

Recruit® HD Bait Research Summary

Effect of Salt Water on Exposed Bait

Background:

Hurricane-related flooding may expose termite bait to salt water. Researchers at Dow AgroSciences wanted to know if bait exposed to salt water results in termite repellency with Recruit® HD termite bait, the bait used in the Sentricon® system.

Paired Choice Test:

Salt water-soaked Recruit HD termite bait was offered side by side with fresh Recruit HD to eastern subterranean termites (*Reticulitermes flavipes*) to determine feeding choice. Salt water-exposed bait for the research was derived from two sources:

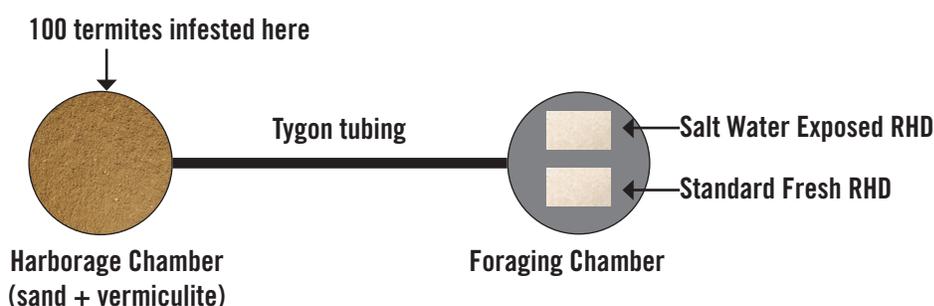
1. Baits that had been underwater for seven days during Hurricane Matthew, which made landfall on Oct. 8, 2016, in South Carolina. This hurricane produced record-setting rain and serious inland flooding. Bait samples were collected from in-ground Sentricon stations placed around commercial properties in Charleston, South Carolina.
2. Baits soaked for one month in brackish salt water taken from the Dundee River near Tampa, Florida. The water was collected about 100 yards from the Gulf of Mexico, which would be typical of water that would flood yards in the event of a hurricane. The water was collected in 5-gallon buckets and baits were submerged for one month in the shade.

One set of choice tests compared fresh Recruit HD with the bait samples collected from South Carolina and another set of choice tests compared fresh Recruit HD with the baits soaked for one month in salt water taken in Florida. Termites were allowed to feed for one week in both sets of choice tests. After the test, all bait samples were weighed to determine if exposure to salt water resulted in significant repellency.

Test Set-up: One-way with Cups in a Paired Choice Test (Figure 1)

- Recruit HD bait samples were halved vertically and discs sliced approximately 1/8 inch in thickness were placed side by side in the foraging chamber (one disc of salt water-exposed bait and one disc of fresh bait).
- 100 termite workers (*R. flavipes*) from a healthy colony were placed in a harborage chamber containing moistened sand and vermiculite. Two different healthy colonies were used. Nylon tubing connected the harborage and foraging chambers.
- A total of 1,600 termites were used in 8 replications (8 sets of 100 termites for the bait samples from South Carolina and 8 sets of 100 termites for the bait samples from Florida).
- After the test period, the bait samples were oven dried at 400° F for four hours and weighed to determine if exposure to salt water resulted in repellency.

Figure 1



Repellency Results:

R. flavipes consumption of flooded or salt water-soaked Recruit® HD compared with consumption of fresh (unsoaked) Recruit HD in a paired choice assay at seven days of exposure. Different letters indicate a significant difference between treatments ($p = 0.10$).

Treatment	Consumption (mg) ± SEM	p value	Preference Ratio (High/Low)	Treatment	Consumption (mg) ± SEM	p value	Preference Ratio (High/Low)
Fresh Recruit HD Bait vs.	2.44 ± 1.26 a	0.0002		Fresh Recruit HD Bait vs.	2.17 ± 1.43 a	0.0010	
Salt Water Soaked Recruit HD	22.43 ± 3.88 b		9.19	SC Flooded Recruit HD	32.80 ± 7.29 b		15.12

Efficacy Test:

Termites (*Reticulitermes flavipes*) were exposed to salt water soaked Recruit HD for 42 days in a no choice termite assay to evaluate any changes in bait performance. Treatments included:

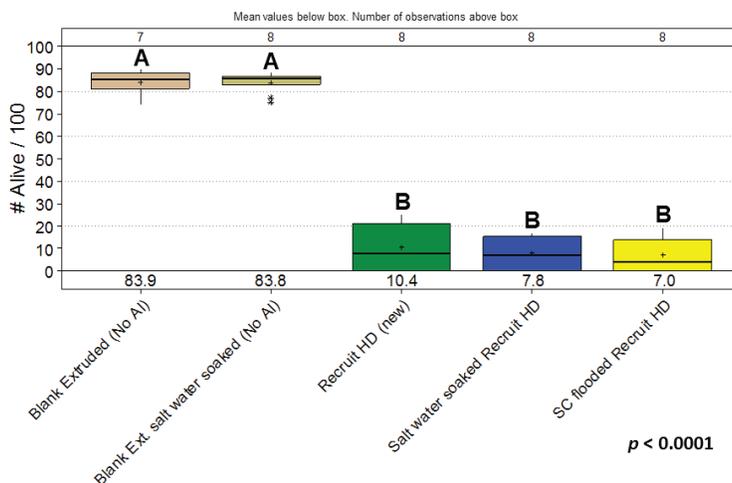
1. FL flooded Recruit HD
2. SC flooded Recruit HD
3. FL flooded Blank bait (no A.I.)
4. Blank bait (no A.I.)
5. Recruit HD (new)

Test Set-up:

- Recruit HD bait samples were halved vertically and discs sliced approximately 1/8 inch in thickness were placed in the foraging chamber directly on moistened soil in a 100 x 25 mm Petri dish.
- 100 termite workers (*R. flavipes*) from two healthy colonies were placed in each Petri dish.
- A total of 4,000 termites were used in 8 replications (8 sets of 100 termites each treatment).
- Each treatment was replicated 8 times (plus 2 consumption controls) with 100 termites per replicate.
- After 42 days, survivorship was determined by counting the number of surviving termites in each replicate.

Efficacy Results:

Survivorship after 42 days exposure to salt water soaked or flooded Recruit HD
Reticulitermes flavipes



Conclusions:

1. Flooded bait exposed to salt water did not cause a significant ($p=0.1$) repellent effect in a one-way paired choice test with *R. flavipes* when compared with fresh Recruit HD. Note that Recruit HD baits exposed to salt water were actually consumed in a significantly greater amount than fresh Recruit HD termite bait. Researchers suspect this may be due to factors other than exposure to salt. Bait samples collected in South Carolina were aged baits, and research shows termites often find aged baits more palatable than fresh bait. Palatability of both baits also may have been higher as they had been soaked in water for extended periods of time.
2. Following measurement of bait consumption, termite efficacy was compared for termites exposed to the bait treatments for 42 days. Results showed no difference in mortality when comparing the new Recruit HD to both the salt water-soaked and South Carolina flooded baits.