

COMPARISON OF S&S AND PRECISION PLASTIC BOLL
WEEVIL TRAPS, ALAMO, TENNESSEE, 2000

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Abstract

Potential annual savings associated with shifting from the industry standard to the S&S trap range from 0.9 million dollars in Arizona to 1.2 million dollars in Texas.

Introduction

On 5-23-00, six S&S (SS) and six Precision Plastic (PP) boll weevil traps were installed and loaded with pheromone dispensers and kill strips. Data, for each (2) treatment, was recorded on 12 sampling dates, beginning on 6-6 and ending on 10-13.

Method

The SS traps were provided by Jim Plato of Plato Industries. PP traps, stakes, pheromone dispensers and kill strips were obtained from Joe Stewart (Boll Weevil Lab/ARS/USDA, MSU).

The traps were arranged in two rows of six (shows as columns in Figure 1). The traps in row one began with an SS trap, were 25 feet apart, and the treatments alternated. Row 2 began with a PP trap, was parallel to and 25 feet from row 1.

Data

Information was recorded on the number of boll weevils captured and the time required to service the traps. To service or run the traps included:

1. Remove the pheromone dispenser and kill strip.
2. Count and record the number of boll weevils captured.
3. Clean the capture cylinder and screen.
4. Replace the pheromone dispenser and kill strip and remount the trap.
5. Walk to the next trap.

Item 2, counting the number of boll weevils captured, required the majority of the time.

Color

During mid-season information was received that some S&S traps were fading elsewhere, i.e., their color was deteriorating. This event was monitored closely at the Alamo location. Color deterioration was not a problem with the SS traps utilized at Alamo. In fact, the PP trap color deteriorated slightly faster than the SS traps, but did not seem to impact the number of boll weevils caught.

Boll Weevil Captured

Table 1 reports the number of boll weevils caught. This limited dataset indicates that SS caught approximately 12% more than PP. In this dataset, the number of boll weevils caught did not differ significantly (in a statistical sense). If the difference is real, the number of escapees from SS must be significantly less than the number of escapees from PP.

Service or Run Time

Table 2 lists the run times. The SS traps consistently required less time (on average 35% less). The difference in time was due to trap design. Specifically, the SS traps required less time to service the pheromone dispenser and kill strip, count the captured boll weevils, and to clean the capture cylinder and screen of captured boll weevils and other insects. Most of the difference in time was associated with removing the captured insects and cleaning the capture cylinder or screen.

About midway through the season, the author became concerned that his years of experience with the PP trap was biasing the time required to run the traps in favor of the PP treatment. Beginning on 8-24, a technician, with no experience with either trap, simulated the role of the trapper and ran the traps for the last six sampling dates. The data indicates no real difference in run time between the author and the technician (35.29 v. 36.11%).

This data is similar to in-house data generated at Arkansas in 2000, which included 50 traps-100 feet apart, five trappers (on 4-wheelers) and two reps, which averaged 14.2 minutes for SS and 16.0 minutes for PP, a difference of 13%.

Conclusions

In the Arkansas test, while the total time included travel time between traps, no boll weevils were involved, hence the difference in time between treatments was associated with replacing the pheromone dispenser and kill strip. At an average speed of 15 miles per hour, 3.78 minutes or 25% of the time was spent traveling between traps, indicating the SS trap required 17% less time to replace the pheromone dispenser and kill strip than the PP trap.

Because of the spacing in the Tennessee test, it included no travel time between traps. Differences in time between treatments were associated with replacing the pheromone dispenser and kill strip and counting and cleaning.

Assuming that under eradication conditions, weevil counts like those experienced on 6-06, 8-16, and 10-13 would not occur, the estimated saving in time is reduced from 35% to 26%.

Economic Implications

In Mississippi, trappers spend approximately 10% of their time in travel between fields (usually by pickup), 25% as in-field travel between traps (usually on 4-wheelers), and 65% with duties at the trap. Therefore, the estimated savings in total time from the Tennessee test is further reduced to (26% x 0.65) or 17%.

In 2000, Mississippi has 506 trappers. At \$200.00 per week and 30 weeks, they cost \$3,036,000. Potential savings associated with a shift to the SS trap are (.17 x 3,036,000) or \$516,120. Estimated savings for selected states are provided in Table 3 for the year 2001. The estimates range from \$91,800 in Arizona to \$1,244,264 in Texas.

SS1	PP4
PP1	SS4
SS2	PP5
PP2	SS5
SS3	PP6
PP3	SS6

Figure 1. Trap Placement, two treatments, Alamo, Tennessee, 5-23-00.

Table 1. Total number of boll weevils captured per six traps, 12 sampling dates, two treatments, Alamo, TN, 2000.

Date	TREATMENTS		Difference	Trapper
	SS	PP		
6-06	292	195	97	Author
6-16	41	26	15	Author
6-26	37	31	6	Author
7-14	28	16	12	Author
7-26	30	32	-2	Author
8-11	255	261	-6	Author
Sum	683	561	122	
8-24	18	19	-1	Technician
9-3	33	28	5	Technician
9-13	35	39	-4	Technician
9-18	38	45	-7	Technician
10-1	62	51	11	Technician
10-13	539	496	43	Technician
Sum	725	678	47	
Total	1408	1239	169	

Table 2. Time (minutes, X.XX) required to "run" six traps, 12 sampling dates, 2 treatments, Alamo, TN, 2000.

Date	TREATMENTS		Difference	Trapper
	SS	PP		
6-06	10.37	14.95	4.58	Author
6-16	7.52	9.40	1.88	Author
6-26	7.73	10.32	2.59	Author
7-14	8.02	9.08	1.06	Author
7-26	7.33	9.73	2.40	Author
8-11	12.10	18.32	6.22	Author
Sum	53.07	71.80	18.73	
8-24	9.70	13.50	3.80	Technician
9-3	10.43	14.64	4.21	Technician
9-13	10.50	14.88	4.38	Technician
9-18	10.45	15.25	4.80	Technician
10-1	11.80	16.50	4.70	Technician
10-13	18.40	22.25	3.85	Technician
Sum	71.28	97.02	25.74	
Total	124.35	168.82	44.47	

Table 3. Estimated savings, S&S Trap v. Precision Plastic Trap, selected states, 2001.

State	Number of Trappers	Average Number of Weeks	Savings
Arizona	90	30	\$ 91,800
Arkansas	150	30	153,000
Louisiana	350	32	380,800
Mississippi	506	30	516,200
Oklahoma	110	28	104,720
Tennessee	150	30	153,000
Texas	1,307	28	1,244,264