Scientist uses fungus to destroy bark beetles

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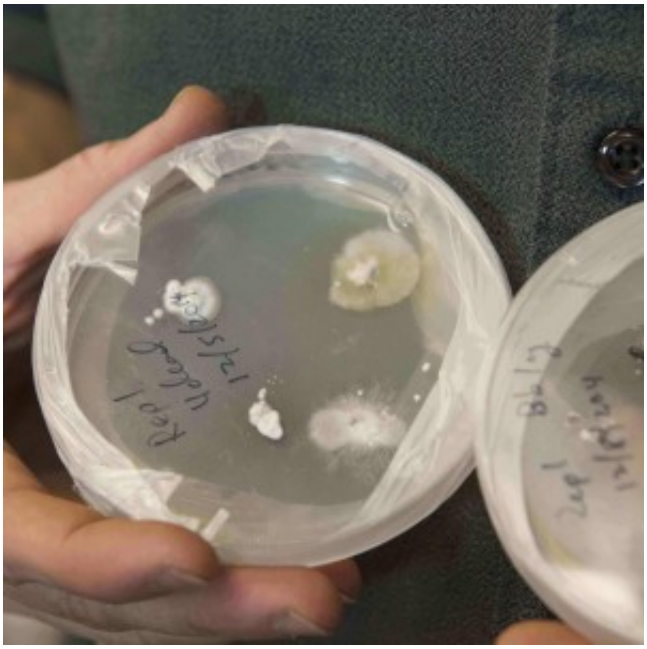

Entomologist Rich Hofstetter's research kills bark beetles with a fungus, which is being used to create a product to spray on trees. In Arizona, bark beetles are responsible for increasing risk of wildfire by killing millions of ponderosa pine trees.

As Arizona and other western states face ongoing drought conditions, the region's pine forests are becoming more vulnerable to bark beetles, which attack and kill stressed trees, increasing wildfire danger. NAU researcher Rich Hofstetter is working with a fungus that kills the beetles.

"We have isolated particular strains and are testing to see whether these

strains are effective against not only the mountain pine beetle, which is the most significant bark beetle in the West, but all the other bark beetles that we have in Arizona that are killing trees, as well as in the eastern United States."

Following severe drought in 2003, bark beetles affected as many as 1 million acres of trees in Arizona, a figure that has diminished after some wetter years but could worsen with current dry conditions.

In the past, Hofstetter, a School of Forestry entomologist and bark beetle expert, has used other methods to slow the insect's progression including using amplified rock music to change their eating patterns.

Hofstetter is testing the fungus, Beauveria bassiana, on a bark beetle species affecting trees from Mexico to Canada.The fungus releases white powdery spores, Hofstetter said. When bark beetles crawl over them the fungus gets into their bodies and takes over.

Hofstetter was contacted by Montana BioAgriculture to conduct the research and find the most deadly strain of the fungus. The company is developing fungal bio-insecticides to control bark beetles with an environmentally benign product that can be commercially produced and marketed to forest managers.

Rich Hofsetter sprays fungus on a log to kill bark beetles.

"The spores penetrate the exoskeleton of the beetle. And once they get inside, they replicate, they grow and kill the beetle within one to two days," Hofstetter said. When the beetle is dead, the fungus grows outside of the beetle and produces more spores that can be picked up by other insects.

Montana BioAgriculture grows the spores and sends them to Hofstetter, who then puts them in a liquid formula, which he sprays on tree trunks and logs. "We are seeing 80 to 90 percent mortality with the spray," Hofstetter said.

Arizona is experiencing a bark beetle outbreak in the White Mountains where the Wallow fire burned in 2011. "We see an increase in activity after disturbances like a wildfire," said Monica Gaylord, a Forest Service entomologist. Thick overstocked strands have lower resistance to the beetles, especially during drought, Gaylord added.

"Arizona is an excellent place to study bark beetles because, unfortunately, we have so many bark beetle species," Hofstetter said. He hopes that within a year his research will lead to a product that can be used to control infestations.

Provided by Northern Arizona University