RURAL DEVELOPMENT AND CONSERVATION IN PAPUA NEW GUINEA

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INTRODUCTION

Much of the work carried out at the Wau Ecology Institute has concerned subsistence agriculture. The aim is to help people carry out subsistence agriculture without destroying Papua New Guinea's primary forests - that is, to provide an alternative to shifting cultivation. By shifting cultivation we mean that crops are planted on land cleared by 'slashing and burning', and when that land is no longer fertile, more land is cleared. The original land is left fallow for many years. Eventually, secondary forest grows, the soils become fertile again and the land can be used once more.

This article gives a short description of the problems which prompted us to start our project on conservation in subsistence agriculture. This is followed by an outline of the activities of the project.

PAPUA NEW GUINEA'S FORESTS ARE IN DANGER

Papua New Guinea's primary forests are very important as a source of biotic diversity (many different species of plants and animals). They are also important to people as a source of clean water, building timber, firewood and many other things. The survival of these forests is being threatened in some areas because farmers who practice shifting cultivation need more and more land. However, the main threat certainly comes from large scale timber projects, especially if they are not carefully controlled.

Some of the main effects of clearing too much primary forest include:

- Destroying the habitat (living place) of animals and plants, especially some valuable medicinal plants;
- A shortage of firewood and building timber, if the forest is not given enough time to re-grow.
- Opening up the landscape to landslides and soil erosion.
- Reducing the amount of water that the land can hold. Clearing the forest causes rain water to drain off more quickly. This can lead to water shortages in the highlands and floods in the lowlands.

Some reasons why farmers in Papua New Guinea need more land for subsistence agriculture include:

- a high emphasis on cash crops.
- increase in number of people in the population.

In the past, shifting cultivation using 'slash and burn' techniques lead to a semi-nomadic way of life for many subsistence farmers - that is, people lived in temporary villages until their land was no longer fertile, then they moved the village to new land. The original land was left fallow and the forest allowed to regrow. This way of life does not fit in well with the development of commercial agriculture in Papua New Guinea today and people are abandoning their semi-nomadic village life for permanent villages.

Because of the increasing population in these permanent villages more land is now

needed for both subsistence agriculture and cash cropping. In areas where the population is increasing fastest, it is no longer possible to leave land fallow long enough for fertility to return through the growth of secondary forest. Especially in the mid-mountain areas of Papua New Guinea, nutrient poor grasslands are becoming a more usual feature in the landscape.

Over 80% of the population of Papua New Guinea is dependent on subsistence agriculture. However, much of the agricultural research carried out here, and many development plans for the country are directed towards cash cropping.

Often the better agricultural land is used for cash crops, so subsistence crops have to be grown on unsuitable land far away from the villages. Clearing the forest from this land can lead to soil erosion which greatly delays the regrowth of bush as well as decreasing the yields of food crops. Women have to walk long distances to their gardens. In the end this encourages people to buy more imported food, often less nutritious than garden food, and more expensive.

THE PROJECT ACTIVITIES

The subsistence agriculture and conservation project at Wau was started on a full scale in 1982 and has now been run for over 2 years. It is part of the Rural Development and Training Programme of the Wau Ecology Institute.

The project has tackled the problem of how to conserve Papua New Guinea's primary forests by conducting a special training and extension programme. The programme tries to teach appropriate techniques, suitable for use in the villages, to produce crops in a site-stable garden (a garden grown on the same site for many years).

These techniques are based on results from applied research activities in subsistence agriculture and agro forestry started in 1978 by the Wau Ecology Institute.

Three main techniques are being used:

1. The production and use of A-frames, which are used to build terraces in sloping areas. This instrument can be built very easily. It is of great value for finding the contour lines in an area. Terraces built along the contour lines prevent unnecessary soil losses.

2. Making compost from any organic waste material to improve the soil by recycling the nutrients which have been used up by the crop plants.

3. Setting up and making use of a nursery by using pre-sterilized soil/compost mixtures either in the form of compost bricks, or to fill banana-fibre-pots.

Each of the 4 members of staff working on the project is responsible for planning, planting, cultivating and harvesting a garden

The demonstration garden at the Wau Ecology Institute

block in the demonstration garden. By working on his or her own block, the staff members have been able to teach all the necessary skills to trainees. Regular visits to nearby villages, where most trainees come from, are part of the extension duties of the staff. Extension into the Menyamya area is projected for the next 3 years.

The trainees on the project have come from villages, schools, or church groups or have been sent by the government to get in-service training. More than 1100 people have received training since 1982.

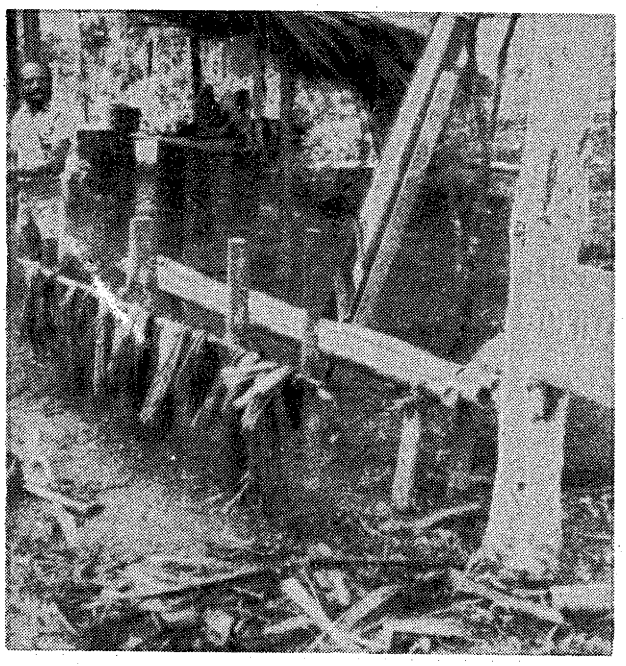
A very important part of the project has been the training of village level extension workers. These villagers, mostly women, are the agents for setting an example of improved gardening in the various villages involved in the project. They have received training for 1-4 weeks. After this they are expected to use the techniques in their own gardens in their villages, and to give advice and support to others interested in the new methods. Some of them are now employed with the Subsistence Agriculture Improvement Section of the Department of Morobe. The village level extension workers are expected to come to the demonstration garden at least once a month to receive additional training. Topics covered have included:

- Production and use of banana fibre pots for nurseries
- Production and use of bamboo steamers to improve the nutritional value of food.
- Special biological control measures for the control of garden pests
- Planting nitrogen-fixing trees
- Prevention of soil loss.

In addition to the village level extension scheme, a system of 'contact farmers' has been set up. These include all the women trainees who are particularly interested in intensive gardening. These 'contact farmers' are given special attention by the village level extension workers.

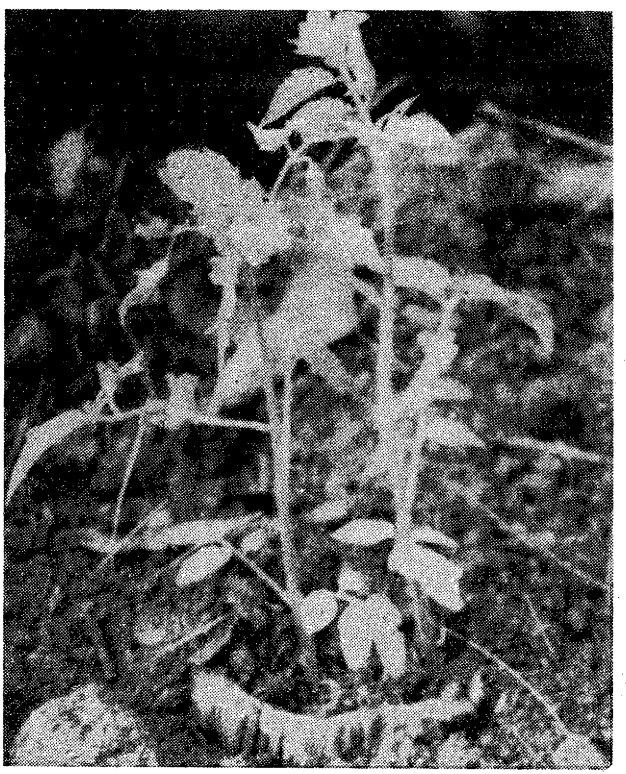
Vegetable nursery, showing the compost brick method

Participants on one of the training courses in subsistence agriculture improvement, preparing compost in a compost stockade



Set-up for the production of banana-fibre pots

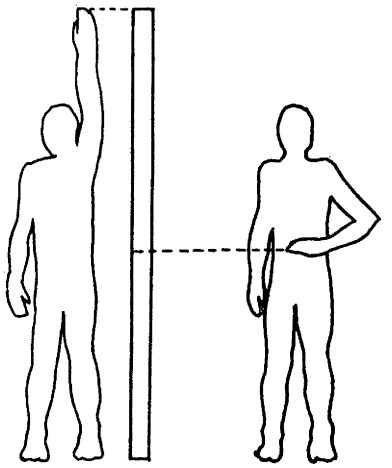
Production of banana fibre pots



Vegetable seedlings being transplanted out of a banana fibre pot

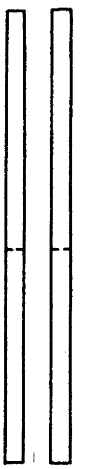
Tomato seedlings planted in the field with their banana fibre pot

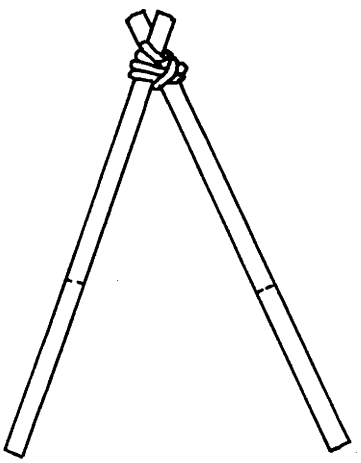
HOW TO MAKE AN A-FRAME, FOR FINDING CONTOUR LINES



1. *Cut two sticks as long as a man with his arm held above his head*

2. *Mark these sticks with a bushknife, just below waist height*

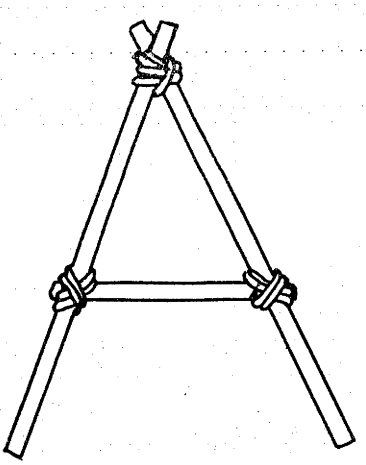




3. *Tie the two long sticks together.*

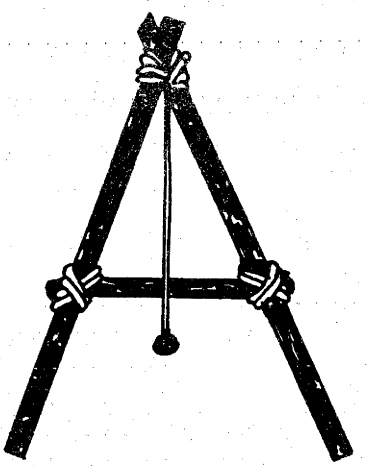
4. *Cut one stick as long as the distance from one shoulder to the fingertips of the other arm, outstretched.*

5. *Cut out a half oval about 3 fingers' width from each end of the short stick. The longer sticks will fit onto these spaces.*



6. *Fit the short stick onto the longer sticks at the marks at just below waist height. Tie together firmly.*

   Find the exact middle of the short stick by measuring the total length with a rope then folding the rope back to half its length. Mark the middle with a bushknife



7. *Tie a rope, weighted with a stone, to the top of the A-frame, so that the stone hangs about 1 fist below the horizontal stick*

8. *If the rope hangs straight down, level with the middle of the horizontal stick, then the A-frame is standing on level ground*

In October 1984, the Morobe Provincial Government took over the programme of the Subsistence Agriculture Project.

SITE-STABLE GARDENS IN THE VILLAGES

Setting up a site-stable garden using the improved subsistence gardening techniques described above does involve hard work for the villagers. In the beginning it may seem easier to continue with shifting agriculture. However, once the garden area is established, with terraces and walkways, compost houses, and a nursery site, - then it is much easier to produce a regular supply of crops.

Because the garden is site-stable, walking distances will be reduced if it is established in a convenient place. At the same time, no more forest needs to be cleared, helping to slow down the destruction of Papua New Guinea's primary forests.

In a number of villages around Wau, these improved gardening methods have already been accepted. Site-stable gardens have been established by women's groups and by individual farmers. Their efforts are a valuable contribution towards our final goal - to prevent further destruction of the unique environment we live in.

A manual about this subsistence agriculture programme will be available in the near future. By giving an alternative to shifting cultivation practises, the manual will help everybody interested in enabling subsistence farmers to face the problem of land shortages; and in the conservation of the unique plant and animal life in Papua New Guinea.

FURTHER INFORMATION

For further information about the Rural Development and Training Programme at the Wau Ecology Institute and the manual mentioned above, you can contact:

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