

Colorado State Forest Service Talking Points Regarding AgriHouse Organic Disease Control (ODC)



March 4, 2010

We have received several calls recently from reporters regarding a product known as **AgriHouse Organic Disease Control (ODC)**, which is a colloidal chitosan (see CSU news release below for additional details).

Following is information about ODC that we encourage you to use if you receive questions from landowners and others about its effectiveness in protecting trees from mountain pine beetles.

- AgriHouse Organic Disease Control (ODC) is an organic disease control product. This product may also be known as YEA (Yield Enhancement Agent.)
- The principal ingredient is chitosan, produced from the exoskeleton of shellfish.
- ODC has been tested in various field crops and several pine species for plant vigor response.
- Although the EPA has approved the current formula, they have not yet approved it for forestry use.
- ODC is applied to the soil around the base of the tree.
- The product has shown to be effective in increasing resin flow in pine trees.
- Resin flow is one part of a tree's physical defense system and can help the tree resist attack from some bark beetles.
- The AgriHouse ODC product may boost tree vigor and could be part of an integrated pest management approach; however, the CSFS does not recommend it as a stand-alone treatment for protection against mountain pine beetle.
- The potential long-term impacts of increased resin flow resulting from ODC are unknown.
- To date, no testing has been done to determine the impacts of AgriHouse ODC on mountain pine beetle in lodgepole pine or ponderosa pine.
- AgriHouse ODC has not been tested on a landscape scale, and its success may be limited to individual trees that are not under significant pressure from MPB.
- Until specific testing is done to determine the impacts of ODC on mountain pine beetle, the CSFS encourages landowners to use well-tested products with a proven track record to protect important pine trees on their land.
- For additional information, contact Sky Stephens at 970.491.7282 or sky.stephens@colostate.edu.

February 23, 2010

Colorado State University Professors Partner with AgriHouse to Bring Organic Biopesticide to Market to Thwart Pine-Bark Beetles

FORT COLLINS - Two Colorado State University emeritus professors, working with Berthoud-based AgriHouse Inc., have helped develop a new eco-friendly EPA-registered biopesticide that can protect pine trees from bark beetles – a major threat in Colorado and across Western states.

Jim Linden, professor emeritus of the Chemical and Biological Engineering and Microbiology, Immunology and Pathology departments, and Ken Knutson, associate professor emeritus of the Horticulture and Landscape Architecture department, helped create Organic Disease Control, a patented formula that increases the sap produced by pine trees. The increase in sap resin boosts tree resistance to the pine beetles by reducing their ability to lay eggs in pine trees.

“Initial studies completed in Louisiana with the U.S. Forest Service have shown that trees produce 40 percent more sap, which is the tree’s natural defense against pine beetles and the blue stain fungal pathogen they carry,” said Richard Stoner, president and CEO of AgriHouse, an agri-biotechnology company that is manufacturing and marketing Organic Disease Control, or ODC. “The ODC formula provides an organic treatment solution to increase the tree’s resistance to the pine beetle infestation, a problem that to date only nature has been able to address through forest fires and lightning.”

AgriHouse is actively marketing ODC. Homeowners can apply ODC for less than \$1 per tree. The results of the initial case study with the U.S. Forest Service in Louisiana revealed a positive response within 45 days of the first application of ODC to the ground area under pine trees branches, Stoner said.

ODC includes chitosan, the exoskeleton of shellfish, as its principal ingredient. The AgriHouse team holds a patent on the ability of chitosan to induce a defense response by all plants.

It was Linden’s research that recognized ODC molecules “fit inside” receptors attached to the surface of cells in the tree root. According to Knutson, these root networks thrive in the top soil nearest to the tree’s drip ring, for example the soil directly under the tree branches. Once the molecule adheres to the receptor, a switch is activated in the plant cell that elicits chemical responses throughout the plant and increases plant health, stimulates photosynthesis and overcomes environmental stresses such as beetle attacks and blue stain fungus infection.

“We’ve developed an environmentally friendly product that we believe will begin to address the pine-beetle epidemic across Colorado,” Linden said. “The 2008 U.S. Forest Service Study showed the elevated sap output using ODC has the potential to reduce about 37 percent of the pine beetle eggs in treated trees.”

“Based on research thus far, we think we have a new tool to help suppress and slow down the massive pine beetle epidemics currently raging throughout the Western United States,” Knutson said.

ODC is available under the brand name ODC Colloidal Chitosan in two sizes - a 1-ounce bottle for \$24.99 containing 30 treatments and an 18.5-ounce bottle for \$249.99 containing 550 treatments. ODC is currently available at nurseries in Colorado and via the AgriHouse website at www.ODCchitosan.com

About AgriHouse

Stoner and Knutson started the company in Stoner's garage in 1992 after Linden brought the elicitor and receptor ideas to the table. Stoner, Linden and Knutson filed for their ODC patent in 1994. The NASA-sponsored Commercial Space Center at the University of Colorado completed ODC elicitation studies aboard the space shuttle and Mir Space Station in 1998. The ODC experiments on adzuki beans were the first experiments of their kind to be conducted on food crops in low-gravity. Linden and his students oversaw the entire scientific effort prior to NASA's Atlantis launch to the MIR space station, including analysis of cellular responses to ODC elicitation of a defense-related enzyme activity. Linden and Stoner patented ODC nematode protection in 2007. The research results obtained by NASA and others led to the U.S. Forest Service case study with ODC in 2008. AgriHouse is conducting additional ODC studies in Colorado on ponderosa pine with the cooperation of Linden and Knutson. Forest health researcher, Lee Pederson, an entomologist, is continuing U.S. Forest Service studies with ODC on lodgepole pine in Coeur d'Alene, Idaho.

AgriHouse is a leading edge agri-biotechnology company offering advance high performance food production systems for Earth and space. The company has a broad portfolio of IP and patents to deliver cost-effective green technologies to increase food production, conserve water and natural resources, reduce the reliance on toxic pesticides, and allow plants to regulate their own environmental needs through intelligent bio-feed systems. CU granted AgriHouse exclusive license to patented leaf sensor technology in January. AgriHouse received a \$150,000 grant from the National Science Foundation to develop the leaf sensor technology for irrigation control. The leaf sensor was beta field tested at the U.S.D.A. facility in Greeley and at CU greenhouses in Boulder. Stoner is known as the original creator of Aeroponics. AgriHouse offers a line of aeroponic growing systems.