Surveys of indigenous entomopathogenic fungi and nematodos of Chile and studies on their pathogenicity towards pests of economic importance.

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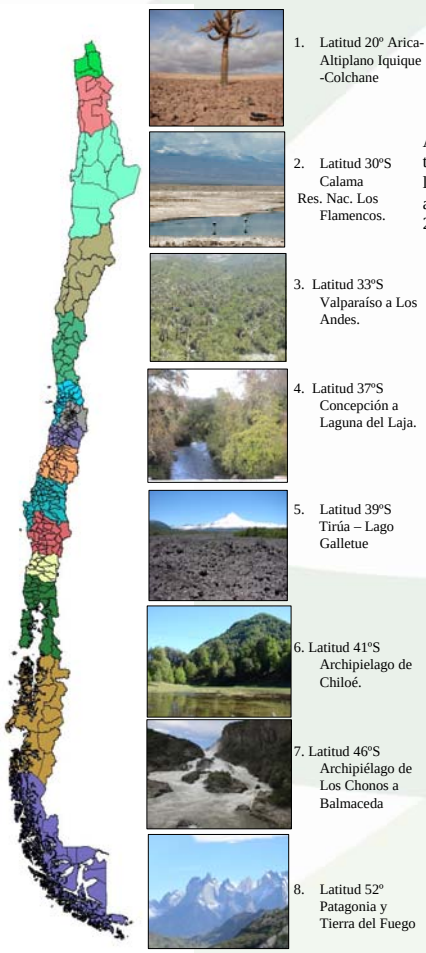
ABSTRACT

This 3 year project is funded by the Darwin Initiative, with the aim of creating a national database of entomopathogenic fungi (epf) and nematodes (epn) found within Chile and to build on the expertise required to curate and profile them. The long-term objective is to develop biological control agents based on these microorganisms and to highlight the benefits of conserving microbial diversity to local growers. The project is a collaboration between CABI (Europe - UK) and the Instituto de Investigaciones Agropecuarias (INIA) in Chile.

SURVEY SITES

Eight sites have been selected in Chile (Figure 1), each of which will be surveyed for epf and epn.



1. Latitud 20º Arica-Altiplano Iquique -Colchane
2. Latitud 30ºS Calama Res. Nac. Los Flamencos.
3. Latitud 33ºS Valparaíso a Los Andes.
4. Latitud 37ºS Concepción a Laguna del Laja.
5. Latitud 39ºS Tirúa – Lago Galletue
6. Latitud 41ºS Archipielago de Chiloé.
7. Latitud 46ºS Archipiélago de Los Chonos a Balmaceda
8. Latitud 52º Patagonia y Tierra del Fuego

The sites, stretching from the Andes to the Pacific coast, cover some of the major topography, vegetation, soil types and climates present in Chile, from hot, arid desert in the north to near Antarctic conditions in the south. Two surveys were carried out in Year 1, in the north, centre and south of the country.

Figure 2. Waxmoth larvae infected with entomopathogenic fungi (EPF) and Entompatogenic nematodes (EPN).

SAMPLING

Approximately 1400 soil samples were taken in each survey site, collecting from a variety of ecosystems including agricultural land, coastal platforms, salt lakes and the Tamarugal Pampa. Samples were also taken on Isla Magdalena, a national park 2 km off the west coast of Chile. The altitude of sampling points ranged from 0 to 4800 m above sea level.

At each soil sample site the pH, temperature and humidity of the soil was taken, then the samples returned to the INIA laboratories. Processing for epf and epn used waxmoth larvae as bait and was carried out twice for 4 days at 20 ˚C (Figure 2).

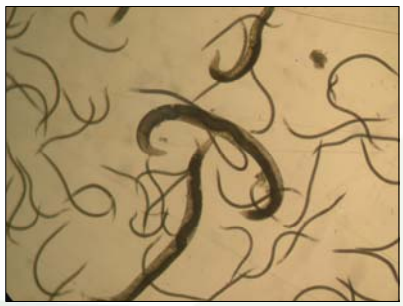


Figure 3. Isolates of entomopathogenic nematode.

ISOLATES

Processing of samples has presently revealed 101 epn isolates (*Steinernema* and *Heterorhabditis* spp.) and 528 epf (Figure 3). Isolates are in process of molecular identification, cryopreservation and will then be biologically and ecologically profiled to identify links between habitat and isolate.

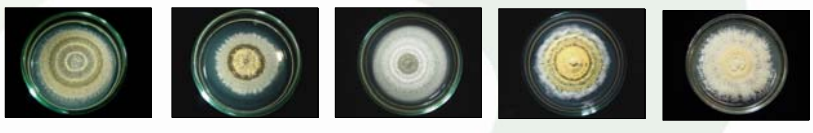


Figure 3. Isolates of entomopathogenic fungi.

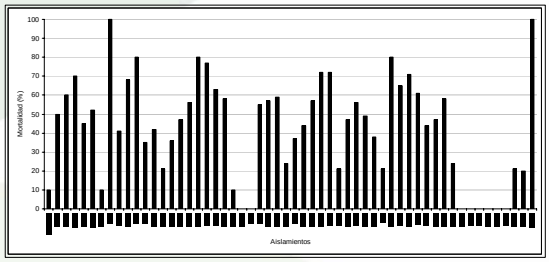


Figure 4. Example of NEP screening on important target pest show the variability of different isolates, like the parasitism in *Cidya pomonella.*

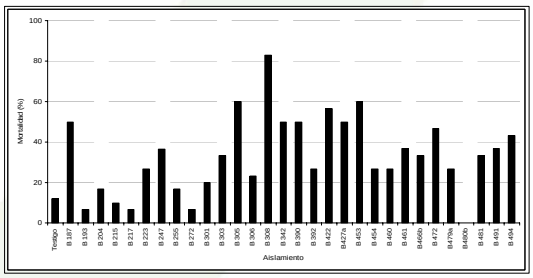


Figure 5. Example of EPF screening on important target pest show the variability of different isolates, like the parasitism in *Xanthogaleruca luteola.*

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