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**Plant Health Protection in Organic Coffee Cultivation in Peru: a  
Basic Programme for Obtaining and Applying Ecologically  
Acceptable Bio-Insecticides and Fungicides**

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**Abstract**

In the Mayo river area of the Upper Amazon in north-eastern Peru a development project for ecological coffee production is under way. Highland Arabica coffee is produced by APROECO, a democratic and cooperative association of more than 800 small farmers and indigenous ethnic groups, with the assistance of PRONATUR, a private, ecologically orientated organization and GTZ, the German Agency for development. Emphasis is on fair trade practices and market orientated, sustainable production of shade grown organic coffee. Habitat conservation (especially high canopy old growth trees) is also considered extremely important.

Conventional methods of plant protection from diseases and pests nearly always endanger ecosystems, and also lead to an inconvenient dependency on commercial products. The Peruvian rain forest is known to harbour innumerable plants with properties making them useful as biological insecticides or fungicides, but much investigation and research has yet to be done.

Local crops are damaged mainly by the following: *Mycena citricolor*, *Pellicularia koleroga*, *Hemileia vasatrix*, *Hypothenemus hampei*.

A two-phase programme is described which **a)** offers a permanent pest and disease identification service to farmers, and **b)** seeks to obtain specific ecological products to combat the above-mentioned organisms.

**Phase 1:** (March–December 2002)

- Research and development of extracts from locally collected plants. Basic formulations which later on can be copied by farmers for use in their own plots.
- Development of foliage fertilizer based on natural products rich in nitrogen, potassium and minor elements: guinea-pig and cattle dung, leguminous foliage etc.

**Phase 2:** (November 2002–December 2003)

- Development of a microbial dynamizer from soil fungi (*Mycorrhiza* spp.)
- Development of organic fungicides derived from *Verticillium* spp. and from a *Trichoderma* sp. discovered locally.
- Development of an organic insecticide from local strains of *Beauveria* sp.

**Keywords:** Agro-ecology, biodiversity conservation, coffee, extension service, fair trade