

STATUS OF BOLL WEEVIL ERADICATION IN TEXAS
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Abstract

The Texas Boll Weevil Eradication program completed a successful year in 2001 with more than 5.8 million acres in 11 active zones participating in the program. Support from growers, grower organizations, Texas and federal legislators, USDA research and implementation agencies and Texas Agricultural research and education agencies, and the Texas Department of Agriculture has grown stronger with continued program success. A referendum will be held in the Upper Coastal Bend (UCB) zone in January 2002. Passage of referendum will authorize the initiation of the diapause phase of boll weevil eradication on 270,000 cotton acres in this zone in the summer of 2002.

Introduction

During the twentieth century, boll weevil has been responsible for more dollars in control costs and crop losses than any other pest of Texas and US cotton. The National Cotton Council estimates that the boll weevil has cost US cotton producers more than \$13 billion (NCC, 1994) since it entered the US about 1892 (Hunter and Hinds, 1905). Following successful experiences with a cooperative boll weevil eradication experiment in Mississippi, Louisiana and Alabama in 1971 and a successful three-year boll weevil eradication trial in North Carolina and Virginia 1977-80, growers requested program expansion in other regions of the US beginning in 1983 (El-Lissy, 1998).

Texas cotton growers began participating in boll weevil eradication in 1994 on approximately 220,000 acres in the Southern Rolling Plains (SRP) zone. In 1996 eradication activities began on approximately 500,000 acres of cotton in the South Texas/Winter Garden (ST/WG) zone and about 500,000 acres in the Rolling Plains Central (RPC) zone. In 1997, the program was challenged and halted by the Texas Supreme Court action, and a new law was passed which allowed the program to be restarted (El-Lissy, 1998).

In 1999 boll weevil eradication was initiated in five new zones, adding an additional 2.3 million acres to the program. Added were the Western High Plains (WHP) zone, 750,000 acres; the Northwest Plains (NWP) zone, 450,000 acres; the El Paso/Trans Pecos (EP/TP) zone, 65,000 acres; the Permian Basin (PB) zone, 720,000 acres; and the Northern Rolling Plains (NRP) zone, 300,000 acres (El-Lissy, 2000). In 2000 full season programs were conducted on approximately 4.2 million cotton acres in 8 active zones.

Referenda held during 2000 added 3 new zones. Growers in the Southern Blacklands (SBL) zone, the Northern High Plains (NHP) zone, and the Southern High Plains/Caprock (SHPC) zone approved the program. Program referenda were passed in the NHP by 75.5 percent positive votes among qualified voters in October 2000. In the SHPC the referendum passed by 80.4 percent of the voters in November 2000. The program referendum in the SBL had been previously passed in 1999. The assessment referendum held in April 2000 passed by 70.8 percent. The three new zones began the diapause phase of the program in 2001. In the NHP zone the program was conducted on 556,006 acres, in the SBL zone the program began on 91,770 acres, and in the SHPC the program was started on 1,230,590 acres.

A retention referendum was held in October 2001 to allow growers and landowners to choose whether or not to continue the eradication program in the ST/WG zone. The referendum passed with over 87 percent of the votes in favor of continuing the program. A referendum will be held in January 2002 to determine whether or not the 270,000 acres of cotton in the Upper Coastal Bend (UCB) zone will enter the diapause phase of eradication in 2002.

Methods

El-Lissy et al. (1997) provided a detailed description of the boll weevil eradication methods used in the Texas program. Modifications have been made in data management systems and in the management of secondary pests.

Discussion

The boll weevil eradication program in Texas has made excellent progress toward the goal of complete elimination of this damaging pest during recent years. Evidence of this success can be seen in every active boll weevil eradication zone. In the case of SRP weevils are no longer present (Table 1). In 2000 SRP trap data, along with data collected by the Texas Agricultural Extension Service, and information from grower and consultant testimonials was submitted to the Honorable Susan Combs, Commissioner of the Texas Department of Agriculture in a request that the zone be declared functionally eradicated. After reviewing data, Commissioner Combs formally declared the SRP functionally eradicated on September 20, 2000. No weevils were caught in 395,736 trap inspections in the SRP in 2001. Because no weevils were caught and no insecticide treatments were made, the zone may be declared eradicated by the Texas Agriculture Commissioner in 2002.

Similarly, excellent progress is also being made in the RPC zone (Table 1). In 2001 a total of 1,470 weevils were caught from the 2,754,692 trap inspections, an average of 0.000534 weevils per trap per week. This is a reduction of 98 percent from the 0.027844 weevils per trap per week caught in 2000 and a reduction of greater than 99.99 percent from weevil trap catches in 1996 at the beginning of the program in the RPC. The RPC zone is eligible and will be considered by Commissioner Combs to be declared functionally eradicated in the spring of 2002. A declaration of functional eradication indicates there is no evidence of reproducing boll weevil populations in the zone. As a result of the substantial reduction in boll weevil trap catches in the RPC, a reduction in treated acres was seen in the zone in 2001. Only 0.15 applications were made per acre of cotton in the zone in 2001 (Table 2). This represents a reduction of over 90 percent in acreage sprayed compared with 2000.

In the ST/WG zone, reductions in weevil trap catches are also being seen (Table 1). Early harvest in 2000 combined with an aggressive 2001 program provided substantial population suppression. The program was enhanced by a stalk destruction rebate which helped assure timely stalk destruction and complete access to all fields. These factors helped bring boll weevil numbers to levels not seen in the area since the weevil entered South Texas about 1892. On average, only 0.16 weevils were caught per trap inspected and a total of 1,696,319 traps were inspected. Weevils caught per trap inspected dropped over 86 percent from 2000 and 98.8 percent from 1996, the year the program began in the ST/WG zone. ST/WG treatment data are shown in Table 2. In 2001, 4.8 treatments were applied per acre of cotton in the zone, a reduction of over 40 percent from 2000.

In the EP/TP zone, boll weevil numbers were relatively low in 1999 at the inception of the program. Numbers of weevils trapped have been reduced substantially in 2001 (Table 1). Only 0.000316 weevils were caught per trap inspection in 2001, a reduction of 96.6 percent from 2000. Compared with 1999, the year the program began, this represents a reduction of 99.8 percent. Weevil trap catches were low enough in 2001 to qualify the zone to be considered by Commissioner Combs to be declared functionally eradicated. In 2001 only 6,735 acres were treated for boll weevil in the EP/TP zone, an average of 0.14 applications per acre of cotton (Table 2). This is a reduction of over 85 percent from acreage treated in 2000.

Progress in 2001 in the NRP zone was enhanced by the early cut-out and harvest of the 2000 crop and the cold winter conditions in the winter of 2000-01. These factors along with the aggressive program conducted in the NRP contributed to the impressive boll weevil population reductions seen in 2001 (Table 1). In the NRP zone boll weevil captures per trap inspection decreased to 0.056 in 2001. This is a 97.6 percent reduction from trap catches in 2000 and a 99.7 percent reduction from trap captures when the program began in 1999. Fewer treatments were required in the NRP zone than in earlier years of the program. Only 2.22 treatments were applied per acre in the zone (Table 2). This represents a reduction in treatments of 76 percent from acre treatments applied in 2000.

As in the NRP, the program in the NWP was also aided by the hard winter of 2000-01. The initiation of eradication programs in New Mexico to the west, SHPC to the south and NHP to the east contributed substantially to progress in the NWP by curtailing weevil migration into the zone. These factors along with an aggressive program in the NWP led to impressive boll weevil population reductions in the zone. Year-long average weevil trap catches were lowered to 0.015 weevils per trap inspection, a 98.8 percent reduction from 2000 and 99.8 percent below the average trap catch in 1999, the year the program started (Table 1). Treatments in the NWP are shown in Table 2. In 2001, an average of 1.57 treatments were applied per acre of cotton in the zone. This is a reduction of 79 percent from treatments applied in 2000.

Program progress in the PB zone has been exceptional. The effects of a cold 2000-01 winter and continued drought in the zone combined with an aggressive eradication effort to produce notable reductions in boll weevil trap catches again in 2001. In the third year of the program, traps in the zone averaged only 0.0097 weevils per trap inspection (Table 1). This is a reduction of 97.7 percent in weevil numbers from 2000, and a reduction of 99.9 percent compared with the diapause control phase of the program in 1999. Treatment data (Table 2) shows 0.52 treatments were applied per acre of cotton in the PB zone in 2001. This is a 90 percent reduction in treatments as compared with 2000.

Excellent program progress was made in the WHP zone in 2001 as well. An average of only 0.021 weevils were caught per trap inspection, a 96.9 percent reduction from 2000 and a 99.9 percent reduction from the average caught in the diapause control phase of the program in 1999 (Table 1). WHP zone treatment data are shown in Table 2. In 2001 1.41 treatments were applied per acre of cotton in the zone, a reduction of over 77 percent from the number of acres treated in 2000.

The NHP zone began diapause control treatments in the week of September 3, 2001. The fall peak in the weevil trap captures occurred the second week after treatments had begun. The average number of weevils captured per trap inspection during the diapause phase was 0.89. Because of the later than normal freeze, 9.59 treatments were applied per acre in the zone.

Diapause treatments were initiated in the SBL zone in late July 2001. Weevil populations continued to increase in the SBL until the week ending October 8, 2001, ten weeks after the initiation of treatments. An average of 13.68 weevils were captured per trap inspected during the diapause phase in the SBL. Cotton acreage in the zone was treated an average of 7.86 times.

The SHPC zone was the largest of the Texas boll weevil eradication zones in 2001 with over 1.2 million acres planted. However, only 854,224 acres remained when diapause treatments began the week of September 3. Over 375,000 acres were destroyed by hail storms and dry weather. Probably the most significant program challenge in the SHPC zone in 2001 was to persuade growers to completely destroy the remaining cotton plants on failed cotton acres before program treatments began. This effort was successful as only 13,500 acres remained when treatments began. Despite the fact that assessments were not collected on the acres failed before treatments began, a net benefit of approximately \$9 million resulted from not having to treat failed but incompletely destroyed cotton acres in the SHPC zone. The peak boll weevil capture in SHPC occurred the first week treatments were made. An average of only 1.16 weevils were captured per trap inspected. Because of the successful effort to destroy cotton plants on failed acres, an average of only 6.83 applications were made per acre in the zone. This was remarkable since fields in the zone required treatment three weeks longer than expected due to the late arrival of the first killing freeze.

Overall, excellent progress was made in all zones toward the goal of elimination of the boll weevil from Texas cotton.

Summary

The Texas Boll Weevil Eradication Program was able to build on the successful programs of past years with another productive campaign in 2001. Our success was possible because of excellent program guidance from the Board of Directors and Zone Steering/Advisory Committees; solid technical guidance from the Technical Advisory Committee; and prudent oversight from the Texas Dept. of Agriculture. In all active zones, 5.8 million acres of cotton, progress exceeded our expectations in 2001.

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