

A Field Evaluation of the Impact of Fire Ants on Quality and Yield of Peanuts in Comanche County, Texas

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Summary: A single application of Extinguish™ fire ant bait in early June, 2002, reduced fire ant activity by 86-98 percent two months later in two peanut fields. However, there were no differences in quality, yield or value of peanuts harvested from plots in which fire ant activity was reduced compared to untreated plots where fire ants were present.

Objective: Fire ants and their mounds are often common in peanut fields and fire ants are known to feed on seeds and seedling plants of some crops. There is no published information regarding feeding damage by fire ants to peanuts. The objective of this study was to determine if fire ants caused a reduction in grade or yield of peanuts grown under irrigation.

Methods and Materials: Two commercial fields of irrigated peanuts in Comanche County were divided into eight square plots each of 2 acres. In each field, four alternating plots were treated with Extinguish fire ant bait to suppress fire ant numbers while the remaining four plots were left untreated as check plots. Extinguish fire ant bait is registered for use on many sites, including field crops. Extinguish bait is collected by foraging ants, returned to the colony and fed to the queens. Queen fire ants stop producing fertile eggs and the colony slowly dies out. Thus, control of fire ants with Extinguish may require one or more months, depending on how environmental conditions influence the rate of ant death.

Extinguish fire ant bait was applied once on June 8, 2001, at a rate of 1.5 lbs. per acre. The bait was applied using a Herd seeder mounted behind a four wheel Kawasaki Mule at 12 mph and with a swath width of about 30 feet.

The sandy soil and spreading nature of the peanut plants made finding fire ant mounds very difficult in peanut fields. To overcome this difficulty, fire ant numbers were estimated by trapping ants in small glass vials baited with candy and cat food. Prior to treatment, four glass vials were evenly spaced down the center of each plot and placed on the ground early in the morning of May 25. Foraging fire ants which discovered the bait recruited other workers from nearby colonies and began removing the bait. After one hour, the vials were quickly picked up and capped, capturing worker ants inside. Bait vials were frozen and the number of fire ants was recorded for each vial. Two months after the bait application, fire ant activity was again monitored on August 2 using 12 glass vials per plots to determine the impact of the Extinguish treatment.

A sample of 10-12 peanut plants was each pulled from two locations in each plot on September 6 and 100 peanuts were collected from each subsample (200 peanuts per plot). Each peanut was examined for the presence of holes in the shuck characteristic of feeding by fire ants, wireworms or other insects.

Peanuts were machine harvested from a plot six rows wide and 100 feet long (0.041 acre) in the center of each plot on October 4 and October 29 for the Hart and O'Brien field, respectively. Harvest weight, moisture, yield, and grade were determined for each sample.

Results and Discussion:

On May 25, prior to treatment, the average number of fire ants collected per vial in the Extinguish and Check plots was 26 and 31, respectively, in the Hart Field. These results demonstrate

that ant activity was similar in both treatments prior to application of the Extinguish treatment.

On August 2, there were 85 % and 98 % fewer fire ants collected in baited vials in the Extinguish treatment than in the Check treatment in the O'Brien and Hart fields, respectively (**Table 1**). These results demonstrated that the Extinguish treatment significantly reduced the number of foraging fire ants two months after the application and that fire ant activity was low in the Extinguish treatment during the time of pod set and pod development. However, there were no significant differences in yield, grade and dollar value per acre of harvested peanuts between plots treated with Extinguish and not treated (**Table 2**). These results suggest that under conditions in these two fields, there was no evidence that fire ants resulted in any economic loss to peanut production. Also, the percentage of peanuts with holes through the shuck that are characteristic of insect feeding such as fire ants were similar in the Extinguish and Check treatments in both fields (**Table 3**). Insect damage to the shucks was low, ranging from 0.6 % to 2.5 % and much of the damage appeared to be the due wireworms feeding through the shuck. These results also suggest that fire ants did not significantly damage peanut pods in these study fields.

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Table 1. Mean number of fire ants collected per vial on August 2, two months after the application of Extinguish fire ant bait.

Field	Check	Extinguish	Percent Reduction
O'Brien	83	12	85 %
Hart	52	0.9	98 %

Table 2. Average yield, quality and value of peanuts harvested from plots treated with Extinguish fire ant bait and not treated for fire ants.

Treatment	Hart Field			O'Brien Field		
	Grade	Yield, lbs/acre	Value/Acre	Grade	Yield, lbs/acre	Value/Acre
Extinguish	63.3 a	3043 a	\$843 a	67.8 a	3048 a	\$892 a
Check	59.8 a	3238 a	\$839 a	68.5 a	3543 a	\$ 1046 a

Means followed by same letter in a column are not significantly different, LSD, a = 0.05

Table 3. Mean percentage of peanuts on September 6 with holes through the shuck resulting from insect feeding.

Field	Check	Extinguish
O'Brien	2.1 %	2.5 %
Hart	0.6 %	0.8 %

Peanuts collected September 6. 800 peanuts examined per treatment in each field.