Cropping systems on vegetal cover

Fundamental principles

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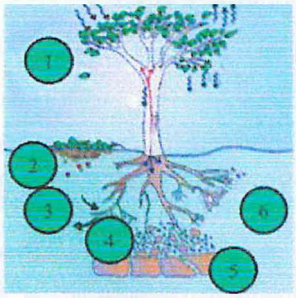
Techniques of direct seeding on vegetal cover have been developed for tropical conditions such as those in Brazil during the past decade. These techniques propose a paradigm change and open new perspectives for agriculture. They are now used on millions of hectares all over the world. Since 1999, they have been adapted for conditions in northern and central Vietnam, both for hilly and mountainous areas. They are based on a few fundamental principles:

Replicating a forest ecosystem

A forest ecosystem ensures a certain number of functions, which are fundamental to the process of soil genesis:

- 1. Transformation of solar energy and creation of organic matter through photosynthesis
- 2. Supply of fresh organic matter on soil surface (leaves, branches) and under the surface (roots)
- 3. Mineralisation and humification of organic matter, recycling of nutrients
- 4. Soil aeration by roots
- 5. Breaking up of parent material by roots and alteration of this parent material. Production of clay.
- 6. Regulation of underground water flow



Principales fonctions assurées par un écosystème forestier

Direct seeding techniques try to replicate this forest ecosystem to speed up the above processes.

Replace mechanical plowing with through improving soil structure

Brachiaria brizantha roots

Improvement and stabilisation of the soil structure is made by cultivation of plants with strong root systems (i.e Brachiaria sp.) that are able to develop in adverse conditions, and by developing biological activity.

Brachiaria brizantha roots in ferralitic soil

Improvement of soil structure in termites gallery

Always keep soil covered with a dead or living mulch

As in a forest, the soil is permanently covered with mulch...

Upland rice on dead grass mulch

.... and, thus, is protected against erosion.

Maize living on mulch of Arachis pintoi

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