

The Ikalahan: towards sustainable forest use

Artist: Ariel Lucerna

Delbert Rice

The Ikalahan (*Kalanguya*) inhabit the upper, forested regions of the Cordillera and Caraballo Mountains of Northern Luzon in the Philippines. Traditionally they are shifting cultivators, primarily focused on the staple food crop *obi* (sweet potato *Ipomoea batatas*). Recent developments, however, forced them to take action to conserve their natural resource base and think of additional livelihood strategies. By enriching fallow vegetation they have succeeded in halving the traditional fallowing period and using 'Forestry Improvement Technology' they have increased the benefits derived from the forest while improving its biodiversity.

To obtain legal control of their ancestral domain and negotiate effectively with the Philippines government, the Ikalahan set up a legal corporation, the Kalahan Education Foundation (KEF), a procedure that eventually led to the creation of the Kalahan Reserve, in Nueva Vizcaya. An area of 14,730 ha has been set aside for about 2500 tribes people. This heavily forested area lies at an altitude of 600 to 1700m. Rainfall is high with 3000 mm falling annually between June and November.

The Kalahan Education Foundation is managed by a Board of Trustees consisting of 13 tribal leaders chosen by the people themselves. The KEF employs about 40 people, all of whom are Ikalahan, as teachers, processors, foresters and development workers. The Ikalahan have

established a Kalahan Food Processing Center, the Kalahan Academy (a High School), the Shalom Bible College and several other community welfare programmes.

Fallowing

Although the soils of the Kalahan Reserve are shallow, they have adequate nutrients. However, when used for crop production, heavy rains tend to leach out the bases more rapidly than they leach out the acids. When this happens, the soil becomes highly acidic and the phosphorous in the soil is bound to aluminium and other metals, making it unavailable to the plants. The production of *obi* tubers is greatly affected by this lack of phosphorous and farmers know exactly when they need to let a field go to fallow.

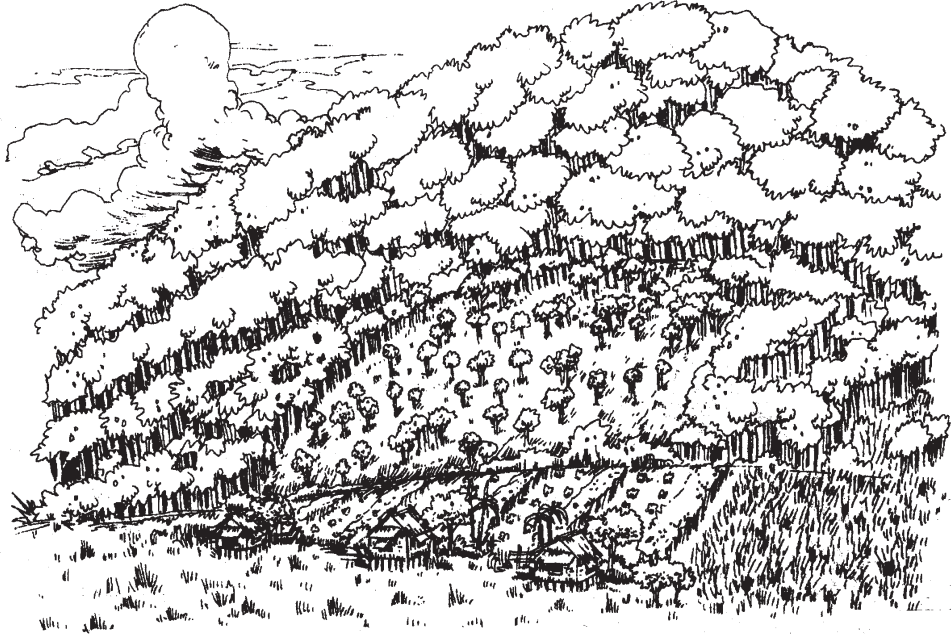
The traditional way of fallowing was to leave a field alone until grass, shrubs and trees had regenerated. After about 15 years the trees would be as big as a man's leg and the field would be ready for cultivation. First, the farmers would cut down the grass, bushes and trees and after the vegetation had been dried, it would be burned in a controlled way. Great care was taken to ensure the fire would not spread and damage any other standing trees or bushes. The ash produced in this way neutralises the acid in the soil, phosphorous is released from its bound form, and is available to the plants once again.

Shortening of the fallow

Recently the Ikalahan started planting small alder seedlings (*Alnus nepalensis*) in the *obi* fields. By the time these fields are ready for fallowing, the tree seedlings are already waist high. The alder trees enrich the fallow vegetation. In this simple way, the time needed for fallowing is reduced from 15 years to 7, thus doubling the amount of agricultural land available. Because the Ikalahan farmers do not need that much agricultural land, these "extra" pieces are allowed to revert to orchards or forest. Other mountain farmers in the region are now imitating this simple technique.

The *obi* cultivation cycle

Several varieties of *obi* are planted in each field. The different varieties probably have different nutritional requirements. Mixing and rotating them helps to preserve soil productivity. Planting is usually done in May or June. The first weeding is done about two months later.



The forest
being trucked
away by
loggers

Artist: Ariel Lucerna

Once the tubers begin to reach maturity they are harvested when needed. Both tubers and leaves go straight from the field to the kitchen. The Ikalahan never harvest an entire field at once. Defective tubers are not wasted because they are cooked and fed to the pigs, which are invariably a part of each Ikalahan household.

Gengen

After about four months of harvesting, tuber production may start to decline. The woman responsible for the field will choose an area of about 10 m.² and remove the entire crop: vines, leaves and tubers. The best vines are separated out and left in a shady place to sprout.

All other vegetation, including weeds, is buried in contour trenches across the slopes at about 8 m. intervals. The area is then replanted.

The hump over the contour line of *in situ* composted material is able to catch any soil eroded during the six weeks the newly planted vines take to mature. When one square is finished, the farmer repeats the process in an adjacent area. This cycle continues until the entire field has been cleared. A field is seldom more than two-thirds of a hectare in size. This system is known locally as *Gengen*. It may be repeated two or more times during the life of the field, depending on the circumstances.

Forest management

Besides providing sites for shifting cultivation, the forests are also a source of materials for domestic use, food and products for sale. As hunters and gatherers, the Ikalahan know that logging is not a sustainable way of extracting forest wood. They have,

therefore, developed Forest Improvement Technology (FIT) to help them manage the forest and harvest its products in a sustainable and profitable way.

Community forestry

Community forestry is the best way to implement this technology. The forest farmer will probably know which trees should be removed to improve the forest; but it is still wise to have a forester help him to be sure that his choice will truly benefit the forest and not only his pocket. One forest farmer could not raise enough money to pay a forester's salary. A community, however, could easily afford to have one of its own members trained in forestry to serve the community as a whole.

Community land use plan

Community members can make a "community land use plan" to ensure they are all working together in the same way. *Unib*, a community near Santa Fe made such a plan and decided that each family should have a plot of about 8 ha extending from the river up the mountain slope. The flatter lands along the river would be used for rice and vegetables. The gentle slopes above these areas would be used for swidden farms to provide food for the family. Small orchards could also be developed near the swiddens if the family wanted to supplement its food supply or have fruits for sale. On the higher land, each family would have a family forest where timber and other building materials could be harvested for their own use or sale.

The family forests do not reach the top of the ridge. The *Unib* have set this aside as a sanctuary for wildlife. The wildlife could also use the family forest and they would be protected there as long as the swidden farms remained undamaged.

Finding the proper niches

Once the Ikalahan had established control over their resources in the Kalahan Reserve, they started to take measures to protect them. Over a period of several years many experiments were carried out. Everyone agreed that this was an impor-

Forest Improvement Technology

The goal of FIT is to improve the forest, rather than simply improve the short-term income of the forest farmer. In the long run this will lead to more sustainable increases in income. Trees are cut continuously in small amounts rather than all together every thirty years. In this way the forest ecosystem can be maintained.

Each year the forest farmer makes a selection of trees to be cut. He checks the forest for crooked, damaged or crowded trees that need to be removed to improve the forest. When these have been removed, they are sawn into lumber. It may not be first-class wood but it can be used or sold. Simple equipment is used and the sawdust, tops and branches are left to rot because they restore fertility to the forest soil and help maintain biodiversity. The forest farmer does not separate the potential crop trees from the other trees because he knows that all trees have a role to play in the forest.

In natural forests there is a continuous process of rejuvenation. Trees die or are felled by storms. In this way the canopy is opened and, because the microclimate is not damaged, young seedlings get a chance to develop. FIT follows this natural process. Mature trees that have stopped growing are removed to create favourable conditions for forest rejuvenation. If this is done every year, the forest will continue to develop and improve. The removal of individual trees does not hurt the forest or its environment and provides first class lumber.

If there are large open spaces, a forest pioneer species will be planted first. Agricultural crops are not planted between the trees because they would bother the other plants that need to grow to make a good forest. The population of one or two species of large or small plants can be increased by enrichment planting. This can be very favourable as long as the forest is not turned into a plantation.

As the forest grows, biodiversity will continue to improve and many species of insects, small animals, grasses and other plants will move in. This is good because all of these species help each other and the improved biodiversity will encourage the forest to grow faster and become more healthy. The forest farmer will only cut a small amount of growth allowing the forest to improve each year.

The growth-rate presently expected in Philippine forests is about 4.5 cubic meters per hectare per year. Under proper management, using FIT, the forest can produce as much as 15 - 20 cubic meters per hectare per year. Such an analog forest still retains the characteristics of a natural forest. It is not a plantation. It still has high bio-diversity and is an effective watershed with a high percolation rate. It will also provide a sanctuary for many kinds of wild orchids, animals, birds and insects.

If each forest farmer cares for 5 hectares of good forest, he may harvest up to 80 cubic meters of first class lumber every year without damaging the forest. That would provide him with a higher cash income than many professionals and he would still have plenty of time to produce his own food on the farm. Once the forest has developed, it can be sustained indefinitely.





Sweet potato vines start to cover the field

Artist: Rolly Nicart

tant step in developing new sources of livelihood. In the beginning, people had a vague vision of their goal, but not much idea of how it could be achieved. Now, after more than two decades of struggle, they describe the process quite simply: *Homo sapiens*, like all other species, must find its own sustainable niches in some part of the ecosystem and do this without trying to dominate the entire system.

The Ikalahan have been looking for resources in the forests that can be used benignly and sustainably while encouraging the forest to go on performing its other functions. In this they follow the basic principle of ecological balance and biodiversity. *Homo sapiens* should not limit themselves to a single niche but should try and make use of as many different possibilities as they can. Therefore, beside lumber, they have developed several new niches.

Wild fruit

For ten years the Ikalahan have been harvesting wild fruit from the forests and processing them into jams, jellies and marmalades. Their products are sold under the trade mark “**Mountain Fresh**” in all the better supermarkets in Metro-Manila. Some of the fruits they use, such as guavas and *santol* (*Sandoricum koetjape*), are quite well known to the customers. Others, such as *dagwey* and *dikay*, are completely new and the customers have to develop a taste for them before they start to sell well. This is quite a difficult job.

In some cases farmers were forced to plant more trees or vines in the forest because there was not enough wild fruit. Today, farmers can obtain a significant income from selling fruits to the Kalahan Food Processing Centre and there is no reason why they should cut down wild plants and replace them with field crops.

Orchids

In the Kalahan Reserve there are more than 70 species of wild orchid. In the past Ikalahan would gather wild orchids and sell them to outside buyers. This practise

was, of course, unsustainable because orchids in the wild do not multiply rapidly. Now the Ikalahan use their forests as a gene bank. They gather a few orchid plants to serve as mother plants, propagate them, and sell their offspring to local farmers who raise them in “backyard forests”. The Reserve also has a few very rare species and the Kalahan Educational Foundation is trying to develop propagation techniques that will enable them to sell these species in the same way.

Mushrooms

Several of the more valuable mushroom types are choosy about where they grow and like the cool moist climate the forest provides. At least one of those species, shiitaki, commands a very high price but it prefers a substrate of either oak or alder. Oak takes a long time to grow, but the Ikalahan have large quantities of alder and this grows very quickly.

Other promising niches

Other promising niches are wild meat, organic vegetables, and ecological jewel-

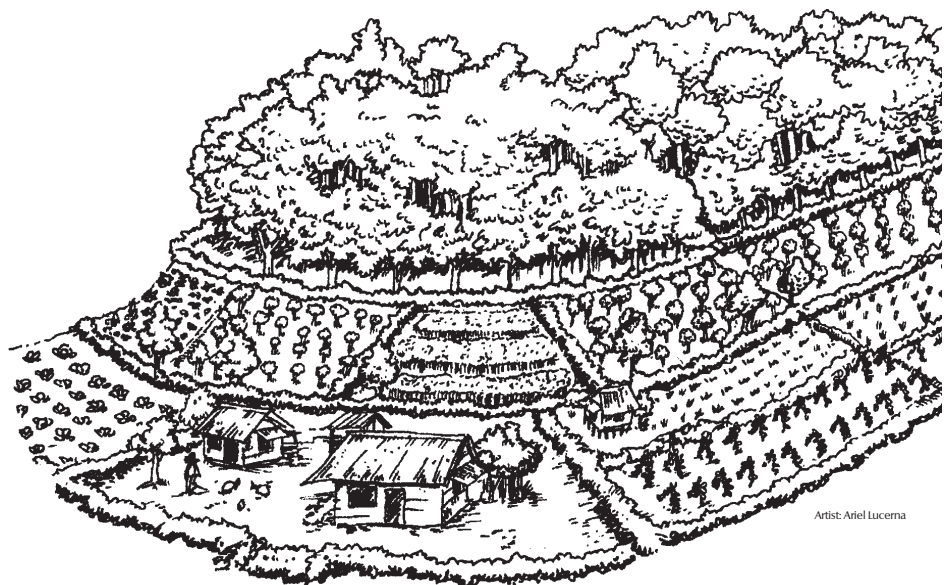
lery. The Ikalahan are presently working on the technologies needed to electroplate leaves and other natural products with gold and silver to make jewellery. This could be combined with the polishing of some of the more attractive stones to be found in the riverbed.

Value adding for employment

The Ikalahan do not want to sell guavas - they want to sell jams and jellies. They do not want to sell lumber - they want to sell tables, chairs and other finished products. Every community has children. These children grow up and many of them go on to college and develop advanced skills. If the communities sell off all their raw materials to the city, the educated youth will be forced to follow the raw materials and find jobs in the urban areas. Therefore, the Ikalahan decided to develop ways of processing raw materials into finished products themselves. They also founded their own Academy because they did not feel that lowland education suited to the needs of forest people. In this way they created a situation where their children can chose to stay at home, become educated, manage local enterprises and later become the leaders who will take care of the community's future.

The experiences of the Ikalahan show that it is not necessary to eliminate swidden farming from the list of forest niches. However, care, ingenuity and patience is required if it is to remain the basis of a sustainable livelihood.

Delbert Rice, Kalahan Educational Foundation, Inc.,
4 Judge Juan Luna, San Francisco Del Monte,
Nueva Vizcaya. Tel/Fax: +63 372 1146;
Email: kalahan@nsclub.net



Artist: Ariel Lucerna

Community land use planning