**FREQUENCY AND DISTRIBUTION OF ENTOMOPATHOGENIC FUNGI IN SOILS ALONG CHILE.**

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Abstract:

In the last ten years, the Biological Control Program of INIA has conducted systematic surveys of soils, searching for entomopathogenic fungi (EPF). 3,200 soil samples have been collected from wild and human intervened areas, covering 4,170 Km of longitude from north to south (18º31‘40” to 54º11‘37” lat S). The surveys were representative of different and contrasting ecological zones, such as the Atacama Desert or the Sub Antarctic climate of Tierra del Fuego, and from the sea level to 4,700 m a.s.l. The survey objective was to isolate, identify, associate the EPF to ecological conditions, and evaluate EPF as potential agents for biological control of agricultural insect pests. The soil samples were baited with the wax moth larvae (*Galleria mellonella*), and then incubated into humid chambers to allow the development of fungi. A total of 1,216 (38%) isolates of *Beauveria* spp. and *Metarhizium* spp. were collected. The geographic distribution shows that Beauveria was prevalent in the northern or warmer area, associated to xeromorph, Andean Altiplano and mesomorphic ecosystems, close linked to aridsoils (42.7%) and alfisoils (55.8%). These isolates were mainly related to spontaneous wild plants, botanic islands and small water courses. Furthermore, the largest frequency of *Beauveria* was at the endemic palm (*Jubaea chilensis*) area; a mesomorphic ecosystem at the Central zone. Instead, *Metarhizium* isolates increase to the south or colder zone, reaching the highest frequency in the cold jungle of native forests. The main distribution includes the subantarctic and hidromorphic ecosystems with inseptisoils, mollisoils and espodosoils zones. In general, the more alkaline was the soil the more frequent was *Beauveria*, and the more acid the more *Metarhizium* is found. This collection is allocated in the Microbial Resource Bank of INIA, significantly enhancing the collection of indigenous germplasm. It is likely that indigenous isolates will show stronger adaptations to Chilean conditions, compared to exotic ones, providing important pest control agents.

**Key words:** Survey, Ecology, Soils, Biological control