

2010 TERMITE REPORT



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The United States Department of Agriculture Forest Service (USDA-FS) evaluates candidate termiticides for federal and state registration. In 2009, the USDA-FS managed and administered 25 agreements with product manufacturers as part of its ongoing Termiticide Testing Program.

One termiticide was installed at the four national test sites in Florida (February), Arizona (April), Mississippi (June) and South Carolina (September) and an impregnated barrier was installed at three sites in Florida, Mississippi and Starkville. The number of products installed in each of the last 25 years is illustrated in Figure 1. Although the number varies from year to year, on

average about three products per year are installed at each test site, although this number has declined recently.

Field tests hopefully result in new product registrations, but the registration rate has been low during the last 25 years; for example, only about 11 percent of candidate termiticides, 8 out of 74, have been registered during this time. This low registration rate is due partly to poor product performance, but other factors are also involved. For example, marketing decisions by companies keep some successful products from being registered, as occurred with Termidor (fipronil, BASF), which was successfully tested as four formulations, only two of which were registered.

In 2009, the USDA-FS screened two termiticides in

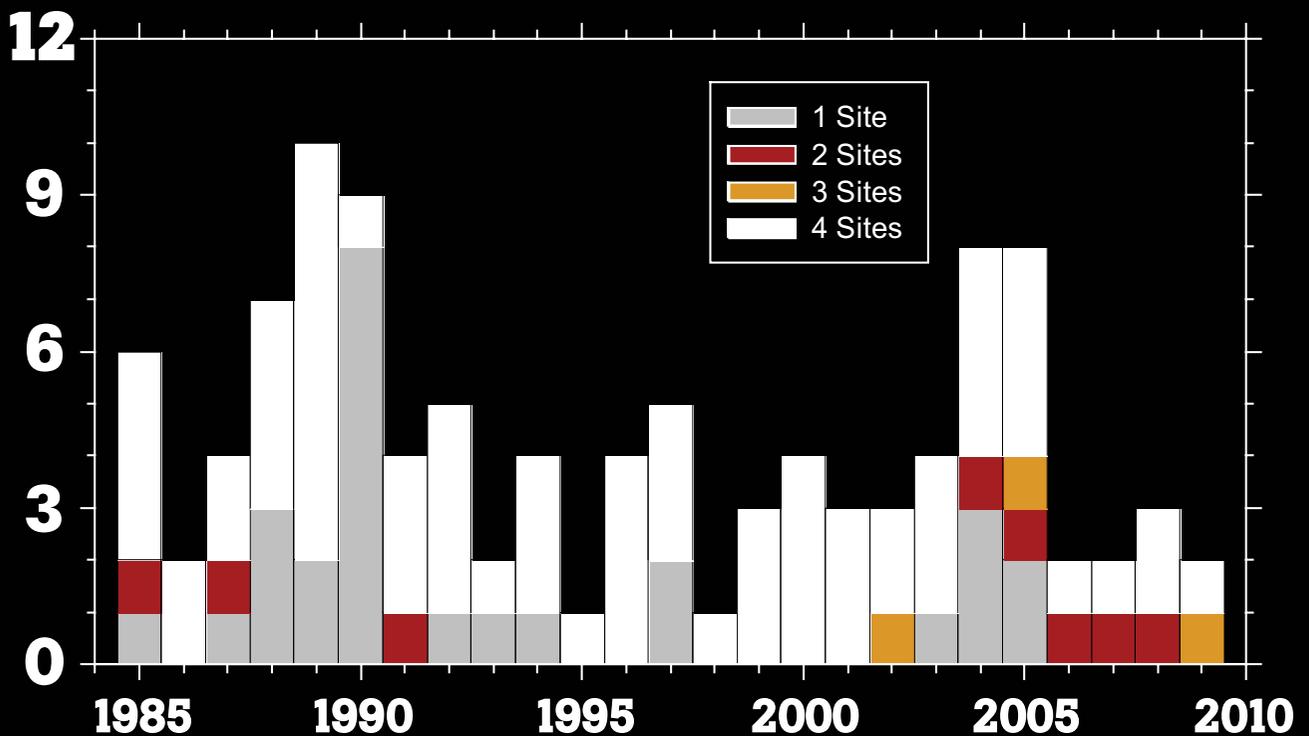


Figure 1 Number of candidate termiticides installed at USDA-FS test sites in the last 25 years

the laboratory under one agreement. These two-year tests often precede the five-year field trials. The Forest Service tracked 20 termiticides and two impregnated barriers in ongoing field tests. Nine ongoing studies ended during the fiscal year, three of which were cancelled prematurely (before the full five-year registration data set was acquired). These early cancellations often result from a loss of interest in the registration process because of product failures. The recent high rate of early cancellations in USDA-FS tests were discussed in detail in the *PMP* Termiticide Report published in February 2008 (pg. 34).

Test Methods

The test methods used to evaluate soil-applied termiticides are specified in the U.S. Environmental Protection Agency's (EPA) Product Performance Test Guideline (OPPTS 810.3600). Two standard field methods are used: ground boards and concrete slabs.

The ground board test consists of a pine board centered in a 17- by 17-inch plot of exposed treated soil, replicated 10 times at all concentrations tested and at each of the four field sites mentioned above. The concrete slab test consists

of a 17- by 17-inch plot of treated soil covered by a 21- by 21-inch concrete slab. A 4-inch pipe extends through the center of the slab and through an underlying polyethylene vapor barrier. The covered pipe contains a pine test block placed on the treated soil.

Both tests apply termiticides to the soil at an equivalent, pre-construction volume of one gallon per 10 square feet. Data are collected annually on the amount of damage to the wooden blocks and the presence of termites in attacked plots.

Damage is read using the Gulfport scale, where 0 = no damage, 1 = nibbles to surface etching, 2 = light damage with penetration, 3 = moderate damage, 4 = heavy damage and 5 = block failure.

Performance Standards

Termiticides are evaluated by applying the EPA's Test Guideline (OPPTS 810.3600) and the Florida Termiticide Efficacy Rule (5E-2.0311, FAC). The federal guideline is used by the EPA to determine the acceptability of both pre- and post-construction use directions for a product,

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while the Florida Efficacy Rule specifically applies to preventative treatments for new construction.

According to the federal guideline, termiticides remain effective during the period that they prevent termites from penetrating the treated soil in all test plots (e.g., 100 percent control). To be fully successful for registration, termiticides must satisfy this condition for at least five years at the four national test sites using the concrete slab, ground board, or stake tests. The EPA places the greatest weight on data generated from the concrete slab test.

Under the Florida rule, termiticides remain effective during the period that they prevent damage worse than ASTM 9 (equivalent to Gulfport 1) to wooden test blocks in at least 90 percent of all plots. All test plots are evaluated each year regardless of their previous attack history. To be successful, termiticides must satisfy this condition for at least five years at one or more of the southeastern sites containing a minimum of 10 concrete slab plots.

Latest Test Results

Results for non-repellent and repellent termiticides are presented in Tables 1 and 2, respectively. The Florida rule applied to individual test sites yielded longer product performance durations than the EPA guideline in 66 percent of the cases and identical durations in 34 percent of the cases (excluding paired rate versus site comparisons of products that never failed either standard).

Sixty-seven percent of the repellent termiticides and 64 percent of non-repellent termiticides had longer performance periods under the Florida rule compared to the federal guideline, while 68 percent of all termiticides in concrete slabs and 62 percent of those in ground boards had extended performance under the Florida rule.

The state of Florida does not apply its rule on a site-by-site basis if data exist from multiple southeastern sites; rather, it combines the data from all sites. Combining the data for the three southeastern sites (see Tables), the Florida rule yielded longer performance periods than did the federal guideline in 90 percent of the cases and equal durations in 10 percent of the cases. On average, the product performance duration is about twice as long under the Florida rule (7.4 years) as the federal guideline (3.5

years) when all active ingredients and rates are considered (excluding Termidor, see Tables).

Because the EPA's federal guideline is clearly more restrictive in approving termiticides for registration than is the Florida rule. Stated differently, some products registered under the Florida rule would not be registered under the federal guideline if the guideline was always taken literally. However, because the EPA's primary mission is to protect human health and the environment, it places greater weight on toxicology and environmental data than it does on efficacy. As a result, it sometimes registers compounds that do not strictly adhere to the guideline. Therein lies the difference between a guideline and a rule — the former may be subject to interpretation while the latter is not.

Request to Revise the Federal Guideline

The EPA's Product Performance Test Guidelines (OPPTS 810.3600) is an important document that regulates the way termiticides are tested and evaluated. In 2005, the Termiticide Standards Committee (TSC) of the Association of Structural Pest Control Regulatory Officials (ASPCRO) requested that the EPA consider revising the guideline. Developments related to this request have been reported in this article ever since (*PC*, February 2006 and 2007; *PMP*, February 2008 and 2009).

During 2009, the EPA sought clarification from their legal staff on revising the Guideline. It was determined that the document can only contain test guidelines (e.g., concrete slab test) and not standards (e.g., five years of 100 percent control). As a result of this decision, the EPA has chosen to pursue rulemaking that would contain the revised product performance standards. This effort will encompass other pests (e.g., public health, structural and certain quarantine pests) in addition to termites and it will involve the Registration Division, Biopesticides and Pollution Prevention Division and the Field and External Affairs Division. The current timeline calls for publishing a draft for comment in 2011 and the final rule in 2012. The Registration Division is also working on revising the test Guideline (OPPTS 810.3600). The revision will address both pre- and post-construction application methods. Stay

Table 1. Number of years that termiticides remained effective in concrete slab (CS) and ground board (GB) tests at four field sites applying the EPA guideline and Florida efficacy rule.[†] Fractions of years occurred when products were installed out of cycle. Control = percentage of all untreated plots attacked over the life of the study.

% A.I.	Test	Arizona		Florida		Mississippi		South Carolina		FL SE States
		EPA	FL	EPA	FL	EPA	FL	EPA	FL	
Imidacloprid – Premise 75 WSP (est. 1992)										
0.025	CS	15	15	15	15	1	1	3	4	2
0.05††	CS	15	15	6	12	2	2	10	10	6
0.1††	CS	15	15	15	15	2	4	5	15	8
0.15	CS	15	15	15	15	3	4	5	15	5
0.2	CS	15	15	15	15	2	5	5	5	5
0.25	CS	15	15	12	15	2	2	8	9	8
0.3	CS	15	15	15	15	5	5	5	11	14
0.4	CS	15	15	12	15	5	9	5	14	15
0.1††	GB	3	7	2	2	1	1	2	2	2
0.2	GB	8	14	2	2	2	2	2	2	2
0.3	GB	5	6	2	2	2	2	1	2	2
0.4	GB	5	7	2	3	2	2	4	5	2
Control	CS	33%		77%		75%		36%		-
Control	GB	40%		95%		96%		70%		-
Fipronil – Termidor 80 WG (est. 1994)										
Only three treated GB plots have been attacked at registered rates, but due to the low attacks at untreated control plots and multiple products in the test site, it is impossible to evaluate treatment effects. For additional information, refer to the 2006 Termiticide Report (PC, February 2007, page 66).										
Control	CS	13%		19%		2%		3%		-
Control	GB	10%		6%		16%		12%		-
Fipronil – Termidor SC (est. 1999)										
0.06††	CS	10	10	9.5	9.5	8	10	8	8	9.5+
0.125††	CS	10	10	9.5	9.5	8	10	10	10	9.5+
0.25	CS	10	10	9.5	9.5	10	10	10	10	9.5+
0.06††	GB	10	10	9.5	9.5	9	10	5	10	9.5+
0.125††	GB	10	10	9.5	9.5	8	10	10	10	9.5+
0.25	GB	0	9	2.5	9.5	2	2	10	10	9.5+
Control	CS	2%		63%		82%		57%		-
Control	GB	49%		97%		83%		84%		-
Chlorfenapyr – Phantom (est. 1996)										
0.125††	CS	13	13	1	7	1	1	6	7	1
0.25††	CS	13	13	11	11	2	5	5	13	6
0.5	CS	13	13	13	13	4	4	13	13	13
0.75	CS	13	13	1	1	5	5	13	13	13
1.0	CS	13	13	13	13	5	7	8	8	7
2.0	CS	13	13	13	13	1	9	13	13	13
0.25††	GB	9	11	0	0	2	6	5	8	6
0.5	GB	5	10	1	8	4	4	12	13	5
0.75	GB	13	13	4	7	5	13	11	13	8
1.0	GB	8	13	9	11	5	11	11	11	11
2.0	GB	6	11	13	13	13	13	8	13	13
Control	CS	20%		62%		78%		46%		-
Control	GB	51%		86%		98%		96%		-

† EPA: Years with no penetration through treated soil in any plot.

FL: Years with no damage worse than ASTM 9 to test blocks in 90% or more of the plots per site.

FL SE States: Years with no damage worse than ASTM 9 to test blocks in 90% or more of the plots for all southeastern sites.

†† Registered rates.

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Conclusions

All registered termiticides in the U.S. have been evaluated by the USDA-FS. Its testing program has provided product performance data to registrants, regulators, the pest management industry and the American public for

decades. Numerous candidate termiticides are presently being tested and some will certainly be registered in the

coming years. These products will add to the choices pest management professionals and homeowners have, challenging them to consider their options carefully. **PMP**

Table 2. Number of years that termiticides remained effective in concrete slab (CS) and ground board (GB) tests at four field sites applying the EPA guideline and Florida efficacy rule.[†] Fractions of years occurred when products were installed out of cycle. Control = percentage of all untreated plots attacked over the life of the study.

% A.I.	Test	Arizona		Florida		Mississippi		South Carolina		FL SE States
		EPA	FL	EPA	FL	EPA	FL	EPA	FL	
Bifenthrin – Biflex TC (est. 1986)										
0.031	CS	0	9	4	11	2	5	2	4	4
0.062††	CS	16	16	22	22	7	7	10	16	10
0.125††	CS	10	15	9	23	2	7	23	23	9
0.25	CS	23	23	23	23	16	17	23	23	23
0.5	CS	6	23	23	23	18	23	23	23	23
0.031	GB	6	7	4	5	2	2	3	4	4
0.5	GB	10	11	14	21	12	15	8	11	14
Control	CS	51%		67%		52%		61%		-
Control	GB	69%		86%		76%		84%		-
Cypermethrin (est. 1982)										
0.125	CS	1	4	0.5	1.5	1	3	2	2	2
0.25††	CS	4	4	10.5	12.5	3	5	4	4	4
0.5††	CS	4	5	4.5	9.5	7	14	12	12	11.5
1.0	CS	8	10	7.5	21.5	6	15	12	16	15
1.0	GB	3	6	4.5	4.5	5	5	5	6	5
Control	CS	62%		66%		50%		60%		-
Control	GB	74%		75%		85%		88%		-
Permethrin – Dagnet (est. 1978)										
0.25	CS	8	10	2	2	1	2	0.5	0.5	1
0.5††	CS	13	19	4	4	5	6	4.5	4.5	4.5
1.0††	CS	15	15	15	25	5	8	10.5	11.5	10.5
1.0††	GB	9	11	6	6	2	3	0.5	3.5	3
Control	CS	50%		55%		60%		53%		-
Control	GB	43%		78%		86%		84%		-
Permethrin – Torpedo (est. 1980. Controls same as cypermethrin)										
0.25	CS	9	9	3	7	2	2	0.5	0.5	1.5
0.5††	CS	11	13	6	9	3	5	1.5	4.5	5
1.0††	CS	19	29	25	27	3	7	6.5	7.5	7
0.5††	GB	4	4	4	4	1	1	1.5	1.5	1.5
1.0††	GB	8	9	5	5	2	2	1.5	1.5	1.5

† EPA: Years with no penetration through treated soil in any plot.

FL: Years with no damage worse than ASTM 9 to test blocks in 90% or more of the plots per site.

FL SE States: Years with no damage worse than ASTM 9 to test blocks in 90% or more of the plots for all southeastern sites.

†† Registered rates.