CHAPTER IX

FUTURE STRATEGY IN WASTELAND DEVELOPMENT
More than 50 per cent of the land area in the district is lying waste. Of this, 23 per cent is amenable for development. 'The land denudation is a silent crisis' and unless arrested in time will lead to greater crisis in which existence of life becomes impossible. Since the intensity and extent of availability of wasteland is having a direct impact on the socio-economic and cultural aspects of the people and the tract, a more comprehensive and built-in mechanism is essential for its development.

The future strategy for development of wasteland encompasses the following aspects.

- Peoples participation
- Extension
- Organisational structure
- Economic support
- Marketing support and
- Improved Technology.

**PEOPLE'S PARTICIPATION**

The wasteland in the district, as elsewhere, owes its origin to the non-participatory role of people. Land management, including forest, has been in the larger interests of people and their welfare, but people never participated in the protection and conservation of biological productivity of land. Therefore, people's participation is sine qua non for the success of
of wasteland development. While launching massive wasteland development programme in the country in 1985, the Prime Minister of India, envisaged that a people's movement should be built up.

The aspirations and perceptions of the people are centred around the problems they consider most important and plan their initiatives to meet their needs. They make rational economic decisions in the context of their own environment and circumstances, pragmatically assessing the risks and rewards associated with change.

The district has a land mass of 1.913 million ha of which 0.44 million ha is degraded where productivity is far below its potential. The degraded (waste) land, on ownership basis include

a) Private lands, mostly, under agriculture,
b) forest land,
c) community/grazing land and
d) other uncultivated lands.

The important strategy to ensure participation of local people would be to make the planning a 'bottom up' approach i.e., start from people. They should be consulted 'first. The 'user' of the programme should also be the decision maker of the programme. Hence, the present 'top-down' approach where the programmes/schemes are formulated at higher levels for the people in the rural areas should be changed to an approach called 'bottom-up' and with adequate 'support-down' policy.
The official agency concerned should give the required support in the form of guidance so that people could plan their programme meaningfully.

In developing private wasteland, the present practice of providing economic support in the form of subsidies, inputs in kind, should be changed and orientated to produce fuelwood, fodder, minor forest produce, etc., by evolving suitable tree cropping and agroforestry techniques. The new programmes should be viable and profitable.

While economic considerations attract many, ecological considerations could not be underminded and people should be made aware of it in terms of loss of productivity in quality and content. People look to trees and vegetation from the short time gains like fodder, fuel, fibre, green manure, etc. This realisation however is slow and time consuming, nevertheless, it is important. In implementing farm forestry, the participation of the people, right from the stage of nursery raising should be planned.

A nursery should be setup in the village itself, in a farmer's field acceptable to many, if not all. This act itself will create motivation among the villagers to take to the programme. Similarly, the species composition should be based on the people's choice. Planning a demonstration plot in each village, with suitable technique, will help peoples participation. Past experience indicated one factor that is, money does not grow trees, it is the people who grow trees. 'Take care of
the people and the trees will take care of themselves'. Focus
should therefore, change from 'money and trees' to 'people'.

Regarding development of community and grazing lands, people do not participate because of lack of awareness and socio-political reasons. Out of 124 tankforeshores afforested so far, in the district, only one plantation of 20 ha extent, was taken over by the village panchayat for future management during last twelve years. Studies revealed that the local people were not involved/consulted in deciding the programme. They had no participatory role in managing the resources. People are not aware of their share of profits and the 50 per cent share from the harvest is credited to the panchayat funds and made use of for welfare activities by the village panchayat. Other villagers are ignorant about it. While planning for development of a community land, the local villagers should be made clear about the policy, action and the benefits that accrue to each family holding.

In the development of forest land, the local people should be involved by forming groups and the usufructory rights should be spelt out. The State Forest Department have approved a scheme for development of wasteland under Joint Forest Management System, wherein people have say in planning and managing forest lands. Therefore, motivation whether for subsistence, profit making or social obligation should be identified and activated. The assistance and cooperation of village elite, may be president, local politician, teacher, doctor, priest should be enlisted
to promote people's participation.

EXTENSION

For the success of wasteland development, adequate awareness and motivation among the people is necessary. This requires an intensive and broad based approach. At present, extension work is provided through a Village Forest Worker (VFW) stationed in each mandal. A mandal with 15-20 villages is too large a jurisdiction for effective coverage. Other field level functionaries like Foresters/Deputy Range Officers hardly find time to interact with people as they are engaged in other protection/plantation/nursery activity. A full fledged extension support is required at village level.

The extension methods should include a village nursery, demonstration farms, field visits, publicity, success stories and other assistance like pattern of generating subsidies, loans and incentives.

The extension methodology should include training and orientation programmes for the village level functionaries. Village level functionaries of allied departments like agriculture, soil conservation, animal husbandry and irrigation should also be involved in imparting the extension training.

ORGANISATIONAL STRUCTURE

The forest sector is charged with the protection and management of forests and implementation of social forestry
and afforestation programme. There is adequate work load for existing personnel which precludes any concentrated and intensive extension approach. Of the two divisions, one division, having territorial jurisdiction, is primarily in-charge of forest area and its development while the other is implementing social forestry programmes, covering nursery development, farm forestry and community forestry all over the district. With the slender man power resources and vast jurisdiction, the social forestry division can hardly support any tangible and meaningful extension to elicit people’s participation. It is therefore, necessary to have atleast three additional divisions (to be located at Kadiri, Penukonda and Guntakal) in addition to the existing social forestry division at Anantapur.

Each division should be supported by 5 Range Officers (one exclusively for publicity) to look after 16 mandals. One Deputy Range Officer/Forester will be incharge of a mandal. Every year a cluster of 2 to 3 villages will be selected for development. At village level, there will be one VFW to cover 100-125 farmers and at this rate 3 VFWs will cover on average, 350 farmers in a mandal every year. Each cluster village(s) will be developed for 2 years and in a period of 10 years, 3500 farmers will be covered in each mandal and 220500 farmers in all the 63 mandals.

The afforestation programme should be integrated with activities of other allied departments like agriculture, soil conservation, animal husbandry, etc., so as to create a strong
base at the village level for the development. Effort should be made for implementing farm forestry along with other rural development and poverty alleviation programmes. The proposed expansion will also enable to provide necessary technical support to the panchayats at village level for launching social forestry programme under JRY.

ECONOMIC SUPPORT

The poor economic status of the farmers is a limitation in the development of wasteland. From the experience, it is seen that the survival percentage of seedlings planted by marginal farmers and small farmers is nearly three fold where cash incentives were paid. The amount involved is less than the expenditure incurred on raising more nursery stock which is waste. Tree cropping is a long term preposition and farmers have to wait for atleast 5 to 6 years to receive the benefit. Further, as a land-based programme, farm forestry should receive atleast 50 per cent of the subsidy component earmarked under rural development programmes. This economic support in the form of incentives and subsidies will yield promising results.

MARKETING SUPPORT

At present, there is no organised market facility for the wood material and farmers are put to difficulty. The farmers, after meeting their bonafide requirements, should be able to find a viable market for the sale of surplus wood. Government
should declare a 'floor price' for wood material as is done in case of sugarcane. The industries and other commercial organisations should be made to pay a minimum assured price. Such a step will go a long way in developing marginal and unproductive agriculture lands.

**IMPROVED TECHNOLOGY**

For evolving proper technology, it will be useful to understand the site and locality factors. The gravelly red soils occur over 80 per cent of the wasteland. The soils are skeletal, infertile with poor moisture holding capacity. They are deficient in phosphorus and nitrogen which regulate growth. Nearly 80 per cent of the precipitation is lost in the form of run-off. The shallow soils, devoid of any top soil, are mostly suitable for supporting pastures. Nearly one-fourth of the wasteland is suitable for pasture development. Where the soil depth is up to 30 cm, species like *Agave vera-cruz* can be used for afforestation. Land having medium depth (31-45 cm), could support species like *Acacias, Glyricidia, Cassia siamea*, etc. Other lands, with deep soils forming 15 per cent of the total wasteland, could support productive trees of timber and MFP value. Strict protection from biotic damage and fires is important.

Rainfall is a critical factor limiting vegetative growth in the district. The rainfall pattern for the past 101 years (1890-91 to 1990-91) has been studied by the author. The mean
annual rainfall is 541 mm with 28 rainy days in a monsoon year (June to May). During south-west monsoon (June-September) the mean annual rainfall received is 319 mm in 17 rainy days and forms 59 per cent of the total precipitation. During north-east monsoon (October to December) period, with 6-8 rainy days, the mean precipitation received is 141.9 mm which is 26.2 per cent of total annual rainfall. The amount of rainfall received during winter (January and February) and summer (March to May) is 6 mm and 74 mm, respectively. Number of rainy days during corresponding periods are, one and four. The effective rainy days (25 mm and above) are less than ten during the year. September receives maximum rainfall (135 mm) followed by October (94.5 mm) and August (74 mm). Mean annual rainfall received during May is 52 mm. May and September months are more dependable. Dry spells of 15 to 60 days is common during June to September. Out of 101 years, 49 years are with less than normal rainfall (Fig. 27).

In order to tide over the erratic and scant rainfall situation, each drop of water should be conserved, aiming at 'zero' run-off. Intensive soil and moisture conservation measures such as gully plugging, check dams, water harvesting structure should be undertaken. Land preparation should include mechanised ploughing (easy topography) wherever soil depth is more than 45 cm. Using country plough or tractor is not effective. Trenches and pits of 50 cm³ and above size are useful. A receptacle around each plant to a depth of 10-15 cm at the
**Fig. 27**

**RAIN FALL PATTERN**

IN ANANTAPUR DISTRICT

A. Normal number of rainy days

B. Normal rainfall during the period.

**DEVIAITION FROM AVERAGE NORMAL RAIN FALL**

(1890-91 TO 1960-61)
ground level will be beneficial to impound rain water. In slopy lands, continuous contour trenches with a cross section of \[\frac{(60+40)}{2} \times 30 \text{ cm} \text{ or } \frac{(45+30)}{2} \times 30 \text{ cm}\] should be formed. The dug out earth should be formed into a mound and sown with seed of legumes and tree species like Neem, Babul, Custard apple, *Albizia amara*. The quantity of earth work to arrest run-off depends on maximum rainfall received in a single day. Volume of earthwork equivalent to 180 cum is considered adequate in this district. A contour interval of 10 m is adequate. In land with easy slope, it is adequate to have staggered trenches, intercepted by continuous trenches at 20 m interval. While length of these trenches may vary, according to espacement adopted for planting, the size of the trench would be 100 cm long, 30 to 50 cm wide and 25 cm deep. A pit of 30 to 45 cm$^3$ in the centre of the trench should be made to hold the plant. Formation of mound on the lower slope using dug out earth will be beneficial. Moisture regime in the pit could be improved by addition of a 'gamela' (\(\frac{1}{2}\) cft) tank silt. Application of neem cake or castor cake and biofertilizers mixed with 50 to 100 g diammonium phosphate as basal dressing will be beneficial. To prevent excessive evaporation losses and to protect the soil from dessication, a cover crop of pasture legume should be raised by propagating 10-15 Kg of *Stylosanthes hamata* seed, which is promising. Mulching with 3 to 4 Kg dry grass around each plant is helpful.

Repeated operations (3 to 4) to break the soil around
each plant to a radius of 50 cm and depth of 10 cm will improve aeration. Except for obnoxious weeds, other vegetation covering the site should be encouraged.

Early planting i.e., by first fortnight of June should be ensured. Advantage of precipitation during May should not be lost. All advance operations like trenching, pitting etc. should be completed during January-February of the preceding year.

Protection from cattle is another factor in land development. The planting stock used should be vigourly growing, sufficiently tall (2 m), with good tap root system. Discretion should be exercised in selecting good planting material at the nursery site. Great care should be taken to minimise damage to the container plants while loading, unloading and in transit. Nearly 30 per cent of mortality reported is due to handling damage and root shock.

The poor soil status does not support high density plantation. A population of 800 to 1000 plants per hectare is optimum.

Selection of suitable species is important in successful wasteland development. Irrespective of the management method, the primary criteria in selecting a species should be its success to withstand and provide soil cover and greenery. The species should be indigenous, fairly fast growing, has good coppicing vigour, drought-hardy, and capable of regenerating naturally. Rehabilitation of denuded lands is the foremost object. From
the past experience in the district, species are suggested for developing various categories of wasteland.

PRIVATE LANDS

In farm forestry, raising a live hedge with 'agave' along the field boundary is important. Tree species, where soils could support, should provide productivity, sustainability and adaptability. The trees planted should improve productivity of the land, give tree products and help in increasing the agriculture productivity. The species should be able to adapt to the local environment and cultural practices. A multipurpose leguminous tree should be preferred. The tree should give products like fuel, fodder, MFP, fruit, etc., and benefits like service functions to the land use system. The species recommended includes Leucaena leucocephala, Eucalyptus hybrid, Sesbania grandiflora, Acacia nilotica, Azadirachta indica, Dendrocalamus strictus, Tamarindus indica and Grevillia robusta.

STRIP LANDS

Species selected should be evergreen, or deciduous for a short period, of shade and ornamental value, yield fruit and minor forest produce. The species should enjoy the patronage of people. The species recommended for different categories are:

For road strips

Tamarindus indica, Azadirachta indica, Samanea saman, Albizia lebbeck and Syzygium jambalona.
For railway strips

Eucalyptus hybrid, Leucaena leucocephala, Pithecellobium dulce and Albizia lebbeck.

For canal strips

Tamarindus indica, Syzygium jambalona, Sapindus emarginatus, Dalbergia sissoo, Mangifera indica and Acacia nilotica.

COMMUNITY/GOVERNMENT WASTELANDS

These wastelands should be afforested with species like Acacia nilotica, Prosopis cineraria, Tamarindus indica, Terminalia arjuna, Pterocarpus santalinus, Sapindus emarginatus, Ficus spp., Holoptelia integrifolia, Cassia siamea and Albizia lebbeck.

DEGRADED FOREST LANDS

Choice of species depends upon the soil depth and land preparation technique. The species recommended for degraded forest lands are Agave vera-cruz, Annona squamosa, Terminalia arjuna, Tamarindus indica, Pongamia pinnata, Holoptelia integrifolia, Eucalyptus hybrid, Pterocarpus santalinus and Leucaena leucocephala.

BIO-TECHNOLOGY APPROACH

There is a great need for quality planting material since non-availability of quality seeds affect the survival rate as well as productivity. Through biotechnology, quality planting material with desirable traits i.e. high adaptability to withstand adverse climatic and soil conditions, high metabolic efficiency, good rate of productivity can be obtained.