University of Florida News

UF research shows termite damage cuts insulation values by nearly 75 percent

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GAINESVILLE, FLA. — Termites aren't just out to eat the wood in your home. A new University of Florida study shows the voracious insects like to feast on your home's insulation, too — making it nearly 75 percent less effective.

In tests measuring how termites damage the thermal properties or insulation in homes and other buildings, three types of widely used construction materials — 2-by-4 boards, five-ply plywood and foam board insulation — were exposed to the pest for eight weeks by entomologists at UF's Institute of Food and Agricultural Sciences.

"All three building construction materials were damaged by termites, but the pest caused more damage to insulation than to either the wooden 2-by-4 or plywood samples," said Phil Koehler, an entomology professor who supervised the study by graduate student Cynthia Tucker and research associate Roberto Pereira. Their findings will be published in the April issue of the journal Sociobiology.

The thermal imaging tests, which measured heat transfer through the three building materials, focused on damage caused by a species of subterranean termite, Reticulitermes flavipes, that's well known in North America.

Tucker, who is completing work on her doctoral degree in entomology at UF's College of Agricultural and Life Sciences, said they were surprised to find that rigid foam board insulation was most heavily damaged by termites, with 12 percent of the material being removed by termites in eight weeks, causing a 27 percent loss in insulation values.

"Most types of insulation are composed of plastic that's not a source of food for termites, but the soft texture of insulation allows termites to build extensive tunnels and consume paper that lines the outside surface," Tucker said. "In fact, the insulation materials are an almost ideal habitat because they protect the pest from cold temperatures."

She said tests showed that plywood was the most resistant to heat flow, but once termites damaged the plywood, temperature changes were significant. After termites ate just 3.1 percent of the wood, insulation values dropped 74 percent.

When the pest attacked 2-by-4 boards, consuming 6.7 percent of the wood by tunneling along the fibers and within softer spring wood, there was a 35 percent drop in insulation values.

“Until recently, changes in the thermal properties of a structure caused by termites — especially for buildings in areas where temperature extremes require lots of heating or air conditioning — have been overlooked,” Tucker said.

Termite damage has been most commonly thought of in terms of weakening structures, making infested areas prone to collapse, she said. Water damage is also linked to these termites because they bring moisture up from the soil into structures.

Pereira said homeowners should make sure a high quality pre-construction termite treatment is done and a termite-protection contract is maintained. Once termites damage the structure, killing the pest will not correct the damage or restore insulation properties.

D.R. Sapp, president of Florida Pest Control and Chemical Co. in Gainesville, said the research provides valuable information that many homeowners overlook.

Insulation can be a “termite turnpike” because the foam material has a low density and holds moisture, he said, making it easy for the pest to quickly tunnel through buildings and attack wood.

“Homeowners always are concerned about anything that can affect the value of their homes, especially now when there is a downturn in the housing market,” Sapp said.

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