Battling insects that cause trouble in paradise

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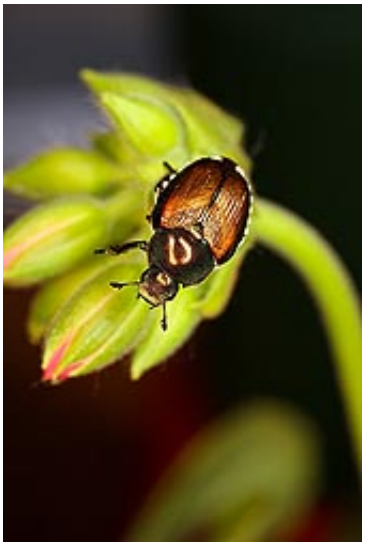

ARS scientists are helping the Azores, islands off the coast of Portugal, control the Japanese beetle (Popillia japonica) with the Metarhizium fungus. Credit: Stephen Ausmus

(PhysOrg.com) -- We aren't the only species that like tropical vacation spots. Japanese beetles plague parts of the Azores, and Oriental fruit flies infest some of French Polynesia. But U.S. Department of Agriculture (USDA) scientists are turning to nature to combat these invasive pests.

Both insects also cause problems in the United States, so the efforts by researchers with USDA's Agricultural Research Service (ARS) may provide mutual benefits. ARS is USDA's principal intramural scientific

research agency, and this work supports the USDA priorities of promoting agricultural sustainability and international food security.

Japanese beetles were accidentally introduced into the Azores, a chain of islands off the coast of Portugal, in the 1970s. Over the next 40 years, their numbers increased exponentially and they began causing major agricultural damage.

Stefan Jaronski, with the ARS Northern Plains Agricultural Research Laboratory in Sidney, Mont., is helping the Azoreans develop the fungus Metarhizium anisopliae as a biocontrol. After the fungus infects a beetle, it grows inside the insect and, over the course of a week, the insect dies. If conditions are right, the fungus covers the insect, producing spores that help spread the fungus to other beetles, continuing the process.

In previous work, Lerry Lacey, a retired ARS scientist, designed a modified Japanese beetle trap so spores of the Metarhizium fungus could be dispersed in a process called "autodissemination." Beetles caught in the traps "dust" themselves with spores and carry them to infect other beetles. The results so far show beetle numbers are decreasing on the one island in the Azores, São Miguel, where the fungus has been used for the past two years.

Meanwhile, Roger Vargas, an ARS entomologist with the agency's U.S. Pacific Basin Agricultural Research Center in Hilo, Hawaii, is helping scientists manage outbreaks of Oriental fruit flies in French Polynesia, a chain of islands on the other side of the world.

Vargas, who has experience with fruit fly biocontrol programs in Hawaii, has introduced two species of beneficial parasites, Fopius arisanus and, more recently, Diachasmimorpha longicaudata, that have reduced infestations of Oriental fruit fly and Queensland fruit fly, a related fruit fly species. He published results of his efforts in the Journal

of Economic Entomology and in Biological Control.

More information: Read more about this research in the February 2012 issue of *Agricultural Research* magazine.

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