

INTRODUCTION AND OBJECTIVES

Ecuador harbors an exceptional biodiversity, reaching its peak in the eastern Amazonian Region. Ecuador emphasized the ecological but also economical and societal values of its biodiversity and the necessity to preserve it together with the development of sustainable mechanisms to valorize it for present and future benefit and the country economy.

Today, many local ecosystems are still poorly inventoried as far as their biodiversity is concerned, and some groups of organisms, such as the fungi, remain scarcely investigated. Fungi constitute a major clade of biodiversity. Their ecological significances are incalculable, as they play key ecological roles, participating in ecosystems functioning and equilibrium (recycling carbon, plant production, plant diversity). Fungi associated to plants are important components of the fungal diversity. Fungi and plant have developed specific to generalist interactions.

Issues in mycology, culture collection, plant ecology and ecosystem conservation delineated a project which global objective is to improve the knowledge of ecosystems functioning, through the study of plant-fungi interactions at the rhizosphere level in various natural or disturbed areas or botanical groups.

GENERAL OBJECTIVE :

Improvement in the knowledge of ecosystems functioning through in-situ and ex-situ studies of plant- fungi interactions, to contribute to their sustainable management and valorization of their fungal component in environmental or economic sectors.

OBJECTIVES:

1. Studies of diversity of non-mycorrhizal root endophytic and saprotrophic fungi associated with plant communities' naturally recolonizing oil ponds in the Amazonian areas.

Oil exploitations in eastern Amazonian Ecuador, since decades have generated large pollution. The "oil pounds" resulted from either pipeline leakages or voluntary discharges of bad quality crude.

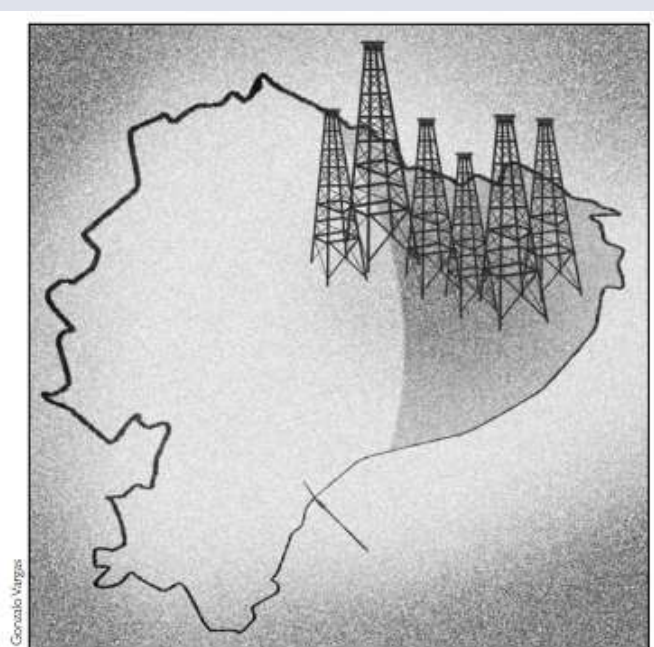
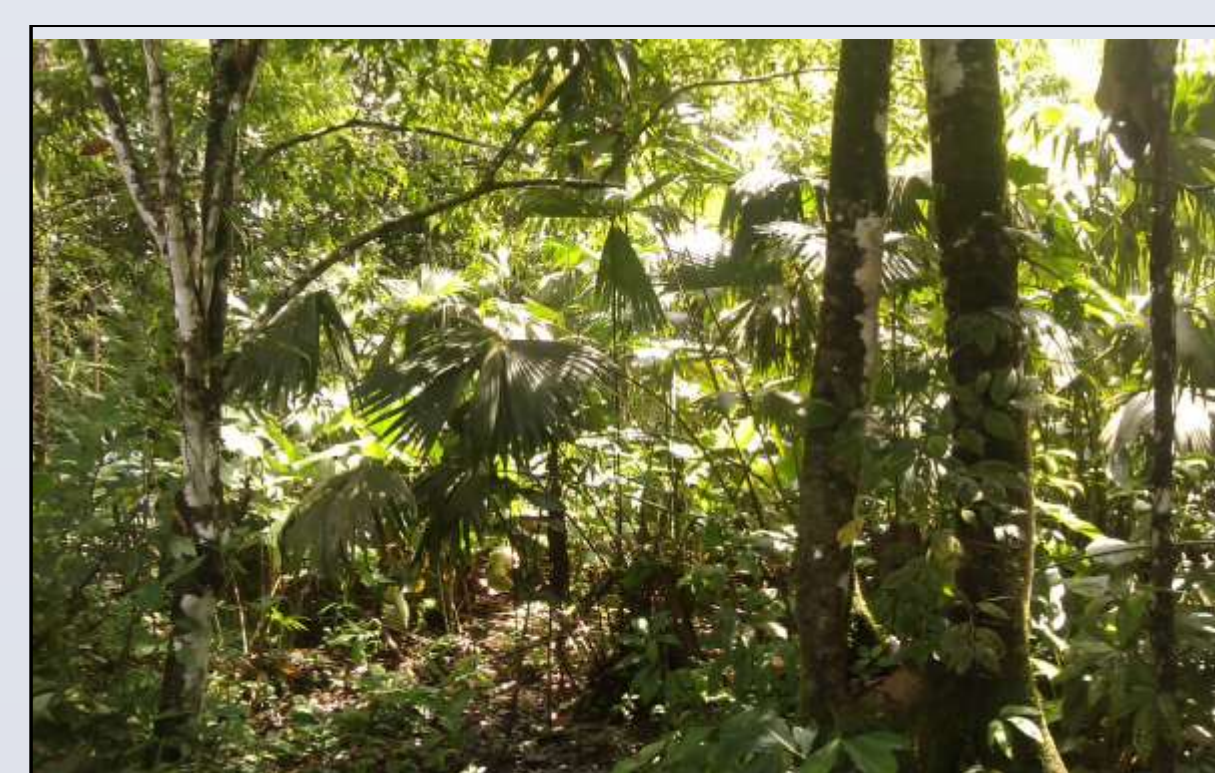


Imagen de un pozo contaminado en Taraco, Ecuador, en 2007. / REUTERS



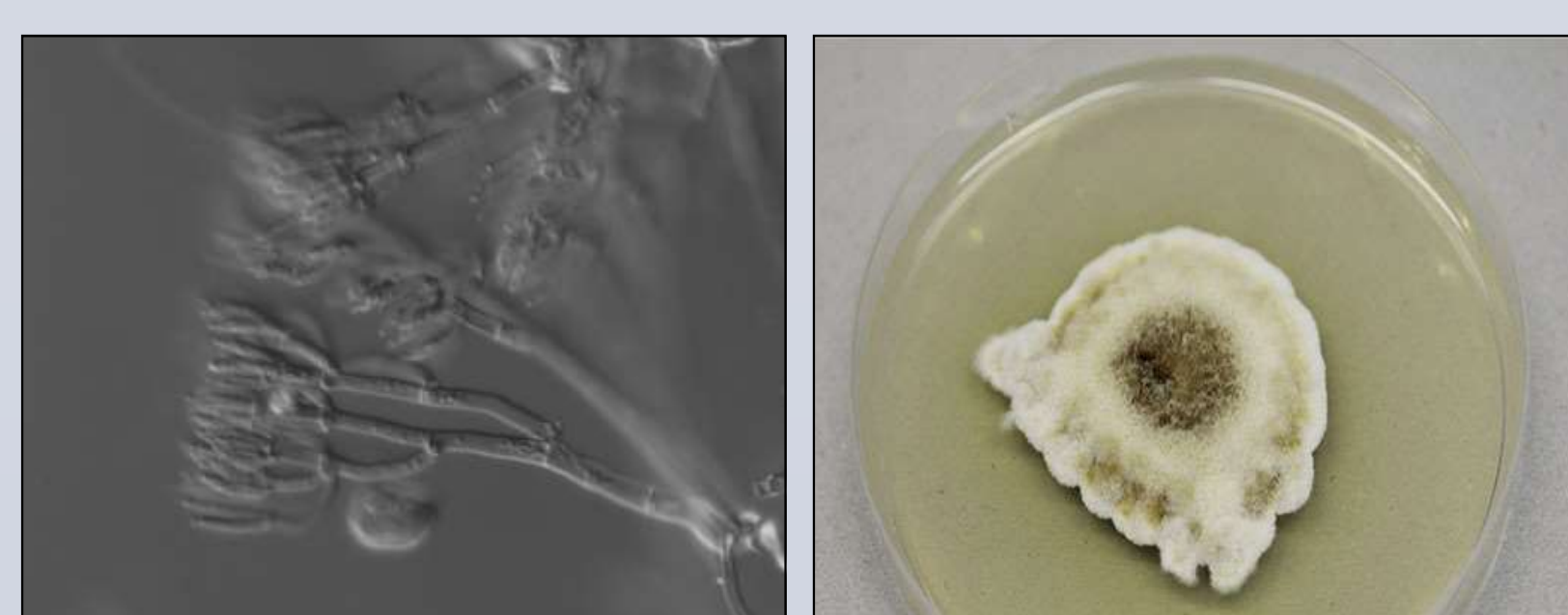
Site of sampling : Charapa camp. (Pond 1)

These ponds, left abandoned for year, were progressively covered by leaf litter and woody debris, developing a superficial layer of loam; this loam layer have favoured plant establishments.



The loam layer is rather superficial, the plants that are growing locally have their root system partly immersed in crude oil.

The strains of fungi were isolated from the rhizosphere and roots of plant growing in a superficial layer of organic debris covering two oil-polluted ponds located at Charapa camp, Province of Sucumbíos.



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2. Diversity of arbuscular mycorrhizal fungi associated with plants communities naturally recolonizing oil ponds in the amazonian areas

Oil activities generate, however, large pollution, aquatic and terrestrial, and represents one of the major threats to the biologically-rich ecosystems.



Site of sampling : Charapa camp. (Pond 1)

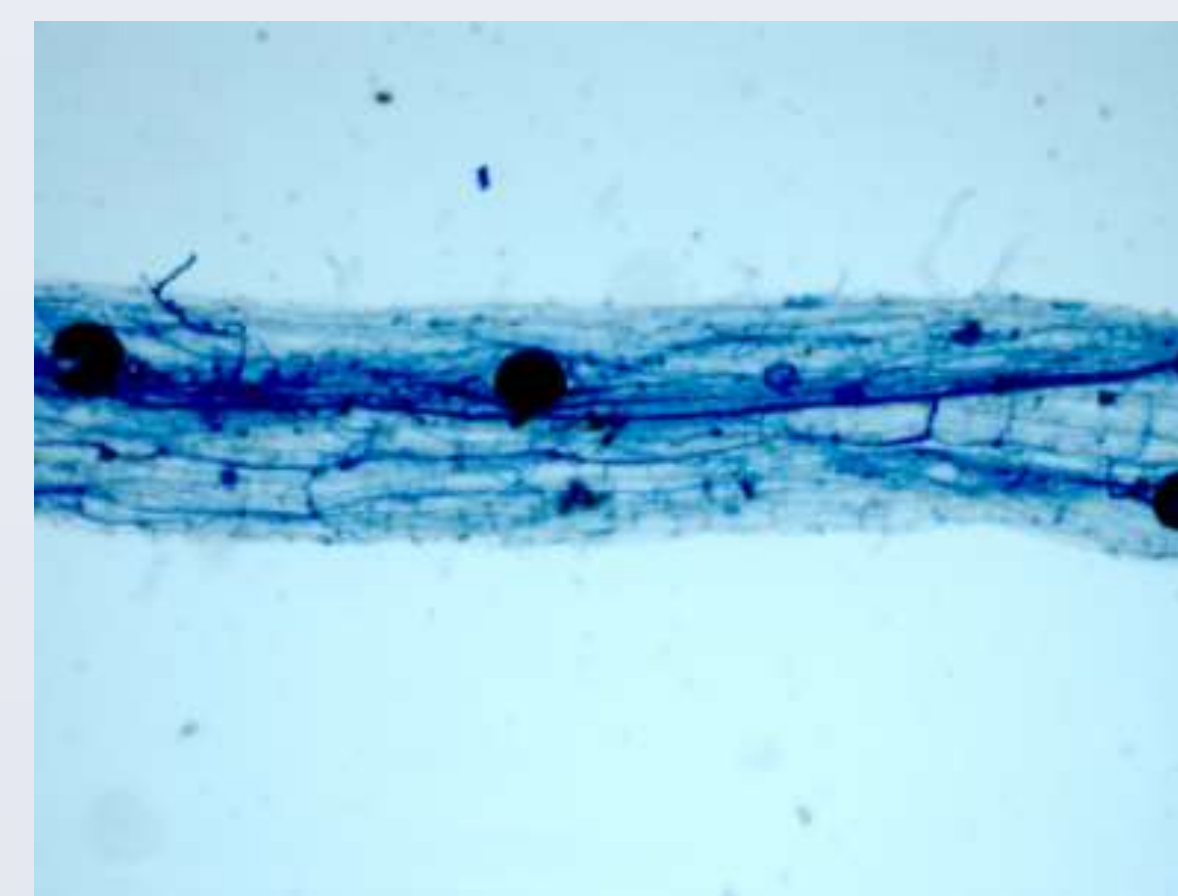


Eastern Amazonian Ecuador



Trap plant culture (roots inoculum)

Root's staining for quantification of mycorrhization



3. Studies of orchid mycorrhizal fungi, molecular r identification and eco-physiology

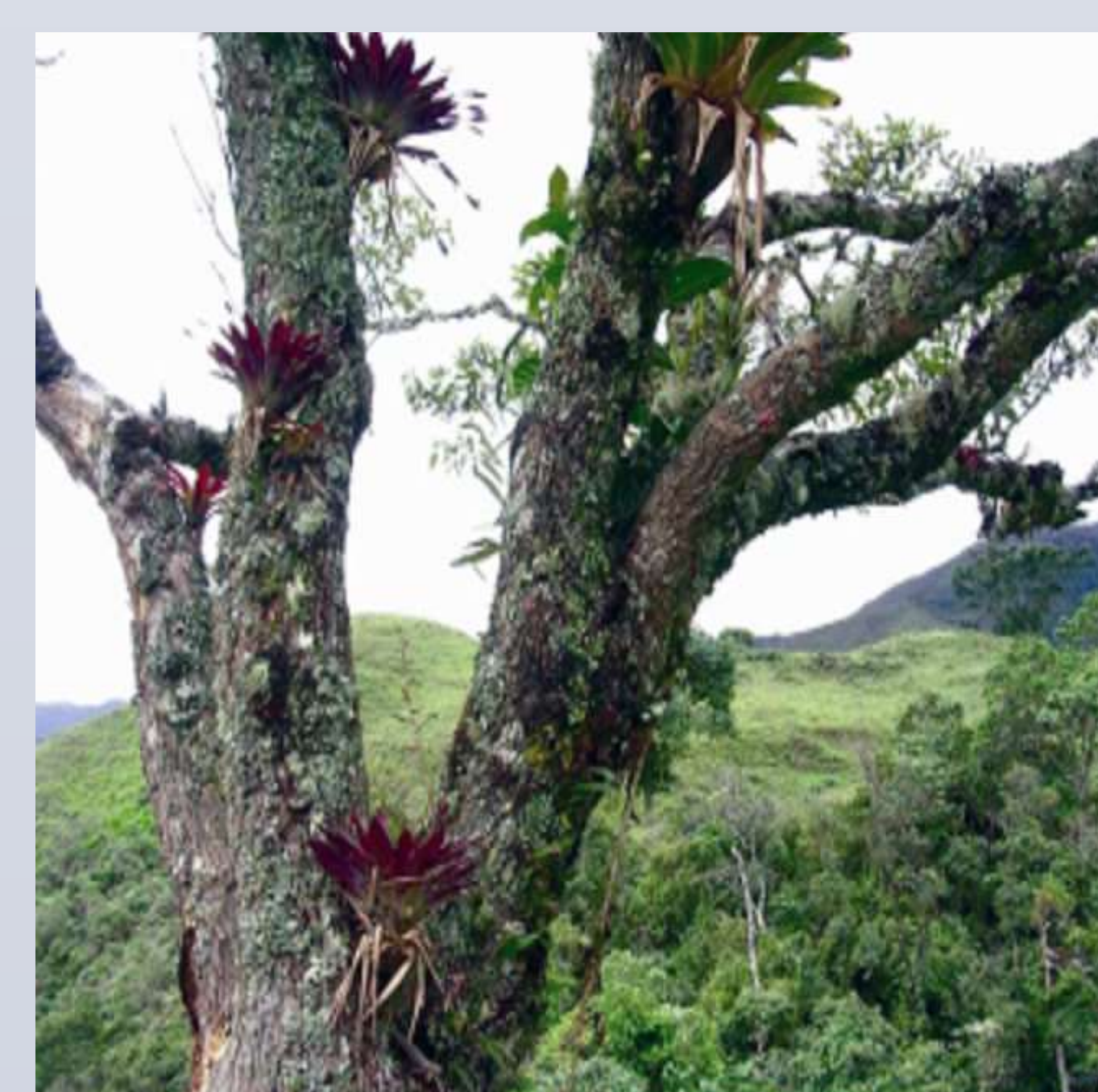


The study was carried out on two sites in tropical mountain rainforest area in southern **Ecuadorian Andes Podocarpus National Park along Loja and Zamora Chinchipe** road.

Sites were selected based on orchids distribution previously confirmed on field. Sampling was focused in epiphytic orchid species, *Cyrtorchilum flexuosum*, *Cyrtorchilum myanthum* and *Maxillaria calantha* distributed along a hectare from each site



Cyrtorchilum myanthum *Maxillaria calantha* *Cyrtorchilum flexuosum*



- Isolate pure strains of orchid mycorrhizal fungi (OMF)
- Identify OMF by DNA analysis
- Carry out in situ experiments to stimulate orchid symbiotic germination and seedling establishment.

