Patent Application Filed for Plant Extracts that Attract Vine Weevils

By Sharon Durham
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Odor chemicals from plants like spindle tree (*Euonymus*) and yew (*Taxus*) can be used as attractants for vine weevils, according to an Agricultural Research Service (ARS) scientist and his two Dutch collaborators. The scientists have applied for a patent on their discovery.

ARS entomologist Denny Bruck at the agency's Horticultural Crops Research Unit in Corvallis, Ore., worked on the research with Rob W.H.M. Van Tol and Frans C. Griepink of Plant Research International, Wageningen, The Netherlands.

ARS is the chief intramural scientific research agency of the U.S. Department of Agriculture (USDA), and this research supports the USDA priority of promoting international food security.

The plant odor chemicals, called kairomones, attract vine weevils that are significant pests found in the major nursery and small fruit production areas throughout the United States, western Canada and northern Europe.

A major problem in combating weevil attacks is monitoring and timing of control measures. Traditional management of this insect involves the use of insecticide sprays targeted at adults in an attempt to avert egg-laying. However, growers continually have problems properly timing spray applications because the adults are active at night and the larvae live in the soil. Insecticides targeting adults also kill beneficial insects, resulting in secondary pest outbreaks.

Growers typically determine the weevil presence in the field by monitoring plant damage, but determining insect numbers and locating them is labor-intensive.

Bruck and his collaborators found that the vine weevil shows a clear preference for odors from specific plants like spindle tree and yew. In laboratory tests, researchers found that these plants, when damaged by adult weevils, were more attractive than the undamaged plants. Extracts from spindle tree plants were attractive as well. Using a combination of scientific techniques, they determined the specific components in the extract responsible for adult vine weevil attraction.

Their future work will focus on the development of practical monitoring and control tools for growers, based on the current discovery.

The findings from this research have been accepted for publication in the *Journal of Economic Entomology*.