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Evaluation of Commercial Termicidies and Baiting Systems for Pest Management of the Formosan Subterranean Termite, Coptotermes Formosanus (Isoptera: Rhinotermitidae)

by

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INTRODUCTION

Formosan subterranean termites, Coptotermes formosanus (Shiraki), continue to expand into new areas of the United States. Initially introduced and identified in two port areas of Texas (Galveston/Houston Ship Channel area and the Beaumont/Port Arthur/Orange area), there are currently (YR 2001) fifteen (15) counties with confirmed infestations of the species (See maps). The majority of these counties are not contiguous with the original coastal introduction, alluding to proliferation by human commerce, rather than by typical alate swarmig behavior.

New infestations of Formosan subterranean termites have been traced to the movement and use of recycled shoring timbers, railroad crossties, bark mulch, and lumber from previously infested areas (Howell et al. 2001). This situation emphasizes the importance of inspection of cellulose materials and accurate identification of the Formosan subterranean termite, as well as the need for treatment of infested materials prior to shipping or relocation.

Key Words: Formosan subterranean termites, Coptotermes formosanus, termite baiting systems, termicidies.

CURRENT EVALUATION

Commercially available termicidies and termite baiting systems are currently being evaluated for efficacy in a Formosan subterranean termite management program. Termicidies currently evaluated include Premise® (Imidacloprid) and Termidor® (Fipronil). Termite baiting systems evaluated include Sentricon® (hexaflumuron-Dow AgroSciences), FirstLine® (sulfuramid-FMC Corp.), and Terminate® (sulfuramid-United Industries Corp.) The evaluations are being conducted in the two coastal areas in Texas with high-density populations of the species, utilizing five (5) structures for each of the termicidies in

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RESULTS

Results of the termite baiting numbers of days for first feeding active ingredient bait tubes in the extremely wide range. All three baits one study site within sixty systems reveal study sites within a period of time; the Terminate® system showed termite activity for over 100 days. FirstLine® system have one or and 550 days, respectively, with a wide range in the number of feeding of the bait stations, so monitoring period episode, described alternating episodes of monitoring that the FirstLine® and the Termite treatment for any active in the study; the Premise® (imha) maintained in all structures treated sites required an additional spot crack beneath carpet (not include Fipronil) termiticide has recent effective management of Formosan subterranean termite activity, whether bait system, or a "passive" termite baiting system, several factors of each area (twenty structures) a termite bait systems in each area structures. All structures qualified of Formosan subterranean termite control op termite bait systems and installation and control of termite activity, under the supervision of the staff.
Formosan Subterranean Termites
*Coptotermes formosanus*

3 Counties – 1980

Formosan Subterranean Termites
*Coptotermes formosanus*

15 Counties – 2001

Each area (twenty structures) had termite bait systems in each structure. All structures qualify of Formosan subterranean termite control pest control of termite bait systems and termite activity, under the supervision of the staff.

**RESULTS**

Results of the termite baiting numbers of days for first feeding of active ingredient bait tubes in a tremendously wide range. All three bait systems reveal study sites within sixty days of period of time: the Terminate® system for termite activity for over 100 days, the FirstLine® system have one or and 550 days, respectively, with a wide range in the number of feeding of the bait stations: so monitoring period episode, described in alternating episodes of monitor that the FirstLine® and the Terminate® spot treatment for any active ingredient termiticides evaluated contained in the study: the Premise® [link] maintained in all structures tested sites required an additional spot crack beneath carpet (not included in the treatment) has been an effective management of termite diligence, time, and effort, whether a bait system, or a "passive" termite baiting system, several factors:

- Supplementary In-ground stations
- Supplementary In-ground termite activity
- Use of Above-Ground stations
each area (twenty structures), as well as five structures for each of the termite bait systems in each area (thirty structures), for a total of fifty structures. All structures qualified for the study with active infestations of Formosan subterranean termites.

Cooperating pest control operators (PCO's) authorized to use the termicicides or termite bait systems performed the treatments and bait system installations and continue to monitor and report observations of termite activity, under the supervision of Department of Entomology staff.

RESULTS AND DISCUSSION

Results of the termite baiting system evaluation, to date, reveal mean numbers of days for first feeding on monitors, in monitored systems, or active ingredient bait tubes in non-monitored systems, with an extremely wide range. All three baiting systems have termite activity in at least one study site within sixty-one (61) days. Two of the three baiting systems reveal study sites without any termite activity for an extended period of time: the Terminate® system has one or more sites without any termite activity for over 100 days and the Sentricon® system and the FirstLine® system have one or more study sites that exhibit over 350 and 550 days, respectively, without any termite activity. There is also a wide range in the number of alternating episodes of monitoring and feeding of the bait stations; some study sites have only the lengthy monitoring period episode, described above, while others exhibit four (4) alternating episodes of monitoring and feeding. It is important to note that the FirstLine® and the Terminate® systems mandate a termicide spot treatment for any active infestations of termites.

Termicicides evaluated continue to exhibit efficacy for the time frame of the study: the Premise® (imidacloprid) termicide barrier has been maintained in all structures treated. One structure of the ten Premise® sites required an additional spot treatment at a newly discovered slab crack beneath carpet (not included in the initial treatment). Termidor® (Fipronil) termicide has recently been added to the evaluation.

Effective management of Formosan Subterranean Termites requires diligence, time, and effort, whether the treatment is an "active" termite bait system, or a "passive" termicide barrier. When utilizing a termite baiting system, several factors contribute to management:

- Supplementary In-ground monitoring stations at conducive conditions
- Supplementary In-ground monitoring stations added to areas with termite activity
- Use of Above-Ground stations placed at sites of termite activity (on
or in wall voids) (Yates & Grace 1998).

- Frequent Inspections (Monitoring visits every 2 weeks, rather than monthly) to confirm termite activity and to ensure sufficient A.I. material is available to Formosan termites at all times (to avoid losing the foraging/feeding activity once the A.I. material is consumed)

When utilizing a traditional Termiticide Treatment Strategy, factors that contribute to management of Formosan subterranean termites:

- Utilizing of “high label rates” rather than “low label rates” of termiticides

- Maintain "continuous" termiticide barrier (Trench and Rod, Drill and Inject)

- Removal of carton material in wall voids, and/or termiticide foaming treatment in wall voids

- Fumigation held for a sufficient time to penetrate moist carton material

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The factors that influence rate termites are poorly understood. of Coptotermes formosanus Shi trees in Lake Charles, Lousian April/May and August 1986. Teory for nine months, seven mont respectively, and then examined soldier production after incubation. Within collection periods, there ship and soldier production of b production. However, termites laboratory had significantly gre and soldier production than relative to whether termite age or sex was

INTRODUCTION

Termites soldiers perform a nu primary role appears to be defen Soldier number varies signifi species with no soldiers to that 1977). Within a species, caste rat highest proportion of soldiers col with periods of intense foraging (Watson & Abbey 1985).

Caste ratios appear to be r colony, because removal of soldi of the workers into replacement study examined soldier number formosanus Shiraki. These term