HOPE - NEWS LETTER
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Cheers to the soil may the plants benefit

This publication is meant for agricultural extension purposes to be distributed at project site. Awareness on environmental matters and alternative soil fertility maintenance methods for sustained subsistence crop production is of prime importance for the small farmers.

The soil is what we have inherited; we have then the moral obligation to pass it to the next generation, with out destroying its capability of production.

Humans can live on its bounty forever only when they take care of it. One of the many ways of restoring soil fertility for sustainable use is through Alley Cropping. Alley Cropping ia a branch of Agro forestry.

Since time immemorial Alley cropping has been practiced by small farmers all over the world, nowadays it is predominantly exercised in tropical and sub-tropical countries.

In general, Alley cropping will result in competition between the component crops, but in many cases the over all effect is positive. A possible reason for this is that different crops use growth factors such as light, nutrients and water at different moments.

The combination of trees with crops is a natural management system. Forest plants and crops (including tree crops) are produced on the same unit of land.

In most countries most of the forests are on steep slopes, where it is not suitable for agriculture. Due to demographic pressure, introduction of new crops and the need of row materials, forests have been logged; crops are pushing to the highlands and unless strict measurements are taken to reverse this situation, the degradation of the ecosystem is inevitable.

Unprotected bare soils are being eroded in tones and are finding their way to neighbouring countries. Besides, the sedimentation of rivers and streams, the inundation of urban areas are the results of mismanagement of the soil.

When cultivation is practiced in steep slopes it does more harm than good. Due to poor harvest farmers may abandon their fields after a short period (1-3 years or so) leaving a bare poor soil behind to erosion. Even though relatively trees need fewer nutrients than crops, it can take years for the soil to be fully covered with vegetation and to regenerate.

Burning eats the litter (organic matter, wasting nitrogen and sulphur). When heavy rain follows burning the problem is more pronounced, mineral (ash) are washed down to the sea and or blown away by wind. Continuous burning results in coarse grass, which is of inferior quality.

The question may be what should be done? There seems to be three ways of increasing crop production. These are:

- by increasing crop area;
- by using fertilizers or
- both

In our case where arable land is very limited and deforestation is undesirable, we shall choose option two (use of fertilizers).
The type of fertilizers that we buy in bags in subsistence agriculture could be uneconomic. Thus organic fertilizer through the use of Alley Cropping is preferred. This is because, Alley cropping not only produces a crop and a tree, but also keeps the balance of natural environment. The two story plants protect the

soil from water erosion, litter fall and root rotting enriches the soil with nutrients. Rooting systems and height are at varied depths and heights, meaning efficient use of row materials.

Nowadays alley cropping is becoming popular Alley cropping is a branch of agro-forestry. In alley cropping the main/economic crop is grown in the alley/avenue and the legume plant is grown in the hedge rows.

Fig. 1 Alley cropping practice

Alley cropping is an adaptation of shifting cultivation to suit conditions of high population pressure on the land but with out erosion, loss of soil fertility and environmental degradation. With alley cropping, farming soil conditions should remain the same or better as under the best conditions of shifting cultivation and it should be possible to crop that piece of land for many years, indeed, almost indefinitely without fallowing.

Alley cropping retains the main advantage of regenerating soil fertility as in shifting cultivation without fallow periods between cropping cycles. Since it brings together, both the merit of productive cropping systems and the protective and ameliorating effects of legume trees, alley cropping offers a significant promise for sustaining production of food crops in many areas.

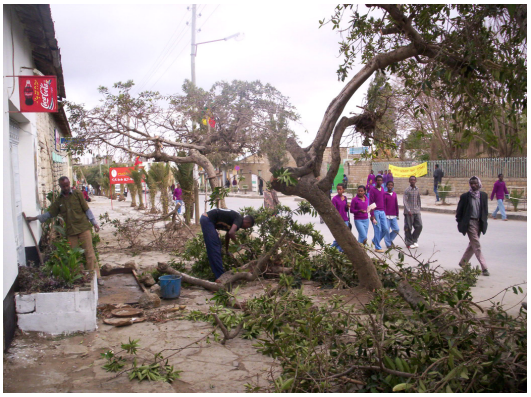
To restore soil fertility and to rehabilitate the devastated environment, the introduction of nitrogen fixing trees (NFT) to the farming system through alley cropping is regarded vital. Unlike common trees, NFT have the capacity to fix nitrogen from the air. When their leaves are applied as mulch, they do in rich the soil with nitrogen, reduce erosion, run-off, increase: infiltration rate, availability of soil phosphorus, soil organic matter levels and decrease soil temperature, weeds and improve the micro clima of the soil and soil aggregates. This means that, legume trees/shrubs can enable the land to be under sustainable agriculture. Additionally, young leaves and flowers of some legume trees can be used as salad and their seeds could also be eaten. Moreover NFT are a source of energy, animal feed, and can be used as wind-break.

Some of the legume trees/shrubs that are recommended for alley cropping in Ethiopia are:

- Sesbania spp.;
- Gliricidia sepium;
- Leucaena leucocephala;
- Acacia spp. etc.

In project area soil degradation is being accelerated by increasing agricultural activities in response to produce more crops for consumption. These increasing agricultural activities have resulted in severe degradation of the ecosystem brought about by, soil erosion and loss of nutrients, depletion of water resources etc. Therefore, the introduction of Alley cropping seems vital.

Fig. 2 In proper pruning at Mekelle



We can live on the bounty of the soil only when we take care of it. 'The social lesson of soil is that no man has the right to destroy soil even if he does own it, in fee simple, the soil requires a duty of man which we have been slow to recognize'.

"Together we stand"

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