SOCIAL FORESTRY NETWORK

NURSERIES IN GUJARAT, NORTH INDIA: TWO VIEWS

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OBSERVATIONS ON CENTRALIZED AND DECENTRALIZED NURSERIES: EXPERIENCES OF AN NGO IN GUJARAT, INDIA

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Introduction

The Panchmahals area of Gujarat is a tribal area which used to have substantial areas of forest according to local history. About 100 years ago -maybe even 75 years back - this district of Gujarat had thick forests on about 75% of its total land area, and the entire economy of the district revolved around forests and forest products. The Sadguru Water and Development Foundation, which is an NGO, was formed to encourage local people to plant trees on their own land in this district.

In one of our village meetings with a women's group, an elderly woman of about 65 years of age told us that when she came to the village as a newly married bride, there were thick forests all around the village. The forests were so thick that women would always go in a large group to fetch drinking water hardly 300 metres away, accompanied by a man with a weapon because they feared attack from wild animals.

Loss of the forests has shattered the entire tribal economy. Most of the people are living below the poverty line, and 50-75% of the population are forced to migrate in search of work for at least 8 months of the year. It is estimated that over 50% of the land area in this district is suitable for tree plantation, as it is too degraded to support agriculture, but the forest department can neither restore the forests in this area nor can they achieve the plantation on the scale required. It is only possible to reforest this area if the people themselves take up this massive programme and plant up their degraded land with trees. However, as long as the forest department persists with its dog-in-the-manger attitude that people cannot be involved in the restoration of forests in former forest areas, then the trees will not be replaced.

The Foundation's Social Forestry Programme

When the Foundation started their social forestry programme they relied on the forest department to supply the villagers with seedlings. In one village this led to the following experience which confirmed the Foundation in its aim to set up local-level nurseries. The forest department had pledged to supply the villagers with seedlings in time for planting during the first rains of the monsoon. However, the monsoon rains were unusually good and the forest department were too busy planting up their own land, and could not supply the seedlings to the villagers until the end of the monsoon in August. The villagers knew that if the seedlings were not planted immediately they would not survive. The local people called on relatives and friends from surrounding villages to help them with carrying the seedlings from the delivery point and also with the planting.

Although the villagers had faced such difficulties in obtaining seedlings, the following year they continued with their large planting programme, and over two years they planted over 400,000 seedlings. The survival rate of the seedlings was over 90%, with the occasional sale of trees over the years. Considering that usually cattle are allowed to roam freely around the villages and that there were no fences around the young trees, it shows the degree of individual and collective committment to ensuring the survival of the trees.

During the drought years of 1985 and 1986 farmers realized the importance of trees as an insurance against the hazards of drought, and sold some of their trees to maintain their families over this period. Trees planted in 1982 and 1983 were providing visible benefits to their owners, for example wood was available for cooking and house construction and some mortgaged their trees for a short period to tide them over this difficult period.

However, the supply of seedlings from forest department nurseries did not improve, and although farmers were producing half the seedlings they needed, the remaining seedlings promised by the forest department frequently did not arrive in the villages. It was decided by the Foundation that farmers should be encouraged to raise all the seedlings themselves and so avoid dependence on this unreliable source from the forest department. Accordingly, 245 decentralized nurseries were set up in 13 villages by the farmers in 1988 and together they raised over 3 million seedlings, which were planted out by nearly 2000 families in the monsoon of 1988.

The farmers, themselves, prefer to raise and plant Eucalyptus, but the Foundation persuaded them to raise a greater variety of species. These trees were planted by the farmers on several different types of land from

privately owned degraded wastelands to common wastelands encroached by farmers. They also planted trees on field edges, in strip plantations, and on open irrigation water courses.

The success of SWDF's tree-planting strategies has been possible only through the work of the farmer and the establishment of many decentralized nurseries. From SWDF's experience with both farmer-run decentralized nurseries and forest department centralized nurseries it is possible to enumerate some of the advantages and disadvantages of these two different approaches.

Advantages of centralized nurseries:

- Easy for the supervision, management and monitoring.
- May need proportionately less manpower, including less technical supervision.
- The protection problem is minimal and manageable.
- Impressive appearance.

Disadvantages of centralized nurseries:

- Require relatively larger water resources, and the water source has to be very near to the nursery site as watering requirements are very labour-intensive
- Occupies more space at one single site
- Transportation of seedlings becomes a serious problem, from the point of view of the management, cost and time involved in the transportation
- Chances of higher casualty rates during lifting and transportation. Poor road conditions compounded by bad handling during loading and unloading, would result in the higher casualties. Like infant children, the seedlings need the utmost care and tenderness in handling. This is difficult when a large number of seedlings are to be transported from centralized nurseries. In particular, the transportation operations are rarely carried out by the people who planted the seedlings, and therefore excessive damage is normal.
- If there is any delay in transportation due to the road conditions in the monsoon or any other reason, planting is delayed. Such abnormal delays upset the programme. In 1987, SWDF faced this problem when the seedlings were to be transported from the centralized Forest Department nurseries to a distant place. The planting was not done at the proper time, due to non-availability of vehicles.
- Sometime good soil must be brought from a distant place for filling the bags. This is costly as well as time consuming.

- The ultimate planters have no stake in or attachment to seedlings raised in a centralized nursery in a distant place.

- The people involved in the centralized nurseries consider themselves wage earners and do not see themselves as participants in the total tree plantation programme.

- The centralized nursery is not people-oriented. Very few people are involved and as the technical staff are omnipresent in such centralized nurseries, nursery workers tend to disown the responsibility of maintaining and protecting the centralized nursery. Whatever is done, is done by strict supervision, and not by the people's own initiative and interest.

- Small damage and small scale casualties do not come to notice; or, if they are noticed, they are ignored owing to the very size of the nursery.

- The benefits of earnings go to fewer people. Often, relatively rich farmers with adequate water resources would monopolise the production and profits from nursery raising. We have seen the Forest Department allotting nurseries of 100,000 seedlings (one hundred thousand) to one individual having a good water source. Such a nursery raiser may earn about Rs.30,000/- in a short period, which is quite a large sum in the Indian situation. And it helps to add to the prosperity of a person who was already well-to-do.

Advantages of decentralized nurseries:

- Decentralized nurseries are people-oriented and they become part of the people's own programme.

- A larger number of people (families) are involved. Thus the earnings from the nurseries are distributed among a larger number of people -making a more equal distribution of earnings.

- Decentralized nurseries require much less land and water, and therefore, even a poor farmer with small land and scant water can also raise a nursery of between 10,000 and 20,000 seedlings.

- Even if the water source is at a distant place, a farmer can easily manage the watering as a small decentralized nursery requires much less water. In our experience, even if the water source is half a kilometre away from the nursery place, it requires not more than one hour in a day to give one watering to a small nursery of 10,000 to 20,000 seedlings.

- The transportation is easy, timely and without any cost, as the plantation area is close to the nursery site and the entire family of the planter lift the seedlings in head loads as quickly as possible. Transportation is labour intensive instead of capital intensive.

- With the nursery so small, even small scale casualties and damages could be noticed and could be rectified well in time.

- The nursery raiser can grow vegetables around the nursery on a small piece of land as some moisture will be available in the nearby soil and the vegetables could be grown under the common management without special efforts. This was noticed in a number of our decentralized nurseries.

- As the nursery is nearby the house, the entire family including children are involved in its various

operations. It becomes a common concern for the entire family.

- There is a constant relationship between the nursery raiser and the ultimate planters who are to plant the seedlings from the specific nursery.

- In fact, the ultimate planters develop an interest in and attachment to the nursery as they constantly feel that their seedlings are being raised in this nursery. Sometimes, we have been contacted by a prospective planter about the bad shape of some nursery, because he feels that he would be the ultimate loser if the seedlings are not properly cared for. This can never be expected in the centralized nurseries.

- Even at a late stage, some corrective measures to replace the casualties by fast germinating and fast growing species could be taken. This would minimise the ultimate casualty rate. We have experienced that even when less than one month period is available before planting out, new seedlings of the proper species can be sown. In our part, the normal peak planting out period is 15th to 31st July. Yet we have often filled up the gap of nursery casualties as late as 15th to 20th June the growth of such seedlings was good. since we had chosen to replace losses with the fastest growing species.

Disadvantages of decentralized nurseries:

- Technical supervision and monitoring becomes difficult. More technical and other supervisors are required.

- They require greater and more elaborate managerial skills, particularly, in ensuring timely input supply, remedial measures, etc.

- Communication problems in a case of urgency can be difficult.

- If supervisors and nursery raisers are careless, much damage may take place, which only comes to light at a very late stage.

CONCLUSIONS

There are distinct advantages and disadvantages to both centralized and decentralized nurseries as has been demonstrated. Which type is better can depend on certain factors like the specific area and type of programme. For example, if a plantation is to be made in forest land, one might prefer a centralized nursery. But, if large number of people in scattered villages are to be involved in tree-planting, decentralized nurseries are much better in many respects. For tree-planting on private wastelands, for agroforestry or for farm forestry programmes, decentralized nurseries have to be preferred. If such planting is to be part of a people's movement, decentralized nurseries help a lot.

Our observations are based on the specific area that we are operating in. There would be different conditions

in arid or semi-arid zones, where because of scant water sources, the centralized nursery may be the only choice. However, wherever water is available in such areas, the decentralized nurseries are more advantageous.

We may also conclude that NGOs, working in different villages intending to involve people and seek their participation in the plantation programme, should prefer decentralized nurseries. They demand somewhat more managerial skill, but the ultimate advantages are much more.

Overall, the Foundation through its encouragement of tree-planting by the local people has succeeded in increasing the number of trees on farmers' land from less than 100 trees in one village to over 80,000 trees. Most of the villages in which the project works have planted up all their degraded land, and in the case of Shankerpura village all the families are self sufficient for their firewood needs. Due to the availability of wood, use of cow-dung for cooking has been almost discontinued in this village, and consequently the amount of organic matter available to farmers for their agricultural land has increased.

Many farmers sold wood in the drought years, each farmer obtaining between Rs 2000 to Rs 11000 which is a large additional income for these tribal farmers considering that their plantations are only 6 years old. In this same period of time 30 new houses have been built by the villagers using their own wood, which they could not have done if they had been forced to buy the wood from local markets.

The most significant impact of the tree plantations in Shankerpura village is on the level of sub-soil water. Ten years ago there were only 2 open dug wells in this village, both were used for drinking water and dried up during the summer. Now there are 44 open wells in the village half of them dug in the last two years. Despite the successive drought years of 1985-1987 each well dug struck water. It is interesting to observe that despite dense plantations of Eucalyptus, the sub-soil water levels have increased rather than decreased. This phenomenon has attracted the attention of many knowledgeable visitors, because the evidence is contrary to the views of those opponents of eucalypts who state that they have an adverse effect on sub-soil water-levels.

Finally, the real benefits accrue to the villagers whose trees have become a real asset and source of wealth. This asset can be banked in times of need, either by selling the trees or mortgaging them.

The lessons learned by the Foundation are many, but perhaps the most important message is that control of production of seedlings and their planting is best left with the farmers who want and need the trees.

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PEOPLE'S DECENTRALIZED NURSERIES: FIELD-LEVEL EXPERIENCES OF THE GUJARAT FOREST DEPARTMENT, INDIA

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Introduction

Gujarat is a relatively urbanized state by Indian standards, highly industrialized and with a well-developed agricultural base. Consequently, there is little scope for diverting any land from its present use to forestry.

The chronic shortage of forest produce, especially firewood, forces the large-scale use of cow-dung as a fuel. Some experts have estimated that state-wide about 1 million tonnes of cow-dung is burnt as fuel each year.

Climate and rainfall vary widely across the state, in the north and north-west drought is common and leads to widespread famine. Altogether about 35% of the state is chronically affected by drought which together with an acute scarcity of fodder leads to massive imports of fodder from other states.

The late 1960s and early 1970s saw floods and droughts of enormous and catastrophic proportions. These devastating droughts left their lasting scars throughout the State but they did create an awareness of the value of trees. The plight of the poorer sections of society who constitute about 40% of the population continued to decline due to dwindling supplies of fuelwood and small timber which resulted in rocketing prices for these forest products.

At this time large tracts of land were lying unused, along the sides of roads, canals, and railways together with barren forest lands and some common grazing lands. The Forest Department planned a tree-planting programme on this land which began in 1969. Initially the plantations were confined to roadside plantings carried out by the Forest Department on state highways. There was an unexpected outcome of these plantings in that local people began to support these initiatives because they could see that it was possible to grow trees on wasteland, at a reasonable cost and with little water.

Following the severe drought and famine of 1974 the Forest Department undertook another social forestry programme, which came to be known as the village forests programme. This project promoted tree-planting on barren community-owned grazing lands to provide local people with fuelwood, fodder, small timber and fruits. Due to uncontrolled grazing these lands had been reduced to wastelands where hardly a blade of grass grew, they were merely exercise grounds for village cattle rather than grazing lands. Theoretically, the extent of village forests should be related to the fuelwood requirements of the village, but this was not possible due to the limited amounts of available community lands, coupled with the need to keep some land for grazing.

Farm and Agroforestry

Before the mid seventies, tree seedlings were raised by Gujarat Forest Department (GFD) in response to demands from the Revenue Department and the panchayats. The seedlings were handed over to these organisations at the nursery site for further distribution to the local people. The GFD therefore played a passive role in the programme. Most of the seedlings taken by the panchayats and Revenue Department were bare root seedlings. These agencies neither had resources nor the necessary infrastructure to transport containerized seedlings, and furthermore, there was no extension work done among the local people before seedling distribution. It was a programme meant for the masses but was conceptualised at the top and handed down to the bureaucratic machinery for execution. There was no involvement of local people. This resulted in the programme becoming an occasion for ceremonial planting which was forgotten soon after the crowd disappeared.

Both the Wastelands Development Programme and Village Woodlots were successful in convincing people that trees could be raised successfully without irrigation. With the inception of a separate Social Forestry Wing (SFW) tree seedlings were supplied free to farmers, but initially, only wealthy farmers approached the Forest Department for these seedlings.

Slowly, however, the obvious success of the large farmers encouraged small and marginal farmers to participate in the tree-planting programme on their farms. Encouraged by this success, the SFW took up distribution of seedlings direct to the people and also gave them technical advice; thus transferring the technology of tree-planting and tree-rearing from the Forest Department to the farmers.

Despite the many arguments that can be put forward against supplying free seedlings, they provided the most effective way to encourage the planting of a large number of trees by a large number of farmers, in the shortest period of time. Although it is the case that considerable subsidies may have gone to richer farmers

who took the largest number of seedlings in the initial years which may result in an over-production of trees for the commercial sector.

The Decentralized People's Nursery Scheme

In the beginning all the seedlings for public distribution were raised by the Forest Department in about 3200 nurseries spread across the state. Each nursery had an average catchment area of 62 square km covering about 6 villages. This arrangement had some inherent defects of which the main one was that the GFD selected the tree species to be grown. Although, the GFD tried to raise seedlings to meet popular demand, there remained an element of GFD perceiving the demands of the state and not of users.

Farmers also had to transport seedlings over relatively long distances, incurring high transport costs and leading to high seedling mortality. Another problem was that the highly skilled technical staff of the GFD were constrained by having to support these centralized nurseries and could not keep up with the ever-increasing demand for seedlings by the local people. It was therefore decided to decentralise the production of seedlings by transferring nursery technology to schools and farmers. This released GFD personnel for the more specialized jobs of silviculture and forest protection. Other advantages of decentralization included lower transport costs, and farmers and schools could also make money by selling surplus seedlings.

In 1985, after nearly 10 years of success in Gujarat, the National Wastelands Development Board (NWDB) adopted this scheme and launched a massive programme throughout the country which came to be known as the Decentralized People's Nursery Scheme (DPNS). DPNS entrusts the task of raising seedlings to the under-privileged sections of society such as the landless, scheduled casts, scheduled tribes, small and marginal farmers, women's groups and schools. The cost of raising a seedling (30 paisa) is paid to each participant in three equal installments in December, March and June. When the seedlings are ready the participants can sell them to purchasers at mutually agreed prices. Thus, the participants not only earn wages right on their doorstep, but also receive additional money from the sale of seedlings, which are in great demand.

Lessons Learnt

The choice of tree species is left to the participants themselves, who generally prefer to plant fruit trees since there is a greater demand for them. It has been possible to sell most of the seedlings from DPNS at varying rates depending on the species: fruit and bamboo carry the highest premium. The expected income from sale of seedlings indicates the trend of demand for particular species by local people. It establishes that though

eucalypts may not be an ideal tree for social forestry, it is still the species most sought after by farmers for income generation. The high premium on fruit trees may not be a lasting phenomenon because once the supply of fruit tree seedlings increases to a level greater than the demand, prices will fall.

The DPNS has created an important decentralized economic activity for poor rural communities. Since the nurseries are close to the farmers it has reduced their transport costs and also decreased the mortality rate incurred by long distance transport. It is also easier for the farmers to obtain seedlings from decentralized nurseries because they do not have to become involved in the bureaucracy of centralized nurseries which took up valuable time in their planting period.

Overall, the DPNS has been very successful in Gujarat and has responded to local farmer demand.