CHAPTER VII

ANALYSIS AND INTERPRETATION

INTRODUCTION

The development of forests shape the future of the nation. With this end in view, various forest policies have been implemented in India. Social forestry programmes in general and farm forestry programmes in particular are of recent origin in India. Hence a study of farm forestry at micro level is undertaken in order to assess the progress, impact and problems of farm forestry in specified area.

The present study deals with the progress of farm forestry in Gadhinglaj, Ajara and Chandgad talukas in Maharastra and Hukkeri taluka in Karnataka State. An attempt has been made to assess the impact of farm forestry and also the problems faced by the farmers who have undertaken farm forestry. In the four talukas selected for the study, 100 farmers were interviewed (out of the total 400 farmers) constituting a sample size of 25 percent. A questionnaire was administered and the findings are presented in this chapter.

Distribution of Area under Farm forestry and Traditional crops

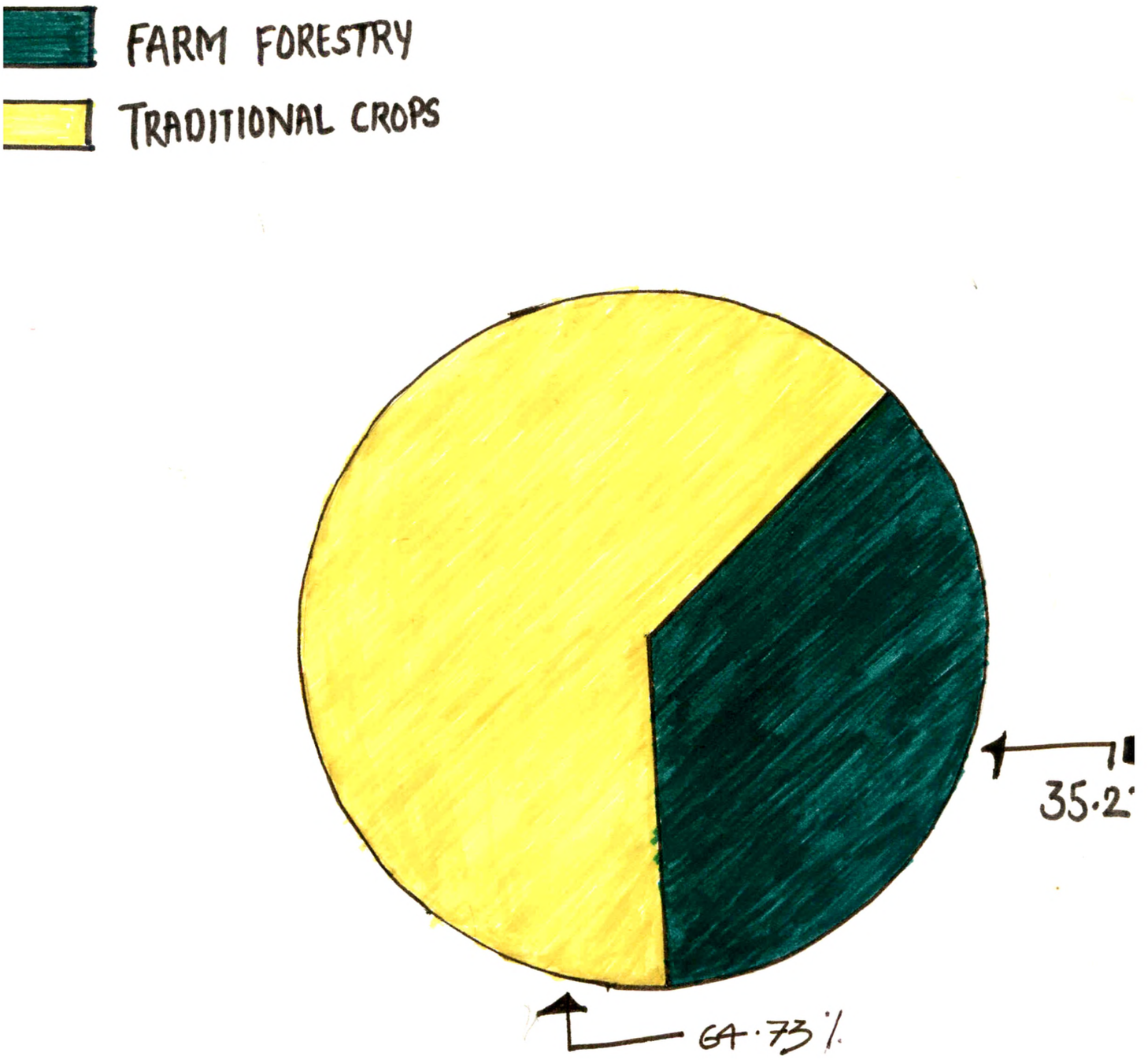
The total area under traditional crops (including fallow lands) and farm forestry belonging to the respondents is 899 acres. Of this total area 270 acres are in Gadhinglaj, 179 acres in Ajara, 359 acres in Chandgad and 89 acres in Hukkeri taluka (Table 7.1). In Gadhinglaj 105 acres (33.02 percent), 55 acres in Ajara (17.30 percent), 125 acres in Chandgad (39.3 percent) and 33 acres in Hukkeri (10.38 percent) are under farm forestry.

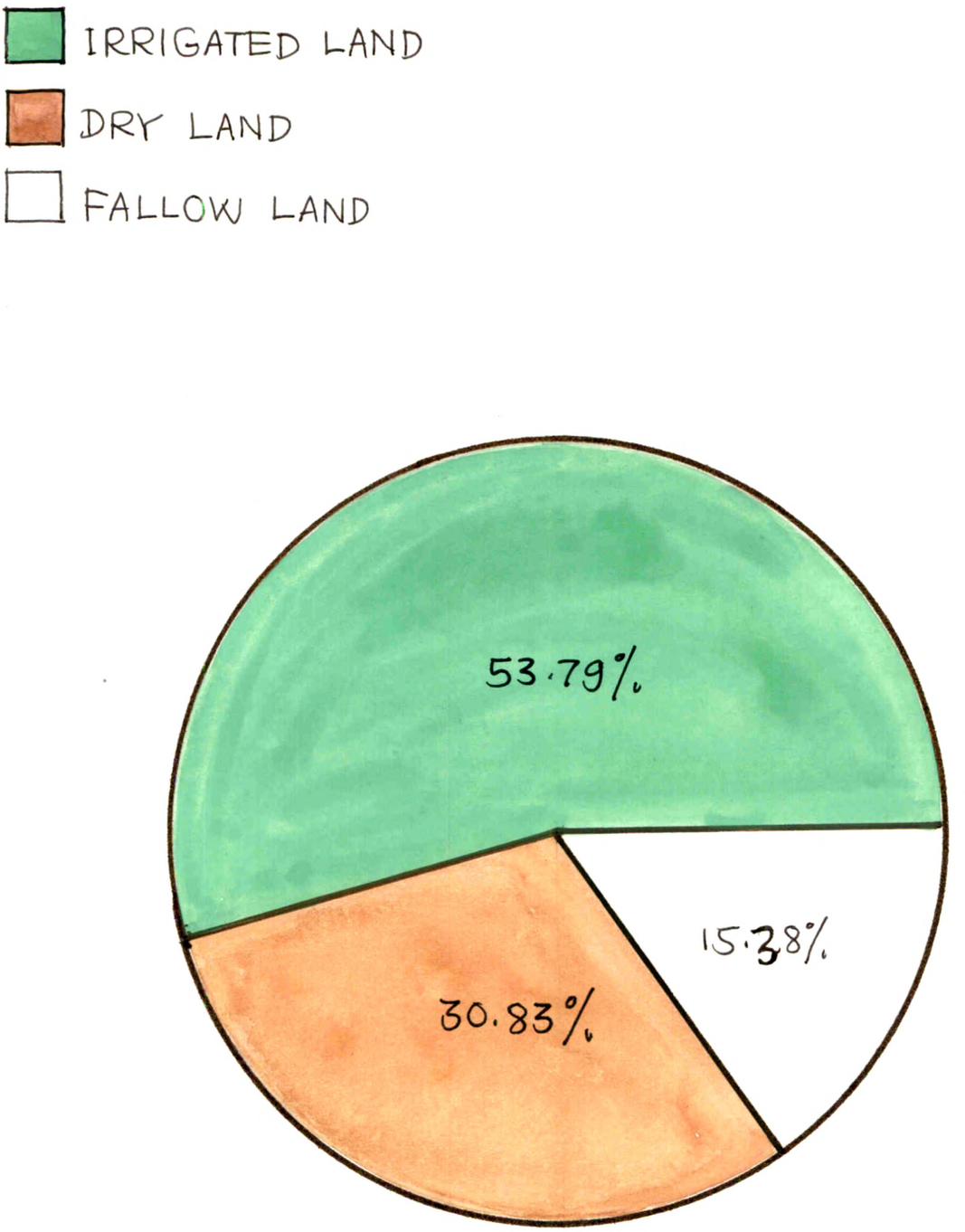
As regards the area under cultivation 61 percent of the of the total area in Gadhinglaj, 69 percent in Ajara, 65 percent in Chandgad and 63 percent in Hukkeri is covered by traditional crops.

TABLE 7.1 TOTAL AREA UNDER FARM FORESTRY AND TRADITIONAL CROPS OF THE RESPONDENTS IN SELECTED TALUKAS

(Acres)

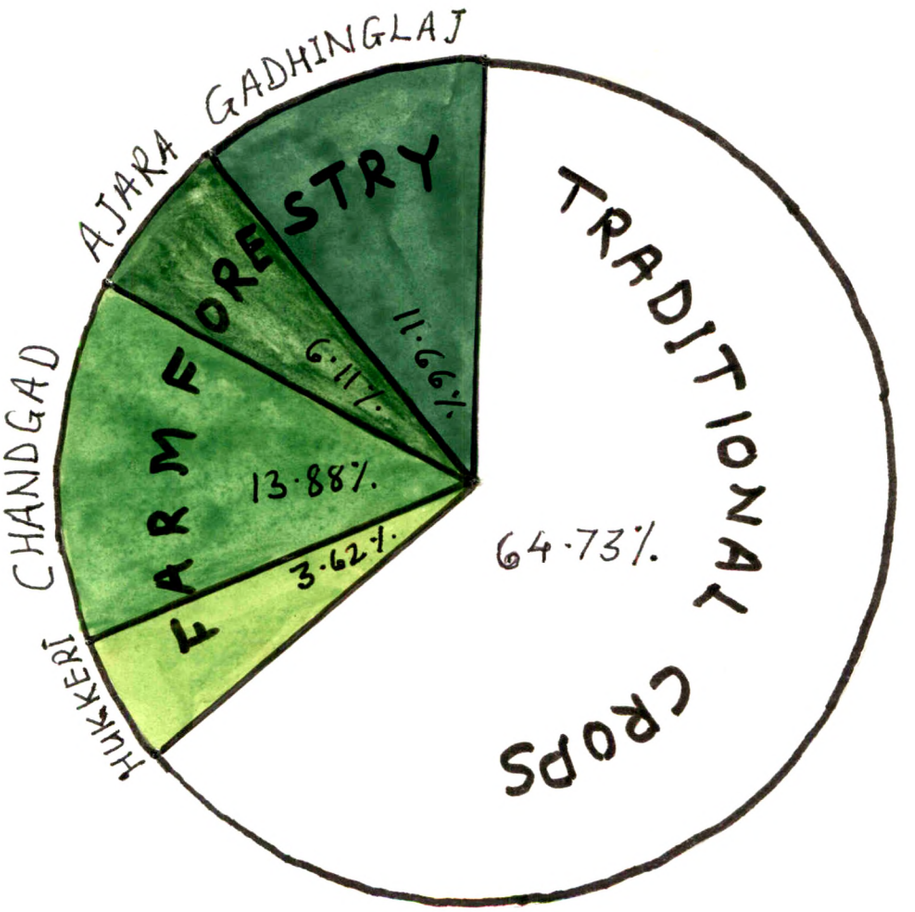
TYPE	GADHINGLAJ	AJARA	CHANDGAD	HUKKERI	TOTAL
Farm forestry	105	55	125	33	318
Traditional crops	165	124	234	58	581
TOTAL	**270**	**179**	**359**	**91**	**899**


FARM FORESTRY
TRADITIONAL CROPS
35·2
64·73 %


IRRIGATED LAND
DRY LAND
FALLOW LAND
53.79%
15.38%
30.83%

FARM FORESTRY

TRADITIONAL CROPS



The land holdings of the respondents are divided into three types namely, irrigated land, dry land, and fallow land. Of the total land holdings, 484 acres (54 percent) are irrigated, 278 acres (31 percent) are dry lands and 137 acres (15 percent) are fallow lands as shown in the Table 7.2.

Of the total irrigated land of the respondents, 145 acres (30 percent) were in Gadhinglaj, 97 acres (20 percent) in Ajara, 194 acres (40 percent) in Chandgad and 48 acres (10 percent) in Hukkeri.

The drylands were distributed amongst the four talukas in the following manner : Gadhinglaj 83 acres (30 percent), Ajara 56 acres (20 percent), Chandgad 111 acres (40 percent) and Hukkeri 28 acres (10 percent).

The talukawise fallowlands of the respondents were : Gadhinglaj 41 acres (30 percent), Ajara 27 acres (20 percent), Chandgad 55 acres (40 percent) and Hukkeri 14 acres (10 percent).

Of the total land holding under various types of the farms of the respondents, 269 acres (30 percent) were in Gadhinglaj, 180 acres (20 percent) in Ajara, 360 acres (40 percent) in Chandgad and 90 acres (10 percent) in Hukkeri.

The distribution of talukawise farm forestry land is depicted in Table 7.3 below.

The table shows that the farm forest land of the respondents totalled 318 acres and was distributed talukawise as follows : Gadhinglaj - 33 percent, Ajara - 17 percent, Chandgad - 39 percent and Hukkeri - 11 percent.

TABLE 7.3 TALUKAWISE DISTRIBUTION OF FARM FORESTRY LAND

(Land in acres)

TALUKA	TOTAL	PERCENT
Gadhinglaj	105	33
Ajara	55	17
Chandgad	125	39
Hukkeri	33	11
TOTAL	**318**	**100**

Out of the total 318 acres of farm forestry land, 71 acres (22 percent) were irrigated, 110 acres (35 percent) were dry land and 137 acres (43 percent) were fallow land.

SELECTION OF SAMPLE RESPONDENTS

The social forestry has been taking roots both in Maharashtra and Karnataka States. Fairly large number of farmers have undertaken farm forestry in the areas selected for this study. In all there are 400 identified farmers who have been practising farm forestry from 1980

anocardium occidentle before that date. The number of farmers practising farm forestry and those selected for an intensive study from Gadhinglaj, Ajara, Chandgad and Hukkeri talukas are given in Table 7.4.

TABLE 7.4 FARMERS UNDERTAKING FARM FORESTRY IN SELECTED AREAS

PLACE	TOTAL	SAMPLE SIZE
Gadhinglaj	100	25
Ajara	90	22
Chandgad	150	38
Hukkeri	60	15
TOTAL	**400**	**100**

The Principle of Equal Proportion Sampling

For the purpose of the present research work, out of 400 farm forestry farmers, who are scattered in the above said four talukas from Maharashtra and Karnataka States, 100 have been selected. The principle of equal proportion sampling has been applied. Therefore, in Gadhinglaj taluka 25 farm forestry farmers, in Ajara taluka 22, in Chandgad taluka 38 and in Hukkeri taluka 15 farm forestry farmers have been selected for the purpose of interview. In short, we can say that 25 percent equal proportion sampling in fairly sufficient to meet the requirements of this research as well as in terms of certain inevitable constraints.

Table 7.5 shows the agewise classification of farm forestry farmers in various age groups. The farmers who are in the age group 30 - 40 are predominant and have shown considerable interest in farm forestry. They constitute 35 percent of the total sample size. This group is followed by the 40 - 50 age group, constituting 30 percent of the total sample.

TABLE 7.5 AGEWISE CLASSIFICATION OF FARM FORESTRY FARMERS

AGE GROUP	GADHINGLAJ	AJARA	CHANDGAD	HUKKERI	TOTAL
20 - 30	3	2	3	-	8
31 - 40	9	6	12	8	35
41 - 50	6	7	12	5	30
51 - 60	4	6	8	2	20
61 - 70	2	1	2	-	5
71 - 80	1	-	1	-	2
TOTAL	**25**	**22**	**38**	**15**	**100**

On the other hand, it is very clear from the Table that old farmers have lesser inclination towards farm forestry and constitute 27 percent of the total sample. However, it would be quite fool-hardy to expect the farmers to undertake innovative experimentation in farm forestry. The farmers in younger age group of 20-30 constitute only 8 percent of the sample size and appear to be less innovative.

Family Structure of the Respondents

The structure of the family of the respondents is indicated in Table 7.6. Of the 100 respondents 35 belonged to joint families and 65 nuclear families. Chandgad had the largest number of respondents from joint families i.e 15, followed by 10 in Gadhinglaj, 8 in Ajara and 2 in Hukkeri.

TABLE 7.6 FAMILY STRUCTURE OF THE RESPONDENTS

TYPE OF FAMILY	GADHINGLAJ	AJARA	CHANDGAD	HUKKERI	TOTAL
Joint Family	10	8	15	2	35
Nuclear Family	15	14	23	13	65
TOTAL	**25**	**22**	**38**	**15**	**100**

Among those belonging to the nuclear families, 23 were from Chandgad, 15 from Gadhinglaj, 14 from Ajara and 13 from Hukkeri.

The structure of the family may be considered an important factor in adopting new farm practices. On an impressionastic basis one may say that it is relatively difficult to adopt new farm practices in a joint family structure, other things being equal than in small nuclear families.

Literacy Level of the Respondents

The literacy level achieved by the respondents and their family members play an important role in propogating farm forestry. Of the total number of respondents and their family members, 208 were illiterate (66 males and 142 females). 256 had primary education (140 males and 116 females), 176 had passed SSC (122 males and 54 females), a fairly small number i.e 56 had received higher secondary education (40 males and 16 females), 58 had graduate degrees (54 males and 4 females), and only 10 males had post graduate degree as is evident from Table 7.7.

TABLE 7.7 LITERACY LEVEL OF THE RESPONDENTS AND THEIR FAMILY

EDUCATION LEVEL	MALES	FEMALES
Illiterate	66	142
Primary	140	116
Matriculation	122	54
Higher Secondary	40	16
Graduate	54	4
Post graduate	10	-

Thus it was found that a large number of family members of the respondents were educted, and possibly helped in making decisions regarding adoption of farm forestry.

The distribution of the land holdings of the respondents is shown in Table 7.8. It is noticed that 66 percent of the respondents are medium farmers, who have taken up farm forestry programmes. As they have relatively larger land holdings at their disposal, they can afford to allot some piece of land for farm forestry purposes.

TABLE 7.8 SIZE OF LAND HOLDINGS OF THE RESPONDENTS

(Land holdings in acres)

TYPE OF FARMERS	LAND HOLDING	GADHINGLAJ	AJARA	CHANDGAD	HUKKERI	TOTAL
Marginal	0 to 2.5	2	3	1	-	6
Small	2.5 to 10	2	3	5	9	19
Medium	10 to 25	20	12	30	4	66
Large	25 & above	1	4	2	2	9
TOTAL		**25**	**22**	**38**	**15**	**100**

The marginal and small farmers which constitute 6 percent and 19 percent respectively of the sample size probably cannot afford the shifting of their farm practices.

Although the age factor does play an important role in the propogation of farm forestry, the size of land holding is also an important consideration in farm forestry study.

The land holdings of the sample respondents of this study, areawise, is indicated in Table 7.8. It is clear from the Table that the overwhelming majority of the farmer respondents held land holding in excess of 10 acres. Thus a clear point emerges in this analysis, that those having larger land holdings are not too young or too old and prefer to accept the challenges posed by the innovative practices of farm forestry.

Reason for Adopting Farm Forestry

There are a number of causes which are responsible for causing a shift from traditional farming to farm forestry. The most important reason is the irregular, erratic and insufficient monsoon rainfall. A common observation about two decades back, regarding the behaviour of monsoon rainfall has been that it follows a particular cycle. This cycle is of five years :

(i) Two years are full of rainfall

(ii) Two years are neither good nor bad

(iii) One year is a famine year.

However, a subtle change in these cycles has been perceptible in recent times.

During the last 15 years, Indian Economy has been a gamble in monsoon in the true sense and Gadhinglaj, Ajara, Chandgad and Hukkeri talukas are no exception to this. The percentage of rainfall has come down in recent years in these talukas. Hirannyakeshi river

running through Ajara, Gadhinglaj and Hukkeri talukas dries up after February. The streams which were full of water have become the Kaccha roads for cycles, motor cycles and bullock carts. In some villages in these talukas even drinking water is being provided by the Govt. during the rainy season. The Table 7.9 shows that this is the major reason for farm forestry.

TABLE 7.9 REASONS FOR ADOPTING FARM FORESTRY BY THE RESPONDENTS

REASONS	NO. OF RESPONDENTS GIVING REASONS
Irregular monsoon	80
Unprofitable traditional farming	47
Problems in management of traditional farming	25
Definite and big profits in farm forestry	64
New approach to Agriculture	55
Others	28

Due to the problems faced during the rainy season, any type of investment in the form of seeds, fertilisers, becomes useless due to lack of water. That is why 80 farm forestry farmers mention the root cause as the inadequate rainfall.

Traditional farming refers to food crops like sugar-cane and chilly. 47 percent of the respondents have switched over to the farm forestry mainly due to loss in cutivating traditional crops.

To quote an example, few years ago sugar-cane cultivation yielded a net profit of Rs. 3000 to Rs. 5000 per acre, and the production of sugar-cane averaged 40 tonnes per acre, however, in recent years the production has come down to 20 tonnes per acre inspite of increasing use of modern inputs and profits have been reduced. Farm wages, electricity bill, prices of fertilisers have been going up also. The farmer is therefore, caught in the trap of increasing costs and decreasing production. The same is the story of other traditional crops also.

In these days, managing traditional farming has become a complicated job. Even the uneducated, unskilled labourers have become time conscious while working on any farm. Legislative Acts concerned with farm labourers have awakened them to demand higher and higher wages and do less work or adopt delaying tactics at the same time. There was a time when agricultural labourers used to come to the owners of the land in search of work. Now the land owners have to request the labourers to attend to the farm activities. The owner of the land is hence, in the search of crops which will require less manual work and earn sure profits. For 25 percent of the farm forestry farmers the farm forestry seems to be the only way out.

To 64 percent of the farm forestry farmers, this is an enterprise which will yield definite and big profits in the near future. This is because of the rising prices of fuel wood, fodder and timber. It is common knowledge that the rate of the growth of the plantations is less and the rate of disappearance of forest is higher in India

including the areas under study.

A new approach to every field of activity has become the need of the hour in these days. Agriculture is no exception to this. Because of T.V. and Radio programmes somthing new in agriculture is displayed. Farm forestry is the new approach in the area under study. So, 55 percent farm forestry farmers consider it as a new approach to agriculture.

There are about 28 respondents who have taken to farm forestry mainly as a result of demonstration effect. Some neighbours as well as friends and relatives have adopted farm forestry and the consequent advantages and benefits have helped to entice these farmers to farm forestry.

Factors Responsible for the Adoption of Farm Forestry

Table 7.10 below shows the factors responsible for the development of farm forestry movement in the areas under study. The officials of the Social Forestry Department have been propagating the importance of the trees in a number of ways. There was a time when Vana-Mahotsava (the festival of planting trees) was considered as a ritual. It was supposed to be the duty of the Forest Department. Range Forest Officer or Deputy Conservator of Forest at the District level have been continuously working in recent years to attain the objective **"Make India Green".**

TABLE 7.10 FACTORS RESPONSIBLE FOR ADOPTION OF FARM FORESTRY

FACTORS	NO. OF RESPONDENTS
Friends	45
Govt. Officials	55
Published matter	30
T.V. & Radio	50
Relatives	16
Neighbours	22
Others	17

The Forest officials help in many ways in promoting development of forests. They develop Kissan Nurseries and Departmental Nurseries. To begin with seedlings were distributed free of charge to those who demanded them. As there was no demand for seedlings of different varieties there was no other way but to unload them on the school ground or in the neighbourhood of temples or Village Panchayat Offices. Hence the people did not take proper care of these seedlings and often the children destroyed them.

In recent years Kissan Nurseries have been developed in every taluka. Leaflets and pamphlets have been published in regional languages, waste lands and village common lands have been planted with the saplings by the officials. The persons who undertake farm forestry and develop good nurseries have been awarded "Vrikshmitra"

titles, "Priyadarshini Indira Gandhi" awards are given to those who take special efforts in this field / area.

Documentary films of forests are being shown in villages. Vriksh-Dindi programmes are arranged. The seedlings are worshipped, carried in a procession and then the plantation is undertaken with people's participation.

Because of the efforts of the Govt. Officials in social forestry has gained momentum. The area under consideration for research is also experiencing the same situation. That is why out of 100 interviewed farmers 55 percent gave credit to the Govt. Officers. Now a limited amount of seedlings are given free of charge. For example, a person applying for seedling from Hukkeri Taluka Range Forest Officer gets 750 seedlings per application free of charge. If he wants more seedlings then he will have to pay as per Govt. rates.

Radio and T.V. have been playing an important role in disseminating the information regarding the Agricultural Development or what we may call as the programme of Krishi Darshan and Documentary films. 50 percent of the respondents have developed the habit of listening to the relevant radio programmes and seeing similar programmes on the T.V.

The farmers who have adopted the farm forestry programmes have been doing an excellant work. It is said that 'Seeing is Believing' method yields good results.

An important factor which helps to propogate and expand the farm forestry activities is the influence of friends. In this study, it has been noticed that fortyfive respondents have been impressed by the working of their friends on their farm forests and the results that they have managed to achieve there on. Similarly, the programmes made by the relatives and neighbours have also contributed to the growth of farm forestry in the areas under study - with 38 respondents attributing their adoption of farm forestry to these factors.

Different financial provisions for forestry available to the farmers are shown in Table 7.11.

TABLE 7.11 FINANCIAL PROVISIONS FOR FARM FORESTRY

FINANCIAL SOURCE	NUMBER
Individual Savings	88
Relatives	15
Banks	18
Money Lenders	10
Others	16

It is said that credit is the life-blood of production. Farm forestry also requires finance as trees take a long time to mature. No agency is readily available to finance the farm forestry. Therefore, 88 percent of the sample farmers resort to their individual savings for the farm forestry programme.

It comes as little surprise that relatives are not eager to provide finance for farm forestry. In the Survey it is noted that only 15 percent of the respondents finance for farm forestry is provided by the relatives (Table 7.11).

Banks have not been forthcoming to finance the farm forestry as the norms have not been formulated. Farm forestry in India is still in its infancy. The banks have very little experience in financing tree farming. However, the beginning has been made by some banks to finance the farm forestry programmes. This has found a reflection in the fact that 18 percent of the surveyed farmers have received credit from the nationalised banks for farm forestry.

Money lenders also hesitate to finance the farm forestry programmes as it is the common experience that they require the repayment of interest and the principal sums. 10 percent of the farm foresters procurred finance from the money lenders at exhorbitant rates of interest.

A number of respondents raised finances by selling valuables like gold ornaments or by selling farm animals, in order to start farm forestry activity. This indicated the degree of acceptability of farm forestry in the rural areas.

Farm Forestry and Initial Problems

The Table 7.12 shows the problems faced by the farm forestery farmers. In recent years farmers are facing the problem of scarcity of seedlings, normally provided by the Department of Social Forestry. But it is unfortunate to state that this scarcity is related to the Eucalyptus species. The other seedlings of fruit, fodder are not in great demand. 65 farmers have reported this problem.

TABLE 7.12 INITIAL PROBLEMS FACED BY FARM FORESTRY FARMERS

PROBLEMS	NO. OF FARMERS
Inadequate supply of seedlings by the Govt.	65
Technical problems during plantation	55
Others	35

Technical problems are related to shifting of the seedlings, preparation of pits, spacing of plantations, etc. While plantation programme is undertaken, how to reopen the polythene bags, how much pesticides are to be used, when and how water is to be provided, how the fencing arrangement is to be made, whether shade is to be provided during the hot sunny days of October and May for coconut trees for the initial two years, etc., are the major problems faced by the farm forestry farmers. The failure to grasp the technical aspects can result

in a lower output. Coconut trees will not yield the fruit at a particular time and in sufficient quantity.

Some trees are light demanders and some trees need shade during the initial years. How the naked seedlings are to be planted ?, what are the conditions required to be maintained ?, etc., are the questions which can be solved through proper training. A majority of the farmers have their own prejudices regarding the trees also. Therefore, 55 percent of the sample farmers do not have the basic knowledge of planting trees and maintenance of the trees.

The other difficulty or problem is that of choice of species or imposition of the species The Department of Social Forestry knows very well as to what kind of species of trees are to be developed through its nurseries and get them distributed amongst the farmers. Govt. has the long term planning of fruit, fodder and fuel trees. But the farm forestry farmers demand a particular species of trees, viz. Eucalyptus. However, this tree has short term income generating capacity. It is a well known fact that Eucalyptus is not the answer to all problems the nation is facing today in terms of social forestry requirements.

Government Assistance

The Table 7.13 shows the nature of Govt. aid available for the development of the farm forestry programme. Nurseries developed by the Department of Social Forestry are the main spring of farm forestry. Mention may be made of Kissan Nurseries. In every taluka, Kissan

Nurseries provide seedlings of different varieties to the farmers who can apply for them. Out of the 100 farmers interviewed 85 have taken the advantage of Govt. Kissan Nurseries and obtained seedlings from them.

TABLE 7.13 NATURE OF GOVERNMENT AID OR GRANTS

GOVERNMENT AID	NO. OF RESPONDENTS
Seedlings	85
Subsidy or Grants-in-aid	20
Technical Know-how	20
Loans	15

The farmers who undertake the responsibility of developing Kissan nurseries get the subsidy in the form of polyethene bags, seeds and cash as per Govt. rules. Twenty farm forestry farmers took advantage of such a subsidy.

Twenty farm forestry farmers received technical guidance from the department which has been a great success. Some Nationalised banks have formulated guidelines to finance farm forestry. However, the maximum amount sanctioned is quite negligible. Only 15 farmers have approached banks for financial assistance by way of loans on commercial basis.

Model of Farm Forestry

There are two models of farm forestry, (i) monoculture and (ii) mixed farm forestry in the area in which the research is undertaken as shown in Table 7.14.

TABLE 7.14 MODEL OF FARM FORESTRY

MODEL	NO. OF RESPONDENTS
Monoculture	20
Mixed Farm Forestry	80

1) Monoculture :- This refers to the model of raising the particular species from the commercial point of view. Eucalyptus farm forestry is becoming extremely popular in this area. The people involved in the commercial farm forestry are teachers, doctors, pleaders political leaders, businessmen and Govt. servants besides farmers, who have got the permanent source of income. Even the good fertile land is being bought under Eucalyptus farm forestry. Eucalyptus requires less water and less management problems because it is less disease-prone and less troubles from the animals. Twenty percent of the sample farmers have adopted monoculture and the plants chosen vary. Some of the plants/species are eucalyptus, cashew nuts, tectona, coconut, mango, pomegranates, etc.

2) Mixed Farm Forestry :- Mixed farm forestry is need-based and it consists of more than two, three or four types of trees. It may be called as "three dimensional forestry or four dimensional forestry" with the aim of producing fuel woods, fodder and fruits. The activities of forests, animal husbandary, agriculture and horticulture are co-ordinated in such a way so as to obtain maximum benefits from available land resources. Raising of fodder trees for coordinated dairy development schemes, improvement of wild fruit trees by grafting and intercropping by traditional crops, etc., are the main features of mixed farm forestry in this area. Eighty percent of the sample farmers practice mixed farm forestry.

Approach of the Farmers to Farm Forestry

Table 7.15 shows the approaches of the farm forestry farmers. These are (a) intensive farm forestry and (b) indifferent farm forestry.

TABLE 7.15 FARMERS APPROACH TO FARM FORESTRY

NATURE OF APPROACH	NO. OF RESPONDENTS
Intensive Farm Forestry	24
Indifferent Farm Forestry	76

(a) Intensive Farm Forestry Approach :- The intensive farm forestry approach refers to the efforts of the cultivator when he applies higher doses of water facilities, fertilizers and pesticides on the same farm forestry land. Taking into consideration, the climatic conditions and the stages of growth of species a cultivator tries to get maximum returns from tree farming.

The intensive farmer has got the capacity to apply higher doses of modern inputs. He applies up-to-date technical strategies. At the same time he has the waiting capacity and he implements the suggestions given by the concerned Range Forest Officer and Deputy Conservator of the Forest. Twentyfour percent of the farmers practice intensive farm forestry programme (See Table 7.15).

(b) Indifferent Farm Forestry Approach :- This approach refers to the efforts of a farmer when he does not take the minimum efforts for maintenance of trees. He follows the mixed farm practices. He concentrates on traditional crops for his livelihood, but remains indifferent towards trees.

As he is economically weak, he can not apply modern inputs for the trees. Whatever income he gets from the trees, it is because of bounty of nature. Seventy-six farmers practice the indifferent farm forestry programme from the respondents.

Farm Forestry & Combination of Traditional Crops

The farm forestry practices do not necessarily displace traditional crops altogether. In fact, a number of traditional crops can be and are being raised along with farm forestry. Some of the crops are groundnuts, jowar, chilly, coriender, grass, paddy, sugarcane, kutthe, nachana and wheat. A number of respondents have produced various traditional crops along with farm forestry products. These are shown in Table 7.16.

TABLE 7.16 FARM FORESTRY & COMBINATION OF TRADITIONAL CROPS

	CROP	NO. OF RESPONDENTS
1)	Groundnut	60
2)	Jowar	40
3)	Chilly	20
4)	Coriender	10
5)	Grass	55
6)	Paddy	50
7)	Sugarcane	28
8)	Kultha	10
9)	Nachana	25
10)	Wheat	10

Above table shows the kinds of crops which are combined while practising farm forestry system in areas in which this research work is

undertaken. Here the majority of the farmers practice subsistence farming. Agriculture is a way of life and not a profession. Cultivators grow agricultural crops on their fields as a tradition. Economic considerations are generally not taken into account. They are not willing to change the landuse pattern. Every farmer wants to be self sufficient in food requirements. Therefore, farm forestry is being practised in combination with the traditional crops.

The wastelands or fallow lands, the area around fields, bunds, tanks, houses, wells, etc., are made available for tree farming. In the similar manner dry land and irrigated land are made available for farm forestry taking into consideration the fertility of the soil, rainfall and irrigation facilities.

Sources of Income During the Gestation Period

The nature of farm forestry is such that there is some gestation period before the farmers can derive any income from farm forestry. In order that they have some subsidiary source of income, while the farm forest is developed, farmers adopt 'secondary' business. For the 100 respondents, the most important activity was dairying as revealed from the Table 7.17. On the other hand, the rest 15 depend on minor forest produce.

Table 7.17 indicates that the sources of income during the gestation period for those who have been practicing farm forestry

TABLE 7.17 SOURCES OF INCOME IN GESTATION PERIOD

INCOME SOURCE	NO. OF RESPONDENTS
1) Dairy	85
2) Other	15

programme fully or partially. It is common experience that trees take a longer period during gestation period, the farm forestry farmers have to adopt the secondary business which is related to agriculture.

It has been noticed that dairy business has been fetching regular income to the agriculturists. But dairy farming requires large amount of fodder. The fodder in terms of grass and leaves of trees is responsible for the growth of dairy farming. Dairy farming is well known in Kolhapur and Belgaum districts. Dairy farming has another advantage of producing excellent manure for the farms.

Income Received from Farm Forestry

The farmers receive their income from farm forestry. There are sources other than the trees themselves, which yield an income to the farmers. These are fodder, fruits, fuel and minor forest products. This is displayed in Table 7.18.

TABLE 7.18 INCOME RECEIVED FROM FARM FORESTRY

SOURCE OF INCOME	NO. OF RESPONDENTS
Fodder	70
Fruit	60
Fuel	44
Minor forest produce	15

The above Table indicates that the early income giving factor is fodder. Fodder can be used for dairy farming which has a regular income. The fodder can be sold in the market earning an income to the farmers. Fodder is a part of the farm forestry programme in this area. That is why 70 farmers consider the importance of farm forestry from the point of view of obtaining fodder. The fallow land is systematically used for grass and tree farming.

Next comes the fruit, Mangifera indica, Tamarindus indica, etc. constitute the major portion of the incomes earned. 60 farmers earn their income in this manner.

Fuel is the most important item in the farm forestry programme. Fuel is used for domestic consumption and it can be sold in the market. Only 15 respondents who derive income from minor forest products.

Problems of Farm Forestry

It is said that the farmer has an eye on his farm and the other on the market. As in case of food crops and commercial crops the marketing of farm forestry produce poses a big problem to the farmer. Some of the problems encountered by the farm forestry farmer are shown in the Table 7.19.

TABLE 7.19 DIFFICULTIES ENCOUNTERED IN FARM FORESTRY

DIFFICULTIES	NO. OF RESPONDENTS
Transport	25
Marketing	62
Harrasment by Govt. Officials	44

The farm forestry produce is usually bulky in size and they have to be disposed off in distant markets. Secondly, they have to be transported by trucks. These heavy vehicles require passes which are to be issued by the Range Forest Officer. Again there is a general misunderstanding regarding the premission or pass. The pass is not sanctioned easily, particularly when urgently needed and causes worry to the simple farmer. This leads to undesirable, but inevitable malpractices.

The transportation and allied problems hinder the potential progress of the farm forestry programme. An encouraging sign in this

regard is the new thinking on the problem by the Govt. of Maharashtra. It is proposed to authorise local officials to grant passes to transport some species of trees of Eucalyptus.

Of the 100 farmers interviewd, 25 had faced the problems of transporting their produce to different places. 62 had to face a 'dilemma' of whether to sell in the local market or at the district place. This can hardly be termed as a marketing problem (Table 7.19).

In an underdeveloped country like India, bureaucratic malpractices are fairly widespread and the farm forestry farmers do not enjoy any immunity from such malpractices. 44 respondents reported that they were the victims of bureaucratic malpractices.

However, there is a silver lining to the farm forestry programme. The Harihar Pulp Factory in Karnataka is a boon to some of the social forestry farmers, in that it has guaranteed that it would purchase all the timber from the Eucalyptus plants. The marketing problem of Eucalyptus of those farmers has been solved.

The marketing of fruits has not been a serious problem. Fruits produced on the farm forestry land are sold even in the local market as there is a fairly large unsatisfied demand for fruits in both the rural and urban India. Similarly, the marketing of fodder is also not a problem in this area. The demand for fodder is greater than the supply of it. So the price of fodder are on the increase.

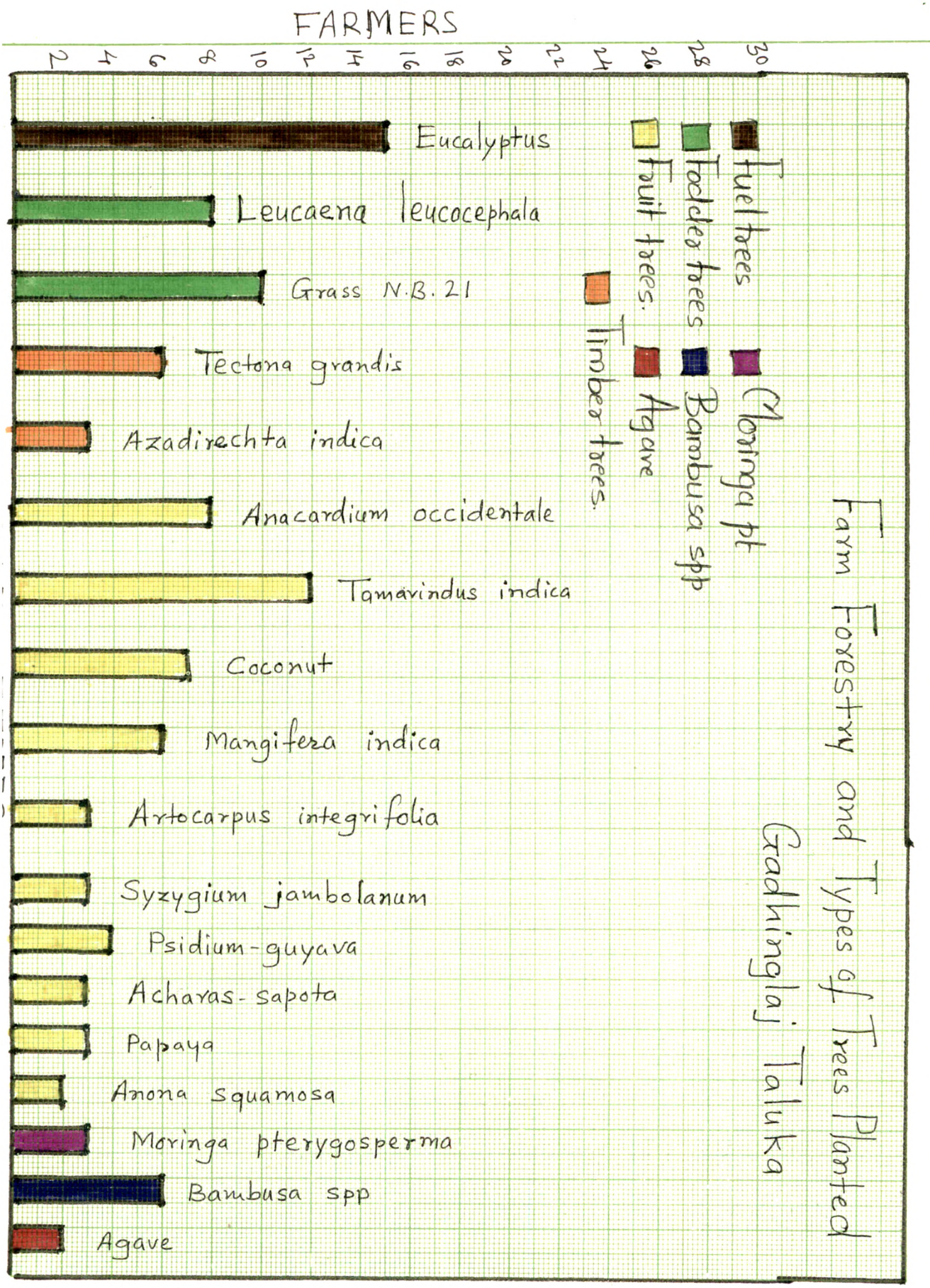
Types of Trees Planted in Farm Forestry

The types of trees that are usually planted in farm forestry can be classified into four types namely those that can be used for fuel fodder, fruit and timber purposes. Of these the Grass N. B. 21 and Leucaena leucocephala are planted for fodder purpose. Eucalyptus species are planted generally for fuel purpose and the fruit trees generally preferred are Mangifera indica, Coconut, Tamarindus indica, Syzygium jambolanum, Psidium guyava, Achras sapota, Papaya, etc.

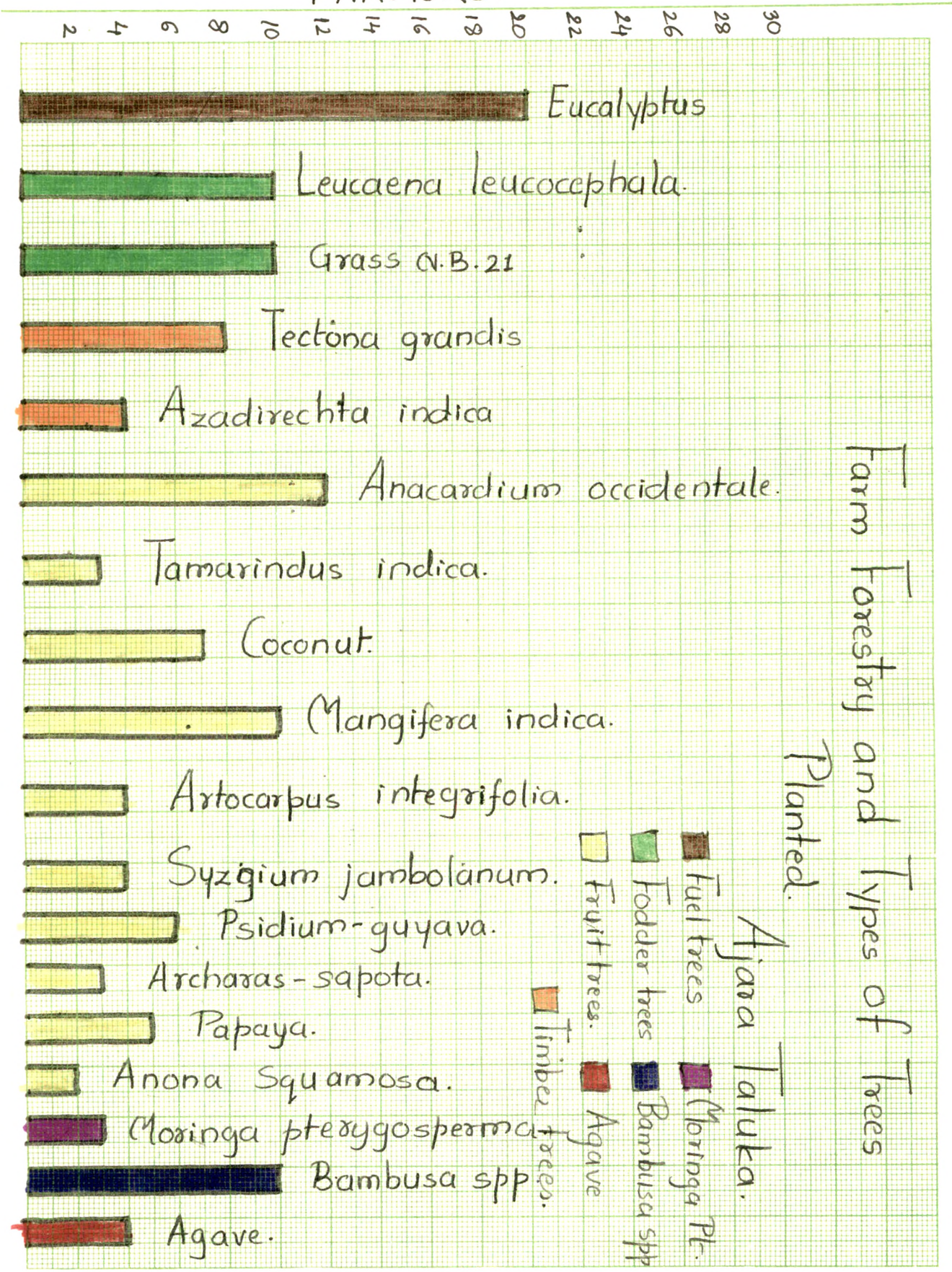
Table 7.20 clearly shows the types of trees preferred and planted by the farm forestry farmers in the four talukas under present study. It is evident that the Eucalyptus species is the most favourite plant probably due to its faster growth and immediate gains. Among the fruit trees, Mango, Jack-fruit and Tamarind are planted by majority of the farm forestry farmers. The ever growing need for the fodder for cattle and dairy animals is also reflected in terms of large number of farmers opting to plant various species of grasses.

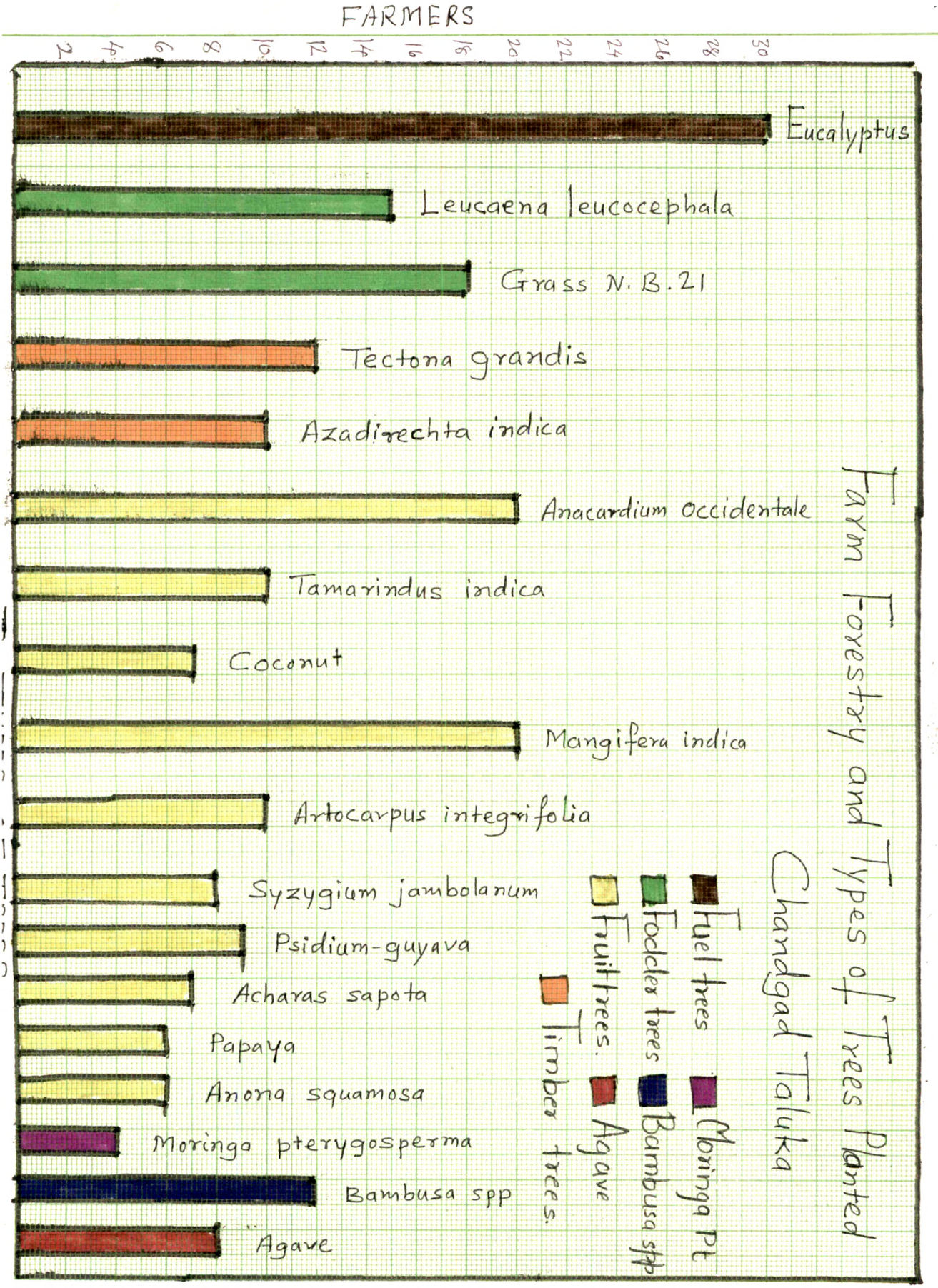
TABLE 7.20 FARM FORESTRY & TYPES OF TREES PLANTED

TYPES OF TREES	GADHINGLAJ	AJARA	CHANDGAD	HUKKERI
Eucalyptus species	15	20	30	13
Leucaena leucocephala	8	10	15	5
Grass N. B. 21	10	10	18	10
Tectona gradis	6	8	12	2
Azadirechta indica	3	4	10	3
Anacardium occidentale	8	12	20	2
Tamarindus indica	12	3	10	6
Coconut	7	7	7	12
Mangifera indica	6	10	20	6
Atrocarpus integenifolia	3	4	10	3
Syzygium jambolanum	3	4	8	3
Psidium guyava	4	6	9	4
Achras sapota	3	3	7	2
Papaya	3	5	6	3
Anona squamosa	2	2	6	2
Moringa pterygosperma	3	3	4	5
Bambusa species	6	10	12	5
Agave	2	4	8	4


FARMERS
2 4 6 8 10 12 14 16 18 20 22 24 26 28 30
Farm Forestry and Types of Trees Planted
Gadhinglaj Taluka
Fuel trees
Fodder trees
Fruit trees.
Timber trees.
Moringa pt
Bambusa spp
Agave
Eucalyptus
Leucaena leucocephala
Grass N.B. 21
Tectona grandis
Azadirechta indica
Anacardium occidentale
Tamarindus indica
Coconut
Mangifera indica
Artocarpus integrifolia
Syzygium jambolanum
Psidium-guyava
Acharas-sapota
Papaya
Anona squamosa
Moringa pterygosperma
Bambusa spp
Agave

FARMERS.


2 4 6 8 10 12 14 16 18 20 22 24 26 28 30
Eucalyptus
Leucaena leucocephala.
Grass (N.B. 21
Tectona grandis
Azadirechta indica
Anacardium occidentale.
Tamarindus indica.
Coconut.
Mangifera indica.
Artocarpus integrifolia.
Syzgium jambolanum.
Psidium-guyava.
Archaras-sapota.
Papaya.
Anona Squamosa.
Moringa pterygosperma
Bambusa spp
Agave.
Farm Forestry and Types of Trees Planted.
Ajara Taluka.
Fuel trees
Moringa Pt.
Fodder trees
Bambusa spp
Fruit trees.
Agave
Timber trees.


FARMERS
2
4
6
8
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22
24
26
28
30
Eucalyptus
Leucaena leucocephala
Grass N. B. 21
Tectona grandis
Azadirechta indica
Anacardium occidentale
Tamarindus indica
Coconut
Mangifera indica
Artocarpus integrifolia
Syzygium jambolanum
Psidium-guyava
Acharas sapota
Papaya
Anona squamosa
Moringa pterygosperma
Bambusa spp
Agave
Farm Forestry and Types of Trees Planted
Chandgad Taluka
Fuel trees
Moringa Pt
Fodder trees
Bambusa spp
Fruit trees.
Agave
Timber trees.

FARMERS

2 4 6 8 10 12 14 16 18 20 22 24 26 28 30

Farm Forestry and Types of Trees Planted

Hukkeri Taluka

- Fuel trees
- (Moringa Pt
- Fodder trees
- Bambusa spp
- Fruit trees
- Agave
- Timber trees.

Eucalyptus

Leucaena leucocephala

Grass N.B. 21

Tectona grandis

Azadirechta indica

Anacardium occidentale

Tamarindus indica

Coconut

Mangifera indica

Artocarpus integrifolia

Syzygium jambolanum

Psidium-guyava

Acharas-sapota

Papaya

Anona squamosa

Moringa pterygosperma

Bambusa spp

Agave

A CASE STUDY

Farm forestry has been taken up by farmers in various parts of Maharashtra and Karnataka. A case of one of the farms in Ankale village in Karnatak's Hukkeri taluka has been undertaken. The size of the land under farm forestry of this case is five acres. It has a common well with an electric pumpset. This well was used for irrigation purposes for four days in a week. Traditional crops like sugarcane, jowar, paddy, chilly and groundnut were raised before turning the land over to farm forestry. There was stiff resistance from the elders of the house to taking up farm forestry and had insisted on continuing with subsistence farming.

To begin with this farming maintained a pair of bullocks for agricultural operations with two permanent labourers. The number of members in this family is five. With this background, the agricultural activities were carried out. Only one year i.e. 1980 had good rainfall and it helped increase traditional farming activities.

After 1980, the percentage of rainfall went on declining and the water table of the well on the farm also went down. It became difficult to irrigate one acre of sugarcane and other crops also. But the prices of inputs of agriculture on one side were rising and on the other side, the production of agricultural commodities decreased year after year. As a result, losses were incurred year after year. The picture of traditional crops can be shown in the following table for the period 1981 to 1985.

FINANCIAL PARAMETERS OF A FARMER

(Rs.)

YEAR	INCOME	EXPENDITURE	NET INCOME	PER CAPITA INCOME
1981	20,000	5,000	15,000	3,000
1982	17,000	5,800	11,200	2,240
1983	13,000	6,100	6,900	1,380
1984	12,000	6,000	6,000	1,200
1985	10,000	7,500	2,500	500

The above table reveals that both the net income and the per capita income is declining. The owner of the land debated seriously to sell-off the entire land holding. But this was not possible as the elders in the family were opposing to this proposal. This was depressing for the owner, as it meant almost a daily struggle for mere survival, and the family members on the farm did not receive even a remuneration.

However, per chance the owner learnt about some information being available on farm forestry in "Shetkari" bulletin. Farm forestry of Eucalyptus by Shri. Kalidasbhai Patel in Gujarat had been a great success. This piece of information led to a visit to the Range Forest Officer of Hukkeri taluka. After having met the officials and discussed the matter with them, a decision was taken to go in for farm forestry. The Forest Officer supplied seedlings free of charge.

In 1986, as a first step to farm forestry a few seedlings of Eucalyptus were planted on bunds and a small unit of Kissan Nursery was sanctioned. It proved to be a success. Some members were critical of the venture but encouragement was received from the educated members of the family.

In 1987, the two bullocks were sold and one buffalo was purchased. The second phase of the farm forestry began with Eucalyptus, N.B. grass 21, and Leucaena. Expansion of farm forestry started and one acre was covered by the farm forestry. Production of milk for consumption and for market was great innovation and there was plenty of fodder in the form of tree leaves and fast growing grass variety.

The workers were trained in the plantation of trees. Even if the water was inadequate for sugar-cane cultivation, it was enough for the plantation of trees and the grass grown under the trees.

In 1987, a Kissan Nursery of 20,000 units was sanctioned which fetched a sizeable income. Again in 1988, the Kissan Nursery of 25,000 units was sanctioned which was on the basis of 100 percent subsidy. It proved to be a turning point in the history of farm forestry on this land. As a result, the income from farm forestry was doubled.

In 1989, again the Kissan Nursery was sanctioned and cutting of 400 Eucalyptus trees was experimented. The first sample of cutting of these trees proved to be a big success. It yielded Rs. 8000 income.

By this time the farm forestry expanded to 4 acres with one acre left for the nursery programme. The history of farm forestry may be summarised in the following Table.

INCOME FROM FARM FORESTRY

(Rs.)

YEAR	NURSERY INCOME	TRADITIONAL FARMING INCOME	DAIRY INCOME	FORESTRY INCOME	TOTAL	PER CAPITA INCOME
1986	3000	5000	4000	-	12000	2400
1987	5000	3000	4000	-	12000	2400
1988	9000	2000	8000	8000	27000	5400
1989	20000	1000	10000	4000	35000	7000
1990	30000	1000	12000	6000	49000	9800

Now the farmer owner has a continuous income from Nursery, dairy and minor forest produce. Therefore, it has been demostrated that any farmer can have some sort of farm forestry model, and would live to enjoy the fruits of this type of farming.

PLANTATION PROGRAMME OF SOCIAL FORESTRY DEPARTMENT IN GADHINGLAJ TALUKA

A brief review of plantation programme undertaken by the Social Forestry Department of Gadhinglaj taluka of Maharashtra State is given below.

[1] MAHARASHTRA SOCIAL FORESTRY PROJECT : BLOCK PLANTATION

SR.NO.	VILLAGE	YEAR	AREA	SEEDLINGS
1	Shendri	1983-84	5.00	8,000
2	Arjunwadi	1983-84	5.50	8,800
3	Atyal	1984-85	6.00	9,600
4	Khandal	1985-86	10.00	16,000
5	Aaurnal	1986-87	5.00	8,000
6	Basarge B.	1987-88	8.00	12,800
7	Shippur tarf Ajara	1987-88	7.00	11,200
8	Bhadgon	1988-89	16.00	25,600
9	Jakhewadi	1988-89	5.00	8,000
	TOTAL		67.50	1,08,000

[2] NATIONAL RURAL EMPLOYMENT PROGRAMME - PLANTATION OF GRAMPANCHAYAT COMMONLANDS

The scheme is implemented in two villages and the details are given in table below.

(area in hectares)

SR.NO.	VILLAGE	YEAR	AREA	SEEDLINGS
1	Kadgon	1984-85	10.59	17,000
2	Khandal	1985-86	5.00	8,000
	TOTAL		15.59	25,000

[3] WESTERN GHAT DEVELOPMENT SCHEME (PLANTATION)

(area in hectares)

SR.NO.	TALUKA	YEAR	AREA	SEEDLINGS
1	Gadhinglaj	1987-88	9.00	14,400

[4] PLANTATION ON THE LANDS OWNED BY THE SCHOOLS

(area in hectares)

SR.NO.	SCHOOL	YEAR	AREA	SEEDLINGS
1	Sadhana Highschool Gadhinglaj	1987-88	6.00	9,600
2	M. R. Highschool Gadhinglaj	1987-88	1.00	1,600
	TOTAL		7.00	11,200

[5] MODEL NO. 10 : PLANTATION ON BUNDS & WESTELAND

(Free distribution of seedlings and subsidised rate for private people)

(area in hectares)

YEAR	AREA	SEEDLINGS
1985 - 86	10.00	16,000
1986 - 87	9.00	14,400
1985 - 86	22.00	35,200
1986 - 87	5.00	8,000
1987 - 88	25.00	40,000
1988 - 89	21.00	33,600
TOTAL	82.00	1,47,200

[6] KRISHI PANDHARI SCHEME : VILLAGE - MADYAL

(Free distribution of seedlings)

YEAR	SEEDLINGS	BENEFICIARY
1984 - 85	80	SC people
1984 - 85	100	School
1986 - 87	4,010	Public
TOTAL	4,190	

[7] KISAN NURSERY PROGRAMME

YEAR	SEEDLINGS	BENEFICIARY
1986 - 87	6	58,000
1987 - 88	12	1,01,600
TOTAL	18	1,59,600

The Kissan Nursery Farmers raised the seedlings and sold out in the open market and thus earned the income.

[8] THREE YEAR PLANTATION DEVELOPMENT PROGRAMME

VILLAGE	AREA	SCHEME
1) Shendri	5.00	Block Plantation
2) Arjunwadi	5.50	- " -
3) Atyal	6.00	- " -
4) Khandal	10.00	- " -
5) Kadgon	10.59	N.R.E.P.
6) Khandal	5.00	- " -

The three year plantation development scheme was handed over to the Grampanchayat.

[8] PROPOSED PLANTATION FOR THE YEAR 1989 - 90

(area in hectares)

SR.NO.	VILLAGE	AREA	REMARKS
1	Bugadikatti	28.00	Seedlings to be raised
2)	Karanbali	15.00	through Kissan Nursery
3)	Aainapur	5.00	Programme 1.50 lakhs
	TOTAL	48.00	

(SOURCE : Office of the Social Forestry Dept., Gadhinglaj)

PLANTATION PROGRAMME OF SOCIAL FORESTRY DEPARTMENT IN AJARA TALUKA

A brief review of plantation programmes undertaken by the Social Forestry Dept. of Ajara taluka of Maharashtra State are given below.

[1] MAHARASHTRA SOCIAL FORESTRY PROJECT : BLOCK PLANTATION

SR.NO.	VILLAGE	YEAR	AREA (ha.)	SEEDLINGS
1	Salagon	1983 - 84	4.50	7,200
2	Ningudage	1984 - 85	4.00	400
3	Khanapur	1984 - 85	10.00	16,000
4	Harapwade	1984 - 85	7.00	11,200
5	Pernoli	1984 - 85	5.00	8,000
6	Hajagoli	1985 - 86	7.00	11,200
7	Hattiwale	1985 - 86	6.00	9,600
8	Moriwade	1985 - 86	12.00	24,200
9	Ajara	1986 - 87	6.00	9,600
10	Medholi	1986 - 87	12.00	24,200
11	Uttur	1986 - 87	7.00	11,200
12	Latgon	1987 - 88	10.00	16,000
13	Sirsangi	1987 - 88	10.00	16,000
14	Watangi	1987 - 88	10.00	16,000
15	Donewadi	1988 - 89	12.00	19,200
16	Karmewadi	1988 - 89	8.00	12,800
	TOTAL		130.50	2,18,800

[2] NATIONAL RURAL EMPLOYMENT PROGRAMME

PLANTATION OF GRAMPANCHAYAT COMMONLANDS

(Area in hectares)

VILLAGE	YEAR	AREA	SEEDLINGS
1) Pernoli	1984 - 85	5.00	9,000
2) Chinchile	1984 - 85	6.87	13,350
3) Hajagoli	1985 - 86	7.13	11,400
4) Salgon	1988 - 89	4.00	6,400
TOTAL		23.00	39,150

[3] RURAL FUELWOOD PLANTATION PROGRAMME

(Area in hectares)

VILLAGE	AREA	SEEDLINGS
1) Devkandgon	19.00	30,400
2) Salagon	6.00	9,600
TOTAL	25.00	40,000

[4] RURAL LANDLESS EMPLOYMENT PROGRAMME, 1988-89

VILLAGE	AREA (ha.)	SEEDLINGS
1) Koriwade	30.00	48,700
2) Devkandgon	5.00	8,000

[5] WESTERN GHAT DEVELOPMENT SCHEME (PLANTATION)

(Area in hectares)

VILLAGE	YEAR	AREA	SEEDLINGS
1) Ajara	1986 - 87	2.00	3,200
2) Salagon	1986 - 87	6.00	9,600
3) Asandi	1988 - 89	5.00	8,000
TOTAL		13.00	20,800

[6] PROPOSED PLANTATION PROGRAMME ON COMMONLANDS (1989-90)

VILLAGE	AREA (ha.)	REMARKS
1) Kolinde	10.00	Social Forestry Development
2) Watangi	10.00	proposed for plantation
3) Bahirewadi	20.00	
4) Musoli	14.00	
TOTAL	54.00	

[7] NUMBER OF KISSAN NURSARIES & SEEDLINGS RAISED

(AJARA TALUKA)

YEAR	BENEFICIARIES	SEEDLINGS
1989 - 90	34	2,52,400

[8] NUMBER OF KISSAN NURSARIES & SEEDLINGS RAISED

(GADHINGLAJ TALUKA)

YEAR	BENEFITIARIES	SEEDLINGS
1989 - 90	15	35,000

(SOURCE : Office of the Social Forestry Dept. Gadhinglaj and Ajara Talukas)

PLANTATION PROGRAMMES OF SOCIAL FORESTRY DEPT. IN CHANDGAD TALUKA

A brief review of plantation programmes undertaken by the Social Forestry Dept. of Chandgad taluka of Maharashtra State are given below.

[1] MAHARASHTRA SOCIAL FORESTRY PROJECT : WORLD BANK AID

VILLAGE	YEAR	AREA (ha.)
1) Nagardale	1984	10.00
2) Nandwade	1984	10.00
3) Lakudwadi	1985	8.00
4) Dukkarwadi	1985	12.00
5) Jelugade	1986	15.00
6) Gudwale	1986	10.00
7) Kajirne	1986	5.00
8) Kitwad	1987	10.00
9) Tewurwadi	1989	5.00
10) Kamewadi	1989	12.00
11) Rajagoli	1989	8.00

[2] WESTERN GHAT DEVELOPMENT SCHEME

(Private Land)

	VILLAGE	YEAR	AREA (ha.)
1)	Nagardale	1986	7.00
2)	Kitwad	1987	8.00
3)	Sule	1988	7.00
4)	Here	1989	20.00
5)	Sule	1990	5.00

[3] RURAL FUELWOOD PLANTATION SCHEME

	VILLAGE	YEAR	AREA (ha.)
1)	Gudwale	1987	18.00
2)	Jelugade	1987	12.00
3)	Humbarwadi	1987	10.00
4)	Nandwade	1988	12.00
5)	Nagardale	1988	15.00
6)	Humbarwadi	1988	4.00
7)	Tewurwadi	1989	10.00
8)	Kolik	1989	20.00

[4] JAWAHAR ROZGAR YOJANA RLEGP
NREP

	VILLAGE	YEAR	AREA (ha.)
1)	Nagardale	1984	10.00
2)	Nandwade	1984	12.29
3)	Nagardale	1984	9.00
4)	Adkur (Naganwadi Rd)	1987	14.00
5)	Parle	1988	27.00
6)	Kodali	1988	7.00
7)	Umgon	1988	11.00
8)	Hosur	1988	12.00
9)	Chinchane	1988	34.00
10)	Nagardale	1988	6.40
11)	Bagilage	1988	4.00

[5] KISSAN NURSERY PROGRAMME

YEAR	KISSAN NURSERY
1984 - 85	7
1985 - 86	8
1986 - 87	19
1987 - 88	26
1988 - 89	52
1989 - 90	33

STATEMENT OF PLANTS RAISED IN HUKKERI SOCIAL FORESTRY RANGE (1983-90)

SR. NO.	LOCATION	EXTENT	B. HEAD	YEAR
1	Raxi	10 Ha	MNP	1982
2	Painaldinni	6 Ha	MNP	1982
3	Beniwad	3 Ha	MNP	1982
4	Beniwad	9.5 Ha	MNP	1983
5	Sholaphur	5 Ha	MNP	1983
6	Beniwad	8 Ha	MNP	1983
7	Gudus	21 Ha	MNP	1983
8	Gudus	8 Ha	MNP	1983
9	Belvi	11 Ha	MNP	1983
10	Hukkeri Sy. No. 149	5 Ha	MNP	1983
11	Belvi	25 Ha	MNP	1984
12	Shirhatti	25 Ha	MNP	1984
13	Beniwadi	16 Ha	MNP	1984
14	Shirhatti	19 Ha	MNP	1984
15	Beniwad	13 Ha	MNP	1984
16	Shirhatti	30 Ha	MNP	1985
17	Sholapur	30 Ha	MNP	1985
18	Raxi	45 Ha	MNP	1985
19	Belvi	38 Ha	MNP	1985
20	Beniwad	15 Ha	MNP	1985
21	Mathiwad	10 Ha	MNP	1985
22	Bairapur	25 Ha	RLEGP	1986
23	Belvi	10 Ha	RELGP	1986

SR.NO.	LOCATION	EXTENT	B. HEAD	YEAR
24	Kotabagi	10 Ha	NREP	1986
25	Kanagal	6 Ha	MNP	1988
26	Managutti	10 Ha	MNP	1988
27	Daddi	16 Ha	MNP	1989
28	Shirhatti	9 Ha	JRY	1989
29	Ankal Gudaketra	10 Ha	JRY	1989
30	Mavanoor	5 Ha	JRY	1989
31	Shagewadi	10 Ha	JRY	1990
32	Haragapur	10 Ha	DWG	1990

LIST OF KISSAN NURSERY IN HUKKERI S. F. (1988-90)

SR. NO.	NO. OF BENEFICIARIES	SEEDLINGS RAISED (in lakhs)	YEAR
1	57	10.09	1988-89
2	65	7.80	1989-90

SOURCE : Office of Range Forest Officer, Social Forestry Office, Hukkeri