

DownToEarth

Scientists characterise a natural pathogenic fungi to help save eucalyptus forests from devastating pest

Eucalyptus snout beetle can cause great damage, but fungi could be used to develop a bio-pesticide for sustainable forestry

By [Himanshu Nitnaware](#)

Published: Tuesday 09 January 2024



📷 A Eucalyptus snout beetle infected with pathogenic fungi in Colombia. Photo: Cindy Mejía / Corporación Colombiana de Investigación Agropecuaria, AGROSAVIA, Bogota, Colombia

Scientists have found a natural remedy to protect eucalyptus forest plantations from a pest, eucalyptus snout beetle, which is known to cause serious damage to eucalypts. The researchers have managed to collect a naturally occurring pathogenic fungi and characterised it to turn it into a bio-pesticide for controlling beetle populations.

The identification of the pathogenic fungi to control the beetle is already known, according to a recently published study. Now, the characterisation could help protect the 115,570 hectares of eucalyptus plantation in the country.

The paper, *The Eucalyptus snout beetle in Colombia: Selection and evaluation of entomopathogenic fungi as bioinsecticides against Gonipterus platensis*, was published in the journal *Biological Control*.

Eucalyptus snout beetle (*Gonipterus platensis*) is a leaf-feeding beetle that is a major defoliator of eucalypts, according to the Food and Agriculture Organization of the United Nations. The pest is indigenous to Australia but occurs in many countries throughout the world where eucalypts are grown.

The beetle feeds on leaves, buds and shoots, resulting in stunted growth and deflation and causing heavy losses. It can cause damage over vast areas as it had a great flight capability and gets transferred with transport of forest products.

The pest is mainly controlled with the help of microwasps *Anaphes* spp — an expensive solution. This led a team of scientists to look for naturally occurring pathogenic fungi to tackle the problem.

The scientists underlined the capacity of the pest to damage eucalypts. In 1998, its distribution spread across 1,156 square kilometres within a year and grew its range by 160 km per year in the United States and South Africa within first five years.

“The mycoinsecticides belonging to the fungal genera *Beauveria* and *Metarhizium* are the most commonly produced and commercialised for these purposes, however, limited research using entomopathogenic fungi to control *Gonipterus* populations is available,” it noted.

In the new research, as the scientists collected the fungi from naturally infected beetles, the pathogen can better adapt to the environmental conditions, making it efficient to control beetles in forest populations.

The fungi could be used to develop a bio-pesticide for sustainable forestry using integrated pest management. The fungi could also be used in other countries where the insect is causing severe damage, the researchers said.

Previously, researchers evaluated five biological insecticides with active ingredients of *Beauveria bassiana*, *Metarhizium anisopliae*, and a mixture of *Brevibacillus laterosporus*, *Bacillus licheniformis* and *Bacillus chitosporus*.

The findings of the study showed that *B. bassiana* was highly effective both by contact and ingestion, with a mortality rate of 100 per cent, while *M. anisopliae* and the *Bacillus* mixture caused low mortalities, ranging from 2.5 to 5 per cent.

Eucalyptus forests are spread over 20 million hectares across the world, the study noted. “In the Iberian Peninsula, the eucalyptus snout beetle could cause defoliation levels of 100 per cent and produce wood volume losses of up to 86 per cent,” the researchers wrote in the paper.

Eucalyptus wood is a crucial material for paper pulp production and requires biological and chemical methods to keep the eucalyptus snout beetle population under control.

The scientists developed the fungi by treating according to insecticidal activity, UV-B radiation tolerance among other parameters to ensure that recovered fungi are suitable to produce bio-insecticide and mass production and commercialisation.

“*Beauveria pseudobassiana* and *Metarhizium brunneum* were the most virulent fungi. *B. pseudobassiana* was the most adapted for producing a bio-pesticide and tolerant to environmental conditions,” a press statement from researchers noted.

Source: <https://www.downtoearth.org.in/news/science-technology/scientists-characterise-a-natural-pathogenic-fungi-to-help-save-eucalyptus-forests-from-devastating-pest-93788>