Evaluation of Certain Fire Ant Insecticide Products and Tactics in a Haying Situation

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The imported fire ant, *Solenopsis invicta* Buren, has established itself as an important economic pest in Texas. The ant affects haying operations by reducing efficiency of machinery, increasing labor costs and impacting final yields. This preliminary report discusses the impact of two different insecticides on fire ant populations. Both Amdro® (hyrdamethylnon) and Extinguish® (s-methoprene) give good fire ant control six weeks after treatment. The Amdro® and Extinguish® in a solid pattern provided the comparable control. The field will be evaluated during the winter and spring of 2000 to determine the length of control of the two products.

Problem

The imported fire ant, *Solenopsis invicta* Buren, has established itself as an important economic pest in Texas. The ant is not only a people problem but has economic impacts on agricultural enterprises. The ant affects haying operations by reducing efficiency of machinery, increasing labor costs and impacting final yields. Some producers feel that the cost of fire ant control can be too high especially if the level of control is poor.

Objectives

This trial was established to evaluate two insecticides labeled for fire ant control in hay pastures. The trial is designed to measure the effectiveness of the materials as well as the length of control. Economic analysis will also be conducted to determine if fire ant control can be economical.

Materials and Methods

This trial was established in a hay field in the eastern part of Lampasas County. The materials evaluated were Amdro® and Extinguish®. Amdro® contains 0.73% by weight hydramethylnon. The insecticide acts on the metabolism of the ant making it difficult for the ant to produce energy. Amdro® usually provides control within six weeks of application. Extinguish® contains 0.5% by weight methoprene, an insect growth regulator that mimics the juvenile hormones in insects. Insect growth regulators are usually slower to act but provide a longer period of control in other fire ant trials.

In addition to these two products, different tactics were also tried. The field was divided into four sections and four treatments were applied. Amdro® was applied in a skip swath pattern

in the first section. Research indicates that the ants will travel to forage for food. The Amdro® was applied in a thirty foot swath and then thirty feet were skipped. This pattern resulted in 0.75 lbs of Amdro® applied per acre. The next section was treated with Extinguish® in a solid pattern at a rate of 1.5 lbs per acre. The third section was treated with Amdro® in a solid pattern at a rate of 1.5 lbs per acre. The fourth section was treated with a combination of Amdro® and Extinguish® in a solid pattern. The combination rate was 1.5 lbs per acre or 0.75 lbs per acre each product.

Results

The results are preliminary and more data need to be collected in the spring of 200 before results are final. **Table 1** shows the level of control for each of the treatments at six weeks and 5 months after application. Plots were treated on May 21, 1999 and evaluated on June 29, 1999 and again on October 7, 1999. Amdro® gave the greatest level of control at 6 weeks followed by the Extinguish® and combination of Extinguish® and Amdro®.

The skip swath of Amdro® did not provide the expected control at 6 weeks when compared to other research plots. The skip swath treatments may be better with a growth regulator like Extinguish®. The Amdro® and Extinguish® provided high levels of control. Extinguish® is difficult to evaluate at 6 weeks because it is slower acting. Mounds were considered under control if no brood was evident in the mounds. The combination treatment worked well but needs to be evaluated over a longer time period. The advantage of this treatment should be in longer control compared to Amdro® used alone. All the plots had 100% control after 5 months but this was probably a function of weather. The control pasture located next to the treated pasture had a 95% reduction in mounds.

Economic Analysis

This trial also compared the cost of a sickle mower to a disk mower when used in a pasture that is fire ant infested. There was no significant difference in time to operate the two mowers in the pasture treated for fire ants although the disk mower is somewhat faster and more efficient to operate (**Table 2**). In the untreated pasture, the sickle mower took three times longer to mow the same acreage and forage yield was reduced by twenty percent with the sickle mower. Yield was reduced due to the mounds causing the sickle blade to bounce and leave large swaths uncut. The use of a sickle mower in a fire ant infested field added an addition $5.40 per acre (**Table 3**). All costs increased. If the producer considers the cost of operating a sickle mower plus the cost of reduced yield then the additional $8.00 per acre for fire ant control is easily justified. The other alternative is to purchase a disk mower/conditioner. Since the disk mower is cheaper to operate at $1.03 per acre, the operator should be able to recover costs after harvesting approximately 1,900 acres.

Conclusion

The test does show that fire ant control is possible despite the number of complaints about the use of baits. The baits are highly effective when applied properly. The baits should only be

used when the ants are foraging. This can be determined by placing a small amount of the bait next to an active mound. If the ants are foraging, they will start feeding on the bait within 5 to 10 minutes. The baits need to remain dry for 24 hours. The presence of a heavy dew did not affect the performance of this trial. However, a rain over 0.5 inches would dictate that the baits should be reapplied. Baits should also be used when soil temperatures are above 65 degrees Fahrenheit.

Baits should be used once in the spring and once in the fall. The fall applications are important because the combination of the bait and the winter temperatures can reduce populations in the spring to very low levels. The trial also shows the devastating impact of dry conditions on fire ants. The treated pasture was treated again on October 7, 1999 to determine if populations can be kept at low levels in the spring.

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Table 1. Preliminary results of control at six weeks after treatment of different insecticide control. Lampasas Co., TX. 1999.

		Number of Active Mounds (Percent Control)		
Treatment	**Rate (lbs product per acre)**	**Pretreatment**	**6 Weeks after Treatment**	**5 Months after treatment**
Amdro®	Skip 0.75	22	8 (67%)	0 (100%)
Extinguish®	1.5	17	2 (89%)	0 (100%)
Amdro®	1.5	21	1 (95%)	0 (100%)
Amdro® + Extinguish®	0.75 + 0.75	33	6 (82%)	0 (100%)

Table 2. Estimated machinery cost (per acre) for disk mower and sickle mower in the absence of fire ants. Lampasas Co., TX. 1999.

Description	Tractor, 160 hp	Disk Mower	Tractor, 100 hp	Sickle Mower
Fuel	0.68		0.66	
Oil and filter	0.10		0.10	
Repairs and Maintenance	0.11	0.38	0.11	0.52
Labor	1.15		1.69	
Additional materials	0.00		0.00	
Operation variable cost	$2.04	$0.38	$2.56	$0.52
Depreciation	0.93	0.52	0.80	0.52
Interest	0.69	0.60	0.73	1.06
Housing	0.00	0.00	0.00	0.00
Insurance	0.02	0.02	0.02	0.03
Operation fixed cost	$1.64	$1.14	$1.55	$1.60
Operation total cost	$3.68	$1.52	$4.11	$2.12
Summary				
Operation variable cost	$2.42		$3.08	
Operation fixed cost	$2.78		$3.15	
Operation total cost	$5.20		$6.23	

Table 3. Estimated machinery cost (per acre) for a sickle mower in the absence and presence of fire ants. Lampasas Co., TX. 1999.

Description	Tractor, 100 hp	Sickle Mower	Tractor, 100 hp	Sickle Mower
	With Fire Ants		Without Fire Ants	
Fuel	1.33		0.66	
Oil and filter	0.20		0.10	
Repairs and Maintenance	0.22	1.03	0.11	0.52
Labor	3.37		1.69	
Additional materials	0.00		0.00	
Operation variable cost	$5.12	$1.03	$2.56	$0.52
Depreciation	1.59	0.20	0.80	0.52
Interest	1.46	2.12	0.73	1.06
Housing	0.01	0.00	0.00	0.00
Insurance	0.04	0.06	0.02	0.03
Operation fixed cost	$3.10	$2.38	$1.55	$1.60
Operation total cost	$8.22	$3.41	$4.11	$2.12
Summary				
Operation variable cost	$6.15		$3.08	
Operation fixed cost	$5.48		$3.15	
Operation total cost	$11.63		$6.23	