

Field Test Site to Study Destructive Formosan Termite

A field test site is being established to study the effectiveness of insecticides, wood preservatives, alternative control procedures, and the use of specified building materials as protection against the Formosan subterranean termite, *Coptotermes formosanus*. A portion of the site will also be used to study the basic biology and colony development of *C. formosanus*.

Background

The Formosan subterranean termite was introduced in the southeastern region of the United States and is spreading through many southern states. Damage to homes is estimated in the millions of dollars in the New Orleans area alone. Worldwide, *C. formosanus* has spread northward to approximately 35° N latitude (the border between Mississippi and Tennessee).

Objectives

It is imperative to assess the durability of building materials facing attack by *C. formosanus*, to determine the effectiveness of insecticides and wood preservatives against *C. formosanus*, and to study alternative control methodologies and basic biology and colony development of this insect.

Approach

The test site is located at the Mississippi Agricultural and Forestry Experiment Station (MAFES), McNeill, Mississippi. This site was chosen because it is in a region colonized by the Formosan subterranean termite. The nearest known colony is on MAFES property within approximately 300 yards of the test site.



McNeill test site for Formosan termite research.

A large field has been allocated to establish colonies of *C. formosanus*. Colony sites will be located at 50-ft intervals. Each colony site consists of an aged wood pile that will be seeded with field-collected termites from a given infestation site. Four trenches filled with aged wood will radiate from each colony site at quadrants to encourage the seeded termites to forage into the surrounding area.

Perforated plastic crates filled with bait-wood have been placed at *C. formosanus* infestation sites adjacent to our test site in McNeill and in Lumberton, Derby, Biloxi, and Pascagoula, Mississippi. These crates will be checked periodically for termite activity and, when heavily infested, will be transported to the McNeill test site and used to seed our colony sites. Crates from only one infestation will be used to seed a given colony site, and termites from each colony will be retained for later DNA studies.

Sections of the test area will be used to conduct a variety of studies. One will be used to test the performance of wood preservatives, termiticides, and alternative control methodologies. Others will be kept free of pesticides to permit study of the development of the seeded colonies, to study other aspects of the biology of *C. formosanus*, and for periodic harvest of individuals for use in laboratory tests.

Another portion of the test site will be used to construct test houses over seeded colony sites so that full-size panel products or other building materials can be tested for their termite resistance. The termite control capability of building design features, construction techniques, or physical barriers can also be tested in these structures. Three structures consist of a chromated-copper-arsenate-treated post-and-beam skeleton (approximately 24 by 24 ft), roofed framework with wall openings large enough to accommodate wall framing, and 4- by 8-ft sheets of panel products. A fourth house of similar construction measures 16 by 16 ft. These structures will permit us to determine the termite resistance of building materials using both within-colony and between-colony replicates.

Expected Outcomes

This site will be one of the few places in the world where the termite resistance of 4- by 8-ft building panels and associated wall framing can be tested in

replicated studies. Tests conducted at the McNeill site will provide data required by building product and termiticide manufacturers, code officials, architects, contractors, and entomologists to ensure that houses built in the southern climatic region, and other areas colonized by *C. formosanus*, will have a reasonable service life.

Timeline

- Four test structures and six *C. formosanus* colony sites were completed March 2004.
- A laboratory will be constructed adjacent to the site and will be functional by October 2004.
- Studies in the test structures and on other *C. formosanus* colony sites should begin May 2005.

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