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NR # 20040803-1

August 3, 2004

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FOREST SERVICE RESEARCHER FINDS NEW "CURE" FOR TERMITES Environmentally Friendly Termiticide Halts Invasive Pest

Madison, Wis.— An unexpected finding by a Forest Service researcher in Wisconsin has led to a patent for a promising new weapon in the battle against one of the country's most destructive insect pests, the Formosan subterranean termite, which costs American consumers a billion dollars a year.

Microbiologist Frederick Green III looks for ways to prevent fungi from causing wood to decay at the USDA Forest Service Forest Products Laboratory in Madison, Wis. In recent years, Green's been looking for alternatives to a popular preservative used in pressure-treating wood, chromated copper arsenate (CCA). Use of CCA has been curtailed because of environmental concerns about arsenic and heavy metals.

Green discovered that a commercially available naphtha-based compound called N-hydroxynaphthylamide (NHA) worked well to prevent decay-causing fungi from damaging wood. He also discovered that NHA was effective at killing common Eastern subterranean termites.

Knowing that fact might be important, Green reported his findings to two termite experts, entomologists M. Guadalupe Rojas and Juan A. Morales-Ramos, at the USDA's Agricultural Research Station in New Orleans.

Termites cause an estimated \$2 billion in damage annually in the United States. They are a special problem in the warm and humid Southeast, where Formosan subterranean termites (*Coptotermes formosanus*), an invasive species that arrived in the U.S. about 50 years ago, have proven to be especially destructive and difficult to deal with. The Formosan subterranean termites (FSTs) have become one of the most destructive pests in the United States, where they are responsible for an estimated \$1 billion in damage annually to buildings and living trees. In areas infested with FSTs, homeowners and others often have to resort to expensive physical barriers to prevent FSTs from damaging property.

Both Rojas and Morales-Ramos were members of a multi-agency task force created by the Agriculture Department to find a solution to the FST problem.

The Formosan termites had proven especially destructive and difficult to counter for several reasons: They are large and reproduce prolifically, establishing colonies that number 10 million or more termites – compared to only 300,000 individuals in a typical colony of native Eastern subterranean termites. FSTs sometimes travel as far as 100 yards from their nests in search of food and can eat through plastic pipe and thin metal. They also have demonstrated an ability to survive standard termiticide treatments, in part by avoiding traditional termite baits, and in some areas had displaced the less-destructive native Eastern termites.

Aware of the FST's dietary preferences, Rojas and Morales-Ramos developed a cellulose-based attractant to combine with the NHA. Their attractant was so appealing to the termites that even the FSTs would carry the bait containing NHA back to their nests. In field tests in Louisiana and Mississippi, entire colonies of Formosan subterranean termites were eliminated in a matter of months, depending on the size of the colony.

Because the NHA termite bait is effective at low doses and, unlike most termiticides, contains no heavy metals, it is considered environmentally friendly and cost-effective.

Earlier this year, the U.S. Patent Office issued a patent (Number US 6,691,453 B1) to the USDA for "Naphthalenic Compounds as Termite Bait Toxicants." Rojas, Morales-Ramos and Green are all listed as the inventors.

More recently, the USDA has awarded an exclusive license for developing, manufacturing and marketing products based on the technology.

The USDA Forest Service Forest Products Laboratory was established in 1910 in Madison, Wis., with the mission to conserve and extend the country's wood resources. Today, FPL's research scientists work with academic and industrial researchers and other government agencies in exploring ways to promote healthy forests and clean water, and improve papermaking and recycling processes. Information is available at FPL's Web site: www.fpl.fs.fed.us. Through FPL's Advanced Housing Research Center, (www.fpl.fs.fed.us/ahrc/), researchers also work to improve homebuilding technologies and materials.

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