Evaluation of Extinguish for Fire Ant Control in Pecans in Comanche County, Texas. 1999-2002.

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Summary.

A fall and spring application of Extinguish Fire Ant Bait (methoprene) reduced the number of fire ant mounds by 80-96% during three years. Under conditions of this trial, Extinguish provided up to one year of residual control once ant densities were significantly reduced (85 % or more) in a treated area of 4.5 acres. The need to re-apply Extinguish will be influenced by the rate fire ants re-infest the orchard and the tolerance of the producer and orchard workers for fire ants.

Objectives: Evaluate Extinguish fire ant bait for control of red imported fire ant in pecans.

Introduction. Red imported fire ants commonly infest pecan orchards in central Texas. Growers report that stinging ants are a hazard to orchard workers during mowing, while grafting trees and at harvest when ants are in the tree canopy. Fire ants also damage irrigation lines and electric motors on water pumps in the orchard and enter open suture in the shells of fallen nuts and feed on kernels.

Until recently, pecan growers had few options for controlling fire ants in pecans. Lorsban 4E is registered for application to the orchard floor to temporarily reduce fire ant numbers. Studies have shown that Lorsban 4E sprayed onto tree trunks also reduce the number of fire ants entering the canopy. Logic fire ant bait is registered only for use in non-bearing pecan orchards.

The active ingredient in Extinguish fire ant bait is an insect growth regulator (IGR) called methoprene. When transported back to the colony by foraging fire ants and feed to the queen, the queen stop producing viable eggs and the colony slowing dies out. The label for Extinguish states it "may be applied to, but not limited to, parks, zoos, school grounds, pastures, rangeland, citrus groves, cropland," and many more sites (see label). Because of this extensive listing of approved application sites, Extinguish is viewed as potential product for fire ant control in pecans. However, Extinguish is very slow acting, requiring several months for ant mounds to die out.

Methods and Materials.

This study was conducted in a commercial orchard in Comanche County, Texas. The orchards, about 100 acres, was divided into 12 plots each consisting of 12 rows of trees wide with about 22 trees in each row. Trees were spaced 25 feet apart within a row and rows were spaced 30 feet apart, resulting is plots about 330 feet wide X 550 feet long or 4.5 acres each. Each plot was separated by an untreated area 6 rows wide (180 feet). All twelve treatment plots were planted to the "Wichita" cultivar. Each plot was randomly assigned to one of the following three treatments: Extinguish fire ant bait, Lorsban 4E trunk spray, or the untreated check. Results from the plots treated with Extinguish or left untreated are reported in this report. Extinguish was applied at a rate of 1.5 lbs per acre using a Herd spreader attached to all-terrain vehicle. The

swath width was about 30 feet and the application speed about 10 mph. Extinguish was applied once in October, 1999, and twice in 2000 on June 16 and October 3, once on June 7, in 2001 and once on August 22 in 2002.

Mounds were not visible for counting due to dry weather in October, 1999, when the first insecticide treatments were made. Rains in late October were followed by mound building activity and allowed mound densities to be determined November 2. As the insecticide treatments were applied only 2 weeks earlier, treatment were not expected to have reduced mound numbers at that time. The number of fire ant mounds was counted in two subplots each 30 X 25 feet in each plot.

Mound densities were determined again the following summer on June 19,2000 by counting the number of mounds in a subplot 12 feet wide and centered down the row of five trees (125 feet long). Fire ant colonies were concentrated along the drip irrigation line running between trees. No significant rainfall occurred from June through October, 2000, and mounds were not visible for counting until rains returned in early November. Mound densities were determined November 12, 2000 in a subplot 125 feet long and 30 feet wide (0.086 acre) in the center each plot. Mounds in these plots were counted again on May 11, 2001 and September 11, 2001 and November 15, 2002. All mound counts are reported on a per acre basis.

Results.

In November, 1999, the average mound density was 272 in the Extinguish plots and 358 in the untreated plots. Fire ants exposed to the Extinguish treatment first applied in October, 1999, died during the winter and no new ants developed due to sterility of the queens. Mound densities the following summer (June 19, 2000) averaged 323 in the untreated check but only 46 in the Extinguish, a reduction of 80%. Extinguish was again applied in June and again in October, 2000. Fire ant mound densities on November 12, 2000, averaged only 32 mounds per acre in the Extinguish treatment, an 89% reduction compared to a density of 287 mounds per acre in the untreated check.

The following spring, May 1, 2001, there were 83% fewer fire ant mounds in the Extinguish treatment (45 mounds per acre) compared to the untreated check (267 mounds per acre.) Extinguish was applied only once (June 7) in 2001. On September 11, 2001, the Extinguish treatment (22 mounds/acre) had 94 % fewer mounds than the untreated check (333 mounds per acre).

During 2002, very few mounds were visible in the Extinguish treatment. However, in mid-summer, some fire ants were observed on the ground and crawling up the tree trunks. Because of these low number of ants could influence results of other studies underway in this orchard, Extinguish was applied once during 2002 on August 22. However, a producer may not have considered the low ant numbers observed in 2002 to justify the cost of this application of Extinguish. Mound densities recorded on November 15, 2002 averaged 9 per acre in the untreated check and 215 in the Extinguish, a 96% reduction.

A fall followed by a spring application of Extinguish significantly reduced the number of fire ant mounds. Extinguish may need to be re-applied once a year or once every other year to maintain fire ant numbers below the tolerance level as determined by the producer. The rate at which fire ants re-infest the Extinguish treated plots will be influenced by the size of the treated area, weather conditions and native ants as they effect survival of new colonies, and the infestation level of ants adjacent to the treated area.

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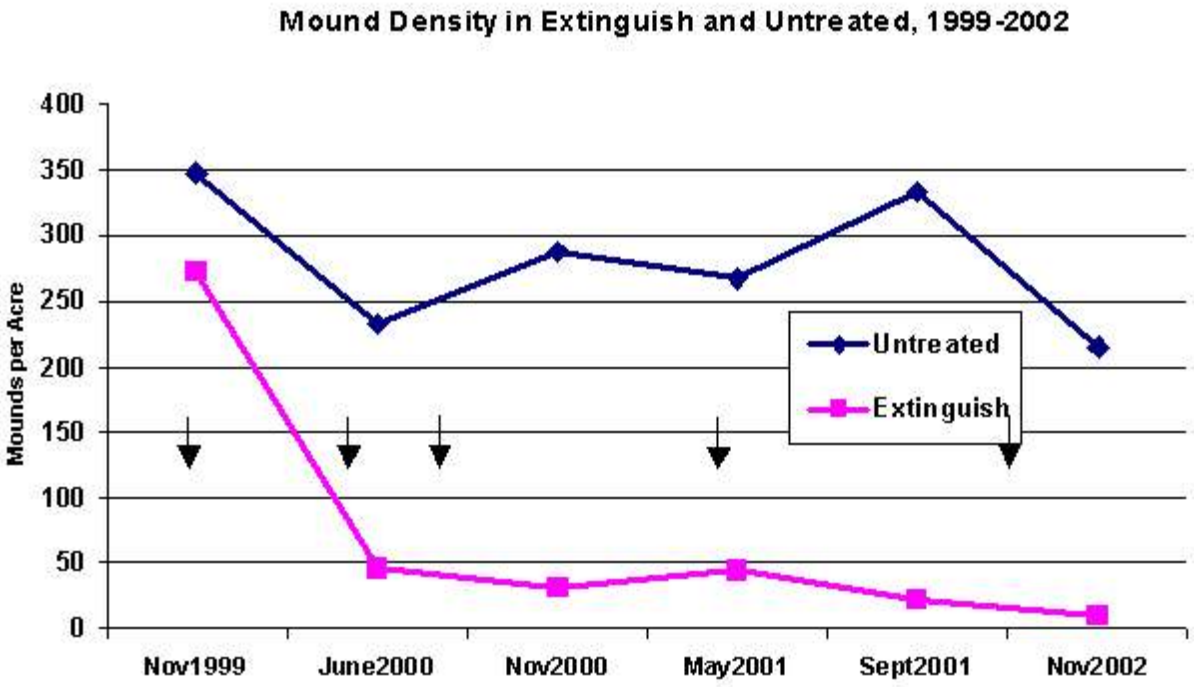

Average number of fire ant mounds per acre in plots treated with Extinguish Fire Ant Bait relative to untreated plots. Arrows indicate dates Extinguish was applied: October, 1999; June and October, 2000; June 2001 and August 2002.