

## **The quality of soils, starting from local indicators of soil quality and chemical, physical and biological parameters, with the participation of farmers of the micro-catchment of the river Cabuyal, Cauca Columbia**

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### **Abstract**

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#### **1. Introduction**

One of the main problems considering the soil of Colombia and especially of the hillside of the department of the Cauca is the degradation process and erosion of the soil, due to wrong use and unsuitable application of the soil. Approximately, 40 % of the Colombian territory corresponds to hillside areas and more than the farmers' third two parts still belong to the Andean area, which is mostly exposed to the migratory pressure and consequently to the degradation of its soil (GONZALEZ, 1996)

After the world Summit of the Earth in Rio 1992 the soil is considered amongst the important lines of protection and conservation due to the importance for life conservation and their relationship with the global climatic change. In this same summit the handling and knowledge of the local communities to be an employee in the sustainability of use of the soil and development was considered of supreme importance (WINKLER PRINS and RHOADES 1994).

The present work tries to investigate and to validate participation (investigators and farmers), to generate technical proposals and methodologies starting from the knowledge of the farmers that allow them to be effective for the conservation and protection of the health and quality of the resource soil. The general Objective of the present investigation is to evaluate and to differentiate the quality of soils, starting from local indicators of soil quality and chemical, physical and biological parameters, with the participation of farmers of the valley of the river Cabuyal in such a way that contributes long term to the improvement of the limitations of the use of the soil and improvement of the quality of the farmers' life. It is started from a database of analyses of soils gathered during 25 years to demonstrate that the resource soil within the basin has not been deteriorated, to identify with participation of the farmers, the local indicators of the soils health, and to compare them with the scientific parameters of the respective analyses.

**2. Characterization of study area.** The study area is the Cabuyal micro-watershed of the Ovejas river basin of the Cauca, with 7.000 ha. Between 33' west of Greenwich and 52' latitude north of Hillside's program.

The Cabuyal micro-watershed is divided in three agro-ecological zones: high, medium,

and low. Coffee is the main crop in the high and medium zones. Cassava is the main crop in the low zone.

### **3. Materials and methods (Procedure)**

- 3.1.- Grouping of the Information (Clarification of the Information)
- 3.2. Interviews, to know about the farmers.
- 3.3. Interviews, to know about the farmers.
- 3.4. Descriptive and multivariated statistical analysis of the data.

### **4. Results of research in progress**

Alterations of the nutrients through 27 years

With the selected samples of soils the chemical behavior of the soil was observed during 27 years for the chemical parameters: Carbon (C), match (P), calcium (Ca), magnesium (Mg), potassium (K), aluminum saturation (To the), capacity of cationic exchange (CICE).

In the period 1970 – 1997 there are improvements in the percentage of the (% Al) 80 %, it decreases to 30 % (See graph 1). Consequently the Match (P) improved of the 2,3 ppm. to 4 ppm. and the Calcium (Ca) increased from 0,5 meq/100 g to 1,5 meq./100 g

There exists a slight tendency of increase of the Carbon (C) of 4,5 % in 1972 to 6,3 % in 1997.

**Keywords:** Chemical, physical and biological parameters, local indicators of soil quality, participation of farmers of the micro-catchment of the river Cabuyal, Cauca Columbia, quality of soils