, (*Anthonomus grandis* Boheman), moved into the United States from Mexico in the 1890s and has since cost the cotton industry more than \$23 billion in economic losses. A trial program that began in 1978 in Virginia and North Carolina proved that the country's #1 cotton pest could be eradicated on a large scale through coordinated regional efforts.

The Boll Weevil Eradication Program is a cooperative effort between the U.S. Department of Agriculture (USDA) and State officials, who work with cotton growers to eradicate the boll weevil, in incremental stages, from the United States. To date, the boll weevil has been eradicated from more than 98 percent of the U.S. cotton acreage in 15 Southeastern and Southwestern States, as well as significant portions of 3 others. The pest has also been eradicated in several parts of northern Mexico.

Q. What is the Boll Weevil Eradication Program?

A. As mentioned above, boll weevil eradication began with a successful trial program in North Carolina and southern Virginia in 1978–80. Since then, this program has expanded to include cotton acreage in Alabama, Arizona, Arkansas, California, Florida, Georgia, Kansas, Louisiana, Mississippi, Missouri, New Mexico, Oklahoma, South Carolina, Tennessee, Texas, and parts of northern Mexico near the U.S. border. All of the 15 million acres of U.S. cotton are involved in the program, and the weevil has been eradicated in 98 percent of that production area.

Q. How does USDA work with States and industry to address the boll weevil?

A. Authorization to operate the program locally usually begins through State legislation and grower-approved referendums. Most States have a boll weevil eradication foundation whose members include elected or appointed cotton producers and State agricultural officials. USDA's Animal and Plant Health Inspection Service (APHIS) cooperates by providing technical support and limited funding. Initially, in each new State, program managers carry out eradication activities to eliminate the boll weevil and then conduct a post-eradication phase to prevent reinfestation.

Q. Where is the program active?

A. Boll weevil is now eradicated from all cotton-producing States, except for a part of Texas. Eradication work is ongoing in Texas' Lower Rio Grande Valley. We expect that the two zones adjacent to the Lower Rio Grande Valley will be weevil-free and efforts will be made to verify eradication starting in spring 2013. These areas, however, will remain susceptible to reinfestation from boll weevil migration and/or storm influences from the Lower Rio Grande Valley and Tamaulipas, Mexico.

Q. How is the boll weevil eradicated?

A. The program uses three main techniques: pheromone traps to detect the weevil's presence, cultural practices (i.e., habitat modification) to decrease its food supply, and chemical treatments to reduce weevil populations. In most areas, in addition to the cultural controls, the program begins with a series of treatments in the fall. In subsequent years, traps are placed around all cotton fields in the spring as cotton is planted. Control operations begin about 5 or 6 weeks later and are based on trap captures. Continuous, season-long trapping pinpoints areas of infestation and triggers necessary treatments until all weevils are gone. This process usually takes about 4 to 5 years in each area.

Q. What chemicals are used?

A. Malathion is the primary pesticide used to eradicate the boll weevil. It is applied to cotton fields at ultra-low-volume rates of 10 to 16 ounces (oz) per acre (43,560 ft²) from aircraft. That's like taking a can of soda and evenly distributing its contents over a football field. For fields that cannot be treated aerially, the program uses high-clearance tractors and truck-mounted sprayers. The application rate for ground equipment is approximately 16 oz/acre.

Q. How many chemical treatments does the program apply in each area?

A. The program applies insecticide only in infested cotton fields. In most new program areas, treatments begin in the late summer or early fall. Infested fields generally receive an average of seven applications during this initial treatment period. Cooperators monitor the application process, especially around environmentally sensitive areas (i.e., schools, hospitals, churches, and housing developments). After the initial fall applications, the program applies treatments only where we detect weevils through the survey process; these treatments take place before

the cotton blooms up until harvest. The number of fields requiring treatment in later years usually goes down dramatically until the area is weevil-free.

Q. How do boll weevil eradication partners determine which aerial applicators to hire?

A. The program's grower organizations, including State regulatory officials, solicit bids for the aerial application of insecticide. Bids are reviewed by program managers, and contracts are awarded by the organizations on a competitive basis. All applicators must comply with State and Federal regulations and the requirements for certification.

Q. Who actually runs the program?

A. The following organizations are responsible for daily program operations on a statewide basis:

- Arizona Cotton Pest Research and Protection Council
- Arkansas Boll Weevil Eradication Foundation
- Georgia Boll Weevil Eradication Foundation
- Louisiana Boll Weevil Eradication Commission
- Oklahoma Boll Weevil Eradication Organization
- Texas Boll Weevil Eradication Foundation
- Southeastern Boll Weevil Eradication Foundation, Inc. (handles operations in Alabama, Florida, Mississippi, Missouri, North Carolina, South Carolina, Tennessee, and Virginia)

In New Mexico, two organizations are active participants:

- South Central New Mexico Cotton Boll Weevil Control Committee
- Pecos Valley Cotton Boll Weevil Control Committee

APHIS provides technical support and limited Federal funds for boll weevil eradication efforts. The State departments of agriculture provide regulatory support, and USDA's National Institute of Food and Agriculture helps distribute program information and offers valuable guidance on crop production.

Q. How does the program expand into new areas?

A. Expanding the program has usually required cotton producers within the area of proposed expansion to pass a referendum with at least a two-thirds majority. State regulatory agencies are authorized under State laws to hold such referenda. Once a referendum

passes, participation becomes mandatory according to State law. Without mandatory participation, eradication could not be accomplished.

Q. For growers, what are the benefits of participating in the program?

A. Growers benefit in two main ways: (1) by eliminating all crop damage and losses caused by the boll weevil, and (2) by significantly reducing the cost of production. Once the weevil is gone from an area, growers typically see an increase in cotton yield of at least 10 percent—and significantly more in some areas.

Moreover, as weevil populations become smaller, insects that prey on other cotton pests rebound. This further reduces the need to use pesticides on cotton crops and brings even more cost savings to the grower. After eradication, the grower's cost of production is significantly lower, yield is often greater, land value increases, and integrated control programs for other cotton pests become much more feasible.

Q. How does the general public benefit from boll weevil eradication?

A. As the weevil and its damage are eliminated from an area, the local cotton industry becomes more stable, and cotton acreage tends to increase. Reduced production costs make cotton more profitable, allowing growers to spend more in the local community for equipment, goods, and services. In Georgia, for instance, the economic benefits of boll weevil eradication have been dramatic, with average gross crop revenues increasing from \$70 million per year prior to eradication to \$400 million per year afterwards. This increased profitability results in stronger rural, and ultimately statewide, economies.

Q. Are there long-term environmental benefits from eradicating the boll weevil?

A. Yes. In fact, the long-term environmental benefits that come from eradicating the boll weevil are substantial. Once an area is weevil-free, there is significantly less need for insecticides—and in many cases, almost no need at all. Cotton growers experience a 40- to 100-percent reduction in their overall use of insecticides after weevil eradication. In addition, a weevil-free environment allows growers to make full use of beneficial insects in developing their long-term integrated pest-management strategies.

Q. How long will it take to complete the program?

A. Areawide boll weevil eradication efforts began in 1983. Now, only one zone in Texas remains heavily involved in eradication efforts. The two adjacent zones entered the confirmation phase (i.e., surveys

are conducted to make sure all weevil populations are eliminated) in spring 2013. The Lower Rio Grande Valley will act as a buffer zone between Mexico and the weevil-free cotton-producing States while Mexican authorities are working to eliminate the weevil from Tamaulipas, Mexico. Monitoring and treatment activities will be ongoing in this buffer zone to reduce weevil populations in the Lower Rio Grande Valley and prevent weevils from moving back into now weevil-free areas in Texas and the Cotton Belt. APHIS expects nationwide boll weevil eradication in 2014, with the exception of the buffer zone.

Q. Who pays for the program?

A. Boll weevil eradication is a cooperative effort. Growers typically pay at least 70 percent of the program's cost, with APHIS paying for the remaining 30 percent. In some areas, State contributions have offset the growers' share by more than 50 percent. Growers contribute their share as an assessment, based either on the number of acres grown or cotton bales produced. In addition to APHIS' contributions to the program, USDA's Farm Service Agency has provided critical loans to grower organizations involved in eradication. These loans allow growers to spread the program cost over several years, making their annual expenses more affordable.

Q. How do we keep the weevil from returning?

A. In the United States, seed cotton, trash from cotton gins, and used cotton-harvesting equipment are inspected, treated if necessary, and certified "pest-free" before they can be moved into or through weevil-free areas. These measures help keep boll weevils from being transported back into areas where they have been eliminated. In addition, planting noncommercial cotton (ornamental or experimental) is restricted in the active eradication phase. During the post-eradication phase, trapping continues around cotton fields to detect any reinfestation. This way, treatment can be directly applied to the localized area if survey staff find weevils.

Internationally, APHIS continues cooperating with our counterparts in Mexico to carry out the eradication program in adjacent cotton-growing areas of northern Mexico. This work offers more long-term protection against weevil reinfestation in the United States.

Q. What are the post-eradication costs?

A. In the 10 States where eradication is completed, typical post-eradication costs range from \$5 to \$10 per acre initially and then level out to about \$3 per acre per year. Eventually, as we achieve nationwide eradication, these costs will decline significantly. This is

because the risk of reintroduction will decrease, which will, in turn, reduce the need for trapping and other preventive work.

Q. For how long will Federal funds support the program?

A. Active eradication will continue in Texas through 2013, with nationwide eradication anticipated in 2014 (except for the Lower Rio Grande Valley buffer zone). While we expect to reduce eradication activity in the buffer zone, the program will need to continue heavy monitoring and preventive treatments to protect against reintroduction of boll weevils into the Cotton Belt States.

Q. How will the eradication program affect other cotton insects?

A. The boll weevil is considered the key pest in cotton production because the insecticides traditionally used early in the season to control weevils also eliminate many beneficial insects. As the eradication effort removes the need for these early season insecticide applications, the good insects—the ones that control cotton pests, such as bollworms, budworms, plant bugs, and aphids—can increase in number and fulfill their role in the ecosystem. Growers in weevil-free areas can now delay or even eliminate early season applications, reduce pesticide rates, use alternative pesticides or genetically engineered cotton varieties, or lengthen the intervals between applications and lower their operating costs while controlling any remaining cotton pests.

Q. Who can answer additional questions about the program?

A. For more information about the program, contact the following offices:

- Arizona Cotton Research and Protection Council, (602) 438-0059
- Arkansas Boll Weevil Eradication Foundation, (501) 224-1533
- Georgia Boll Weevil Eradication Foundation, (800) 269-9926
- Louisiana Boll Weevil Eradication Commission, (225) 952-8105
- Oklahoma Boll Weevil Eradication Organization, (580) 726-4280
- Pecos Valley Cotton Boll Weevil Control Committee (New Mexico), (325) 672-2800

- South Central New Mexico Cotton Boll Weevil Control Committee, (575) 541-0584
- Southeastern Boll Weevil Eradication Foundation, Inc. (AL, FL, MO, MS, NC, SC, TN, VA), (334) 283-4106
- Texas Boll Weevil Eradication Foundation (Texas and eastern New Mexico), (800) 687-1212

In addition, you can reach APHIS' National Cotton Pests Manager at (919) 855-7397.

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