

PROBLEMS TO BE OVERCOME BY NAFF

Development of appropriate nursery techniques

One of the first tasks of the NAFF was to develop nursery techniques appropriate for use in the Middle Hills. Because of transportation problems, the nurseries needed to be small and located close to available planting land and to a perennial source of water. One overriding constraint was to apply "appropriate levels of technology" to the establishment and operation of the nurseries. External inputs were kept to a minimum so that the possibility of long-term sustainability in the absence of outside involvement was enhanced. Thus, chemicals (fertilisers, pesticides, and hormones) are not used even though their application would improve seedling quality. Local materials are used for nursery bed and house construction. The main external inputs are polythene seedling tubes, seed, polythene pipe for water supply, and a few bags of cement if a permanent water tank is deemed necessary.

It is expected that the local community will voluntarily assist with the construction of the nursery itself and often with the nursery house. One tangible and immediate benefit to local communities is an improved permanent water supply in the vicinity of the nursery, which is often used for domestic purposes.

Seed

At present the shortage of seed in Nepal is one of the main limiting factors to expanding forestation activities. There are a large number of seed stands in Nepal from which collections could be made. However, few individual projects have systems operating to enable them to collect their own local seed requirements. The Integrated Hill Development Project (SATA) is one which has organized an efficient seed collection and handling unit. NAFF also has two local seed units but is not yet self-sufficient. Like most other projects in Nepal, NAFF has to rely on external suppliers of seed to meet its programme commitments. These sources are unreliable and the seed expensive. Further efforts need to be made to encourage local self-sufficiency in seed supplies, particularly for the highly favoured fodder and fuelwood species for use on private lands.

Choice of species for plantations

The establishment of plantations or new forests presents problems with regard to choice of species due to ecological reasons associated with topography, altitude, soils, climate, and the preference of the potential users of the forest. The land available for planting in the hills is often vacated farming or grazing land varying in elevation from 600 to 2000 m.

Chir pine (*Pinus roxburghii*) is well adapted to harsh degraded sites in the Middle Hills, but it has low societal preference because the leaves have no fodder value and the wood has less fuel value than that of most broadleaf species. However, the more highly favoured broadleaf species are not established readily in open plantations on the sites available. Where chir pine is established as the initial plantation crop, the site protection afforded it allows the regeneration of native broadleaf species to occur, either from seedlings or from residual root stocks.

Consequently, initial plantation establishment with chir pine does not infer that the area will be managed entirely for chir pine. It is feasible to manage such areas as mixed pine-broadleaf stands or even to convert them eventually to broadleaf-dominated forests.

One of the most vigorous naturally occurring broadleaf species is chilaunc (*Schima wallichii*) which regenerates readily from seed, root suckers, and coppice at elevations around 1400 m. It produces good quality fuelwood and construction timber and the leaves are useful for bedding and fodder.

One of the great difficulties has been to successfully establish good quality fodder species in plantations, despite continuing efforts over many years. At this stage it seems that the best option for increasing the number of fodder trees in the hills is to encourage increased planting of such species on private land where better quality soils are generally available and where additional care and attention can be applied. For this reason, most nurseries raise a wide range of species to provide for the needs of local farmers. These include trees for fuelwood, fodder, fruit, construction timber, religious, and ornamental purposes. While the majority of seedlings are planted in plantations, a substantial number are given

(free of cost) to local villagers for establishment on private land.

One promising plantation species, particularly at elevations above 1300 m, is patula pine (*Pinus patula*). It grows faster than chir pine and while the needles are of no value for fodder, the wood is considered by many local villagers to be equal in quality to that of many broadleaf species, although it burns somewhat faster.

Protection of plantations

In many parts of Nepal it is considered impossible to establish plantations successfully without fencing to afford protection from animal grazing and illicit cutting. Fencing is a very expensive item generally dependent on external funding. Consequently, for anything other than small-scale operations the cost is prohibitive. In addition, experience has shown that even good quality fencing does nothing more than delineate an area; it has little real effect in preventing people or animals from entering a plantation area.

Effective protection can occur only if the local community is fully committed to the forestation programme and agrees to prevent animals from grazing on newly planted areas. This is normally achieved by discussion between the staff of the district forest office and representatives of the local community, ideally members of a forest committee, who will establish rules of conduct for the forests. It is unrealistic to prevent people from entering the new forests as they still need to collect fodder (grasses and other herbs) and bedding material for livestock.

As more open grazing lands become planted, there has been a change from open range grazing to stall feeding of animals. This was initially seen by villagers as a negative aspect of the forestation programme because of the additional time required to cut and carry fodder. However, it is now generally viewed as being a better way of managing livestock for a number of reasons: the grazing lands are more productive once close grazing and heavy trampling are removed; the stock are more productive because they are confined and do not have to spend their time climbing on steep slopes; manure (an essential fertiliser input for agricultural land) is more effectively collected from stall fed animals; and some family members are freed from the need to continually tend open range-grazed animals and can carry out other tasks or, in the case of children, attend school.

While fencing is not practised in the NAFFP areas, local villagers are employed as forest watchers to protect the forests. On average, one watcher is employed per 15 ha of plantation, but efforts are being made to increase the area per watcher.

Trained manpower

A cadre of motivated, well-trained managers and field supervisors, who are sympathetic toward community forestry, is required to assist the expansion of forestry activities in the Middle Hills. The lack of suitable people has been a constraint to the rapid expansion of activities. Most forest officers received their training some time ago in traditional disciplines designed to fit them for work in commercial forestry operations. This frequently makes it difficult for them to develop innovative solutions to the non-traditional problems facing them in community forestry programmes.

A further complication is the dual role played by the forest officers in the hill districts. On the one hand, a rigid approach is required for upholding and enforcing forest law and carrying out judicial responsibilities associated with bringing wrongdoers to justice. On the other hand, there is the need to be empathetic to the needs of local people and to encourage a participatory approach to forest development. Some people may find these dual roles incompatible.

Most of the older forest rangers received their formal training long before the community forestry concept was developed. The general level of their technical training was rather low and their major responsibilities revolved around upholding forest law, apprehending and initiating legal proceedings against wrongdoers, and processing sales of timber from government forest. Neither their training nor subsequent work experience have fitted them for a role working in consultation and cooperation with local villagers. In many cases the presence of such people continues to be detrimental to the development of good working relations between the Forest Department and the villagers.

During recent years the training received by forest rangers and forest officers at the Institute of Forestry at Hetauda has steadily improved. Recent graduates have greatly improved technical skills and knowledge and experience of some of the issues involved in community forestry. It will take time for this

new group to move through to influential positions in management.

A further manpower deficiency was in the area of trained technical staff such as nursery foremen, *naikes* and plantation workers. One of the big tasks facing NAFP was the need to train local villagers in the technical skills necessary to build and operate small forest nurseries and to establish and protect plantations. Substantial effort went into developing and operating appropriate training courses. Between 1978 and 1986 a total of 222 people took part in four to five-week long nursery *naike* training courses and many hundreds of people received short-term training in plantation establishment and protection techniques.

The forest guards of HMG staff remain something of an anomaly. These people are permanent HMG employees who received a three-month training course in various aspects of forestry, largely to do with enforcing forest law. Observations suggest that this large group of people (44 in Sindhupalchok and 33 in Kabhre Palanchok) is something of an anachronism, a legacy from when forestry meant something different from what it is coming to mean today. It is clear that in many instances forest guards have little empathy with the needs of local villagers and that they enjoy little trust and respect. There could be considerable value in critically reviewing the work role and performance of this group and integrating them into the community forestry programme. A degree of re-training and re-orientation would be required.

Administrative procedures

Difficulties are often experienced transferring land from HMG ownership to Panchayat Forest and Panchayat Protected Forest. This is often due to property boundary disputes occurring during the surveying and subsequent forest boundary demarcation. These disputes are usually between private individuals who claim that a certain part of the land belongs to them and the forest officers who claim that the forest land belongs to the state and can legally be transferred to the panchayat. This problem is usually exacerbated where no cadastral survey has been carried out.

Prior to the advent of community forestry programmes in the hills, the Forest Department operated largely as an organisation to administer the sale of forest products (mainly construction timber) and to exercise protection over the natural forests (including apprehend-

ing and bringing to justice anyone caught breaking forest law). There was no effective organization to carry out forest development activities. The need to train staff for these activities has already been mentioned, but equally important was the need to develop an organizational structure within the districts which could effectively plan for and control a large-scale plantation programme with associated activities. This has been carried out by encouraging the development of a process whereby key district staff meet on a monthly basis to report on and to plan for activities. This allows the DFC to check on progress and to delegate authority and responsibility for various operations.

Acceptance of increased authority by field staff, along with a commitment to a changing work ethic (from being forest policemen to people who work with local communities in a participatory fashion), has been one of the key elements which has allowed the programme to expand. This area of organizational reform is one which still needs continual attention in order to further improve the efficiency of the operations.

Communications

One of the great difficulties with implementing any development project in the hill regions of Nepal is communications. Few roads exist, so messages have to be carried to their destination by hand. This means that all communications are slow and frequently imprecise. This is a major constraint in a large operational forestry project covering half a million hectares of steep and rugged country. The installation of a small radio network has done much to alleviate this problem, but it will never be entirely eliminated.

Land availability

One serious problem in establishing large areas of plantation quickly concerns the availability and accessibility of plantable land. Although there is frequently common grazing land which is suitable for planting, it is not necessarily available for planting. On many occasions the local people have indicated during discussion and consultation that certain land is in fact not available for planting. Land may be rejected due to a number of reasons, including the need to have space for open range grazing, living and recreational activities, and a common meeting ground. If these areas are summed up on a panchayat

basis, they could be large enough to have an impact on the available land to plant. The experience from Sindhupalchok suggests that most of the large tracts of land close to habitation have been or are rapidly being planted, so the area remaining comprises a large number of small non-contiguous blocks. This makes the management involved in getting nurseries operational and plantations established and protected more difficult, and may be a constraint to continued expansion.

Remnant natural forests

The remaining natural forests are usually heavily utilized and have often been reduced to scattered trees and depauperate shrubland. They are sometimes on land cleared for agriculture and subsequently abandoned and left to

regenerate. These forests, which are often heavily lopped or coppiced, have low-density canopy cover and are low in height. The approach taken with such areas has been to encourage conversion of tenure to PPF and undertake enrichment planting and protection. It has been found that even low-density enrichment planting can assist in improving protection. The villagers recognise that effort has been expended to improve the forest and they exercise more restraint in their use of the forest, particularly in controlling grazing animals. However, to date, development work has concentrated on the establishment of new forests rather than on the management of remnant natural forests. The large area and the generally poor condition of most of these stands requires that more effort be expended on them in the future.



Plate 7 Community participation is essential in all forestry operations including the production of tree seedlings.



Plate 8 Young people from the community also participate in seedling distribution.