

## Study: IGR proves effective vs. fire ants

GREENSBORO, N.C. — A recent test conducted at the U.S. Department of Agriculture Imported Fire Ant Station in Gulfport, Miss., showed 100-percent fire ant control over an 18-week period and gave enlightening insight into mound population dynamics.

The research project, led by Anne-Marie Callcott, measured the efficacy of Award, a fire ant bait containing the active ingredient fenoxycarb. It also determined how and when the insect growth regulator (IGR) treatment affects various ant life stages, or "castes," inhabiting the mound.

The study site was a six-acre field infested with a fire ant population that averaged 116 colonies per acre. Award was broadcast over the area at a rate of 1.5 lbs/acre on April 26, 1994. Check plots were left untreated in an adjacent field.

Prior to treatment, baseline fire ant populations were assessed in both areas by excavating five mounds from both the treated and untreated areas. The mound examinations determined the developmental stages of fire ants and the number of ants present. The stages identified are eggs, small larvae, worker pupae, sex larvae, sex pupae, minor workers, major workers, males, alate (winged) females and gravid (egg-bearing) queens. Award, which is impregnated on materials that are highly attractive to fire ants, works by infiltrating colony life in several ways. After it is picked up by foraging workers, Award is dispensed as food to the rest of colony, including the queen. After the queen ingests Award, she lays only eggs that don't develop into workers. In addition, alate female offspring do not produce viable eggs, so they cannot start new colonies.

Without replacements, the natural death rate of existing workers accelerates due to the increased workload. And, without workers to care for her, the queen dies, which leads to the mound's collapse. In this test, fire ant numbers and population dynamics were monitored from sample mounds in the treated and untreated sites at six-week intervals until reinfestation of the treated area occurred.

Efficacy test results showed that fire ants in the Award-treated mounds declined by 89.9 percent six weeks after treatment. The second and third reading — at 12 and 18 weeks, respectively — showed a 100-percent population decline. Minimal ant activity was recorded at the final 24-week reading.

At the study's onset, ant populations from mounds in the treated and untreated areas were not significantly different. Six weeks after treatment, the early effect of Award was evident, as no

worker pupae were present in the treated population. Due to the 100-percent population decline at the 12- and 18-week readings, researchers could not collect samples from the treated colonies. However, the untreated check plots contained a full caste composition throughout the study.

At the final 24-week post-treatment reading, the caste populations in the treated and untreated mounds were no longer significantly different except for the worker pupae category. Although

the worker pupae population was significantly lower in mounds in the treated area, their presence did indicate reinfestation.

As this test shows, for best control, Award applications should be repeated after several months. Since fire ants forage most actively when temperatures are moderate, Award is most effective if applied when ground temperatures reach 60 degrees Fahrenheit. In many areas, the ideal time for applications may be spring and fall.

### Effect of Award on Fire Ant Populations

Mean percentage change in fire ant population at indicated post treatment interval:

|              | TREATMENT |         |         |        |
|--------------|-----------|---------|---------|--------|
|              | 6 (weeks) | 12      | 18      | 24     |
| <b>Award</b> | -89.9%    | -100%   | -100%   | -94.4% |
| <b>Check</b> | -27.4%    | -45.8%* | -63.3%* | -15.2% |



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