TEXAS BOLL WEEVIL ERADICATION UPDATE

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Abstract

The Texas Boll Weevil Eradication program completed a successful year in 2000 with over 4.2 million acres in 8 active zones participating in the project. Support from growers, grower organizations, Texas and federal legislators, USDA research and implementation agencies and Texas Agricultural research, education and regulatory agencies has grown stronger with continued program success. Passage of referenda in 3 new zones sets the stage for program expansion to approximately 6 million acres in 2001.

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 et. al., 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. Program expansion in 1996 brought in two new zones. Eradication activities began that year 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 re-started (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 the program was conducted on approximately 4.2 million cotton acres in 8 active zones.

Referenda held during 2000 added 3 new zones. Growers in the Southern Blackland (SBL) Zone, 120,000 acres; Northern High Plains (NHP) Zone, 600,000 acres; and Southern High Plains/Caprock (SHP/C) Zone, 1,290,000 acres approved the program and are slated to start the diapause phase of eradication in 2001. Program referenda were passed in the NHP by 75.5% in October 2000 and in the SHP/C by 80.4% 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%. Program expansion in 2001 will bring the total acreage in the Texas Boll Weevil Eradication Program to over 6 million acres in 11 active zones.

Discussion

The Texas Boll Weevil Eradication Program has brought about strong reductions in boll weevil infestation in every active zone. This fact is supported by our own data (Table 1), data gathered by the Texas Agricultural Extension Service and by grower and consultant testimonial. Susan Combs, Commissioner of the Texas Department of Agriculture, after reviewing the SRP data, formally declared theSRP functionally eradicated in September 2000.

Progress in the SRP is notable. The average number of weevils captured per trap inspected was 0.000091 in 2000 (Table 1). Represented another way, 10,989 traps were checked for each weevil that was captured. Forty-nine weevils were captured from the 365,143 cotton acres in the zone in 2000. Of these, 44 were caught on the west side of the zone within 60 miles of cotton not in eradication. Four of the remaining 5 weevils were trapped from areas where they could have easily been moved into the zone on equipment, motor vehicles or trains. One weevil was trapped the second week of June in an area remote from cotton not in eradication and not near obvious sources of re-infestation by human activities. This lone weevil may have survived the winter in the SRP. No evidence of boll weevil reproduction was detected in the SRP during 2000.

ULV malathion treatments in the SRP are shown in Table 2. In 2000 the cumulative total acres treated was 4,184. About one acre was treated for every 100 acres of cotton in the zone.

Excellent progress is also being made in the RPC zone (Table 1). A total of 71,393 weevils were caught from the 789,337 acres in the zone in 2000 for an average of 0.029 weevils per trap inspection. This represents a 99.8% reduction from weevil populations trapped in 1996.

Treated acres in the RPC zone are beginning to decline. Only 1.54 applications were made this year per acre of cotton in the zone (Table 2).

In the ST/WG zone, progress is also being made (Table 1). A hurricane in the fall of 1999, the mild winter of 1999-2000 and wet spring weather in the spring of 2000 impeded program progress in 2000, but in spite of these adversities, weevil numbers continue to be reduced. In 2000, 1.23 weevils were caught per trap inspection in the ST/WG zone, a 91% reduction from 1996 and a 93% reduction from the program restart level of 1997.

ST/WG treatment data are shown in Table 2. In 2000, 8.09 treatments were applied per acre of cotton in the zone.

In the EP/TP zone, boll weevil numbers were relatively low in 1999 at the inception of the program. Numbers of weevil trapped have been reduced very strongly in 2000 (Table 1). Only 0.0098 weevils were caught this year per trap inspection, a reduction of over 96% from levels caught in the zone last year.

Treatments in the EP/TP zone are already beginning to decline (Table 2). Only 1.38 applications were made per acre of cotton in the zone in 2000.

Progress in 2000 in the NRP zone was impeded by several factors. Program success was negatively affected by mild 1999-2000 winter conditions, curtailed trapping activities due to wet weather at pinhead square stage and migration of weevils in the fall from cotton not in eradication . In spite of the set backs, the program made good progress this year (Table 1). The average number of weevils per trap inspected was 2.30 in 2000, a reduction of 88% compared with the population levels observed during the diapause control phase of the program in 1999.

Treatment in the NRP zone was aggressive with 9.61 treatments per acre of cotton in the zone in 2000 (Table 2).

The program in the NWP suffered from the mild winter, wet spring and migration problems that plagued the NRP. In the NWP boll weevil migration into the zone was especially problematic in 2000. The zone was surrounded on three sides by cotton not in eradication and suffered more than any other Texas zone from boll weevil migration. In-spite of these

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concerns, average weevil captures for the year were reduced to 1.17 per trap inspection, a reduction of 84% compared with capture levels in the diapause control phase of the program in 1999 (Table 1).

Treatments in the NWP are shown in Table 2. In 2000, an average of 7.5 treatments were applied per acre of cotton in the zone. This was up slightly from treatments applied in the 1999 diapause control phase.

Progress in the PB zone was impressive in 2000. Traps in the zone averaged only 0.17 weevils per trap inspection (Table 1). This is a reduction of over 98% in weevil numbers from levels trapped in the diapause control phase of the program in 1999.

Treatment data (Table 2) shows 5.19 treatments were applied per acre of cotton in the PB zone in 2000. This is a reduction in treatments from levels used in the diapause control phase of the program in 1999.

Impressive program progress was also made in the WHP zone in 2000. Only 0.68 weevils were caught per trap inspection, a reduction of over 96% from levels captured in the diapause control phase of the program in 1999 (Table 1).

WHP zone treatment data are shown in Table 2. The data show that 7.26 cumulative treatments were applied per acre of cotton in the zone in 2000, a slight reduction from the numbers of treatments applied during the diapause control phase of the program in 1999.

Several serious concerns were encountered in Texas boll weevil eradication zones in 2000. Farmers in some zones do not allow eradication personnel full vehicular access to all sides of cotton fields. This allows weevil infestations to go undetected and untreated gravely affecting program progress.

Mild winter weather and a hot dry summer provided favorable conditions for beet armyworm population development. Out breaks occurred during the 2000 growing season in areas of the Texas High Plains and Rolling Plains. Outbreaks were observed before eradication applications were made and they occurred in cotton fields both within eradication zones and outside eradication zones. Program personnel responded by increasing mid-season trap triggers. The goal was to limit applications in work units in which outbreaks were occurring such that not more than 10-15% of the acreage in these areas was treated. This was done to promote the development of populations of the natural enemies of beet armyworms. Care was taken to keep pressure on developing boll weevil populations while reducing malathion use during mid-season so that natural enemy populations might grow.

Supplies of malathion were short in 2000 due to production problems encountered by one of the manufacturers. The problem was solved by delivering malathion via airfreight and by carefully managing the distribution of the limited supply.

Summary

The Texas Boll Weevil Eradication Program with program guidance from our Board of Directors and zone Steering Committees; technical guidance from our Technical Advisory Committee and oversight from the Texas Department of Agriculture was able to build on the successful campaigns of past years with another successful campaign this year. In general, program progress met or exceeded our expectations on the 4.2 million acres of cotton under eradication in 2000.

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Table 1. Annual average weevils caught per trap per week in active Texas boll weevil eradication zones.

Zone	1995	1996	1997	1998	1999	2000
SRP	7.87	2.07	1.17	0.04	0.0023	0.000091
RPC		16.94	12.00	0.532	0.131	0.029
ST/WG		13.93	17.75	2.29	1.54	1.23
EP/TP					0.25	0.0098
NRP					19.19	2.30
NWP					7.22	1.17
PB					10.85	0.17
WHP					18.16	0.68

Table 2. Annual average number of ULV malathion applications per acre in active Texas boll weevil eradication zones.

Zone	1995	1996	1997	1998	1999	2000
SRP	8.90	4.55	7.60	1.42	0.48	0.01
RPC		5.74	7.00	1.60	3.05	1.54
ST/WG		5.61	4.64	6.59	6.24	8.09
EP/TP					4.22	1.38
NRP					9.04	9.61
NWP					6.80	7.50
PB					7.65	5.19
WHP					8.95	7.26