

Agroforestry as Practised in Thailand and the King's Hilltribe Project

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ABSTRACT

Appropriate cash crops and agricultural technology resulted from research work undertaken in the highland conditions were introduced into some watershed areas where hilltribes are living. The system of agroforestry has been developed with the aim of utilizing the land, gaining profit from crops and forest trees as well as maintaining the natural watershed environment. In order to achieve the goal of agroforestry, three basic aspects as economics, social and education have to be included into system. This line of work has been accepted in many hill areas associated with the King's Hilltribe Project.

BACKGROUND PROBLEMS

Generally and highland in Northern Thailand, although comprising some 70% of the Region, is comparatively unknown and therefore neglected. That has been very well until a decade or so ago when the area began to receive waves of hill peoples who emigrate south from China and Burma. These practitioners of shifting cultivation, leaving exhausted land behind them, came into Thailand in search of fresh forest land. At present, it is estimated that there is now 700,000 hilltribe people.

The presence of such a large number of people in the hill areas causes the following problems.

- 1). Destruction of forest and watershed areas which in turn causes floods followed by drought in the Lowland agricultural regions.
- 2). Erosion of the fertile land.
- 3). Cultivation of opium poppy.
- 4). Tribal peoples' low standard of living makes them fruitful target of communist subversion.

These problems have been realised, and the objectives put forward by His Majesty the King of Thailand in order to solve the problems are as follows.

- 1). To stop forest and watershed destruction by introducing terracing, contour planting, and other erosion control measure.
- 2). To stop gradually opium cultivation by substituting with other better paying crops.
- 3). To improve hill tribes' standard of living, by increasing their income.

In response to the wishes of His Majesty the King of Thailand, Kasetsart University joined the Royal Project and carried out many research projects on the possible economic crops in the highland areas. The first project was set up in 1969 to conduct research on temperate fruits in order to find out fruit varieties which can be productive under the highland conditions. This research team was assigned to find appropriate species of fruit trees and best techniques of cultivation under this mountainous conditions.

The research was carried in conjunction with the Royal Forestry Department to determine the kinds of land suitable for a particular crops. The elevation and degree of openness are also studied. It has been recommended that the area less than 50 degree slope can be used for agriculture including fruit trees plantation. Any place steeper than 50 degree is not suitable for crops and is allocated for forest tree which need lesser care.

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The climatic study of various watershed sites started in 1965 by the Department of Conservation, Faculty of Forestry, Kasetsart University. The information gained from this study include the distribution of rainfall, humidity, evaporation, maximum and minimum temperatures throughout the year, and dialy solar radiation. These data helped crop scientists to select the crops for researches in a particular site.

The research on fruit trees consisted of many small subgroups, each represents the fruit of high potential suitable for growing under the highland conditions. The fruits were peach, oriental pear, arabica coffee, apple, Japanese apricot, persimmon, nuts and some small fruits like strawberry. As soon as the cultural techniques of growing these crops under the highland conditions are known, the adaptive research of each crop is started sometimes in the hill tribe area, sometimes in the villages. This is to test the acceptability of the crops by the hill tribes as well as the market feasibility of the crops. After this trial of adaptive research, the crop is put into the extension program. At present, some varieties of peach, Japanese apricot, arabica coffee, oriental pear, apple, persimmon and strawberry have been extended to hill people, with the occassionally technical advise from the researchers. At the same time, searches for other fruits such as chinese jujube, fig, kiwi, blueberry, plum, pomegranate, chestnut, walnut etc. are continued.

AGRO-FORESTRY AS A SOLUTION

As we have seen that many hill people used to practise shifting cultivation and growing opium poppy as part of their livings, which is very difficult to change this long time practice. At the same time, the importance of maintaining forest and watershed areas to conserve the environment is emphasized. Since population pressure into the remaining forests of the Northern mountains seems to become an unchangeable issue (as is seen everywhere in tropical forests), this lead us to look into an agroforestry system, with the design to measure reducing soil erosion and enabling a shortening of fallow periods without long-term deterioration. Therefore, the research on appropriate agroforestry systems in the hill conditions may be an answer to reduce the loss from shifting cultivation as well as settling the hilltribes in a particular area with some earnings from the land. Thus the term appropriate in this case refers to both, the natural environment and the local inhabitants.

Since the idea of living together between hill villagers and forest tree plantation in the Northern area, has been established, this led the research directed to agroforestry in which we hope to be the best solution to this problem. The researches on finding the best combination between perennial forest trees and agricultural crops are tested under various watershed stations of different altitudes. At this point, many crop specialists from the Royal Project work alongside with the Royal Forest officers in the hill areas, with the aim of obtaining products from the crops (such as fruit trees, coffee or vegetables) as well as wood from the forest trees in the area. In some places where the need on improving fertility of the land, fast growing legume trees such *Acacia auriculaeformis*, *Leucaena leucocephala*, *Erythrina spp.* were included into the system with crops like coffee, vegetable, corn and flowers. This agroforestry system besides creating income from crop yield, the fertility and erosion of the land is also conserved. This in turn will reduce the production input such as chemical fertilizer, pesticides etc. which normally are needed to produce a reasonable yield.

At present, this agroforestry system has been accepted in many hill villages since they started to realise the problem of lesser and lesser fertile land left for them to grow crops for liv-

ing. Many hilltribes stop practising shifting around, and happily settled in the particular land. If this system has been encouraged, the natural fertility and the ecological system will be brought back to the time where the land used to be very productive. This will benefit not only to the hill people but also to the people in the lowland as well as to the wealth of the nation as a whole.

One last point to be mentioned is that although the theory of agroforestry looks good in solving the problems in Northern Thailand and before this system goes further to cover every hill villages, some points have to be tackled. They are economics, education and social problem. This first one is due to the marketing system of the crops in the agroforestry system. This is a very sensitive issue, and unless the market for the farmers in the hillvillages is solved, the agroforestry system shall not be sucessful. The second point comes to education, since there is no educational institutions aimed at training young generation in agroforestry. Many people have the wrong concept of agroforestry and do not understand the clear picture of solving the problem. Education offered to young hilltribes is also very important, since it is rather difficult to change the adult from the normal way of growing crop into the more technological ways. If the young generation has been educated, this gap of communication, understanding the devil caused from opium as well as destroying forest trees in the watershed areas would be much reduced, and the work should be progressed towards what has been outlined by H.M. The King, who has a strong determination of seeing wealth and hapiness from his subjects, lowland Thai as well as Highland hilltribes.

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