# How sustainable agriculture works

By Ifham Nizam

Agriculture is the key for a Third World country like ours. Certainly our expertise could be used in a meaningful manner so that we don't need to depend on essential food items from others.

This article deals with three villages that were struggling to get the best out of their crops and how local expertise accomplished their task.

Villagers from Nikmawatta, Haragama and Pubudugama found it very hard to keep up with their day-to-day to activities due to low yields and poor gains.

However, with assistance from the UN Development Programme, Global Environment Facility/Small Grants Programme, yields began to improve, generating better incomes for the needy villagers, who are now said to be self sufficient and investing more on future crops.

These farmers cultivate mainly vegetables; tomato, beans, snake gourds, bitter gourds and brinjals. They said they witnessed significant crop yield and quality improvement after soil mechanisms were introduced. However, their cultivation is limited only to the Maha season due to water limitations.

Prior to the project, Dr. S.P. Nissanka from the Department of Crop Science, Faculty of Agriculture, University Of Peradeniya, visited these villages. He found that there were limitations to water supply, crops brought lower yields and cultivators were unable to sell their products at prices that would help them cover their production costs. They also had financial

difficulties in purchasing relevant machineries. They were also not aware about what crops were best suited for each season.

Following a request by project proponent Ven. Atatagalle Dhammalankara, the UN Development Programme (UNDP) introduced soil conservation measures to reduce soil erosion, through community participation. Dr. Nissanka randomly selected 15 project sites.

Nikmawatta, Haragama, and Pubudugama are mountainous villages where the majority of the families are poor — their main source of income being from crops grown mainly during the Maha season.

As experts say, with the absence of permanent vegetation, sloping lands in the region are prone to very high soil erosion where settlements and agriculture should not be allowed.

Soil continues to be degraded due to unplanned vegetable cultivation with no soil conservation and the top soil being washed off during heavy rains in the *Maha* season — the villagers believed these problems were inherent and were unaware about soil management and conservation measures. Being situated in the Victoria catchment area it was vital to introduce sustainable land management techniques as a national priority to protect further degradation of the soil.

Global Environment Facility (GEF/Small Grants Programme (SGP) assisted Sri Dheerananda Savings and Credit Organization to raise awareness of the community about sustainable agriculture and soil conservation.

The project initiated action to introduce farmers to new fruit and timber species as crops that would help sustain income generation throughout the year. Soil conservation measures were introduced and implemented with community participation.

## Implementation

Education and awareness programmes were followed by establishing soil conservation mechanisms -stone terraces 4000 feet, Gliricidia live hedges 3000 feet and drains 10,000 feet. Residue recycling -compost making, crop diversification, and timber and fruit trees were effectively introduced.

Hedges were established in contours across the slopes to facilitate cropping and to reduce runoff as in Slope Agricultural Land Technology (SALT) an agro forestry system introduced Dr. Ray Wijewardene.

According to officials crop residues and lopping (pruning) were used directly as organic fertilizer and also used for compost making. Farmers were educated on manure and compost usage and their importance in soil improvement and conservation. Compost making techniques such as pit and heap and use of household solid wastes for compost making were also introduced.

## Results

* All farmers in the region cultivating mainly vegetables crops mentioned significant improvements in yields and improvement of the quality of produce after soil conservation mechanisms were introduced.

* Farmers were seen caring for the multipurpose trees and as a resulted, the agro-biodiversity of the region has improved.

* Community participation increased forming a society where some credit facilities were also provided on a loan basis in addition to the project implementation activities and other social responsibilities.

* Farmers mentioned significant yield improvement with addition of organic matter mainly from Gliricidia. Some participants achieved great success in learning the significance of soil conservation.

* Confidence building and attitudinal changes were observed. They were seen as thinking positively and having confidence that what they were doing was bringing in good results.

## Sustainability

By improving soil conditions, conservation measures of this very vulnerable area and the livelihood of underprivileged farmers have improved.

Community leaders have emerged who are capable of convincing other householders who are not engaged in this exercise to follow this method. Community networking by forming welfare societies was a very positive out come that would sustain this project in the long term. This also gave them a collective voice for raising their grievances to the relevant authorities.

Reduction of damage by fires to vegetation in this region is apparent as the Gliricidia sticks used for support in tomato cultivation are later used for Gliricidia plantation which are more fire resistant than grass.

Excess sticks produced are sold and mature poles are used for construction processes and as fuel wood. This prevents people from getting fuel wood and timber for domestic usage from forests, thus furthering conservation.

A sustainable income would be obtained by selling fuel wood and all other ecological benefits such as soil erosion control, soil moisture and soil biodiversity are the resulting benefits. As a large number of people have grown Gliricidia, plantation owners together could sell wood to dendro-power generation projects.

Increasing agro biodiversity by cultivation of multipurpose trees such as Jak, coconut and mango are also very good indicator of sustainable land management.