

Research leads to fewer yellowjackets on Christmas trees

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Hawaiians can now worry less about finding stray yellowjackets living in their Christmas trees shipped from the mainland United States, partly due to research by a U.S. Department of Agriculture (USDA) scientist and his university and state cooperators.

Every year, fir [trees](#) from the Pacific Northwest are shipped to Hawaii for use as Christmas trees. Although yellowjackets usually nest in the ground, mated queens who haven't yet built their nests sometimes make fir trees their home during winter. So, when the trees are harvested in November for shipment to Hawaii, the yellowjacket queens get rounded up right along with them.

The western yellowjacket, *Vespula pensylvanica*, is considered an invasive insect in Hawaii, competing with [native birds](#) for insect prey and greatly reducing native insect populations. In an effort to keep more yellowjackets from reaching the islands, Hawaii officials required a percentage of trees to be either manually or mechanically shaken to dislodge [insect pests](#). But there is no precise specification for how long the trees should be shaken, which makes a big difference in whether insects remain on trees.

Entomologist Robert Hollingsworth, who works for USDA's Agricultural Research Service (ARS), teamed with university and state collaborators to examine the efficacy of the tree-shaking program and found that both methods failed to remove all yellowjacket queens from the trees, although mechanical shaking was significantly more effective than

manual shaking. Hollingsworth is based at the ARS Pacific Basin Agricultural Research Center in Hilo, Hawaii. ARS is USDA's principal intramural scientific research agency.

The scientists also tested pre-harvest insecticide sprays as a supplement to the shaking treatment. They found mist applications of an insecticide in the pyrethroid chemical class were 100 percent effective in killing yellowjacket queens, and remained effective even after heavy rainfall. Details of the study were published in the *Journal of Economic Entomology*.

Hawaii officials now require all fir trees destined for the islands to be shaken, regardless of shaking method. Future research plans include making shaking treatments more effective in the absence of an insecticide treatment.

Provided by United States Department of Agriculture

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