FARM FORESTRY SHOWS THE WAY FOR US TO PLANT TREES AND PROSPER

PRINTED BY THE DIRECTOR OF STATIONERY AND PRINTING,
MADRAS, ON BEHALF OF THE GOVERNMENT OF MADRAS.
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FOREWORD.

Recently the Prime Minister enumerated three development features as of prime importance in the advancement of the land and the people, viz., (1) electric and other forms of power, (2) Education-general and technical and (3) Panchayat Raj, under which the rural people organise and administer themselves.

Panchayat Raj has been ushered in, all over the Madras State as from 1961, October 2nd. It is now for the village Panchayats and Panchayat Unions to ensure balanced development of the services and economy that would make for better standards and comforts for people living and working in rural areas. It need scarcely be added that tree crops are essential for better rural life. The agriculturist needs wood for fuel, wood for his implements, wood for his tool handles and wood for his dwellings. He needs grazing and fodder for his cattle. He needs green-leaf manure for his fields. He needs many other things every day, for which he has to depend wholly on trees, tree crops and forests. And yet, how little attention he pays to growing them! It is but meet that the Government should step in to help, make good this glaring deficiency in rural development programmes.

This scheme aims, wholly and exclusively, at rural improvement. This pamphlet attempts to explain first what this scheme of "Farm Forestry" consists of, secondly how the scheme depends on the collaboration of the Panchayats and Panchayat Unions, and thirdly how its success is vitally linked with the whole-hearted co-operation of the people.

Briefly put, the scheme aims at systematically establishing a tree crop on every patch of barren land, a grove of trees on every village common, a row of trees on every field ridge, and an avenue to mark every pathway, in short a tree wherever there would be room for one to be

planted. The scheme will not differentiate between public and private lands but will tackle neither without the peoples' consent; and in any case, will help to clothe both equally with green vegetation, of undoubted productive and protective value to the villagers and their fields. Though initially it will entail short-term restrictions on cattle, it will afford improved grazing and increased fodder resources in the long run. The scheme will also help to supplement (by way of wages to be distributed) the villagers' incomes. The Planning Commission and Governments in India have fully recognised the many benefits that will accrue to the farmers and the rural folk from ' Farm Forestry ' and have made large fund provisions for its development. The Forest Departments have (after a century of conservative and commercial forestry) emerged from their shell (in the Reserved Forests) and come forward to place their technical knowledge, practical skill and trained staff at the disposal of the Panchayats, for its effective implementation. The Community and Block Development units will incorporate systematic now planting as part of rural development work. It is new for the people of this State, as elsewhere in the country, to grasp the opportunity to enrich their villages and to provide for themselves (in perpetuity) increased resources of forest produce, which have remained all along so essential for day to day life in the villages and yet so much in short supply.

Here is a good scheme, aimed entirely at improvement of the lot of the rural people. While Government will spend funds and foresters will give of their time and energy to implement it, the benefits from it will all go entirely to the local people concerned.

This small booklet on ' Form Forestry ' is issued in the hope that it will place these beneficial proposals in their right perspective before the people and secure for the scheme their fullest co-operation.

The Chief Conservator of Forests acknowledges the assistance rendered by Sri K. R. Venkatesan, Assistant Conservator of Forests in the compilation of this booklet.

LET US PLANT TREES AND PROSPER.

C. A. R. BHADRAN,
Chief Conservator of Forests.

Madras,
16th October 1961.

SUMMARY

The poor position of India regarding the extent of forests and tree lands, consumption of wood, etc., are explained, especially in comparison with other countries. The evils of exposure and soil erosion due to absence of adequate vegetative soil cover are brought out. In particular, Madras State is far from self-sufficient in respect of the products of trees and forests, viz., timber, fuel, fodder and manure leaves, owing firstly to inadequate forest area (17 per cent of land area), secondly to much of that being no better than valueless scrub and thirdly to the damage to or destruction of trees indiscriminately in private lands and village commons. Obviously, all this calls for urgent remedial action in the interests of a better way of life, especially in our rural areas. A scheme of " Farm Forestry " is proposed as the solution, though not an expensive one, for remedying this unsatisfactory state of affairs.

The concept of Farm Forestry, its elaboration from ' Vanamahotsava ' and its scope are fully dealt with. Farm Forestry can be tackled by two methods, viz., common endeavour and individual effort. In the former method, the Forest Department will undertake planting of waste lands suitable for the purpose, and above 20 hectares (50 acres) in extent. The Village Panchayats will be assisted in planting areas smaller in size. Planting will include introduction of suitable trees, shrubs and grasses, for timber, fuel, fodder and manure leaf. In the individual effort, the farmers will undertake planting of trees in their own lands, either individual trees (in their backyards or field bunds, etc.) or tree crops on a commercial scale. Suggestions have also been put forward for local institutions like schools and private organisations to play their full part in promoting tree

planting. Technical guidance and help and planting material (seed and seedlings) will be available from the Forest Department to the Panchayats, to individuals and to institutions through the Forest Development Staff specially attached to each Panchayat Union.

As a result of a reconnaissance survey undertaken by a Special Division of the Forest Department, it is estimated that about 6.4 per cent of all land in the State may be available for such planting under Farm Forestry methods (i.e.) about 8 lakhs hectares. At the rate of planting proposed for the present, viz., about 16,000 acres a year, it will take 50 years to plant up this area, which is a very prolonged proposition. It is, therefore, urged that the scheme should be enlarged on the basis of practical experience to be gained in the Third Plan period, at least by the beginning of the Fourth Five-Year Plan, so that the available areas in the entire State could be covered with tree vegetation within a reasonable length of time.

In 1960-61 a pilot scheme was undertaken and 1,007 hectares (2,495 acres) were planted. The experience gained led to the adoption of the Farm Forestry Scheme in its present form, in the districts of Chingleput, South Arcot, North Arcot and Salem in 1961-62 and it will be extended to Madurai, Tirunelveli, Ramanathapuram and Kanyakumari districts in 1962-63.

A total sum of Rs. 75 lakhs has been provided for the scheme in the Third Five-Year Plan. A Forester and a Forest Guard will be attached to each Panchayat Union and a Ranger for each Development District. The entire work will be done under the supervision and control of the respective District Forest Officers. When the work progresses it will be necessary to provide separate supervisory staff for regulating the large volume of work that will be the feature of this scheme alone.

The need for Farm Forestry measures is reiterated and an appeal is made to the public for their whole-hearted co-operation in furthering the scheme. The scheme will bring to the villagers, at their door-steps, increased supplies of firewood, fodder and green manure-leaf which are essential adjuncts to good agriculture. It will also provide small timber and other forest products. All this will mean handsome additions to the revenues of the panchayats as well as to individuals. Farm-yard manure which is being used as domestic fuel now will go rightly to enrich the cultivated land. Soil erosion will be arrested. The entire State will be turned into a pleasing panorama of green vegetation and the villages will become more pleasant to live in.

Relevant extracts are appended from the current Indian Forest Policy; the schemes of Farm Forestry as adopted by the Government of India and Madras; particulars of planting in Madras State in 1961-62 and 1962-63; economics of the scheme; a model scheme for a rural unit; and species suitable for planting in the State.

It is hoped that this publication will lead to continually increasing interest in this truly welfare activity.

FARM FORESTRY

A scheme which will, so to say, bring the benefits of forests to the villagers' door-steps.

> " The man who plants trees for the enjoyment of the public obtains bliss. The planter gives liberation to 30,000 of his past and future ' pitaras ' (ancestors) "
>
> — *Agni Purana.* —

INTRODUCTION

It is needless to stress the role played by forests in the welfare of the land and people. The conservation of soil and water, which is important for good agriculture and consequent prosperity of a State, is dependant on the even distribution and adequate maintenance of its forests. Besides, the forests meet the requirements of people in respect of timber, fuel, fodder and manure leaf in addition to yielding a variety of minor forest products like barks, fruits, honey, wax, drugs, etc.

One of the yard-sticks used to measure the standard of living in a country is the consumption of timber. Thus the *per capita* consumption of timber in Japan is .38 Cu. metre (13.4 c.ft), France .45 Cu. metre (16 c.ft.), United Kingdom .53 Cu. metre (18.7 c. ft.), United States .80 Cu. metre (63.5 c. ft.), Australia 2.14 Cu. metre (75.6 c. ft.) and Canada 4.04 Cu. metre (142.6 c. ft.). Only .04 Cu. metre (1.5 c. ft.) of timber per head is consumed in India, even out of which 70 per cent is firewood: This is a very unsatisfactory state of affairs compared with the advanced countries. This limited production of timber (especially if firewood is excluded) and the faulty distribution of our forests are the main causes of the acute and widespread difficulties frequently experienced by cultivators in the intensely cultivated regions in our country. They are forced to misuse large quantities of cow-dung as fuel which should rightly go to their fields for producing additional food. It is shocking to realize that the amount of cow-dung burnt annually in India is of the order of 81 million tonnes.

Soil erosion is most inimical to good agriculture. Floods, erratic flows of water in the rivers and streams, silting up of reservoirs, lakes and irrigation canals and similar adverse effects are due mainly to absence of

vegetation in the catchment areas and unwise clearings and destruction of forests. It has been ascertained that the capacity of a reservoir may be reduced to half or even less within as short a period as 40 years if the catchment is not adequately clothed and protected. Therefore, this aspect needs great attention from all concerned. Various adverse factors like excessive or unregulated grazing have reduced the natural vegetation in most of the vulnerable sites to a precarious state. This situation calls for urgent remedial measures not so much in conventional forest areas but primarily in waste lands, etc., near villages and cultivated lands and fields.

Let us now turn our attention to our forests. It is the opinion of forestry experts that unless a country has at least a third of its total area under forests, it cannot build up its prosperity from its own resources. The Indian Forest Policy which was formulated in 1952 also stresses that India must have at least one-third of its area under forests, with the additional provision that at least 20 per cent in the plains and 60 per cent in the hilly areas must be wooded. Prosperous countries in the World possess adequate forests. United States 32.8 per cent, Union of Soviet Socialist Republic 32.9 per cent, Germany 38 per cent, Japan 67 per cent, Finland 70.9 per cent. Compared to these figures, India has only 22.3 per cent of forests but much of this is Forest only in name. Worse still, Madras State has only 17.5 per cent of land under forests, barely half of the desirable proportion of 33-1|3 per cent. Not only the extent but the condition of forests in the State also leaves much to be desired. Except for a few timber producing forests on the Western Ghats and other hills, most of the other forests are mere, often degraded, scrub jungles of very low value even from the protection point of view.

OUR REQUIREMENTS AND PRODUCTION

Our State forests produce only 20,320 tonnes of timber which is insignificant compared with the increasing needs of the people in the State. Therefore, we are forced to buy large quantities of timber from Kerala, Bombay and Andamans. Regarding fuel, our requirements are of the order of 5.9 million tonnes at the rate of one-sixth ton per head for a population of 34.8 million but our forests produce only about 1.02 million tonnes of fuel. The rest of the wood fuel is obtained either from private sources or substituted by cow-dung and other fuels which should rightly go to enrich our lands. The cattle population of Madras State is bovine 11.8 million and sheep and goats 11.4 millions. This number is abnormally high when we take into account the total area of the State and the availability of fodder. Most of the cattle are consequently under-nourished, and do not yield enough milk or flesh compared to cattle in other parts of the World. Our forests can support only 10 per cent of this cattle population, that too not without obvious adverse effects on the forests. The rest of the 90 per cent are presumably depending upon straw of cereal crops and the husk and bhusa of pulse crops, besides chance feeding on anything green on the porambokes and private lands. All these sources of fodder and grazing are obviously very inadequate. Therefore, there is immediate necessity, on the one hand, to reduce the cattle population drastically and to improve the fodder resources on the other, besides improving the quality of the cattle.

Another important requirement of the villagers is green manure leaf. At present the villagers living near the Reserved Forests secure manure leaf from the forests but wholly on a casual basis. This is not only inadequate but the forests suffer from heavy lopping and other damages, leading to deterioration. Recently, the State

Forest Department has taken up a scheme for growing green manure crops in forest areas specifically for supplying seeds of such species to the cultivators. Though this may go a long way in meeting part of the demand, there is urgent need to grow the crops in the village lands extensively.

All these demands are bound to increase rapidly due to the increases of population and increasing needs of the people, apart from the need for land for other and new uses. The foregoing facts suggest that the inadequate supply of timber, fuel, fodder and manure leaf is due to inadequate extent of our forests and there is necessity to increase the extent of forests and produce these in the village limits by growing suitable tree and other crops in the available village waste lands. Therefore, Farm Forestry is suggested as a panacea for all these and the successful implementation of it will make the State prosperous. If every villager, village or panchayat union is made self-sufficient in the requirements of small timber, fuel, fodder and manure leaf, the resources of the State's Reserved Forests can be diverted to supply fuel to urban areas and timber and other products for developing industries like paper, rayon, boards, tanning, etc.

Kodukkapuli village forest near Puthuthakku where cattle can graze.

THE PAST AND PRESENT CONDITION OF TREES IN THE VILLAGES.

" A fine must be imposed for injuring all
kinds of trees, in exact accordance with
their usefulness; thus in the rule ".
And every kind of tree is useful.

— *Manu Dharma Sastra* —

In the olden days the villagers were maintaining *topes* of coconut, palmyrah, mango, illuppai, etc., in the village common lands, around temples, around tanks, etc. In fact the village panchayats held its deliberations under a spreading banyan or peepal tree and village fairs and festivities used to be held in the shady *topes*. The guarding deities of villages like *Ayyanar, Pidari,* etc., were installed only in the midst of small grooves of trees and shrubs at the outskirts of the villages and the grooves used to be zealously protected. Every agriculturist grew useful species of trees in his backyard, around his lands and in *topes* and as far as possible he was self-sufficient in his requirements. The road sides were also full of good fruit or shade trees of all species. There was a belief (which prevails even today in some remote villages) that trees containing milky juice, like illupai, al, arasu, etc., should not be felled on any account and such trees were held sacred.

Very recently during the World War and later, this healthy situation took a different turn. There were heavy demands for timber and fuel which boosted up prices. Consequently a large number of trees in the private lands were felled and the wood sold. Due to increase of population, we see today more of building activities, growth of industries, etc., and the demand for timber and firewood keeps ever increasing resulting in turn in the felling of trees on a large scale. The felling has extended from private lands to village commons and further to avenue trees on the road sides. It is a pity to note that people interested themselves only in felling trees but not in planting a single sapling. It goes without saying that the village forests and the Reserved forests even have also been heavily affected by the illicit activities of groups and of individuals. We have lost our respect and love for trees and forests; with the result, the surrounds of villages are becoming more and more barren, ugly and unproductive. It is not an exaggeration to observe that in most of the villages today, it is hard to find a respectable shade tree. Luckily, the new colonies which are springing up around cities in recent years are full of shade and flowering trees on road sides, in and around compounds of houses, in parks, etc. The villages, therefore, are becoming more and more inhospitable to live in, which may be one of the reasons why large number of well-to-do villagers prefer to live in cities.

VANAMAHOTSAVA

In order to instil in the minds of the people a love for trees and to change the landscape of our country into a pleasant panorama of shady grooves and flowers, the festival of trees, viz., Vriksharoban or Vanamahotsava was initiated as a National Festival in 1950 by the Union Minister for Agriculture, Sri K. M. Munshi. It was expected that this annual festival would induce people to take a keen interest in planting trees and the country-side would look richer and become more pleasant to live in. However, after eleven years propaganda for Vanamahotsava, we find that we have not planted enough trees nor have we looked after the planted saplings. Mere appeal to the people to realize the benefits of tree planting has not served the purpose adequately. Therefore, the necessity for a more organized effort to plant trees is keenly felt.

FARM FORESTRY—ORIGIN, AIM AND SCOPE

"He that plants a tree is bound to water it"

—A Tamil proverb—

In January 1956 a symposium on Vanamahotsava by scientists and foresters of the nation was held in Agra in conjunction with the Indian Science Congress. The symposium stressed the need to organise tree planting in a systematic way, taking into account the need for correct choice of species, techniques and methods for planting. It was only a natural development that 'Vanamahotsava' in rural areas should, with better organization, give way to programme of "Farm Forestry". In 1958, during Vanamahotsava, emphasis was laid on planting small forests not only by every village

as such but by individual farmers also. In September 1958, a symposium on Farm Forestry was held at Dehra Dun under the joint auspices of the Forest Research Institute, Dehra Dun and the Indian Agricultural Research Institute, New Delhi. Farm Forestry was defined as " The practice of Forestry in all its aspects on farm and village lands, generally more or less integrated with other farm operations ". Therefore, Farm Forestry implies an integration of farming with forestry practices for the benefit of agriculture. It does not mean tree culture at the cost of Agriculture. The concept originates from the realization that trees play a vital role in safeguarding the long range interests of agriculture and in improving agricultural economics.

It was decided in the symposium that if not the area of forests at least the content of forests should be increased all over the land and " Farm Forestry " would be the best approach for achieving the same. Technical help and guidance would be rendered by the Forest Departments but the responsibility for execution would rest with the Community Development Organizations.

Accordingly the Government of India prepared an ambitious programme of planting 31.57 million hectares (78 million acres) during the Third Five-Year Plan at a cost of Fifty crores of rupees at the rate of 323.76 hectares (800 acres) per block. However, the budget and the target were reduced subsequently to provide for 40.47 hectares (100 acres) to be planted with tree crops annually in each Development block. The aim of the scheme is to utilise every site, however, small or large it may be (not otherwise utilised) for the raising of tree crops or other useful vegetation solely for the benefit of the rural public. The object would be to leave no soil or site exposed to the destructive effects of wind and water. At the same time, every site would be so utilised as to obtain maximum returns possible according to its individual capacity. Farm Forestry would aim at producing small timber, firewood, fodder and manure leaf within easy reach of the village and in adequate quantities, both on private lands and public lands, thus making the village self-sufficient in these basic requirements.

The methods necessary are two-fold, namely (1) Collective effort and (2) Individual effort.

1. COLLECTIVE EFFORT

" Let us compose poems and let us grow
many a good forest "

— Subramanya Bharathi —

In the first instance, the Forest Department with the concurrence of the Panchayat or Panchayat Union concerned, will take up village waste lands suitable for planting trees of 20 hectares (50 acres) or more in extent and plant them with suitable trees and shrubs of economic value. Such waste land sites will include high level waste lands like grazing grounds, denuded hillocks, etc., and lake and tank foreshores. Trees, shrubs and grasses will be planted, which will yield small timber firewood, fodder, fruit, manure leaf and other

products of economic value. Further, with the concurrence of the Panchayats, the department will also take up soil conservation work in all the badly eroded areas like hill sides, river margins, canal banks, etc., and consolidate them by small-scale constructions and by raising grasses, shrubs and trees as may be indicated.

Planting in other areas (i.e.) less than 20 hectares (50 acres) in extent, including lake bunds, road margins, village paths, etc., not covered by the department's activities will be left to the Panchayats concerned. The Forest staff attached to the Development block will, however, render all technical advice and assistance to the Panchayats besides supplying seeds and seedlings. It will be necessary to protect those small plantations by erecting fences, opening trenches or adopting a combination of both. For trees planted individually anywhere, it will be necessary to provide tree guards. Small pieces of waste lands can be planted up at practically no cost during Vana-mahotsava if people donate free labour and hearty co-operation. Voluntary organizations and social workers can give a good lead in such programmes. Otherwise, the panchayat can induce willing individuals to plant all waste lands with suitable tree species and pay them on the number of trees successfully raised. School children can also be allotted sites in which they will be encouraged to plant and protect trees. It will be a matter of real pride for them at a later date in identifying the trees they planted and watered and helped to grow along with them. In this connection, it is not out of place to mention here the example of Federal Germany, were 350 "School Forests" (planted by school children under the guidance

Kodukkappuli and Usil village plantation at Tirinchipuramon the banks of Palar.

of their teachers and of forest wardens, often with seedlings grown in school nurseries) have been created and numerous children have been taught how to grow trees and care for them.

There is a private organization called "Men of the Trees" in England, the members of which take active interest in trees not only in England but in trees of other countries also. There is great need in our country for such private bodies devoted to trees which can do excellent service to the country, even as the Red Cross Society or the Society for the Prevention of Cruelty to Animals are already doing in their own fields.

As tree planting is a profitable venture, the villagers may form co-operative bodies, called "Forest Co-operatives" and look after the planting, protection, felling and marketing of trees and tree products on a co-operative basis. The State Forest department will offer all technical guidance to such co-operatives and even afford financial assistance to meet initial expenses. In the Kangra Valley of Punjab State, large areas of village forests are managed by such "Forest Co-operative Societies" under the technical guidance of the Forest department. This aspect of management of village forests by co-operatives needs greater attention from all interested villagers.

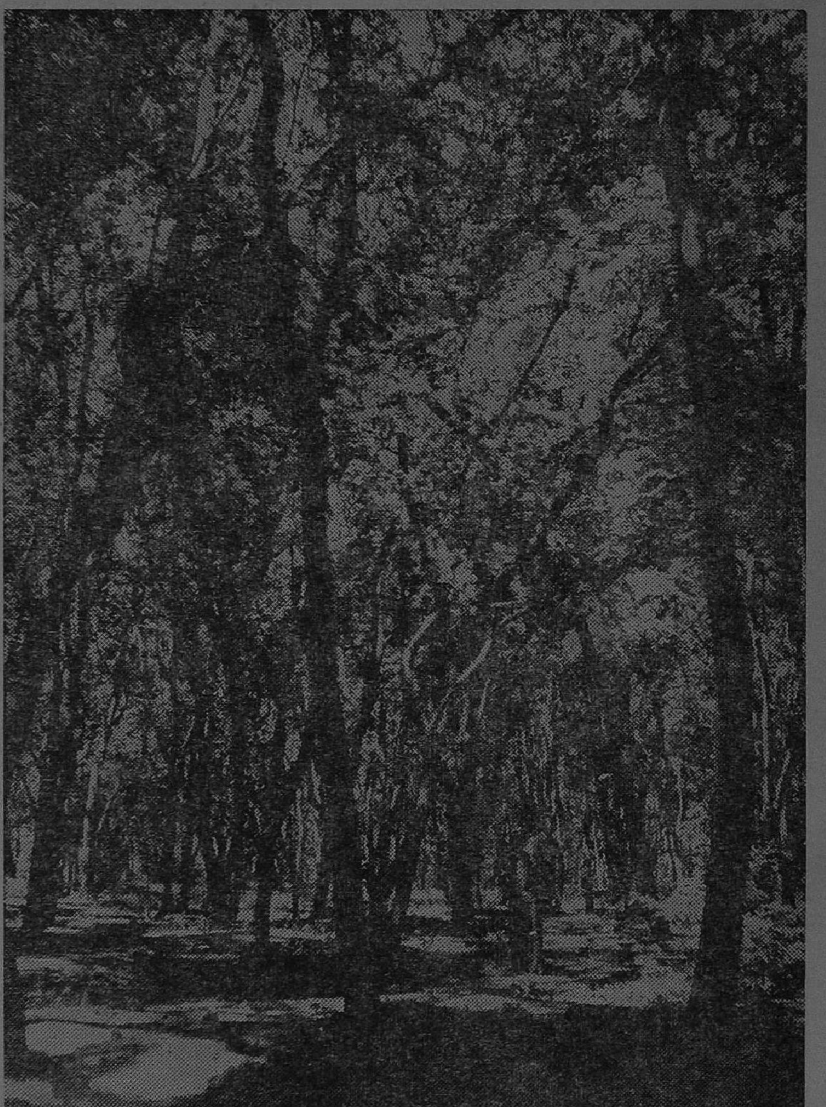
2. INDIVIDUAL EFFORT

"O Lord Nandalala (Krishna)!
I behold your green colour in
All the trees I see around me"

— Subramanya Bharathi —

There are in the Madras State nearly one million hectares (25 lakhs acres) of lands lying as current fallows either due to lack of rains or of irrigation facilities. This forms roughly 8 per cent of the total area of the State, an enormous figure. Admittedly, much of this is rocky or sterile and marginal to any cultivation. Even so, if at least half of this area is put under tree crops, the State will be the richer by another 4 per cent of the land under permanent vegetation. It is not uncommon to come across farmers who spend all their time, energy and money in raising agricultural crops in lands which are scarcely fit for the purpose. Even with the high prices that agricultural produce fetch now-a-days, very often such efforts do not yield a gross return of even Rs. 50 per acre per year. On the other hand, a farmer with foresight can convert such a land into a *tope* of tamarind, cashew, bamboo, casuarina or Eucalyptus, which needs of course an initial investment of money and labour but will look after itself in subsequent years and can be so regulated as to yield a sustained revenue year after year without further expenditure. An acre of Casuarina or Eucalyptus will fetch incomes up to Rs. 1,000 at the end of the Seventh or Eighth year or yield enough firewood for the household. The revenue from casuarina is so attractive that some ryots in the districts of South Arcot and Chingleput have even started planting casuarina in the poorer quality paddy fields! After a crop of casuarina, the land become fertile due

to the bacterial nitrogen fixing nodules present in the roots. The more recently introduced Eucalyptus hybrid can be grown in the plains, arid areas and can be expected to yield up to 25 tonnes of



An interior of a Kodukkapuli village plantation on river Palar near Puthuthakku.

wood per acre within a comparatively short period of five to six years. A hectare of land can support 100 tamarind trees and each well grown tree will bring the owner an average revenue of

not less than Rs. 10 annually. As tamarind can come up well even on poor soils, its extension is urgently indicated. Of course, in all cases initial attention for a year or two, by way of protection from damage by domestic livestock, watering during critical days in dry months and cultural operations, will be necessary. Cashew, bamboos and other commercial species will also give handsome returns. Even such vegetable yielding species like Murungai, Karuveppilai or Agathi if planted systematically will fetch high returns that the farmer would have never anticipated.

There is a practice in the arid taluks of Palladam, Dharapuram and Erode of Coimbatore district to leave a considerable number of *velvel* (*Acacia leucophloea*) trees in the dry cultivated lands which besides protecting the crops from the dessicating effects of winds and sun, yield timber, firewood and fodder. In the coastal tracts of Ramanathapuram, Tirunelveli and Kanyakumari, the cultivated dry fields are studded with *Odai* (*Acacia planifrons*) trees. This practice is also worthy of emulation by farmers in other dry districts. In United States, Canada and Union of Soviet Socialist Republic crops are protected from the dessicating winds by growing shelter belts. It is reported that due to such shelter belts crops production increases by nearly 30 per cent though individual increases of 50 per cent or

A village plantation near Sriperumbudur, first started-cashew and casuarina on what was previously over grazed barren wasteland.

even 200 per cent are not rare. It is one of the recommended agricultural practices in Russia. Growing such shelter belts needs co-operation between neighbouring farmers so that they may be established effectively at minimum costs and with a minimum of land having to be set apart for the shelter-belts themselves.

In addition to devoting a portion of his cultivable lands to tree crops, the farmer can also plant, usefully, trees and shrubs in the backyards of houses, field bunds, margins of water courses, etc. It must be appreciated that a single teak tree, well grown in one's own compound might easily mean an item of wealth to one's successors. It does not necessarily have to be teak. Many other trees and bamboos also produce sizeable returns now-a-days and that too in shorter periods after planting. Trees like coconut, palmyrah, *karuvel, velvel, Illavu* and *Mullilavu* are all suited for planting around cultivated lands as their shade does not inhibit the cultivated annual crops. It is a practice in the delta tracts of the State to grow palmyrah and *Karuvel* trees all along the bunds of paddy fields. In fact a farmer in these parts very rarely resorts to purchasing firewood as these trees are sufficient to meet his household needs. All his agricultural implements and tool handles are made of Karuvel wood. Advice regarding the suitability of species and the technique of growing them can be had from the Forest staff attached to each Development Block. It is fully believed that this lead if purposefully followed, will bestow considerable benefit on individual families and rural communities. The scheme aims at the ideal that every farmer must be able to produce enough small timber, firewood, fodder and manure leaf on his own lands in order to meet his requirements and also derive maximum income by utilising his lands wisely. In this connection it must be realized that in other countries like Japan, United States and Canada most of the small forests and small farm wood lots are owned by private individuals who derive sustained and attractive incomes from them.

STAFF

In order to further actively and extensively, the proposition of " Farm Forestry ", the Forest department have planned to maintain a trained Forester and trained Forest Guard in each Panchayat Union or Development Block. Their duties will consist of (1) forming and managing an adequate model tree nursery for providing necessary seedlings, etc., for all Farm Forestry operations in the block. (2) selecting, demarcating, preparing and planting and subsequently maintaining all compact areas of 20 hectares (50 acres) or more according to the requirements of Farm Forestry, (3) systematically assisting every household and private farm holding (of course with the consent of the owner) on the best scheme for tree and shrub planting in his holding consistant with every other use to which he would put his homestead and his field, (4) advising every village panchayat regarding the choice of species, site and techniques for it to undertake planting in smaller porambokes (less than 20 hectares or 50 acres in area) along village roads and paths, etc., and (5) executing soil conservation works in all badly eroded areas in their jurisdiction. They will follow up their advice to farmers with supplies of planting material and assistance with regard to planting methods and subsequent maintenance.

There will be one Range Officer for every development district and he will guide and control the Foresters and Forest Guards in the work; for the present, the Range Officers will themselves work under the guidance of the regular District Forest Officer of the area.

The work has just been launched in the districts of Chingleput, South Arcot, North Arcot and Salem covering only 66 blocks. In the near future, the work will be extended over the entire State, covering 375 panchayat unions.

RECONNAISSANCE SURVEY AND AVAILABILITY OF THE LANDS.

As a pre-requisite to the development of Farm Forestry on systematic lines, a survey of available waste lands and their present status has been undertaken.

The land utilisation figures of the Madras State were as below during 1958-59 :—

	(1)	*Hectares.* (2)	*Acres.* (3)
1	Forests	1,777,101	4,391,308
2	Barren and unculturable land ..	998,492	2,467,325
3	Land put to non-agricultural uses..	1,255,974	3,103,576
4	Culturable waste	804,281	1,987,419
5	Permanent pastures and other grazing lands.	381,186	941,931
6	Land under miscellaneous tree crop and groves.	263,315	650,666
7	Current fallows	1,031,081	2,547,855
8	Other fallow lands	663,161	1,639,200
9	Net area sown	5,784,110	14,292,834
	Total area of the State ..	12,958,901	32,022,114

The lands included under items 2, 4, 5 and 8 above amount to nearly 2.83 million hectares (7 million acres) which are lying vacant at present. This is roughly about 22.5 per cent of the total area. At least a significant part of this could be afforested with much advantage. It is recognized that not all these lands are fit for raising tree crops. Some of these areas are rocky or very badly eroded. In order to assess the extent of public or common lands actually available for tree planting in each and every village in the State and also assess the extent of erosion, a Reconnaissance Survey has been undertaken. A Special Forest Division has been covering village after village, district after district from early 1956. This Special Division consists of a District Forest Officer, four Range Officers and eight Foresters in addition to other ancillary staff. The work of this division is to visit each and every village and collect particulars of available waste lands from the basic revenue records of the village and from field inspections and thus make a first hand study of the public waste lands 20 hectares (50 acres) and more in extent. Incidentally, data on the fuel, fodder and manurial resources of the village, the population, incidence of cattle, sheep, etc., are collected, besides assessing the nature and extent of erosion in public as well as private lands. Statements are compiled for each village giving all information on the village, the availability of lands for the planting and the extent of erosion. These data are compiled into taluk reports which are submitted to the Government. So far this work has been completed in five districts, namely, Chingleput, South Arcot, North

Arcot, The Nilgiris and Coimbatore and the work in Salem district is in progress. This is the fundamental work on which the Farm Forestry Scheme will be based.

The extent of waste lands in blocks of 20 hectares (50 acres) and more in the five districts so far surveyed is given below:—

	District.	*Total area. Hectares.*	*Total area of poramboke, etc. Hectares.*	*Area available for planting. Hectares.*	*Percentage of plantable area to the total area.*
	(1)	(2)	(3)	(4)	(5)
1	Chingleput	795,223 (19,64,969 acres.)	181,218 (4,47,783 acres.)	97,147 (2,40,047 acres.)	12
2	South Arcot	1,089,923 (26,93,163 acres.)	201,726 (4,98,457 acres.)	76,455 (1,88,918 acres.)	7
3	North Arcot	1,209,367 (29,88,305 acres.)	197,574 (4.88,198 acres.)	100,205 (2,47,602 acres.)	8
4	The Nilgiris	251,296 (6 20,945 acres.)	102,245 (2,52,643 acres.)	9,633 (23,803 acres.)	3·8
5	Coimbatore	1.196,607 (29,56,777 acres.)	115,009 (2,84,187 acres.)	16,727 (41,331 acres.)	1·4
			Average for five districts ..		6 4

This survey indicates that the average of lands available for planting in compact blocks of 20 hectares (50 acres) and more is only 6.4 per cent of the total area of the State which is about one-third of the total extent of waste lands. The rest of the area is either in small bits of uneconomic size or are rocky or otherwise unfit for tree growth. This present average of 6.4 per cent works out to about eight lakhs hectares (20 lakhs acres) of waste lands as likely to be available in the whole State. The present pace of planting is only 40 hectares (100 acres) per Development block per year. Even assuming that planting will be implemented in all the 375 blocks simultaneously, at this rate, we arrive at the staggering fact that it will take us not less than 50 years to cover all the plantable waste lands in the State. As 50 years is a very long period, the Farm Forestry Scheme has to be enlarged adequately at least by the time the Fourth Five-Year Plan begins.

PILOT SCHEME.

Before actually launching on this scheme, a pilot scheme was undertaken in 1960-61 in the district of Chingleput, South Arcot and North Arcot. The scheme was inaugurated at Thirukalikundram in November 1961 by Sri Bhakthavatsalam, Minister for Agriculture. The following areas covering about 1,000 hectares (2,500 acres) in all were planted, the works expenditure being Rs. 90,000. The Government also sanctioned six Rangers, six Foresters and twelve Forest Guards for these areas, covering three development blocks.

Particulars of areas planted are as follows:—

1. Chingleput district—

Development Block.	*Name of the village.*	*Area planted.*	
		Hectares.	*Acres.*
(1)	(2)	(3)	(4)
Sriperumbudur ..	Sriperumbudur	74·86	185·00
	Kiloy	44·51	110·00
	Pondur	43·30	107·00
	Vadamangalam	46·91	116 00
	Pillapakkam	68·39	169·00
	Beemanthangal	12·95	32·00
	Total	290·95	719·00
Thirukalikundram ..	Thirukalikundram	25·09	62·00
	Punjeri ..	74·06	183·00
	Puliyur	57·06	141·00
	Manamai	36·01	89·00
	Kadambadi	30·79	76·00
	Total	223·01	551·00
	Total for the district ..	513·96	1270·00

2. South Arcot district—

Development Block.	*Name of the village.*	*Area planted.*	
		Hectares.	*Acres.*
(1)	(2)	(3)	(4)
Gingee	Ponpathy	44·51	100 00
	Meledayalam	22·25	55·00
	Alampoondi	74·56	184·24
	Total	141·32	339·24
Melmalayanur	Kodukankuppam	44·31	108·51
	Thayanur	84 98	210·00
	Total	129·29	318·51
	Total for the district ..	270·61	657·75

3. North Arcot district—

Development Block.	*Name of the village.*	*Area planted.*	
		Hectares.	*Acres.*
(1)	(2)	(3)	(4)
Vembakkam	Vembakkam	40·47	100·00
	Tirupanangadu	40·47	100·00
	Selleri	19·02	47·00
	Total	99·96	247·00
Pernamallur	Pernamallur	100·77	249·00
	Total for the district ..	200·73	496·00

The areas chosen were mostly foreshores of lakes and dry, bare waste lands or waste land with a wholly unwanted thorny scrub growth. Miscellaneous fuel and fodder species like Eucalyptus, neem, vagai, karuvel, etc., and green manure species like Pungam were planted. This pilot scale work was executed by the respective District Forest Officers with the co-operation of the public, though in some villages the people were averse to their common lands (which were but nominally used for grazing all these years) being planted up. These initial plantations are coming up well and afford encouragement for planning further work on an increasing scale.

THE SCHEME IN THE THIRD FIVE-YEAR PLAN.

The Farm Forestry Scheme itself comes into effect from 1961-62 and a sum of Rs. 75 lakhs has been provided for its implementation in Madras State during the Third Five-Year Plan period. The Scheme envisages the raising of plantations on available waste lands. It is proposed to cover a total area of about 2.62 lakhs of acres of land during the Plan period. In 1961-62, 2,640 hectares (6,600 acres) [at the rate of 40 hectares (100 acres) per development block or panchayat union] would have been planted, thus covering 66 blocks in the districts of Chingleput, South Arcot, North Arcot, and part of Salem. During 1962-63, it is proposed to extend the scheme to another 23 blocks in Chingleput, South Arcot, North Arcot and Salem districts at the rate of 40.00 hectares (100 acres) per block (per annum) thus covering another 920 hectares or 2,300 acres. Besides, it is also proposed to take up fresh areas of 20 hectares (50 acres) in each of the original 66 blocks in the district of Chingleput, South Arcot, North Arcot and Salem where the scheme is already in force. Thus during 1962-63, 2,240 hectares (5,600 acres) will be covered, making up a total coverage of 4,880 hectares (12,200 acres) by the end of 1962-63. The further programme (for the rest of the Five-years plan period) will be chalked out on the experience of the first two years.

DIFFICULTIES OF THE SCHEME: NEED FOR CO-OPERATION OF THE PEOPLE.

Unlike other forest schemes, the Farm Forestry Scheme is beset with a number of hazards as it involves doing cultural work in public and waste lands, which up-to-date the neighbouring people and their livestock have been accustomed to use without any restrictions whatever. Most of these lands are already badly eroded and it will be an uphill task to establish any tree crop on these poor soils, especially when we consider the inadequate rainfall and the inhospitable climate in most parts of the State. Therefore, it may be necessary to make repeated efforts at planting and large-scale replacement of casualties before establishing a well-stocked plantation. Secondly, there is already a sharp reaction among some of the villagers against the scheme. Now that all the waste lands in the State vest with the panchayats, some of the panchayats even are unwilling for the lands being planted under the scheme. The reaction is mainly due to a non-appreciation of the lasting benefits of tree crops and trees.

It is stressed that the scheme aims only at creating plantations of tree crops and not forests; there need be no fear that they will harbour harmful varieties of wild life. On the other hand the bird population will increase and they will be helpful in controlling insect pests which attack agricultural crops.

It is necessary that the public should appreciate the need for such village plantations and should co-operate with the panchayat officials and the forest officials in the planting and protecting of tree crops. Cattle, especially goats, and even inconsiderate human beings may prove a factor affecting the scheme adversely and this can be countered only by the co-operation of the general public. A few goats let loose in a planted area just once may spoil the entire work and cause considerable loss and set back. The local people must come to look upon the protection of the planted trees as entirely their responsibility, if the investments in Farm Forestry are to bear fruit and lead to better rural life. In this connection, it is hoped that the villagers will realize the destruction caused by goats to plants and vegetation of any kind and the necessity to adopt and enforce voluntarily regulations to restrict the movements and depradations of goats. All panchayats and panchayat unions would do well to follow the good lead already set up by one or two of them and implement suitable resolutions in this connection. In fact it will be ideal to eliminate goats (which are but a symbol of poverty of the people) altogether from the village. However, if certain individuals persist in maintaining goats, they should (in the interests of the community as a whole) stall feed their animals and confine them to their own holdings as is done in respect of any livestock everywhere else in the world.

In a scheme of this kind involving the use of public land for planting, the villagers are likely to feel the restriction for sometime on their freedom of movement because of reduction of their open grounds which they have been taking so much for granted, especially for exercising their animals, all these years. But, it is high time that the long range benefits to the village are fully realised. Apart from other benefits, the planted area will provide fodder leaves and grasses in future, if not direct grazing. It will be necessary for the public to put up with inconvenience of restrictions in respect of these lands

for two years or so only. The areas where the planted trees have established themselves, i.e., have reached a state when they will be beyond damage by cattle, will once again be thrown open for grazing; even in the meanwhile, closure itself would encourage grass growth in the areas and the villagers will be free to cut and remove the grass. It is hoped that the panchayats and panchayat unions will realise the urgent need for implementing this scheme and offer their whole-hearted support and co-operation without which the scheme cannot be a success. Besides meeting the needs of the public, the plantations will give a handsome revenue to each panchayat which can again be utilized for the welfare of the village.

FUND PROVISION.

A sum of Rs. 75.00 lakhs has been provided for Farm Forestry for the entire Third Five-Year Plan. During the first two years, 4,880 hectares (12,200 acres) of waste lands will be afforested as follows:—

(Rupees in Lakhs.)

	Works.	*Establish-ment.*	*Total.*
(1)	(2)	(3)	(4)
1961-62	4·40	0·94	5·34
1962-63	3·74	2·26	6·00
Total	8·14	3·20	11 34

The rest of Rs. 63.66 lakhs will be spent during the subsequent years of the plan period.

BENEFITS OF THE SCHEME.

The benefits of the scheme are manifold. Firstly, the scheme will give employment to the rural population in addition to employing educated people also. Most of the amount to be spent on this scheme, will be paid to the local people as wages. The surroundings of the villages will improve and they will become more pleasant to live in. The chronic shortage of essential resources like fuel, fodder and green manure leaf will be resolved and will become available practically at their doors. When the villagers become self-sufficient in their requirements of fuel, fodder and manure leaf, the reserved forests can in turn be diverted to supply fuel to big towns and cities and other forest products for industrial uses. Thus industry will also be helped. The surplus of trees from the villages can also be supplied to the industries. Soil erosion can be stopped and our river and reservoirs saved from silt and our land from loss of fertility. More of manure will be produced and also the enormous amount of cow-dung, which is burnt at present as fuel, will be saved for use as manure. The bird population will increase and they will put down the insects which are harmful to crops. Thus agriculture will prosper. By the improvement of fodder position, the cattle will improve, which in turn would mean better cattle power to agriculture and more of milk, other dairy products and meat.

CONCLUSION.

'Farm Forestry' has as its sole objective, the betterment of our villages and our rural areas. The Government will provide funds on a large-scale for implementing 'Farm Forestry' on an equally large-scale. The Forest Department is ready to place its skill, knowledge and techniques and trained staff at the disposal of the people in order to carry out the scheme. It is for the people to avail themselves of the opportunity and convert their arid (often barren) neighbourhood into productive tree-lands and pleasing landscapes.

APPENDIX I

EXTRACTS FROM THE NATIONAL FOREST POLICY OF INDIA.

RESOLUTION—1952.

Vital national needs.—The National Forest Policy of India is formulated on the basis of six paramount needs of the country, namely:—

1. the need for evolving a system of balanced and complementary land-use, under which each type of land is allotted to that form of use under which it would produce most and deteriorate least;

2. the need for checking:

(*a*) denudation in mountainous regions, on which depends the perennial water-supply of the river system whose basins constitute the fertile core of the country;

(*b*) the erosion progressing space along the treeless banks of the great rivers leading to ravine formation, and on vast stretches of undulating waste lands depriving the adjoining fields of their fertility;

(*c*) the invasion of sea-sands on coastal tracts, and the shifting of sand dunes, more particularly in the Rajputana desert;

3. the need for establishing tree lands, wherever possible, for the amelioration of physical and climatic conditions promoting the general well being of the people;

4. the need for ensuring progressively increasing supplies of grazing, small wood for agricultural implements, and in particular of firewood to release the cattle-dung for manure to step up food production;

5. the need for sustained supply of timber and other forest produce required for defence communications and industry;

6. the need for the realisation of the maximum annual revenue in perpetuity consistent with the fulfilment of the needs enumerated above.

These vital needs indicate the functions of forests are to fulfil, and provide the fundamental basis of the policy governing their future.

Land use.—The correct solution of the land problem is to evolve a system of balanced and complementary land use, under which each type of land is allotted to that form of use under which it would produce most and deteriorate least. A detailed survey of lands with a view to their proper utilization is, therefore, highly desirable.

Village forests.—" Village forests " popularly termed fuel forests, are intended, in the main to serve the needs of the surrounding villages in respect of small timber for housing and agricultural implements, firewood, leaves for manure and fodder, fencing thorns, grazing and edible forest products. The supply for such requirements should be made available at non-competitive rates, provided they are utilised by the villagers themselves and not traded in. The management of such village forests should aim at meeting the present as well as the future needs of the local population. Removal of the produce in excess of its annual growth should not, therefore, be permitted. Restrictions should be imposed in the interests not only of the existing generation but also of posterity. These considerations render the entrusting of the management of village forests to *panchayats*, without appropriate safeguards, a hazardous undertaking as has been demonstrated in some of the States. The co-operation of panchayats should be enlisted in the protection and creation of village forests, and in the distribution of forest produce assigned to meet the needs of the local population, but not at the cost of economy and efficiency. While the profit motive in the management of these forests should be relegated to the background, there is no justification for allowing them to become a burden on the general tax-payer; the expenses for development and maintenance of such forests must come from their own income.

Treelands.—Although " treelands " are not part of regular forests, in a country like India where their increase, management and development are vital to the needs of the people, they cannot well be left out of any well-considered policy. The Land Transformation Programme of the Government of India envisages the planting of 30 crores of trees in ten years, but this number is very far from 2,000 crores of trees, which would be necessary to restore the hydrological nutritional balance of the country. The creation of forests by State Forest Departments on such an elaborate scale is ruled out at present by lack of funds and trained personnel. The only way in which some progress can be achieved is by making the whole nation 'tree conscious'. Such consciousness will stimulate private efforts at tree planting as has been demonstrated by the success of the *National Vanamahotsava* movement. It will also arrest the vandalism which feels no scruples in cutting down valuable trees, and create among the populace an urge to secure the protection of trees—a virtue as much to be desired as it is rare.

Scope for increasing treelands.—State Governments have a vast scope for an all round increase in the area under tree lands, defence, Railways, Public Works Department, Universities and Colleges, District Boards, Municipalities and other local authorities, associations and institutions can lend a helping hand by converting the lands at their disposal into treelands. The new Forest Policy, therefore, envisages a concerted and supreme effort on the part of various Governments and other agencies towards planned afforestation with a view to the enlargement of treelands. The exploration of the

possibilities of such a development by the Central and State Governments is clearly indicated. A systematic programme of extending existing treelands and establishing new ones should be framed by the Governments concerned. Under the new policy, it should be the duty of the Forest Departments concerned:

(*a*) to awaken the interest of the authorities within their region in the development, extension, and establishment of treelands;

(*b*) to draw up plans for such purposes bearing in mind the need for species of commercial importance;

(*c*) to establish nurseries and seed stores in each area for the supply of saplings, plants, and seeds;

(*d*) to supervise the planting of trees, and render such technical assistance as may be necessary for the development of treelands; and

(*e*) to arouse tree consciousness among the people by publicity, by celebrating the *Vanamahotsava* and by encouraging the *Vana Premi Sangh*.

Treelands in agricultural areas.—The importance of treelands in the rural economy of the regions where agriculture constitutes the mainstay of the vast bulk of the population cannot be over-emphasized. Experience gained during the first two *Vanamahotsavas* indicated a very considerable response in the country-side, where Government Officers had prepared the ground and created the necessary enthusiasm among the people. A campaign inducing villagers to plant trees in village commons and along roadsides, on the condition that they would enjoy the benefit of the fruits, timber and other produce of trees planted by them has yielded excellent results and is well worth an extended trial. The essence of success in such ventures lies in invoking the willing co-operation of the local villagers, the necessary technical guidance and help being furnished by the Forest and other Departments. In most localities, a cultivator has no land to utilize for growing trees; there is, however, nothing to prevent him from growing at least a few trees per acre on his own field. Much useful work in this direction has been done in the western district of Uttar Pradesh where cultivators have raised a fair amount of babul (*Acacia arabica*) in their fields. Other species may prove to be of equal utility in other regions.

Proportion of Forest Areas.—The proportion of land to be kept permanently under forests would naturally vary in different regions. Practical consideration suggests, however, that India, as a whole, should aim at maintaining one-third of its total area under forests. As an insurance against denudation a much larger percentage of the land, about 60 per cent should be kept under forests for their protective functions in the Himalayas, the Decan, and other mountainous tracts liable to erosion. In the plains, where the ground is flat and erosion is normally not a serious factor, the proportion to be attained should be placed at 20 per cent; and in view of the pressure of agriculture, effort at the extension of treelands should be concentrated on river banks and other convenient places not suitable for agriculture. At the same time it must be realised that even distribution of forests in all physical regions is as important as its over-all proportion. In certain localities deficient in forests, therefore, afforestation of marginal lands, and eroded river and village waste-lands, should be

undertaken. Forest area in excess of the indicated proportion, if any, should, however, not be sacrificed. To maintain an over-all average, it is essential that States better suited for the growth of trees should help to make good the deficiency in those parts where climatic and edaphic factors militate against tree-growth.

APPENDIX II

Copy of the reference to the scheme as given in the Third Five-Year Plan of the Government of India.

FARM FORESTS AND EXTENSION FORESTRY.

3.1.1 The necessity of increasing the present forest area from 22.3 per cent to 33.1/3 per cent has already been emphasised in the foregoing discussion. This means that forests have to be increased by nearly 11 per cent to achieve the objective recording an increase of nearly 50 per cent in the existing forest area. We shall thus need to find an area of approximately 36.42 million hectares (90 million acres) of land for afforestation purposes. Can this area be found and if so from where, is the problem? A study of the statement in Chapter I, paragraph 3 gives us an indication that the following type of areas could possibly be considered for this purpose.

(*a*) Pastures and Culturable waste 52.77 million hectares (130.40 ml. acres).

(*b*) Barren and uncultivable waste land 34.41 million hectares (85.05 ml. acres).

3.1.2. Out of these areas one can reasonably expect about 60 per cent of the pastures and culturable waste would be available for growing of trees in some shape or other, which would mean that nearly 33.56 million hectares (78 millions acres) can be considered for afforestation, thus increasing the total area under forests. Our effort, in the third plan should, therefore, be directed to intensify afforestation measures on such lands. Before, any concrete proposals can be formulated a detailed inventory of such areas district and Statewise will have to be prepared. But the above analysis indicates that the problem is amenable to solution. To cover such a vast area with trees would also call for mobilization of peoples' effort on a very vast scale particularly with the aid of Community Development Organisation and harnessing all other public and private workers in the field.

3.1.3. Incidentally, at this stage, recapitulation of the position regarding conservation of cow-dung and integration of campaign for diverting cow-dung as farmyard manure to the field instead of to the hearth would be desirable. By creating fuel and fodder resources on the land indicated above, in course of time, the vast amount of cow-dung consumed for want of firewood could be saved and used on land for increasing agricultural productivity. The quantum of this waste amounted to nearly 81 million tonnes in 1955, and would be increasing at a fast rate in succeeding years. We have already considered this aspect in some detail under paragraph 6 of chapter I, but the future

trends were not indicated then. The overall picture, anticipated in 1975, is given below on the basis of figures of Forest Trend Survey and will serve as a useful guide:—

DEMAND AND SUPPLY OF FIREWOOD (*in cu. metres*).

Year.	*Per capita requirement in wood equivalent,*	*Per capita supply of firewood.*	*Per capita supply of waste in terms of wood equivalent.*	*Per capita deficit as firewood equivalent.*
	·51	.19	·09	·21
1953–55	(18 c. ft.) ·51	(6·7 c. ft.) ·18	(3·1 c. ft.) ·09	(8·2. c. ft.) ·26
1960	(18 c. ft.) ·51	(5·7 c. ft.) ·15	(3·2 c. ft.) 09	(9·1 c. ft.) ·28
1970	(18 c. ft.) ·51	(4·1 c. ft.) ·10	(3.2 c. ft.) ·09	(10·7 c. ft.) ·32
1975	(18 c. ft.)	(3·5 c. ft.)	(3·2 c. ft.)	(11·3 c. ft.)

This deficit expressed in terms of dung equivalent for entire population of the Country is:—

Year.	*Per capita deficit in term of wood in cu. metres.*	*Total deficit in terms of wood.*		*Total deficit in terms of dung.*
		M. Cu. metre.	*M. Tonnes.*	*M. Tonnes.*
	.02	87.82	62.79	81.28
1953–55	(8.2 c.ft.) ·26	(3091) 103.83	(61·8) 74.48	(80 Ml) 99.57
1960	(9.1 c.ft.) .30	(3667) 137.24	(73.3) 98·46	(98) 131.07
1970	(10 7) .32	(4847) 154.85	(96.9) 111.26	(122) 148.34
1975	(11.3)	(5469)	(109.5)	(146)

Thus pressure on the use of cow-dung for fuel purposes will go on increasing in years to come.

3.1.4. The elimination of this waste will only be possible if we are in a position to meet the energy requirements met by burning of cow-dung, by either supplies of firewood or other sources of energies, such as coal gas, oil and electric power. Extensive industrial development of these latter resources of energy may help to some extent to relieve the situation but chances appear, perhaps, remote as these would in the near future, find increased uses in industrial activity itself. Thus the real solution to the problem will be to raise fuel plantations on a vast scale, at least, to meet the needs of the rural population. This, we have said, is possible, if all the forces are properly mobilized to achieve the stupendous task of growing trees over nearly 24 to 32 m. hectares (60-80 million acres) of land, which can at present be made available for this purpose.

3.1.5. To produce 110 million tonnes of firewood annual afforestation and tree planting to the tune of 110|68, i.e., 1.60 million hectares (4 million acres) will be necessary, assuming one hectare will produce 68 tonnes of solid firewood (25 tonnes|acres). Such planta-

tions can be managed on a 15 to 20 years rotation, by using fast growing species and would require in course of 15 to 20 years an area equivalent to 24.32 million hectares (60.80 million acres) which we have deduced under paragraph 3.1.2 above is available. The task set up is, therefore, capable of achievement; but would require very serious efforts and mobilisation and concentration of all over energies on the largest possible scale.

3.1.6. While it may be necessary to organise Governmental work for regular planting and maintenance of major shelterbelts, canal banks, roadside avenues, etc., urgent necessity of encouraging community or private effort in extension forestry cannot be over-emphasised. It is high time that the interest in tree planting, that has been aroused by Vanamahotsava, was channelized to result in village plantations, in tree planting on field, ridges, etc. It is felt that an effective beginning could now be made by utilizing the organisation of Community Development and National Extension Service Blocks. It is proposed, that to achieve the objective aimed at, i.e., 1.6 million hectares (four million acres) annually, each block could plant up 324 hectares (800 acres) with tree crops and trees annually. Such plantings could cover :—

(i) planting of available marginal and waste lands, pasture lands, available within the block.

(ii) tree planting or shelter-belt planting along the roads, paths canal banks, field ridges, railway strips, etc., and

(iii) even planting on private holdings.

With 2,154 blocks now in force and another 2,800 due to be constituted by the end of 1963, this could mean establishment of 8 million hectares (20 million acres) of crops in 5 years period. The question of cost is left to be solved by the local ingenuity and that of the community development organisation. Such plantations would cost normally Rs. 100 to 150 per hectare (Rs. 40 to 60 per acre), say Rs. 125 (Rs. 50) in forests. So, this effort would need to be subsidised as to what the quantum of subsidy should be is a question yet to be decided but in any case it could not be less than 50 per cent of the total cost, i.e., Rs. 62.5 per hectare (Rs. 25 per acre). The subsidy for 8.2 million hectares (20 million acres) will, therefore, be Rs. 50 crores for the plan period or Rs. 10 crores annually. This effort will continue throughout the period of succeeding next two plans also.

APPENDIX III

COPY OF THE SCHEME AS GIVEN IN THE STATE THIRD FIVE YEAR PLAN.

FARM FORESTRY.

This is one of the major programmes proposed for the Third Plan on which a beginning has been made in 1960-61. The proposal is to raise plantations on available waste lands at the rate of 40 hectares (100 acres) per year in every Community Development and National Extension Service Block. The scheme is intended to meet

the needs of the rural population in fuel, small timber, manure leaves, etc., and make the villagers less dependent on Reserved Forests. The scheme will be implemented by the Forest Department in the initial crucial period of two years. The question whether the Forest Department should continue thereafter to implement the scheme or whether it should be implemented by the Panchayats will be taken up after 2 years. A total area of about 1.06 lakhs hectares (2.62 lakhs of acres) will be covered by this programme at a cost of Rs. 75 lakhs, during the Third Plan period.

APPENDIX IV

Abstract of the programme in the State during 1961-62 and 1962-63.

Serial number.	*Name of Development District.*	*In* 1961-62 at 40 *hectares* (100 *acres*),	*In* 1962-63	
			at 20 *hectares* (50 *acres*).	at 40 *hectares* (100 *acres*).
1.	North Vellore	10	10	3
2.	South Vellore	9	9	4
3.	North Cuddalore	9	9	6
4.	South Cuddalore	9	9	1
5.	Chingleput	18	18	3
6.	North Salem	1	1	3
7.	South Salem	10	10	3
	Number of blocks	66	66	23
	Area in hectares	2,540 (6,600 acres).	1,320 (3,300 acres).	920 (2,300 acres).
				2240 (5600 acres).

APPENDIX V

ECONOMICS AT A GLANCE

(*Units of* 40 *hectares or* 100 *acres per annum per Panchayat Union.*)

Taking 40 hectares or (100 acres) as an economic unit and 10 years as rotation period, the expenditure, revenue and profit will be as below :—

	Expenditure.		*Rs.*
1.	Cost of raising 40 hectares (100 acres) at Rs. 200 per hectare (Rs. 80 per acre).		8,000·00
2.	Establishment charges :		
	(i) Forester at Rs. 113.12 per month for one year.	1,358.00	
	(ii) Forest guard at Rs. 66 for one year	792.00	
		2,150.00	1,290·00
	(60 per cent of costs, other 40 per cent debitable to technical advice to villagers for individual planting in private holdings).		
	(iii) Watchman at Rs. 30 for 10 years.		3,600·00

	Expenditure.	Rs.	
8.	Proportionate Supervisory charges at Rs. 100 per annum.	1,000.00	
	Total Expenditure ..	13,890 00 14,000·00	or say
	REVENUE.		
	Minimum expected revenue from 40 hectares (100 acres) at the end of the 10th year after allowing for costs of disposal at Rs. 750 per hectare (Rs 300 per acre).	30,000.00	
	RETURNS TO THE PEOPLE.		
	(i) Net Returns from 40 hectares (100 acres)	16,000.00	
	or		
	Net returns per hectare per year to Panchayat Board (i.e. Rs. 16 per acre per year).	40.00	
	(ii) Wages to people—2,500 men-days.		
	(iii) Regular employment for 2 trained men and 1 untrained man.		
	(iv) Indirect benefits—climatic amenities soil conservation, moisture conservation, etc.		
	There will be by the end of the Third Plan, the equivalent of 350 such units in the Madras State.		

APPENDIX VI

SRI PERUMPUDUR NATIONAL EXTENSION SERVICE BLOCK CHINGLEPUT DISTRICT

A SCHEME FOR IMPROVEMENT OF PRODUCTS FROM TREES AND FOREST CROPS.

SECTION I

Introduction : Villagers Need Forest and Tree Products.

1. *Fuel.*—Many countries abroad are using in addition to firewood electricity, mineral oils and coal as domestic fuel where they are available. But, in rural India, we still have to use firewood though it has become very expensive being in short supply. In Madras State the extent of land constituted as Reserved Forest is only 13 per cent of the total land area and this extent of forest even if carrying a full crop cannot satisfy the demand for fuel. The resources from Reserved Forests have been supplemented by exploiting privately owned trees, by using cow-dung (which is a valuable source of manure for our lands) and agricultural waste. The per capita annual requirement of firewood in our State may be estimated at 1|6 of a ton.

2. *Small timber.*—Our agriculturists also need small timber for tools, agricultural implements and construction of hutments. These are hard to find now-a-days. Neither have our people the resource to buy costly modern implements and materials for house construction.

3. *Green manure.*—Again our agriculturists require about 2 to 4 tons of green manure per acre, every year for maintaining the fertility of wet lands at an optimum level, in addition to farm yard and chemical manures. With the existing maldistribution of forest lands, this requirement cannot be met equitably throughout the State. Moreover, forests, if worked continuously for manure leaf, will deteriorate rapidly and hence only limited forest areas are allotted for working for this purpose.

4. *Fodder and grazing.*—The availability of fodder for cattle is very inadequate and the nutritive value of the available fodder is very low. The rural folk cannot afford the cost of concentrated feeds. Much has to be done to augment the present limited resources of cattle feed by raising suitable tree crops of fodder value and improving the pasture lands.

5. *Planting and management by village panchayats suggested.*—To meet the demands of the rural folk regarding firewood, small timber, green manure and fodder, especially in places far away from the Reserved Forests and to enable the production in Reserved Forests being diverted for meeting the demands of the urban population and industries, all the available waste lands both private and public must soon be clothed with valuable trees and fodder grasses. Trees must also be grown amidst cultivated lands without impairing the production of agricultural crops.

6. It might be the best arrangement to entrust the Forest Department with the task of raising such village plantations. But these plantations are intended for the good of the villagers and it will be better to secure the willing and active co-operation of the villagers for establishment, protection and maintenance of these areas. The Forest Department could render necessary technical guidance and as a matter of fact an extension service could be set up. Mobilisation of local co-operation could be achieved through the aegis of Block Development Officers.

SECTION II

THE LAND RESOURCES OF THE BLOCK.

7. *Location.*—The block of Sriperumpudur National Extension Service lies at the centre of the district with Sriperumpudur as the headquarters. There are 150 villages in this block distributed as follows:—

Name of Firka.	*Villages.*
1. Sriperumpudur	59
2. Serpanancheri	47
3. Mathuramangalam	44
Three Firkas total	150

8. *Climate.*—The climate of this block can be classified as " Dry ". The temperature generally varies from 40 6° C to 24° C. The average annual rainfall is about 1,100 m.m. with 54 rainy days. This area gets rain from both monsoons beginning from June to the middle of December. The maximum rainfall is received from the North-East Monsoon during October-December. Generally the rainfall seems to be erratic as there was a rain of 29 inches (725 m.m.) in 1957 and 60 inches or 1,500 m.m. in 1956. There is no record to show the hourly intensity but the maximum received in 24 hours is 120 m.m. in 1952. This block is not generally exposed to heavy winds. The western end of this block is lightly exposed to wind erosion.

9. *Area and distribution.*—The total extent of this block is 170.4 square miles or 109,056 acres. According to village records the total extent of this block is as follows:—

	Name of Firka.	*Area in hectares.*	*Area in acres.*
1	Sriperumpudur	18,287	45,186
2	Serpanancheri	13,261	32,767
3	Mathuramangalam	14,618	36,120
	Total ..	46,166	114,073

10. Total area of Government poramboke lands set apart for communal purposes is 17.538 hectares (43,335 acres) and this forms about 38 per cent of the total land area of the block. These poramboke lands consist of—

(1) Channels.
(2) Maduvu.
(3) Odai.
(4) Pond.
(5) Thangal.
(6) Lake.
(7) Well.
(8) Tank.
(9) Thrashing floor.
(10) Grazing ground.
(11) Cattle stand.
(12) Unassessed waste-hillocks.
(13) Pattai.
(14) Temple.
(15) Chathram.
(16) Burial ground.
(17) Thope.
(18) Natham or village site.

The details of survey numbers of porambokes, the nature of the soil, their present condition and suggestion for improvement for each village are maintained in the District Forest Office for ready reference.

11. *Topography and soil condition.*—The elevation of this block is between 200 feet and 400 feet M.S.L. Generally the entire area is to be classified as a plain country with a gentle slope less than 3 per cent from west to east. Three difference soil types are seen in this block. (1) Hard gravelly red soil, (2) Sandy loam and (3) Clayey loam on the top and hard red gravel below. The block is not exposed to any serious wind erosion.

Clay soils are met within lakes and irrigated lands. Generally sheet erosion is seen everywhere. Mild gully erosion is seen on the banks of Kalungal channels and storm water channels.

12. *Water resources.*—Kambakkal channel starts from Palar Anicut in North Arcot district and runs in this block and feeds Sriperumpudur lake. The banks are sandy and eroded.

Adayar river starts from the overflow kalungal channel of Tenneri tank and runs on the southern and partly eastern side of this block. Here also the banks are bare sandy and eroded.

There are many lakes, thangals, ponds and tanks in these villages. They irrigate a few hundred acres in each village. The bed and bund of these lakes are clayey and bare. These lakes are mainly rainfed and the kalungal channels from one lake to another are often bare and eroded. The catchments are bare unbunded lands under dry cultivation where sheet erosion is observed generally.

There are innumerable storm water channels some of which are eroded but all of them bare. The irrigation channels are desilted annually to regulate water flow.

The sub-soil water in this region can be tapped between 10 feet to 30 feet.

SECTION III.

REQUIREMENTS OF THE BLOCK.

13. *Population and fuel, etc., requirements.*—According to the 1951 census the population of this block is 82,131. It has been worked out that there is an annual increase of 1.38 per cent. So the present population would be 92,131. Their annual requirement of fuel would be 15,355 tons.

14. *Cattle and fodder needs.*—The strength of cattle in this block is as follows:—

Serial number.	*Classification.*	*Total.*	*Total in terms of cow unit.*
1	Cows and bulls	37,372	37,372
2	Buffaloes	9,568	19,136
3	Sheep	19,539	9,769
4	Goats	8,835	4,417
		75,314	70,694

15. Assuming a scrub cow consumes about 30 pounds of green fodder (10 pounds of hay or straw) per day the annual requirements of green fodder would be about (340,846 tons 113,615 tons of hay or straw).

16. *Other requirements.*—In addition the people may require minor forest products and small timber which are not locally available now, with no forests or tree lands nearby.

SECTION IV.

PROGRAMME OF PLANTING AND SOWING.

Sapling of Cashew–the dollar earner.

17. *In Government topes and high level porambokes.*—Palmyrahs and phoenix trees are occasionally found in some of the Government poramboke lands elsewhere there is no valuable tree growth,

In these areas, trees like Iluppai, Vagai, Tothagathi, Vembu, Pungam, Punnai, Prosopis, Velvelan, Tamarind, Cashew, Kodukapuli, Karunkonnai, etc., could be planted. These may attain exploitable

sizes within 30 years. The existing palmyrah trees may be retained and more planted. In addition Eucalyptus hybrid can also be planted, up as it yields food fuel on a short rotation.

18. *In lake foreshore, ponds, thangals and along water ways.*—The grazing grounds also form the catchment area of lakes. This area contains neither fodder grasses nor any trees of value.

Trees like Murungai, Mullumurungai, Vagai, Sissoo, Karuvelan, Kodukkapuli, Savundal, Vathamadakki, Agathi and grasses like Cenchrus ciliaris (Kolukkattai pullu), Panicum antidotale (Australian drought resistant grass, Australia Pul), Chloris gayana (Rhodes grass, Gayanapul), Elephant grass (Yanaipul), Guinea grass (Panicum maximum, Ginipul) and Buffalo grass (Brachiaria mutica) may be introduced. Fodder legumes like lucerne, Berseem, Sun hemp (Janappu) and Pillipesara may also be introduced. The areas can be planted up in three years and divided into convenient blocks for introduction of rotational grazing. Alternatively grass may be harvested four or five times in a year and any excess may be converted into hay or silage for stall feeding of cattle.

All the ponds in the village can be renovated and trees like Pungam (Pongamia glabra), Vembu (Azadirachta indica), Arjuna (Terminalia arjuna) and Eucalyptus hybrid (Nelagiri maram) can be planted on their margins.

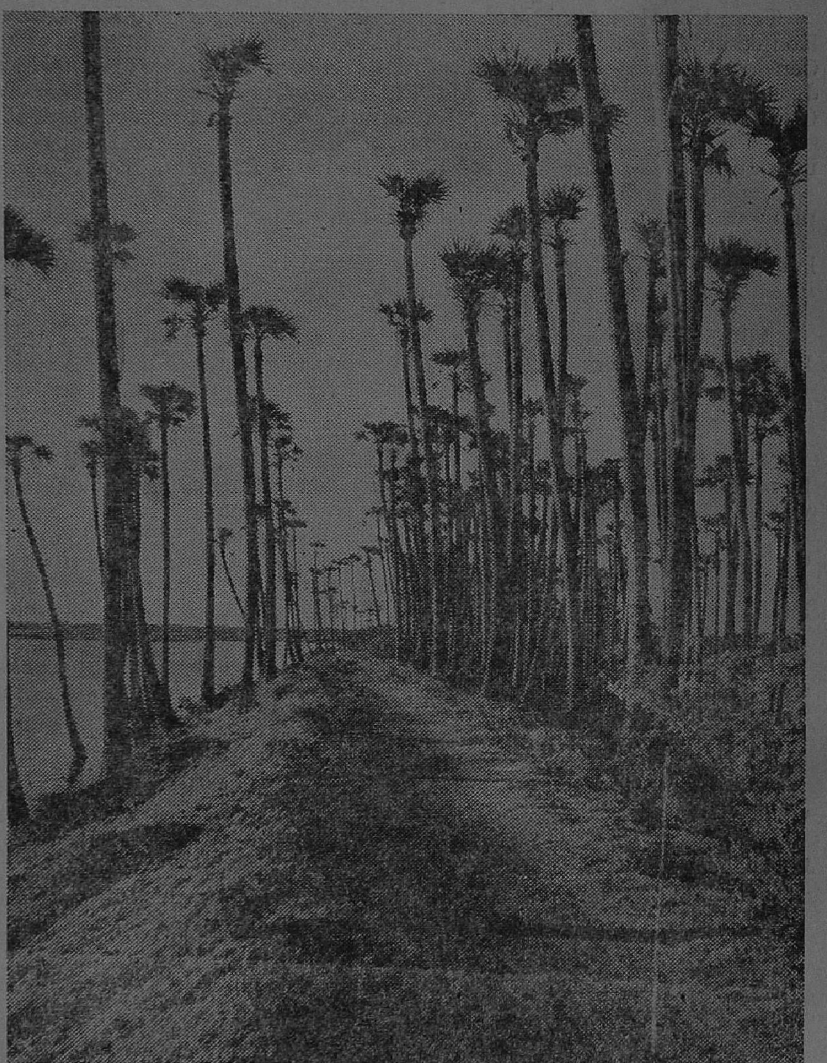
The bunds and entire bed of all thangals can be planted with Karuvelan (Acacia arabica), Velvelan (Accacia leucaphloea), Kodaivelan (Acacia Planifrons), Pungum (Pongamia glabra), Naval (Eugenia Jambolana), Arjuna (Terminalia arjuna) and Kodukkapuli. On the lake bund bamboos (moongil canes (Pirambu), Elavanpanju (Erodendron anfructuosm) and other trees can be planted, also Kathalai (Agave americana) to stabilise the bund nd provide fibre.

Along subsidiary channels and all available space on the banks may be planted up with manure leaf species like Cliricidia maculata, Savundal (Leucaena glauca), Agathi (Sesbania grandiflora), Noohi (Vitex nigando), etc.

19. *Along roads, paths, etc.*—There are a few miles of trunk road and considerable lengths of village roads and paths. Along margins of these roads and paths a single row of trees 33 feet apart can be planted. For this the following species are suitable:—

Mango	**Mangifern indica**
Puli	**Tamarindus indica**
Illuppai	**Bassia latifolia**
Vembu	**Azadirachta indica**
Konnai	**Cassia fistula**
Karungonnai	**Cassia siamea**
Arjuna	**Terminalia arjuna**
Eucalyptus hybrid	**Nilagiri maram**
Ayil vagai	**Peltophorum ferrugenum**
Thoongumoongimaram	**Entrolobium saman**

20. *On miscellaneous sites such as thrashing floors, temple, surrounds, burial grounds, etc.*—Even on the borders of thrashing floors, temple lands, chatram areas and burial grounds trees like kattu ilavam (Bombax malabaricum), Ilavanpanju (Eriodendron anfructuosm) and Fibre species such as Kathalai (Agave americana) can be planted with advantage.



Lake bund well protected by Palmyrahs—Sriperumbudur lake.

21. *In private residential compounds, etc.*—There is the residential village sites with hundreds of acres of open areas. All vacant spots

and unoccupied patches can be planted with trees like Thennai (Cocos nucifera), Mango (Mangifera indica), Puli (Tamarindus indica), etc. People can also easily grow a few Eucalyptus hybrid (Nilagiri maram), Vadarajan or other graceful trees in front of back yards of their homes.

22. *In the cultivated areas.*—Even along the field ridges amidst wet cultivation Karuvelan (Acacia arabica) and Gliricidia can be introduced. After each harvest, in the main fields themselves shrubs suitable for manuring like Kolingi (Thephrosia), Avuri, Agathi (Sesbania grandiflora), etc., can be raised. These species will enrich the fields by fixing nitrogen in the soil and can also be ploughed in as green manure for the next cultivation. Amidst dry cultivated lands, species which yield light shade like Velvelan, Casuarina, Kodukkapuli, Vagai and Eucalyptus hybrid could be grown at the rate of at least two per acre.

23. *Planting material—Seeds—Nursery—Planting stock—Planting seasons—Formation procedure—After care and establishments.*—The required number of plants could be got by adopting any one of the following methods:—

1. By dibbling seeds.
2. Using transplants or container plants.

Seeds.—Efforts should be made to collect the maximum quantity of seeds locally from well grown trees, when the seeds are ripe. Generally all the seeds except Neem will be available between January and March. Neem could be collected in May-June. It is better to sow the seeds in nurseries soon after collection. For purposes of dibbling directly *in situ* they cannot be used immediately and hence they should be mixed with ash well dried and stored in air tight containers. Oil seeds lose their viability in storage and hence they should not be retained long. Seeds of species that are not available locally or that are required in excess of local availability could be obtained through the help of Forest or Agricultural Departmental Officers. To achieve good results, it is best not to dibble seeds *in situ*, but to sow them in nurseries and raise seedlings. Only Karuvelan Cashewnut and Palmyrah may be raised, by dibbling of seeds, some time in June-July.

Transplants.—Good seeds may be sown in prepared and well manured nursery beds of 40 feet by 4 feet raised in a centrally located area having good water facilities. This may preferably be at the headquarters of the block (Taluk) where officers responsible can devote their personal attention to this. Generally, all the suitable species for this locality are best raised a year in advance, so that well grown seedlings which can establish after planting can be got. Plants like Tamarind, Eucalyptus hybrid, Mango, yield better results by raising seedlings in containers and hence seeds may be either sown in containers (mud pots 9 inches—12 inches long) or seedlings grown in nursery beds may be pricked into the mud pots in the proper and tender stages.

In flat bits of land, pits 1 foot cube may be dug by end of November and the dug up soil allowed to weather. As the soil is devoid of any humus or nutrients, farm yard or compost manure may

be mixed with dug earth and refilled in pits by the end of April. At that time, saucers of 6 feet diameter may also be formed round each pit.

Planting may be done at the beginning of July, when the ground is well soaked by the south-west monsoon showers. Replacements of casualties may be completed before end of October. One soil working may be done after good rains but when the soil is just moist. Mulching may be done at the end of December when the rains stop. Wherever the area is undulating, sunken mound method, which consists of a trench 4 feet by 1 foot with earth filled in the centre over a length of 2 feet may be adopted. Casualties may be replaced in the second and third year of planting by using pot plants or nursery seedlings.

SECTION V.

RESULTANT BENEFITS TO BE ANTICIPATED.

24. *Amelioration of weather conditions.*—If all the available waste lands and bare sites are clothed with trees, shrubs and grasses, as suggested here, rapid run-off and erosion will be prevented and thus the soil and soil-moisture will be preserved, consequently resulting in the increased production of food crops. Further, the villagers' requirements of fuel, fodder, green manure and other forest produce will be met. Such tree lands and forests will protect the crops, livestock and men during adverse wheather especially against desiccating winds and scorching sun.

25. *Improvement of æsthetic values.*—The existence of such trees lend scenic beauty to the locality. They also harbour birds which, apart from providing attraction, also help the villagers in many ways.

26. *Anticipated yield*—(1) *Fuel.*—The available area under lake bund and bed ponds, thangals, and other similar area is 5,851 hectares (14,457 acres). [In this, areas of less than 20 hectares (50 acres) are omitted.] On a rotation of 30 years, under miscellaneous fuel species yield would be realised each year from the 31st year of planting and for casuarina from the 8th year of planting.

From 195 hectares (482 acres) at 20 tons per acre, 9,640 tons.

The other resources like topes and trees grown in patta lands and also from trees to be grown along road margins are there. As the requirement of the people is 15,355 tons there may be a short supply of about 6,000 tons. This may be obtained from existing resources or from the over production in adjacent blocks.

(2) *Fodder and grasses.*—The extent of available grazing ground, cattle stand and other areas is about 2,505 hectares (6,189 acres). Irrigated variety of grass can be cut at least 4 times in a year and each time the yield would be about 5,000 pounds per acre and so from one acre the yield would be 20,000 pounds or 9 tons. Assuming half of the area mentioned above is available for producing irrigated variety the yield from 1,254 hectares (3,100 acres) would be 27,900 tons of green fodder or 9,300 tons of hay. From the balance of (1,254 hectares) 3,100 acres unirrigated variety of grass at the rate

of 4½ tons per acre may be obtained which would come to 13,950 tons or 4,650 tons of hay. In all the total yield would be 41,850 tons of green grass (13,950 tons hay). In addition the existing resources from wet and dry lands can also be utilised. Moreover, the current fallows and other fallow lands can be reverted to grass for at least some time. The older fuel plantations could be opened for grazing. The number of scrub type of cattle may be reduced and replaced by pedigree types. Lastly goats may be eliminated in order to achieve self-sufficiency in fodder.

(3) *Other products.*—The requirements regarding green manure had to be met with by growing manure leaf species in the wet lands, channel bunds and wet land bunds, etc., as suggested already. Small timber and minor forest produce, etc., can be met from fuel plantations and avenue trees along roads and lake bunds.

27. *Warning regarding time lag between endeavour and returns.*—Forestry is a long term project and quick returns cannot be achieved as in the case of agricultural crops.

Grass seeds may not be available in plenty for regenerating large areas. We should have seed farms and multiplication plots adjacent to the nursery. Grass is best introduced by ploughing the lands, removing all weeds and planting slips before the north-east monsoon.

Fuel from Eucalyptus hybrid tree can be obtained after 14 years of planting. But there may not be any subsequent planting as the tree is expected to coppice well for four times.

Fuel and small timber can be obtained from miscellaneous trees after 30 years of their introduction. Fruits and minor forest produce can be got earlier between 5th and 10th year of planting.

SECTION VI.

ORGANISATION AND FINANCIAL ASPECTS.

28. *Labour requirements.*—For carrying out the regeneration operations efficiently and successfully, labour should be available at proper seasons. But as the time of forest regeneration work may coincide with that of agricultural operations there may be some difficulties. Hence, retention of a small unit of permanent labour is suggested. Landless labourers may be recruited for this purpose.

29. *Protection arrangements.*—For protecting the plantations and maintaining them permanent mazdoors at the rate of one for every 500 acres may be selected from amongst the villagers themselves. No outsiders should be appointed for this post. Every villager should be made to feel his individual and collective interest in these plantations, and then only protection may be possible. The services of an experienced Range Officer may be essential for this work. His work will be under the technical control of the District Forest Officer, Chingleput Administratively he may work under the Block Development Officer.

30. *Seed and planting materials—Costs.*—As already pointed out (in paragraph 23) most of the seeds have to be collected locally, and part through the Forest or Agricultural Departments, Transplants

and pot plants can be got from the permanent nurseries to be maintained. The cost of these operations is furnished in the following paragraphs.

31. *Financial forecast—A. Expenditure.*—It has been proposed to take up every year 195 hectares (482 acres) for miscellaneous fuel regeneration and 20 acres for cashewnut (to be completed in 5 years) and about 835 hectares (2,063 acres) for grass (to be completed in three years) regeneration or pasture development and thus in all there would be regeneration over about 1,038 hectares (2,565 acres) including cost of seed, maintenance of nursery, supervision, etc., a minimum of Rs. 100 per acre may be required and so a sum of Rs. 2,56,500 may be required each year.

NOTE :—(1) After the 3rd year when the area under grass is completed there may only be maintenance work which would cost only about Rs. 20 per acre.

(2) After the 5th year there will be no more planting under cashewnut.

B. Income—

	Rs.
By sale of grass at Rs. 4 per ton for 41,850 tons	1,67,400
By sale of miscellaneous fuel from 482 acres at 20 tons per acre at Rs. 20 per ton.	1,92,800
Miscellaneous (i.e. usufructs of trees) 3 firkas at Rs. 1,000 per firka ..	3,000
Thus the income up to 30 years would be for grass 1,67,400 × 27 ..	45,19,800
For miscellaneous 3,000 × 25	75,00
Total ..	45,94,800

Thus it may be noticed that the scheme will be a very profitable one. But it may at the same time be realised that realising profit is not the criterion, but it is more to meet the bona fide requirements of the villagers.

SECTION VII.

CONCLUSION.

32. *Technical Assistance from Forest Department.*—As discussed already the services of an experienced Ranger will be placed at the disposal of the Block Development Officers. The local District Forest Officer will provide the necessary technical guidance and inspect the plots frequently.

33. *Responsibility of Block Development Organisation.*—The Block Development Officer under whom the Ranger will work should be fully responsible for implementing the scheme, for providing funds for securing labour and for controlling the work in all stages. He should also mobilise the interest and enthusiasm of local villagers and get work done on a shramdan basis or as a means of commomaration whenever possible.

34. *Ultimate success entirely dependent on the foresight labour and interest of the village people.*—These forests and trees should be treated as community or village forests raised by the people, protected and tended by them and utilized by them in due time for the common welfare of the village community as a whole. The existence of some of the old topes raised by our elders should be an eye opener for the present generation. They may also realise the folly in destroying the existing growth and the inadequacy of the present growth to meet the growing demands of the ever increasing population. Whereas food can be even imported from abroad, we cannot even for a moment think of bringing the essentials for rural folk from any distant place. Hence the success of the scheme rests only with having the full co-operation of the public.

APPENDIX—VII.

Species suggested for adoption in Farm Forestry Work.

Serial number and botanical name.	*Tamil name.*	*Habit.*	*Uses.*
(1)	(2)	(3)	(4)
1 Acacia arabica ..	Karuvel ..	Small tree.	Firewood, smallwood, fodder (fruits and leaves) tanning bark, gum, fencing material, good for growing around paddy fields, lakes etc.
2 Acacia leucophloea ..	Velvel ..	Do. ..	Firewood, smallwood, fodder (fruits and leaves) tanning bark, gum, fencing material, good for growing around paddy fields, lakes, etc., good for growing around dry fields.
3 Acacia mollissima ..	Seemaivel	Do. ..	Firewood, rayon pulp, tanning bark, a commercial tree crop.
4 Adhatoda vasica ..	Adathodai.	Shrub ..	Manure leaf, hedge.
5 Adenanthera pavonina.	Anai kundumani.	Tree ..	Avenue firewood, tanning bark.
6 Agave species ..	Seemai kathazhai.	Herb ..	Fibre, hedge, useful specially to stop gully erosion.
7 Ailanthus excelsa ..	Peemaram.	Tree ..	Matchwood.
8 Albizzia amara ..	Usil ..	Small tree.	Firewood.
9 Albizzia lebbeck ..	Vagai ..	Tree ..	Timber, firewood, fodder, green manure.
10 Anacardium occidentale.	Mundiri ..	Small tree.	Cashewnut, oil used as varnish against white ants and seawater, fuel fruit comes up well in sandy and laterite soils.

Serial number and botanical Name.	*Tamil name.*	*Habit.*	*Uses.*
(1)	(2)	(3)	(4)
11 Annona squamosa ..	Seetha ..	Shrub ..	Fruits—can be grown in bare and eroded hillocks.
12 Artocarpus integrifolia.	Pala ..	Tree ..	Fruits, timber.
13 Azadirachta indica ..	Vembu ..	Do. ..	Firewood, fodder, manure leaf medicinal.
14 Bassiu latifolia ..	Iluppai ..	Do. ..	Timber, firewood, fodder leaf manure leaf, edible oil.
15 Borassus flabellifer ..	Panai ..	Tall tree.	Timber, tender fruit edible, neera, palm gur, sugar, leaves for cottage industries like baskets, hats mat, etc., fibre from leaf stalks for brush etc.
16 Brachiaria mutica ..	.. ..	Grass ..	Fodder.
17 Calophyllum inophyllum.	Punnai ..	Small tree.	Firewood, oil from fruits.
18 Calotropis zigantea.	Erukku ..	Shrub ..	Manure leaf, floss, fibre-good to protect eroded areas.
19 Cassia auriculata ..	Avarai ..	Small shrub.	Tanning bark, manure leaf, medicinal.
20 Cassia fistula ..	Sarak-konrai.	Do.	Tanning bark, firewood medicinal, ornamental flowers yellow profuse and very attractive.
21 Cassia javanica	Seemaikonrai.	Tree ..	Firewood, ornamental.
22 Casuarina equisetifolia.	Savukku.	Tall tree.	Excellent firewood, poles, hedges, commercial tree crop.
23 Ceiba pentandra ..	Ilavu ..	Tree ..	Floss (silk cotton), can be grown around fields—casts very little shade.
24 Cenchrus ciliaris ..	Kozhuk-kattaipul.	Grass ..	Excellent fodder grass in dry areas.
25 Chloris gayana ..	..	Do.	Good fodder.
26 Cocos nucifera ..	Thennai.	Tall tree.	Edible kernal, oil coir-leaves for thatching, brooms stem as pillars, almost all parts useful.
27 Crotalaria juncea ..	Sanappai.	Herb ..	Green manure, fibre.
28 Cynodon dactylon ..	Arugampul.	Grass ..	Very good for lawns, fodder.
29 Dalbergia latifolia ..	Etti (Rosewood).	Tree ..	Very costly timber, grows in high rainfall areas.
30 Dalbergia sissoo ..	Sohusa ..	Do. ..	Timber, fodder-grows well in sandy tracts on river-sides and canal banks.

Serial number and Botanical name.	*Tamil name.*	*Habit.*	*Uses.*
(1)	(2)	(3)	(4)
31 Delonix elata ..	Vadana-rayanan.	Tree ..	Best manure leaf tree-can stand plenty of lopping comes up well in all soils.
32 Delonix regia ..	Mayil-konrai. ..	Do. ..	Ornamental, beautiful red flowers in summer
33 Digitaria marginata.	.. ..	Grass ..	Fodder.
34 Emblica officinalis ..	Nelli ..	Tree ..	Fruits rich in Vitamin 'C', firewood.
35 Enterolobium saman.	Thoon-gumoonji.	Do. ..	Avenue tree, quick growing and very shady.
36 Erythrina indica ..	Kalyana-murungai.	Do. ..	Fodder.
37 Eucalyptus (hybrid)	Thaila-maram.	Do. ..	Quick growing fuel tree good for commerical planting.
38 Eucalyptus globblus..	Nilagiri thaila-maram.	Do.	Timber, firwood, medicinal oil, paper and rayon pulp grows only above 6000' in hills.
39 Eugenia jambolana ..	Nagam ..	Do. ..	Fruits, firewood, fodder, green manure, grows well near water.
40 Feronia elephantum..	Vila ..	Do. ..	Fruits, firewood.
41 Gleditsia triacanthos..	..	Do. ..	Timber, pods as folder.
42 Glyricidia maculata ..	..	Shrub ..	Manure leaf, hedges
43 Hibiscus tilliaceus ..	Atrup-puvarasu	Tree ..	Fuel, shade tree.
44 Lannea grandis ..	Odiyan ..	Do. ..	Fodder, useful as live posts, easy to grow.
45 Mangifera indica ..	Ma ..	Do. ..	Softwood good for packing cases; fruits.
46 Millingtonia hortensis	Maramalli	Do. ..	Ornamental, white fragrant flowers.
47 Moringa pterygos-perma.	Murungai	Do. ..	Fruits, and leaves useful as vegetables; quick-growing can be grown in backyard, around fields and on commercial scale also near cities.
48 Marrya Konigii ..	Karuvepi-lai.	Shrub ..	Leaves used for flavouring curries; can be grown as above.
49 Nerium odorum ..	Arali ..	Do. ..	Ornamenral; grows well near water along canal and tank bunds to stabilize the bunds.
50 Panicum antidotale ..	.. ..	Grass ..	Fodder.
51 Peltophorum ferrugi-neum	.. ..	Tree ..	Ornamental; evergreen with profuse yellow flowers.
52 Pennisetum clandes-tinum.	.. ..	Grass .	Fodder in hills above 5000'.

Serial number and botanical name.	*Tamil name.*	*Habit.*	*Uses.*
(1)	(2)	(3)	(4)
53 Pennisetum purpureum.	.. ..	grass ..	Fodder, in plains.
54 Phaseolus trilobus ..	Naripayaru.	Herb ..	Fodder, green manure; very good for growing in paddy fields during summer.
55 Pithecelobium dulce..	Kodikkapuli.	Tree ..	Fuel, tanning bark, fruits; can be grown as hedge.
56 Polyalthia longifolia..	Nettingam	Tall Tree..	Avenue; leaves used decorations.
57 Pongamia glabra ..	Pungan ..	Tree ..	Firewood, manure leaf, pungam oil, can be grown on road sides, cannal banks etc.
58 Salmalia malabarica..	Mullilavu..	Do. ..	Softwood excellent for match splints; floss (red silk cotton) can be grown around dry cultivated lands.
59 Sesbania species ..	... ..	Herbs and shrubs.	Green manure.
60 Sesbania grandiflora..	Agathi ..	Tree ..	Vegetable leaf; can be grown in the backyards around paddy fields and also as a commercial crop near towns.
61 Tamarindus indica .	Puli ..	Do. ..	Fruits for curries, seeds for industrial starch, fuel, can be grown as individual trees and also as a *tope* as a commercial crop.
62 Tectona grandis	Thekku ..	Do.	Versatile timber, grown on river margins where soil is deep and well drained.
63 Tephrosia purpurea ..	Kozhinji	Herb ..	Manure leaf.
64 Terminalia arjuna ..	Marudu ..	Tree ..	Firewood; grows in swamps and along river margins.
65 Terminalia cattappa ..	Nattubadam.	Do. ..	Ornamental, fruits.
66 Terminalia chebula ..	Kadukkai	Do. ..	Fruits medicinal and used in the tanning; grows only above 2500'.
67 Thespesia populneer	Poovarasu	Do. ..	Timber, fodder leaf, leaf grows well in coastal tracts near water.
68 Vitex negundo ..	Nochchi	Shrub ..	Green manure, medicinal leaf, good for soil conservation work on river margins.
69 Zizyphusjujuba ..	Ilandai	Tree ..	Fruits, fodder, fuelwood.

I. PILOT SCHEME AREAS (1960-1961)

1. Chingleput District

Serial number given in the Map.	*Name of Farm Forestry Blocks.*	*Name of Taluk.*	*Name of Revenue Division.*	*Name of Forest Division.*	*Remarks.*
(1)	(2)	(3)	(4)	(5)	(6)
12	Sriperumbudur ..	Sriperumbudur.	Saidapet ..	Chingleput.	
14	Tirukalikundram ..	Chingleput ..	Chingleput ..	do.	

2. North Arcot District

11	Vembakkam ..	Cheyyar ..	Arni ..	Vellore East	
14	Pernamanallur ..	Wandiwash ..	do. ..	do.	

3. South Arcot District

1	Mel Malayanur ..	Gingee ..	Tindivanam.	Cuddalore	
2	Gingee ..	do. ..	do.	North do.	

II. AREAS FOR FIRST AND SECOND YEAR UNDER THIRD FIVE-YEAR PLAN. (1961—1963.)

1. Chingleput District

1	Gumudipundi ..	Ponneri ..	Tiruvallur ..	Chingleput
2	Minjur ..	,, ..	,,	,,
3	Uttukoottai ..	Tiruvallur ..	,,	,,
4	Poondi ..	,,	,,	,,
5	Tiruvallur ..	,,	,,	,,
6	Kadambathur ..	,,	,,	,,
7	Cholavaram ..	,,	,,	,,
8	Villivakkam ..	Saidapet ..	Saidapet ..	,,
9	St. Thomas Mont ..	,,	,,	,,
10	Poonamallee ..	Sriperumbudur.	,,	,,
11	Kunnathur ..	,,	,,	,,
12	Sriperumbudur ..	,,	,,	,,
13	Kattankolathur ..	Chingleput ..	Chingleput ..	,,
14	Tirukalikundram ..	,,	,,	,,
15	Kancheepuram ..	Kancheepuram.	,,	,,
16	Uttramerur ..	,,	,,	,,
17	Madurantakam ..	Madurantakam.	,,	,,
18	Achchrapakkam ..	,,	,,	,,
19	Pallipet ..	Tiruthani	,,	,,
20	Ramakrishna Rajapet	,,	,,	,,
21	Tiruvelangadu ..	,,	,,	,,

Serial number given in the Map.	Name of Farm Forestry Blocks.	Name of Taluk.	Name of Revenue Division.	Name of Forest Division.	Remarks.
(1)	(2)	(3)	(4)	(5)	(6)
	2. North Arcot District.				
1	Arakonam	Arokonam	Vellore	Vellore East.	
2	Nemali	,,	,,	,,	
3	Kaveripakkam	,,	,,	,,	
4	Sholingur	Walajapet	,,	,,	
5	Wallaja	,,	,,	,,	
6	Arcot	,,	,,	,,	
7	Kaviyambadi	Vellore	,,	,,	
8	Madanur	,,	,,	,,	
9	K. V. Kuppam	Gudiyatham	Tirupattur	,,	
10	Peranampet	,,	,,	,,	
11	Vembakkam	Cheyyar	Arni	,,	
12	Cheyyar	,,	,,	,,	
13	Wandiwash	Wandiwash	,,	,,	
14	Pernamallur	,,	,,	,,	
15	Arni	Arni	,,	,,	
16	Chetpet	,,	,,	,,	
17	Polur	Polur	Tiruvannamalai	,,	
18	Kalasapakkam	,,	,,	,,	
19	Alangayam	Tirupattur	Tirupattur	Vellore West.	
20	Natrampalli	,,	,,	,,	
21	Kandili	,,	,,	,,	
22	Tirupattur	,,	,,	,,	
23	Chengam	Chengam	Tiruvannamalai	,,	
24	Pudupalayam	,,	,,	,,	
25	Thandrampet	,,	,,	,,	
26	Turiyapuram	Tiruvannamalai	,,	Cuddalore North.	
27	Tiruvannamalai	,,	,,	,,	
28	Kilperumanthur	,,	,,	,,	
	3. South Arcot District.				
1	Mel Malayanur	Gingee	Tindivanam	Cuddalore North.	
2	Gingee	,,	,,	,,	
3	Vadasiruvallur	Tindivanam	Tindivanam	,,	
4	Olakkur	,,	,,	,,	
5	Merkanam	,,	,,	,,	
6	Vanur	,,	,,	,,	
7	Vikravandi	Villupuram	Tirukoilur	,,	
8	Kanai	,,	,,	,,	
9	Koliyanur	,,	,,	,,	
10	Kandamangalam	,,	,,	,,	

Serial number given in the Map.	Name of Farm Forestry Blocks.	Name of Taluk.	Name of Revenue Division.	Name of Forest Division.	Remarks
(1)	(2)	(3)	(4)	(5)	(6)
	3. South Arcot District—*cont.*				
11	Tirukoilur ..	Tirukoilur ..	Tirukoilur.	Cuddalore North	
12	Tiruvennamallur ..	,,	,,	,,	
13	Tiruvannamallur .. (N) Tirunavalur.	,,	,,	,,	
14	Ulundurpet ..	,,	,,	Cuddalore South.	
15	Panrutti ..	Cuddalore ..	Chidambaram	,,	
16	Kurinjipadi ..	,,	,,	,,	
17	Mel Bhuvanagiri ..	Chidambaram ..	,,	,,	
18	Orathur ..	,,	,,	,,	
19	Nallur ..	Virdhachalam ..	Virdhachalam	,,	
20	Mangalur ..	Kallakurichi ..	,,	,,	
21	Thayagadurgam ..	,,	,,	,,	
22	Kallakurichi ..	,,	,,	,,	
23	Chinna Salem ..	,,	,,	,,	
	4. Salem District.				
1	Krishnagiri ..	Krishnagiri ..	Hosur ..	Salem North	
2	Palacode ..	Dharmapuri ..	Dharmapuri.	,,	
3	Nallavahalli ..	,,	,,	,,	
4	Dharmapuri ..	,,	,,	,,	
5	Morappur ..	Harur ..	,,	,,	
6	Kolathur ..	Omalur ..	Dharmapuri.	Salem South.	
7	Mecheri ..	,,	,,	,,	
8	Taramangalam ..	,,	,,	,,	
9	Edapadi ..	Tiruchengodu .	Namakkal ..	,,	
10	Kadayampatti ..	,,	,,	,,	
11	Veerapandi ..	Salem ..	Salem ..	,,	
12	Panamarathupatty	,,	,,	,,	
13	Valapadi	,, ..	,,	,,	
14	Peddanayakan palayam.	Attur ..	,,	,,	
15	Attur	,,	,,	,,	
16	Talavasal	,,	,,	,,	
17	Sendamangalam ..	Namakkal ..	Namakkal ,,	,,	

III. PROPOSED AREAS UNDER THIRD FIVE-YEAR PLAN (1963-66)

5. Nilgiris District.

Serial number given in the Map.	*Name of Farm Forestry Blocks.*	*Name of Taluk.*	*Name of Revenue Division.*	*Name of Forest Division.*	*Remarks.*
(1)	(2)	(3)	(4)	(5)	(6)
1	Gudalur	Gudalur ..	Nilgiris ..	Nilgiris	
2	Ootacamund ..	Ootacamund ..	,,	,,	
3	Coonoor	Coonoor ..	,,	,,	
4	Kotagir	,,	,,	,,	

6. Coimbatore District.

1	Bhavanisagar ..	Gobichettipalayam.	Gobichettipalayam.	Coimbatore North.	
2	Nambiyur ..	,,	,,	,,	
3	Satyamangalam ..	,,	,,	,,	
4	Gobichettipalayam	,,	,,	,,	
5	Thucherichenpalayam.	,,	,,	,,	
6	Talavadi	,,	,,	,,	
7	Andiyur	Bhavani	,,	,,	
8	Bhavani	,,	,,	,,	
9	Ammapet	,,	,,	,,	
10	Dharmapuram ..	Dharapuram ..	Erode ..	Coimbatore South.	
11	Kundedam ..	,,	,,	,,	
12	Moolanur	,,	,,	,,	
13	Kangayam ..	,,	,,	,,	
14	Vellakoil	,,	,,	,,	
15	Perundurai ..	Erode ..	,,	Coimbatore Central.	
16	Uthukuli	,,	,,	,,	
17	Erode	,,	,,	,,	
18	Kodumudi	,,	,,	,,	
19	Modakurichi ..	,,	,,	,,	
20	Perundurai II ..	,,	,,	,,	
21	Perur	Coimbatore ..	Coimbatore	,,	
22	Singanallur	,,	,,	,,	
23	Sirkarasamakulam	,,	,,	,,	
24	Perianaickenpalayam.	,,	,,	,,	
25	Thondamuthur ..	,,	,,	,,	
26	Madukarai	,,	,,	,,	

Serial number given in the Map.	*Name of Farm Forestry Blocks.*	*Name of Taluk.*	*Name of Revenue Division.*	*Name of Forest Division.*	*Remarks.*
(1)	2	3	4	5	6
	6. Coimbatore District—*cont.*				
27	Avanashi	Avanashi	Coimbatore	Coimbatore Central,	
28	Annur	,,	,,	,,	
29	Karamadi	,,	,,	,,	
30	Pollachi	Pollachi	Pollachi	Coimbatore South.	
31	Anamalai	,,	,,	,,	
32	Valparai	,,	,,	,,	
33	Kinathukadavu	,,	,,	,,	
34	Sulur	Tiruppur	,,	,,	
35	Palladam	,,	,,	,,	
36	Lakshminaicken-palayam.	,,	,,	,,	
37	Tiruppur	,,	,,	,,	
38	Pongalur	,,	,,	,,	
39	Madathukulam	Udumalpet	,,	,,	
40	Gudimangalam	,,	,,	,,	
41	Udumalpet	,,	,,	,,	
	7. Tiruchirappalli District.				
1	Thathiangarpet	Musiri	Musiri	Tiruchirappalli.	
2	Musiri	,,	,,	,,	
3	Thottiam	,,	,,	,,	
4	Thuraiyur	,,	,,	,,	
5	Uppilapuram	,,	,,	,,	
6	Lalgudi	Lalgudi	,,	,,	
7	Pullambadi	,,			
8	Manachanallur	,,			
9	Veppanthattai	Perambalur	Ariyalur		
10	Perambalur	,,	,,		
11	Alathur	,,	,,	,,	
12	Veppur	,,	,,		
13	Thirumanur	Udayarpalayam	,,		
14	Ariyaloor	,,	,,		
15	Jayakondan	,,	,,	,,	
16	T. Palur	,,	,,	,,	
17	Sendurai	,,	,,	,,	
18	Andimadam	,,	,,	,,	
19	Tiruvarambur	Tiruchirappalli	Tiruchirappalli	,,	
20	Manikandam	,,	,,	,,	
21	Srirangam	,,	,,	,,	
22	K. Paramathy	Karur	Karur	,,	

Serial number given in the Map.	*Name of Farm Forestry Blocks.*	*Name of Taluk.*	*Name of Revenue Division.*	*Name of Forest Division.*	*Remarks.*
(1)	(2)	(3)	(4)	(5)	(6)
	7. Tiruchirappalli District—*cont.*				
23	Thandoni	Karur	Karur		Tiruchirappalli
24	Aravakurichi	,,	,,		,,
25	Karur	,,	,,		,,
26	Kulithalai	Kulithalai ..	,,		,,
27	Marungapuri	,,	,,		,,
28	Manaparai	,,	,,		,,
29	Kadavur	,,	,,		,,
30	Vaiyampatti	,,	,,		,,
31	Krishnarayapuram ..	,,	,,		,,
32	Annavasal	Kulathur ..	Pudukottai ..		,,
33	Viralimalai	,,	,,		,,
34	Keeranur	,,	,,		,,
35	Tiruvarangulam ..	Alangudi ..	,,		,,
36	Karambakudi	,,	,,		,,
37	Ponnamaravathi ..	Tirumayam ..	,,		,,
38	Tirumayam	,,	,,		,,
39	Arimalam	,,	,,		,,
	8. Thanjavur District.				
1	Nidamangalam	Mannargudi ..	Mannargudi		Thanjavur.
2	Mannargudi	,,	,,		,,
3	Kottur	,,	,,		,,
4	Muthupet	Tiruthuraipoondi	,,		,,
5	Tiruthuraipoondi ..	,,	,,		,,
6	Talanayar	,,	,,		,,
7	Vedaranyam .. .	,,	,,		,,
8	Mayuram.	Mayuram ..	Mayuram ..		,,
9	Sembanarkoil	,,	,,		,,
10	Kuttalam	,,	,,		,,
11	Anaikaranchatram ..	Sirkali ..	,,		,,
12	Sirkali	,,	,,		,,
13	Nagapattinam .. .	Nagapattinam	Nagapattinam		,,
14	Tiruvarur	,,	,,		,,
15	Kivalur	,,	,,		,,
16	Tirumarugal	Nannilam ..	,,		,,
17	Nannilam	,,	,,		,,
18	Kodavasal	,,	,,		,,
19	Koradacheri	,,	,,		,,
20	Thanjavur	Thanjavur ..	Thanjavur ..		,,
21	Tiruvaiyaru	,,	,,		,,

Serial number given in the Map.	Name of Farm Forestry Blocks.	Name of Taluk.	Name of Revenue Division.	Name of Forest Division.	Remarks.
(1)	(2)	(3)	(4)	(5)	(6)
	8. Thanjavur District—*cont.*				
22	Boodalur	Thanjavur	Thanjavur	Thanjavur.	
23	Tiruvonam	Orathanad ..	,,	,,	
24	Orathanad	,,	,,	,,	
25	Pattukottai	Pattukottai ..	Pattukottai ..	,,	
26	Sethubavachatram ..	,,	,,	,,	
27	Peraurini	,,	,,	,,	
28	Medakkur	,,	,,	,,	
29	Aranthangi	Aranthangi ..	,,	,,	
30	Avadayarkoil	,,	,,	,,	
31	Kumbakonam	Kumbakonam	Kumbakonam	,,	
32	Tiruvadamaradur ..	,,	,,	,,	
33	Tirupanandal	,,	,,	,,	
34	Ammapet	Papanasam ..	,,	,,	
35	Velangiman	,,	,,	,,	
36	Papanasam	,,	,,	,,	
	9. Madurai District.				
1	Dindigul	Dindigul ..	Dindigul ..	Madurai North.	
2	Shanarpatti	,,	,,	,,	
3	Vadamadurai	,,	,,	,,	
4	Palayam	,,	,,	,,	
5	Athoor I .. .	,,	,,	,,	
6	Athoor II	,,	,,	,,	
7	Vedasandur	,,	,,	,,	
8	Kodaikanal	Kodaikanal ..	,,	,,	
9	Oddanchatram ..	Palani ..	,,	,,	
10	Thoppampatti	,,	,,	,,	
11	Palani .. .	,,	,,	,,	
12	Vadipatti	Nilakottai ..	,,	Madurai South.	
13	Alanganallur	,,	,,	,,	
14	Batlegundu	,,	,,	,,	
15	Nilacottai	,,	,,	,,	
16	Madurai I	Madurai ..	Madurai ..	,,	
17	Madurai II	,,	,,	,,	
18	Tiruparakundram ..	,,	,,	,,	
19	Melur South	Melur ..	,,	,,	
20	Melur North	,,	,,	,,	
21	Natham	,,	,,	,,	
22	Vadugapatti	Periakulam ..	Usilampatti ..	Madurai North	
23	Theni	,,	,,	,,	
24	Bodinaickanur ..	,,	,,	,,	

Serial number given in the Map.	*Name of Farm Forestry Blocks.*	*Name of Taluk.*	*Name of Revenue Division.*	*Name of Forest Division.*	*Remarks.*
(1)	(2)	(3)	(4)	(5)	(6)
	9. Madurai District—*cont.*				
25	Andipatti	Periyakulam	Usilampatti	Madurai South	
26	Chinnamanur	,,	,,	,,	
27	Uthamapalayam ..	,,	,,	,,	
28	Cumbum	,,	,,	,,	
29	Usilampatti	Tirumangalam	,,	,,	
30	Chellampatti	,,	,,	,,	
31	Tirumangalam ..	,,	,,	,,	
32	Kalligudi	,,	,,	,,	
33	T. Kallupatti	,,	,,	,,	
34	Sedapatti	,,	,,	,,	
	10. Ramanathapuram District.				
1	Kallal	Tirupattur ..	Devakottai ..	Ramanathapuram.	
2	Singampuneri	,,	,,	,,	
3	Tirupattur	,,	,,	,,	
4	Sakkakottai	,,	,,	,,	
5	Kalayarkoil	Sivaganga ..	,,	,,	
6	Manamadurai	,,	,,	,,	
7	Tiruppuvanam ..	,,	,,	,,	
8	Sivaganga	,,	,,	,,	
9	Tiruvadanai	Tiruvadanai ..	,,	,,	
10	Kannangudi	,,	,,	,,	
11	R. S. Mangalam ..	,,	,,	,,	
12	Devakottai	,,	,,	,,	
13	Illayagudi	Paramagudi ..	Ramanatha puram.	,,	
14	Bogalur	,,	,,	,,	
15	Paramakudi	,,	,,	,,	
16	Kumutti	Mudukulattur	,,	,,	
17	Kodaladi	,,	,,	,,	
18	Mudukulathur ..	,,	,,	,,	
19	Ramanathapuram ..	Ramanathapuram.	,,	,,	
20	Tiruppullani	,,	,,	,,	
21	Mandapam	,,	,,	,,	
22	Virudhunagar	Sattur ..	Sivakasi	,,	
23	Sivakasi	,,	,,	,,	
24	Sattur	,,	,,	,,	
25	Vembakottai	,,	,,	,,	
	Srivilliputtur	Srivilliputtur ..	,,	,,	

Serial number given in the Map.	Name of Farm Forestry Blocks.	Name of Taluk.	Name o Revenue Division.	Name of Forest Division.	Remarks.
(1)	(2)	(3)	(4)	(5)	(6)
	10. Ramanathapuram District—*cont.*				
27	Rajapalayam	Srivilliputhur	Sivakasi	Ramanathapuram.	
28	Watrap	,,	,,	,,	
29	Aruppukottai	Aruppukottai ..	,,	,,	
30	Tiruchuli	,,	,,	,,	
31	Kariapatti	,,	,,	,,	
32	Narikudi	,,	,,	,,	
	11. Tirunelveli District.				
1	Tuticorin	Srivaikuntam ..	Tuticorin	Tirunelveli South.	
2	Karungulam	,,	,,	,,	
3	Srivaikuntam	,,	,,	,,	
4	Satankulam	Tiruchendur ..	,,	,,	
5	Udankudi	,,	,,	,,	
6	Tiruchendur	,,	,,	,,	
7	Alwarthirunagari ..	,,	,,	,,	
8	Sankarankoil	Sankarankoil ..	Koilpatti	Tirunelveli North.	
9	Vasudevanallur ..	,,	,,	,,	
10	Kuruvikulam	,,	,,	,,	
11	Melaneelithanallur ..	,,	,,	,,	
12	Koilpatti	Koilpatti ..	,,	Tirunelveli South.	
13	Ottapidaram	,,	,,	,,	
14	Pudur	,,	,,	,,	
15	Vilathikulam	,,	,,	,,	
16	Kayathar	,,	,,	,,	
17	Manur	Tirunelveli ..	Tirunelveli	,,	
18	Palayamcottai ..	,,	,,	,,	
19	Alangulam	Tenkasi ..	,,	Tirunelveli North.	
20	Tenkasi	,,	,,	,,	
21	Kadayanallur	,,	,,	,,	
22	Kilepavoor	,,	,,	,,	
23	Shencottai	Shencottai ..	,,	,,	
24	Valliyoor	Nanguneri	Cheranmahadevi	Tirunelveli South.	
25	Radhapuram	,,	,,	,,	
26	Nanguneri	,,	,,	,,	
27	Kalakad	,,	,,	,,	
28	Cheranmahadevi ..	Ambasamudram.	,,	Tirunelveli North.	
29	Papakudi	,,	,,	,,	
30	Kadayam	,,	,,	,,	
31	Ambasamudram ..	,,	,,	,,	

Serial number given in the Map.	*Name of Farm Forestry Blocks.*	*Name of Taluk.*	*Name of Revenue Division.*	*Name of Forest Division.*	*Remarks.*
(1)	(2)	(3)	(4)	(5)	(6)
	12. Kanyakumari District.				
1	Agastheeswaram ...	Agastheeswaram	Kanyakumari..	Tirunelveli South.	
2	Rajakkamangalam ..	,,	,,	,,	
3	Kiliyur	Vilavancode ..	,,	,,	
4	Melpuram	,,	,,	,,	
5	Munchira	,,	,,	,,	
6	Thovala	Thovala ..	,,	,,	
7	Kuruthancode	Kalkulam ..	,,	,,	
8	Thuckalay	,,	,,	,,	
9	Thiruvattar	,,	,,	,,	