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Draft

INVENTORY SURVEY

(NON FOREST AREA)

OF

BHIWANI DISTRICT

HARYANA STATE

INVENTORY RESULTS

FOREST SURVEY OF INDIA

NORTHERN ZONE

SHIMLA - 1

Contents

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NORTHERN ZONE

SHIMLA - I

1997

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SUMMARY

1. To assess the availability of forest resources for the production of timber, fuelwood and raw material for paper pulp, matchwood, packing cases and essential oils etc. in areas outside the traditional Reserved Forests and those forest areas which could not be covered during the course of regular Inventory Survey of the district, it was proposed to carry out the inventory of such areas. The Inventory Survey has been carried out in the Bhiwani district during 1992-93 and 1993-94.

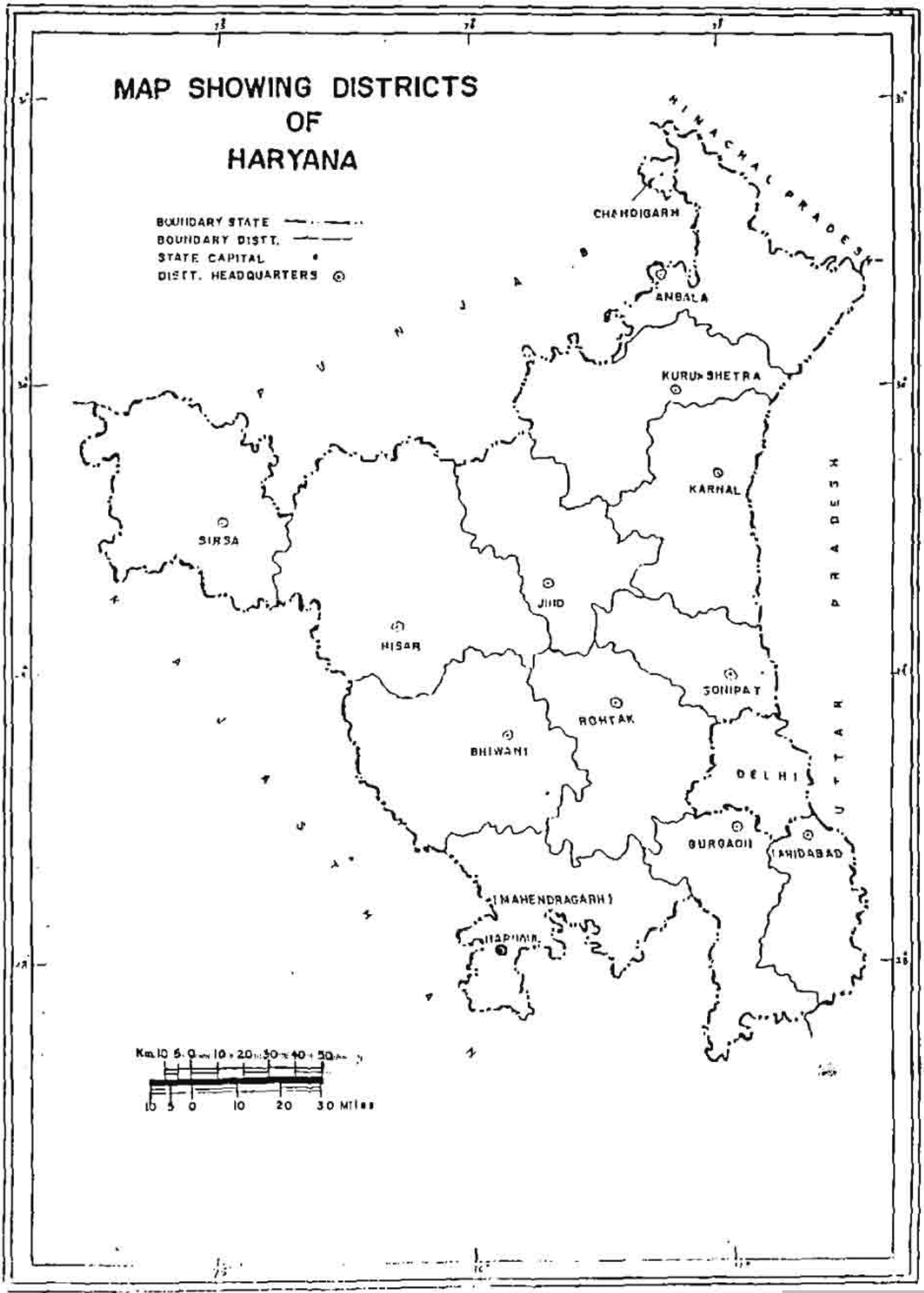
2. As per 1981 Census, Bhiwani district had a total of 428 villages having a total area of 5048.06 Sq. km. out of which 23 villages having an area of 240.93 Sq. km. were randomly selected and surveyed.

3. In the entire rural area of Bhiwani district 69.27 lakh trees (13.72 trees/ha.) have been estimated. The analysis shows that when all the species are combined the maximum number of the estimated trees occur in 10-20 cm. dia-class i.e. 36.51 lakh trees (52.71%) and the minimum in 40 cms. and above dia-class i.e. 3.33 lakh trees (4.80%).

4. The specieswise distribution of total number of estimated trees shows that Prosopis cineraria has the largest representation i.e.29.89 lakh trees (43.14%) followed by Acacia nilotica (Babul)12.29 lakh trees (17.75%),Acacia tortilis 11.49 lakh trees(16.59%),Salvadora spp. 3.26 lakh trees (5.22%),Dalbergia sissoo 3.02 lakh trees (4.36%) Zizyphus spp. 2.05 lakh trees (2.96%),Eucalyptus spp.1.31 lakh trees(1.9%) and Azadirachta indica0.96 lakh trees (1.38%). The representation of rest of the species is less than 1% each.

5. The distribution of total number of trees categorywise and dia-classwise, when all the species are combined, shows that the representation of trees is maximum in the category-III -Village Woodlots i.e. 36.85 lakh trees (53.20%)and minimum in category-II Road Side Plantation 2.64 lakh trees (3.81%) for the combined dia-class.

6. In the entire rural area of Bhiwani district total estimated volume of all the species and dia-classes combined comes to 14.16 lakh cubic meter i.e. 2.805 cum./ha.


MAP SHOWING DISTRICTS
OF
HARYANA
BOUNDARY STATE
BOUNDARY DISTT.
STATE CAPITAL
DISTT. HEADQUARTERS
HIMACHAL PRADESH
CHANDIGARH
AMBALA
KURUKSHETRA
KARNAL
SIRSA
JIND
HISAR
SONIPAT
ROHTAK
BHIWANI
DELHI
GURGAON
FARIDABAD
MAHENDRAGARH
UTTAR PRADESH
Km 10 5 0 10 20 30 40 50
10 5 0 10 20 30 Miles

Contents

Chapter 1

1.1 Introduction

To assess the availability of forest resources for production of timber, fuelwood and raw material for paper, pulp, packing cases, essential oils, match wood etc. in areas outside the traditional Reserved Forest areas and those forest areas which could not be covered while undertaking the regular Inventory Survey of Haryana State.

1.2 Description of the District

The district of Bhiwani is a part of the Western Haryana Plain. It is named after the headquaters town of Bhiwani, believed to a corruption of the word Bhani. From Bhani, it is supposed to have changed to Bhiani and then to Bhiwani. Tradition has another story after the name of Bhiwani. The present Bhiwani district was created in 1972.

1.3 Location

The district lies between 28° 22' and 29° 04' 35" North Latitudes and 75° 28" and 76° 28' 45" East Longitudes. The district is flanked by the districts of Hisar, Rohtak and Mahendergarh on its north, east and south respectively. On its south-west and west it has a common state border with Rajasthan. The total area of the district is 5099.00 sq. km. having a population of 9,20,052 as per 1981 Census.

1.4 Physical Features

Soil, geology and topography

The district on the whole is sub divided into following sub-micro regions on the basis of geology, soils, topography, climate and natural vegetation:

(a) Siwani undulating Plain with sand dunes

It extends over the north western part of Bhiwani district, covering the parts of Bhiwani Khera, Bhiwani and Loharu tahsils. It makes its boundaries with Rajasthan state in the west, Loharu Bagar in the south, Bhiwani Plain with Aravalli offshoots in the east and Hisar district in the north.

The soils found in this region are sandy and loamy sand. The soils as classfied by the NBSS and LUP(ICAR) Nagpur, the region is Psamments-Fluvents-orthids and Psamments types of soils. The sand dunes are formed on undulating surface through out the region.

As far as communications and transportation facilities are concerned there are three main roads namely Hisar-Siwani-Rajgarh, Bhiwani-Tosham-Hisar and Hansi-Tosham-Bahal in this region.

(b) Bhiwani Plains with Aravalli offshoots

The region extends over the eastern half of the district covering the areas of the Bhiwani Khera, Bhiwani and Dadri tahsils. It makes its limits with Siwani Undulating Plains with sand dunes and Loharu Bagar in the west, Mahendragarh district in the south,Rohtak district in the east and Hisar district in the north. The loam, relatively sandy loam and rocky surfaces are found in the region. The soils as classified by the NBSS and LUP(ICAR),Nagpur, the region has Psamments- Fluvents-Orthids- Fluvents and Ochrepts types of soils.

On the whole this region has satifactory network of rails/roads.

(c) Loharu Bagar

The region extends over the south-western part of the district, covering some parts of Bhiwani and Dadri tahsils and major portion of Loharu tahsil. It makes its limits with Rajasthan state in the west and south-west, Mahendragarh district in south-east, Bhiwani plain with Aravalli Offshoots in the east and Siwani Undulating Plain with sand dunes in the north. The soils are mostly sandy and loamy sand. The soils as classified by NBSS and LUP(ICAR), Nagpur, the region has Psamments-Fluvents-Orthids and Psamments types of soils.

The net work of roads is relatively poor as compared to other regions of Bhiwani district because of availability of sand dunes. Metre gauge railway lines namely Rajgarh-Loharu-Mahendragarh and Jhunjhunu-Loharu are important.

1.5 Climate

Bhiwani district lies in western Haryana Plain and has semi-arid type of climate.

1.6 Rain

Monsoons bring rain from July to September. From October to June, the weather is dry except for a few

showers received from western cyclones. The eastern part of the district receives more rain than the western part. The rainfall during 1979-80 was only 14.7 cms. against 68.3 cms.during 1977-78 and 63.1 cms. during 1978-79. It reflects the inadequacy and uncertainty of rainfall.

1.7 Temperture

Due to its distance from the the sea there is great difference between the tempertures of day and night as well as during winter and summer . The maximum daily temperature during summer reaches as high as 45 C in May-June. Hot dry winds blow during the day due to semi arid climate of the region. During the winter the minimum temperature falls below 5° C during December-January.

1.8 Frost,Fog and Hails

Ground frost occurs rarely in the southern parts of the district adjoing Rajasthan due to less humidity. Foggy weather condition occurs sometimes during the months of December and January. Isolated spells of hailstrom can also occurs during Febuary to April. During May-June dust stroms also occur in the district due to proximity to the desert areas.

1.9 Socio-Economic Conditions

The economy of the district is primarily agricultural.At the time of 1981 Census about 70 per cent of total main workers were cultivators and agricultural labourers.The large and medium scale units are engaged in manufacturing synthetic and cotton yarn and cloth, staple yarn,cement, cold rolled steel strips,precision tubes, gum and gaur,refined oils and vegetable ghee etc. There are many small scale units in Bhiwani district manufacturing metal products and parts, nonmetallic mineralproducts, food products, textile products, rubber,plastic, petroleum and coal, products. wood products furniture, chemicals and chemical products, cotton textiles, machine tools and electrical machinery etc.

Irrigation in the district mostly depends upon canals. Among the foudgrains mostly bajra,grams and wheat are grown.In 1977,the number of livestock in Haryana was 6,90,800 which includes cattle,buffaloes, horses and ponies, donkeys, sheeps,goats,camels and pigs etc.

The people of Haryana are hardworking and enterprising. The per capita income of Haryana is second to Punjab among states of the country. Wheat and rice are the main food. Milk consumption is about 500 gm. per person which is quite high as compared to the National

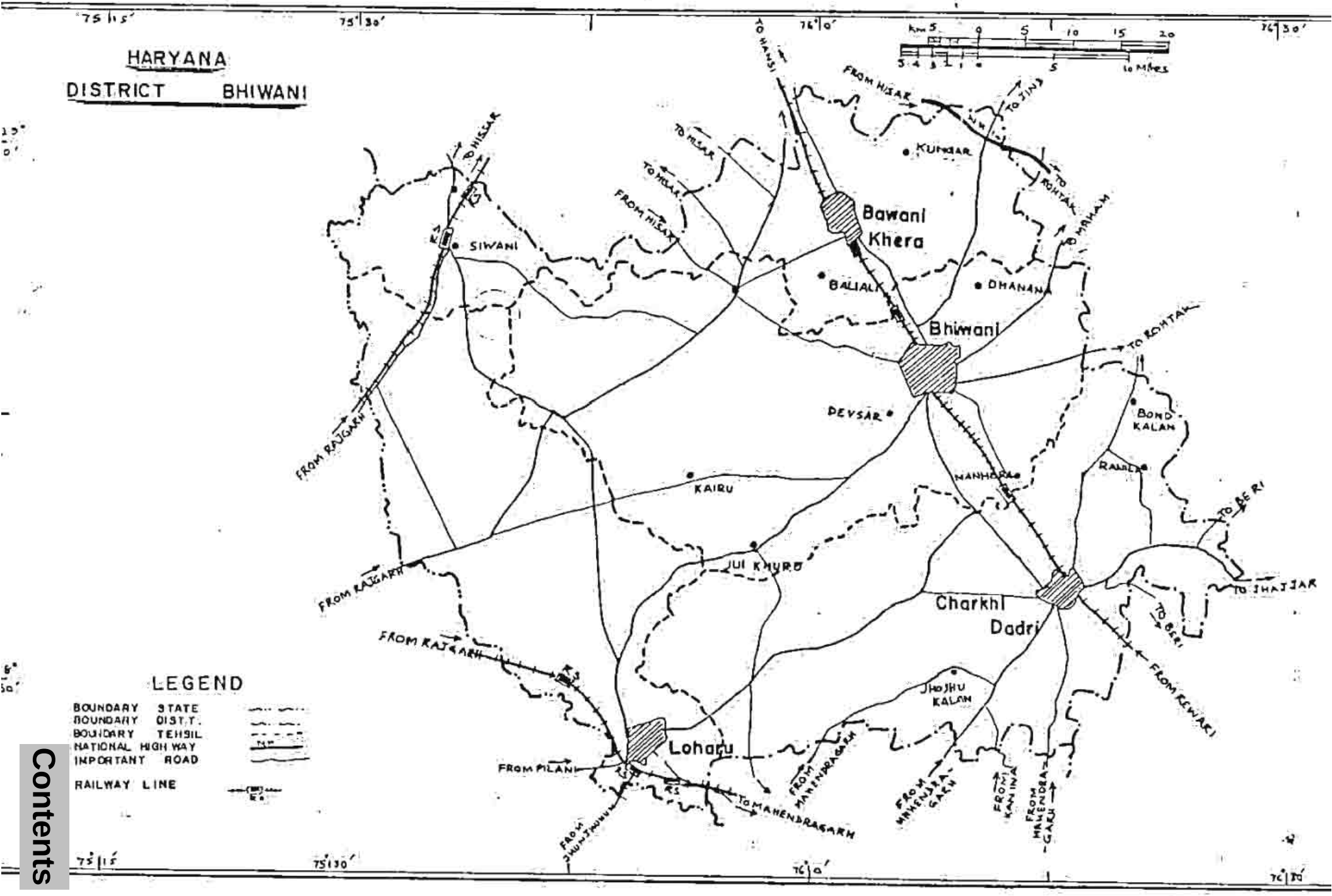
average of about 137 qm. per person.

Out of total population of the district 84% is rural population.The Literacy Rate in the district is 33.07. it is 48.13 for males and 16.30 for females. Out of the population only 33% are workers while 67% are non-workers.

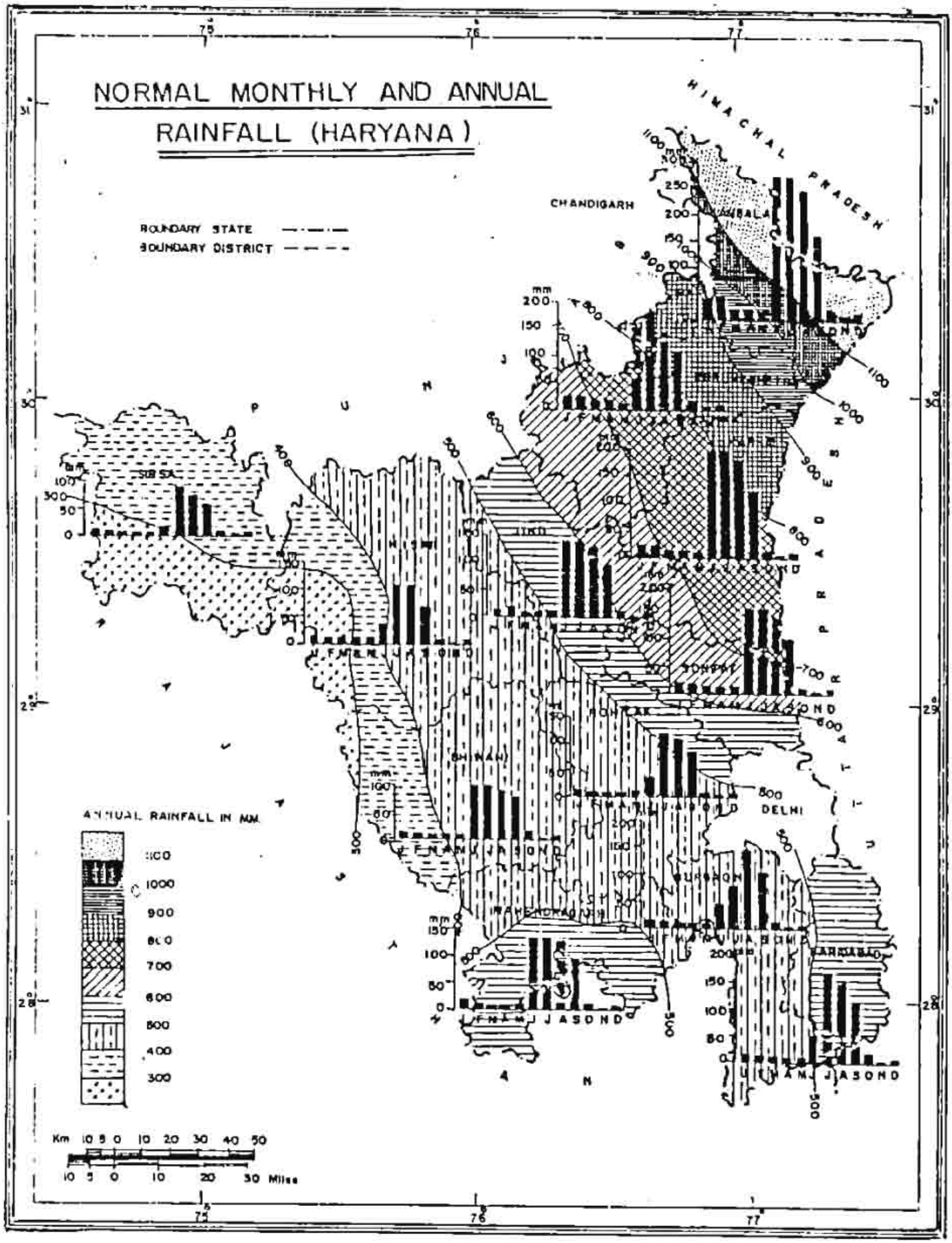
1.10 Uses

The trees provide mainly timber,fuelwood, fodder,fruit and shade. Timber is obtained mainly from Dalbergia sisoo, Eucalyptus spp., Melia azedarach, Syzygium cumini,Morus alba,Mangifera indica,Azadirachta indica, Albizia spp., etc. Small timber is obtained mainly from Acacia nilotica,Acacia spp., Prosopis juliflora,Tamarix articulata etc. All the above mentioned trees provide fuelwood also.Trees like Prosopis juliflora, Acacia nilotica, Acacia tortilis, Albizia spp., Morus alba, Prosopis cineraria, also provide fodder in the form of leaves or pods.Morus alba provides wood for manufacturing hockey sticks and other sports goods. Poplars provide matchwood and Eucalytus paper and pulpwood. Fruits are obtained from Zizyphus spp. and Syzgium cumini.Katha is extracted from Acacia catechu. Neem oil is obtained from Azadiachta indica.

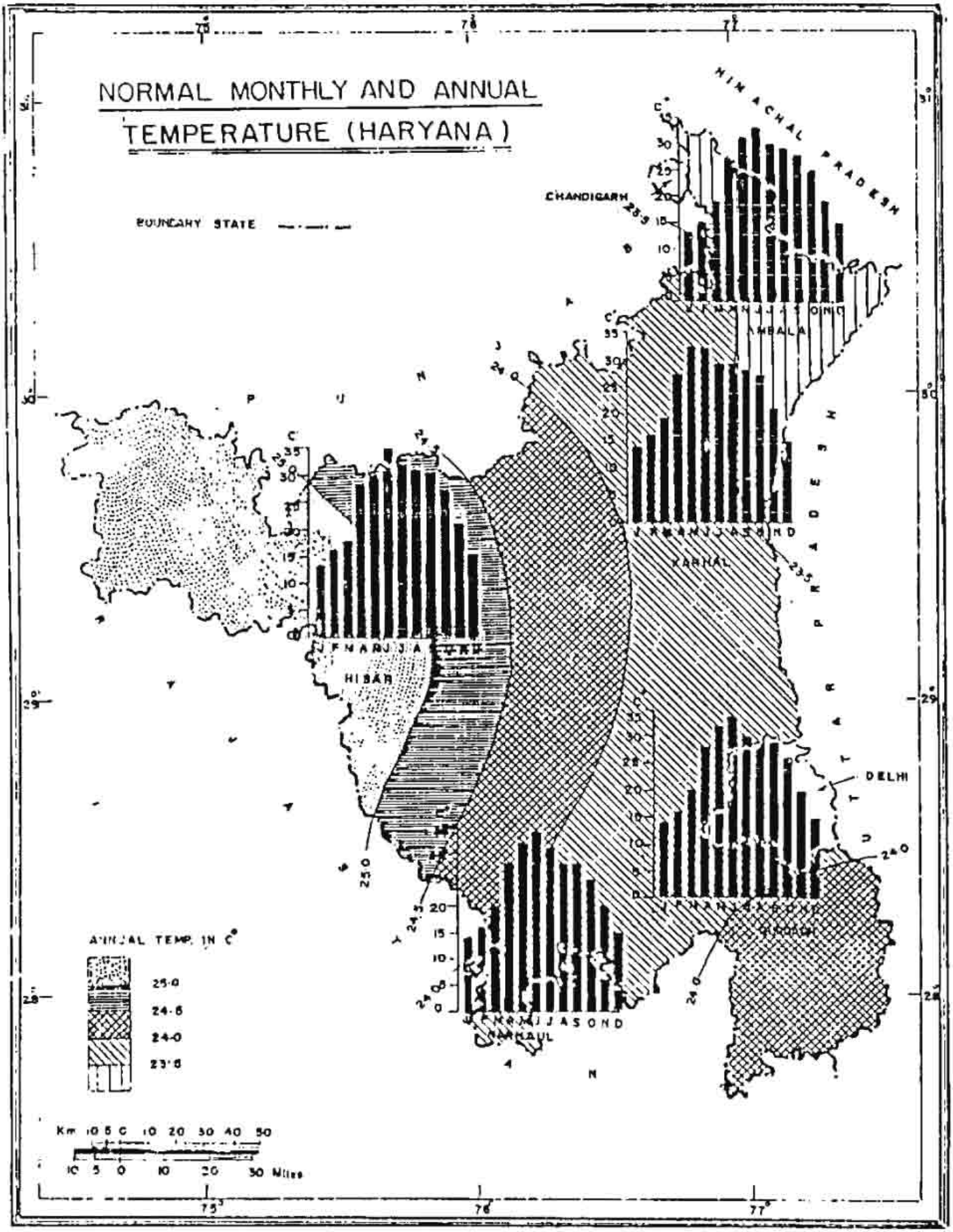
It has been seen that with the ban on felling of green trees in Himachal Pradesh, packing cases for apple and other fruits/vegetables are supplied from Haryana which are constructed from Eucalytus wood. Eucalyptus spp. is also used for making cheap furniture and also as a fuelwood.


HARYANA
DISTRICT BHIWANI
LEGEND
BOUNDARY STATE
BOUNDARY DIST.T.
BOUNDARY TEHSIL
NATIONAL HIGH WAY
IMPORTANT ROAD
RAILWAY LINE
Bawani Khera
Bhiwani
Charkhi Dadri
Loharu
SIWANI
KUNDAR
BALIALI
DHANANA
DEVSAR
KAIRU
NANHORA
RAMPURA
BOND KALAN
JUI KHURD
JHOJHU KALAN
TO HANSI
FROM HISAR
TO JIND
TO ROHTAK
TO MAHAM
TO HISAR
FROM RAJGARH
FROM PILANI
TO MAHENDRAGARH
FROM MAHENDRAGARH
FROM KANINA
FROM KEWARI
TO BERI
TO JHAJJAR
FROM JHUNJHUNU
75°15'
75°30'
76°0'
76°30'

Contents


NORMAL MONTHLY AND ANNUAL
RAINFALL (HARYANA)
HIMACHAL PRADESH
CHANDIGARH
AMBALA
ROUNDARY STATE
BOUNDARY DISTRICT
RAJASTHAN
UTTAR PRADESH
DELHI
ANNUAL RAINFALL IN MM
1100
1000
900
800
700
600
500
400
300
Km 10 5 0 10 20 30 40 50
10 5 0 10 20 30 Miles
75
76
77
31°
30°
29°
28°

Contents

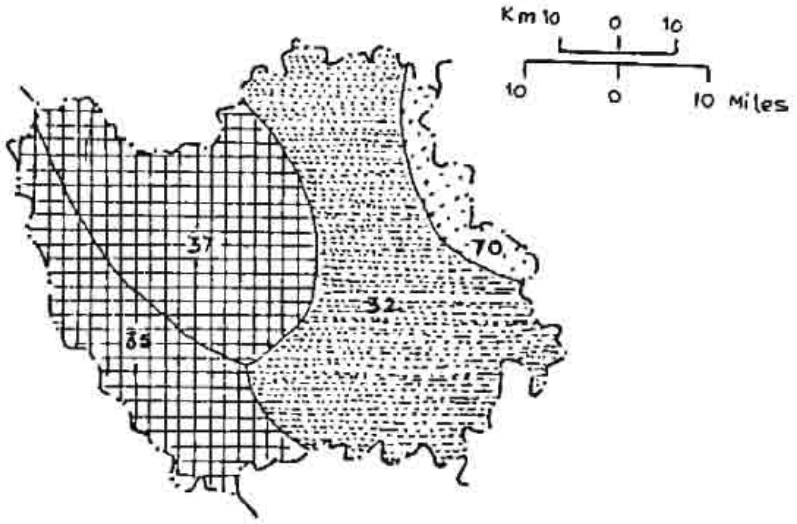

NORMAL MONTHLY AND ANNUAL
TEMPERATURE (HARYANA)
BOUNDARY STATE
HIMACHAL PRADESH
CHANDIGARH
AMBALA
KARNAL
HISAR
DELHI
NARNAUL
ANNUAL TEMP. IN C°
25·0
24·6
24·0
23·6
Km 10 5 0 10 20 30 40 50
10 5 0 10 20 30 Miles

Contents

HARYANA

DISTRICT BHIWANI

SOILS



ORTHIDS - FLUVENTS (32)
PSAMMENTS (35)
PSAMMENTS - FLUVENTS - ORTHIDS (37)
OCHREPTS (70)

GEOLOGY

XX ALLUVIUM RECENT

Contents

CHAPTER 2

2.1 Design and Methodology of Non-Forest Inventory Survey

District Census Books of Census Survey 1981 were used as basis of Inventory of Non-Forest Areas. A list of villages in the district was prepared and each village was given a serial number.

2.2 Definition of Non-Forest Area

For the purpose of this survey

(1) All those areas were taken which were outside the traditional Reserved Forest Areas.

(2) All those areas which satisfied the following conditions were also excluded:-

(a) All places within the Municipality, Corporation, Cantonment Board or a notified area Committee etc.

(b) All other places which satisfied the following criteria:-

(i) A minimum population of 5,000;

(ii) At least 75% of the male working population engaged in non-agricultural persuits and

(iii) A density of population of at least 400 per Sq.Km. (1,000 per Sq.mile).

In addition to all municipal areas/Cantonment Board, four villages namely (1) Babiyal in Ambala district, (2) Smalakha in Karnal district, (3) Gurgaon (rural) and (4) Tharsa in Gurgaon district satisfying the above criteria had been treated as Census towns (non-municipal) in 1981 Census. Panchkula Urban Estate in Ambala district had also been treated as a town. The Faridabad Complex Administration consisting of Faridabad, Faridabad Township and Ballabgarh towns of 1971 and some surrounding villages in Faridabad district had been treated as towns.

2.3 Sampling Design and Method of Selection of Sample Villages

The inventory survey was undertaken in the rural area (non-forest area only) of the state. The design followed in the field inventory was random sampling with the villager as sampling units. A list of villages of Mahendragarh district was prepared according to 1981 Census and each village was given a serial number.

Firstly, the number of sample villages to be surveyed in the state was decided by taking a pilot survey such that the results of the survey at State level would be at the precision level of ±10% at 95% probability.

For carrying out pilot survey, 2 to 3 villages were taken from each district of Haryana State. Total 31 villages were selected for pilot survey in Haryana State. A list of the villages selected for pilot survey is given in Appendix-I.

The villages selected for pilot survey were taken up one by one for carrying out complete enumeration of all the trees of 10 cms. and above diameter at B.Ht(OB). Each of these selected villages, with its area and boundaries as per the revenue records, was treated as a sampling unit.

After completing the pilot survey the data was processed for obtaining number of trees/Ha. in each village for calculation of sample size by using the formula

$$n = \frac{\left(\frac{2 * c.v.}{10}\right)^2}{1 + \left(\frac{1}{N}\,\frac{2 * c.v.}{10}\right)^2}$$

where $c.v. = \frac{s}{\bar{x}} * 100$ and

N = total no. of villages in the State.

For large N, it will be equal to

$$n = \left(\frac{2 * c.v.}{10}\right)^2$$

The method used was ratio method of estimation. The sample size obtained from pilot survey was 241 villages.

These 241 villages were distributed over all the districts proportional to the rural area of the district. A list of number of villages selected for each district is

given in the Appendix-II.

These randomly selected villages in each district were taken up one by one for carrying out complete enumeration of all the trees of 10 cms. and above diameter. Each of these randomly selected villages, with its area and boundaries as per the revenue records, was treated as a sampling unit.

2.4 Field Methodology

The field data is collected by a Crew, consisting of one Junior Technical Assistant (Crew Leader), a Deputy Ranger, two Fieldmen, a Khalasi and unskilled labourers engaged locally wherever necessary for showing the boundary of the village as well as helping in the survey work.

Each Crew Leader is provided with a list of villages to be tackled alongwith a set of 1:50,000 scale maps with location of villages duly marked. The Crew Leader is required to find the nearest convenient route so that they can reach the village with minimum traverse by jeep or on foot. After reaching the village the next job is to determine the boundary of the village. For this purpose, the maps of the Revenue department are referred and in addition the help of village level authorities are obtained. The unit of sampling is the whole of sample village. To begin the data collection it is necessary to select the starting/reference point preferrably centre of the village. This reference point/centre is not necessarily to be the centre of the area. The details of the location of the reference point/centre and its description are recorded in the village description form. This is very important to enable the checking crew to reach this point and commence checking.

After fixing the starting/reference point, the enumeration work is started from the reference point by dividing the entire village into suitable sized angular quadrants with the help of compass in such a way that enumeration within each angular quadrant could be completed in one working day. The size of each angular quadrant is decided by the Crew Leader accordingly. Enumeration of trees/bamboo is commenced from the line marking due North from the centre/reference point and is proceeded in clockwise direction (i.e. North to East).

This procedure is important to avoid duplication/ommision of trees when the enumeration work is continued on the next day. Further, all the enumerated trees are suit-

ably marked with chalk to achieve this objective. The informations regarding number of angular quadrants, the size of each angular quadrant and number of trees enumerated in each quadrant are recorded in the prescribed Field forms given below:

(1) Village Description Form
(2) Village Tree Enumeration Form
(3) District Tree Form

Samples of the above field forms may be seen in the Appendix-VI. The field forms are briefly described below:

(1) Village Description Form

The information regarding the conspicuous features of the point selected as the Centre for starting the enumeration, number of angular quadrant, Size of each angular quadrant and number of trees enumerated in each quadrant are recorded in this form.

(2) Village Tree Enumeration Form

In this form the data of all trees of 10 cms. and above diameter at breast height over bark [DBH(OB)] in a sampled village are recorded. The dead trees having utility less than 70% and all trees of less than 10 cms. diameter are ignored.

(3) District Tree Form

This form has to be filled in for each sampled village selected in the district.

While carrying out the survey, i.e. enumeration and measurement of trees, the category of each tree - indicating the type of plantation it belongs to is also recorded in the columns of Village Tree Enumeration Form. The definitions used for this classification are as under:

Farm Forestry: Trees along the farm bunds and in small patches up to 0.1 ha. in area.

Road side Plantation: For trees planted along the road side.

Village Woodlot: Naturally growing trees on community/ private land.

Block Plantation: Patches covering an area of more than 0.1 ha. and not falling in any of the above.

Ponds: For trees planted in and around water ponds.

Railway Lines: For trees planted along the railway lines.

Canals: Trees planted along the canals.

Rest: Trees not falling in any of the above categories.

CHAPTER 3

Data Processing

3.1 Processing of the Data

After completion of field work, the field forms of the villages surveyed were consolidated and checked for inconsistencies and Coding mistakes, if any. Forms for each village were then processed manually and information was filled in the tables. The species found in sample villages of Bhiwani district during survey are given in Appendix-III. Since many of the species in the region were having a very small number of trees, they were clubbed together under Miscellaneous species. Twenty main species were selected for calculating the number of stems on the basis of their numerical occurrance, commercial importance and regional importance. After manual processing of the data the tabulated data was then transferred to the data files in the Personal Computer (PC) using suitable softwares. The data files were then processed for making various tables in desired formats required to be incorporated in the Report.

3.2 Area Computation

Rural area of the district was calculated by adding up the areas of the villages given in the Census Book of 1981 of that district.

3.3 Procurement of Volume factors

Collection of felled tree data has been discontinued by zones, for developing volume equations. The volume factors have been obtained from the Logging Divisions and Territorial Forest Divisions of the State Forest Department of Haryana.

The volume factors used for different tree species have been given in the volume table at the end of this chapter.

3.4 Estimation Procedure

The estimation procedure is given below:

Let

x_i = area of the ith village

y_i = volume/no. of trees for the ith village

n = no. of sample villages in the district/state
N = total no. of villages in the district/state

$\bar{x} = \sum^{n} x_i/n$ = average area per village in the sample

$\bar{X} = \sum^{N} x_i/N$ = average area per village in the population (District/State)

$\bar{y} = \sum^{n} y_i/n$ = average volume/no. of trees in the sample

$\bar{Y} = \sum^{N} y_i/N$ = average volume/no. of trees in the population (District/State)

$A = \sum^{N} x_i$ = total area of all villages in the population (District/State)

Then the mean volume/no. of trees per unit area for the population (District/State) is given by

$$\hat{R} = \frac{\bar{Y}}{\bar{X}}$$

The estimate of R is the sample ratio

$$\hat{R} = \frac{\sum^{n} y_i}{\sum^{n} x_i} = \frac{\bar{y}}{\bar{x}}$$

The estimate of total volume/no. of trees in the population (District/State) is given by

$$\hat{T} = \frac{A * \bar{y}}{\bar{x}} = A * \hat{R}$$

Estimated variance of $\hat{R}$ is given by

$$\hat{V}(\hat{R}) = \frac{N - n}{N n \bar{x}^2} * \frac{1}{(n-1)} \left[\sum^{n} y_i^2 - 2\hat{R} \sum^{n} y_i x_i + \hat{R}^2 \sum^{n} x_i \right]$$

When N is large, then

$$\hat{V}(\hat{R}) = \frac{1}{n(n-1)\bar{x}^2}\left[\sum^{n} y_i^2 - 2\hat{R}\sum^{n} y_i x_i + \hat{R}^2\sum^{n} x_i\right]$$

Estimated variance of $\hat{T}$ is given by

$$\hat{V}(\hat{T}) = A^2 * \hat{V}(\hat{R})$$

$$\text{S.E. of } \hat{R} = \sqrt{\hat{V}(\hat{R})} \quad \text{and} \quad \text{S.E.\%} = \frac{\text{S.E.}}{\hat{R}} * 100$$

$$\text{S.E. of } \hat{T} = \sqrt{\hat{V}(\hat{T})} \quad \text{and} \quad \text{S.E.\%} = \frac{\text{S.E.}}{\hat{T}} * 100$$

Contents

Volume table - specieswise and dia-classwise

S.No.	Name of Species	10-20	20-30	30-40	40+
1	Acacia catechu	0.10	0.21	0.51	1.13
2	Acacia nilotica	0.06	0.14	0.57	1.13
3	Acacia torilis	0.06	0.14	0.57	1.13
4	Acacia spp.	0.06	0.14	0.57	1.13
5	Albizia spp.	0.06	0.14	0.57	1.13
6	Azadirachta indica	0.06	0.14	0.57	1.13
7	Bathemia sissoo	0.06	0.14	0.57	1.13
8	Eucalyptus spp.	0.10	0.41	0.95	1.71
9	Ficus spp.	0.06	0.14	0.57	1.13
10	Hemidesmus indicus	0.06	0.14	0.57	1.13
11	Holia azedarach	0.06	0.14	0.57	1.13
12	Ougeinia spp.	0.06	0.14	0.57	1.13
13	Pongamia spp.	0.07	0.35	0.73	1.36
14	Prosopis cineraria	0.06	0.14	0.57	1.13
15	Prosopis juliflora	0.06	0.14	0.57	1.13
16	Psidium guava	0.06	0.14	0.57	1.13
17	Salvadora spp.	0.06	0.14	0.57	1.13
18	Syzygium cumini	0.06	0.14	0.57	1.13
19	Tamarix aphylla	0.06	0.14	0.57	1.13
20	Zizyphus spp.	0.06	0.14	0.57	1.13
21	Misc. spp.	0.06	0.14	0.57	1.13

CHAPTER 4

Stand and Stock Tables

As per 1981 Census Bhiwani district has a total of 428 villages having an area of 5048.06 Sq. km. Out of these, 23 villages having an area of 240.93 Sq. km. were randomly selected and surveyed (see Appendix-IV).

During the course of inventory, data have been collected for trees having 10 cms. and above diameter only. The data collected from 23 villages have been statistically analysed for variability in respect of stand and stock parameters of trees and "number of trees/ha." and "volume/ha." The analysis shows that the estimated number of trees/ha. is 13.72 and the corresponding volume is 2.805 cum./ha. for the entire district of Bhiwani.

The distribution of total number of stems and stems/ha. as well as corresponding total volume and volume/ha. which have been estimated on the basis of survey for the entire district have been included as table nos. 1 to 6.

In the entire rural area of Bhiwani district 69.27 lakh trees having volume of 14.16 lakh cubic meters have been estimated and the distribution thereof is discussed below:

1. The distribution of total number of trees (estimated), speciesswise and dia-classwise (all categories combined), is given in table no. 1. The speciesswise distribution of total number of trees in the State has been estimated by ratio estimation method.

The analysis shows that, when all species are combined, the maximum number of the estimated trees occur in 10-20 cms. dia-class i.e. 36.51 lakh trees (52.71%) followed by 20.21 lakh trees (29.17%) in 20-30 cms. dia-class. 9.22 lakh trees (13.32%) in 30-40 cms. dia-class and 3.33 lakh trees (4.80%) in 40 cms. and above dia-class.

It also shows that in the rural area of Bhiwani district, when all the dia-classes are combined, Prosopis cineraria (Jandi) has the largest representation i.e. 29.89 lakh trees (43.14%), followed by Acacia nilotica 12.29 lakh trees (17.75%). Acacia tortilis 11.49 lakh trees (16.59%). Salvadora spp. 3.26 lakh trees (5.22%). Dalbergia sissoo 3.02 lakh trees (4.36%), Zizyphus spp.

3.62

2.05 lakh trees (2.96%) Eucalyptus spp 1.31 lakh trees (1.9%) and Azadirachta indica 0.96 lakh trees (1.38%). The representation of the rest of the species is less than 1% each.

2. The distribution of total number of trees (estimated), categorywise and dia-classwise (all species combined), is given in table no. 2.

It shows that, when all the dia-classes are combined, the representation of trees in Category-III - Village Woodlot is the highest i.e. 36.85 lakh trees (53.20%) followed by Category-I - Farm Forestry 12.83 lakh trees (18.52%). Category-IV- Block Plantations 11.63 lakh trees (16.79%), Category-VII- Canals 4.27 lakh trees (6.17%), Category-II - Roadside Plantations 2.64 lakh trees (3.81%). The representation of trees in Category-V - Ponds and Category-VI - Railway Lines and Category-VIII-Rest is found to be very poor i.e. less than 1%.

The dia-classwise distribution of total number of stems and percentage thereof, for combined categories, are the same as in table no. 1 i.e. dia-classwise total number of trees for all species combined as already described above in para 1.

Though the overall distribution of stems per hectare is 13.72, the dia-classwise distribution of stems per hectare is maximum in dia-class 10-20 cms. i.e. 7.23 followed by 4.00 in 20-30 cms dia-class, 1.83 in 30-40 cms. dia-class and 0.66 in 40 cms. and above dia-class.

3. The distribution of total number of estimated trees, specieswise and categorywise (all dia-classes combined), has been presented in table no. 3.

The specieswise total number of trees (all categories combined) and the percentage thereof are the same as in table no. 1 i.e. specieswise distribution of total number of trees for combined dia-classes as already described above in para 1.

Similarly, categorywise total number of trees estimated (all species combined) and the percentage thereof are also same as in table no. 2 i.e. categorywise total number of trees for combined dia-classes as described in para 2 above.

The analysis shows that the specieswise total number of estimated trees (in order of decreasing number) in the various prescribed categories are as under:

Category-I - Farm Forestry

As per the estimate, this category has a total number of 12.83 lakh trees (18.52%) in this category. It is mainly comprised of Acacia nilotica 5.57 lakh trees. Dalbergia sissoo 2.75 lakh trees, Acacia tortilis 1.02 lakh trees, Eucalyptus spp. 0.99 lakh trees. Zizyphus spp. 0.11 lakh trees Azadirachta indica 0.86 lakh trees, Morus spp. 0.36 lakh trees Ficus spp. 0.32 lakh trees. Prosopis juliflora 0.26 lakh trees, Albizia spp. 0.17 lakh trees. The remaining species are represented very poorly.

May/ol be written in decreasing order

Category-II - Roadside Plantation

As per the estimation there are 2.64 lakh trees (3.81%) in all, in this category. It is mainly represented by Acacia nilotica 1.49 lakh trees Prosopis cineraria 0.49 lakh trees, Acacia tortilis 0.42 lakh trees. The representation of the remaining species is very poor and hence not presented here.

Category-III - Village Woodlots

As per estimate, this category has a total number of 36.85 lakh trees (53.2%) which is the highest amongst all the categories. It is mainly comprised of Prosopis cineraria 28.90 lakh trees, Salvadora spp 3.08 lakh trees, Zizyphus spp. 1.85 lakh trees, Acacia nilotica 0.48 lakh trees, Acacia spp. 0.13 lakh trees. The remaining species have a poor representation.

Category-IV - Block Plantations

There are 11.63 lakh trees (16.79%) in all in this category. The main species forming bulk of the crop are Acacia tortilis 8.42 lakh trees, Acacia nilotica 1.77 lakh trees, Salvadora spp. 0.38 lakh trees, Prosopis cineraria 0.35 lakh trees, Eucalyptus spp. 0.23 lakh trees and Dalbergia sissoo 0.12 lakh trees. Representation of the remaining species being very poor are not mentioned here.

Category-V - Ponds

As per the estimate, there are only 0.42 lakh trees (0.60%) in this category. Acacia nilotica has 0.11 lakh trees. Other spp. are either absent or have a very poor representation.

Category-VI - Railway Lines

This category has 0.52 lakh trees (0.75%) in all. Acacia nilotica having 0.32 lakh trees and Acacia tortilis 0.16 lakh trees. The rest of the main spp. are either very poorly represented or are found to be absent in this district.

Category-VII - Canals

It is estimated that this category in total has 4.27 lakh trees (6.17%). The main species in this category are Acacia nilotica 2.54 lakh trees and Acacia tortilis 1.47 lakh trees. The representation of the rest of the spp. is very poor.

Category-VIII - Rest

The representation of main spp. in this category is either absent or very poor.

Analysis of Volume (Stock)

As per the estimate the entire rural area of Bhiwani district has a total volume (all species and dia-classes combined) of 14.16 lakh cubic meters corresponding to the estimated total of 69.27 lakh trees. The distribution of this stock is discussed below:

1. An assessment of dia-classwise and specieswise distribution of volume (all categories combined) has been presented in table no. 4. The dia-classwise total estimated volume of trees and percentage thereof (in decreasing order) of all species is as given below :

Dia-class 30-40 cms. having a volume of 5.27 lakh cubic meters (37.20%) followed by dia-class 40 cms. and above having a volume of 3.76 lakh cubic meter (26.58%)20-30 cms. having 2.90 lakh cubic meter (20.46%) and 10-20 cms. having volume of 2.23 lakh cubic meter (15.76%).

It also shows that the total volume per hectare contributed by trees of all species of all dia-classes combined is 2.805 cum. The volume per hectare for different dia-classes (in decreasing order) are as below:

30-40 cms. dia-class (1.043 cum.), 40 cms. and above dia-class (0.746cum),20-30cms. (0.574cum.)and 10-20 cms dia -class(0.442cum.).

It may also be seen from the said table that the bulk of the volume, for combined dia-classes, is mainly contributed by the following species (in decreasing order):

Prosopis cineraria 7.54 lakh cum. (53.27%). Acacia nilotica 1.98 lakh cubic meters (13.95%).Acacia tortilis 1.07 lakh cum. meter (7.59%). Salvadora spp. 0.96 lakh cum. meter (6.77%). Dalbergia sissoo 0.69 lakh cum. meter(4.88%).Zizyphus spp. 0.32 lakh cum. meter (2.24%). Azadarachta indica 0.27 lakh cum. meter (1.93%).Eucalyptus spp. 0.25 lakh cum. meter (1.74%). Ficus spp. 0.23 lakh cum. meter (1.65%). The volume contributed by the rest of species is very less.

2. The distribution of total volume (estimated), categorywise and dia-classwise (all species combined), is given in table no. 5.

It shows that, when all dia-classes are combined, category-III has the maximum volume of 9.16 lakh cubic metres (64.66%) followed by category-I having 2.33 lakh cubic metres (16.49%), category-VII having 0.93 lakh cubic metres (6.55%), category-IV having 0.92 lakh cubic metres (6.50%) and category-II having 0.62 lakh cubic metres (4.36%). The volume contributed by categories V,VI,and VIII have been found to be less than 1% each.

It also shows that the dia-classwise total volume of all categories combined and the percentage thereof are the same as in table no. 4 i.e. dia-classwise total volume of all species combined as described in para 1 above.

3. The distribution of total estimated volume, specieswise and categorywise (all dia-classes combined), is given in table no. 6.

The speciesswise total volume of trees (all categories combined) and the percentage thereof are the same as in table no. 4 i.e. speciesswise distribution of total volume of trees for combined dia-classes as described above in para 1.

Similarly, the categorywise total volume of trees (all species combined) and the percentage thereof are also same as in table no. 5 i.e. categorywise total volume of trees for combined dia-classes as described in para 2 above.

Table No. 1

Distribution of total number of Stems- Specieswise and Dia-classwise
(All Categories Combined)

Rural area of BHIWANI DISTT. 5048.06 Sq.Km.

S.No.	Name of Species	10-20	20-30	30-40	40+	Total	%age
1.	Acacia catechu	482	84	21	0	587	0.01
2.	Acacia nilotica	748085	326983	120224	33943	1229235	17.75
3.	Acacia spp.	33922	2766	147	84	36919	0.53
4.	Acacia tortilis	962239	142644	36247	8067	1149197	16.59
5.	Albizia spp.	13179	5595	3121	1760	23655	0.34
6.	Azadarachta indica	46703	23907	12530	12446	95586	1.38
7.	Dalbergia sissoo	156325	81275	43749	20659	302008	4.36
8.	Eucalyptus spp.	102709	25269	2578	901	131457	1.9
9.	Ficus sop.	15464	8550	5930	15798	45742	0.66
10.	Mangifera indica	1551	608	629	440	3228	0.05
11.	Melia azedarach	964	293	168	21	1446	0.02
12.	Morus spp.	22776	9701	4379	1131	37987	0.55
13.	Populus spp.	168	210	63	0	441	0.01
14.	Prosopis cineraria	1016276	1205537	610155	156536	2988504	43.14
15.	Prosopis juliflora	28768	4338	755	231	34092	0.49
16.	Psidium guvava	7249	147	42	0	7438	0.11
17.	Salvadora spp.	199509	78928	38323	45090	361850	5.22
18.	Syzygium cumini	3730	2074	859	356	7019	0.1
19.	Tamarix aphylla	293	273	461	733	1760	0.03
20.	Zizyphus spp.	139040	42576	15988	7312	204916	2.96
21.	Misc.spp.	151612	59108	26023	27092	263835	3.81
	Total	3651044	2020866	922392	332600	6926902	100
	%age	52.71	29.17	13.32	4.80	100.00	

Table No. 2

Distribution of total number of stems - Categorywise and dia-classwise

(All species combined)

Rural area of BHIWANI DISTRICT. 5048.06 Sq.Km.

S.No.	Category	10-20	20-30	30-40	40+	Total	% age
1	I	800529	306975	115700	59546	1282750	18.52
2	II	97094	108513	44965	13326	263898	3.81
3	III	1439869	1344600	673053	227731	3685253	53.20
4	IV	1064299	79161	12070	7376	1162906	16.79
5	V	20178	9974	6013	5573	41738	0.60
6	VI	36459	12907	1928	462	51756	0.75
7	VII	184675	155969	68264	18481	427389	6.17
8	VIII	7941	2767	399	105	11212	0.16
	TOTAL	3651044	2020866	922392	332600	6926902	100.00
	%age	52.71	29.17	13.32	4.80	100	
	Stems/ha.	7.23	4.00	1.83	0.66	13.72	

Table No. 3

Distribution of total number of Stems- Specieswise and Categorywise
(All Dia-classes Combined)

Rural area of BHIWANI DISTT. 5048.06 Sq.Km.

S.No.	Name of Species	I	II	III	IV	V	VI	VII	VIII	Total	%age
1	Acacia catechu	84	0	0	0	0	0	503	0	587	0.01
2	Acacia nilotica	557020	149034	48022	177467	11126	32120	253796	650	1229235	17.75
3	Acacia spp.	2263	63	31219	3353	0	0	21	0	36919	0.53
4	Acacia tortilis	102290	42491	0	842265	21	15589	146541	0	1149197	16.59
5	Albizia spp.	16762	1089	2116	1906	126	105	210	1341	23655	0.34
6	Azadarachta indica	86282	1090	231	1739	1675	252	3813	504	95586	1.38
7	Balbergia sissoo	274770	8654	168	11754	1152	503	4630	377	302008	4.36
8	Eucalyplus spp.	99629	315	0	22838	398	42	84	8151	131457	1.9
9	Ficus spp.	32057	566	8926	1384	2662	42	105	0	45742	0.66
10	Mangifera indica	3060	0	0	168	0	0	0	0	3228	0.05
11	Melia azedarach	1320	126	0	0	0	0	0	0	1446	0.02
12	Morus spp.	36352	84	21	399	21	63	1047	0	37987	0.55
13	Populus spp.	84	0	0	357	0	0	0	0	441	0.01
14	Prosopis cineraria	21	48819	2890425	35221	3415	818	9785	0	2988504	43.14
15	Prosopis juliflora	25793	482	587	2452	2116	252	2410	0	34092	0.49
16	Psidium guyava	3541	0	0	3855	0	0	42	0	7438	0.11
17	Salvadora spp.	0	7313	307665	38301	6454	1886	231	0	361850	5.22
18	Syzygium cumini	6809	0	0	210	0	0	0	0	7019	0.1
19	Tamarix aphylla	1152	63	440	21	0	0	84	0	1760	0.03
20	Zizyphus spp.	10518	1572	185218	4066	1069	42	2431	0	204916	2.96
21	Misc.spp.	22943	2137	210215	15150	11503	42	1656	189	263835	3.81
	Total	1282750	263898	3685253	1162906	41738	51756	427389	11212	6926902	100
	%age	18.52	3.81	53.2	16.79	0.60	0.75	6.17	0.16	100	

Table No. 4

Distribution of total volume (cum)- specieswise and dia-classwise

(All Categories Combined)

Rural area of BHIWANI DIST 5048.06 Sq.Km.

S.No.	Name of Species	10-20	20-30	30-40	40+	Total	%age	Vol./ha.
1	Acacia catechu	48.200	17.640	10.710	0.000	76.550	0.01	0
2	Acacia nilotica	44885.100	45777.620	68527.680	38355.590	197545.990	13.95	0.391
3	Acacia spp.	2035.320	387.240	83.790	94.920	2601.270	0.18	0.005
4	Acacia tortilis	57734.340	19970.160	20660.790	9115.710	107481.000	7.59	0.213
5	Albizia spp.	790.740	783.300	1778.970	1988.800	5341.810	0.38	0.011
6	Azadarachta indica	2802.180	3346.980	7142.100	14063.980	27355.240	1.93	0.054
7	Dalbergia sissoo	9379.500	11378.500	24936.930	23344.670	69039.600	4.88	0.137
8	Eucalyptus spp.	10270.900	10360.290	2449.100	1540.710	24621.000	1.74	0.049
9	Ficus spp.	927.840	1197.000	3380.100	17851.740	23356.680	1.65	0.046
10	Mangifera indica	93.060	85.120	358.530	497.200	1033.910	0.07	0.002
11	Melia azedarach	57.840	41.020	95.760	23.730	218.350	0.02	0
12	Morus spp.	1366.560	1358.140	2496.030	1278.030	6498.760	0.46	0.013
13	Populus spp.	11.760	73.500	45.990	0.000	131.250	0.01	0
14	Prosopis cineraria	60976.560	168775.180	347788.350	176885.680	754425.770	53.27	1.4[illegible]
15	Prosopis juliflora	1726.080	607.320	430.350	261.030	3024.[illegible]	0.21	0.006
16	Psidium guyava	434.940	20.580	23.940	0.000	[illegible].350	0.03	0.001
17	Salvadora spp.	11970.540	11049.920	21844.11	50951.700	95816.270	6.77	0.19
18	Syzygium cumini	223.800	29[illegible]0	489.630	402.280	1406.070	0.10	0.003
19	Tamarix aphylla	17.[illegible]	38.220	262.770	828.290	1146.860	0.08	0.002
20	Ziz[illegible] spp.	8342.400	5960.640	9113.160	8262.560	31678.760	2.24	0.063
21	Mi[illegible] spp.	9096.720	8275.120	14833.110	30613.960	62818.910	4.44	0.124
	Total	223191.960	289793.850	526751.900	376360.580	1416098.290	100.00	2.805
	%age	15.76	20.46	37.20	26.58	100.00		
	Vol./ha.	0.442	0.574	1.043	0.746	2.805		

Contents

Table no.5

Distribution of total volume(cum) - Categorywise and Dia-classwise

(All species combined)

Rural area of BHIWANI DISTT. 5048.06 SQ.Km.

S.No.	Category	10-20	20-30	30-40	40+	Total	% age
1	I	51163.490	48203.700	66516.540	67615.260	233498.990	16.49
2	II	5831.520	15220.170	25653.990	15058.380	61764.060	4.36
3	III	86392.140	188244.000	383640.210	257336.030	915612.380	64.66
4	IV	64591.470	12014.940	7236.980	8517.000	92360.390	6.52
5	V	1217.400	1458.460	3427.410	6297.490	12400.760	0.88
6	VI	2187.540	1812.650	1106.940	522.060	5629.190	0.40
7	VII	11098.940	21852.880	38910.480	20883.530	92745.830	6.55
8	VIII	709.460	987.050	259.350	130.830	2086.690	0.15
	TOTAL	223191.960	289793.850	526751.900	376360.580	1416098.290	100.00
	%age	15.76	20.46	37.20	26.58	100.00	

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Table No. 6

Distribution of totalvolume(cum)- Specieswise and Categorywise
(All Dia-classes Combined)

Rural area of BHIWANI DISTT. 5048.06 Sq.Km.

S.No.	Name of Species	I	II	III	IV	V	VI	VII	VIII	Total	%age
1.	Acacia catechu	17.010	0.000	0.000	0.000	0.000	0.000	59.540	0.000	76.55	0.01
2.	Acacia nilotica	82899.120	35649.840	7034.380	11686.300	1686.720	2961.800	55568.040	59.790	197545.99	13.95
3.	Acacia spp.	270.520	3.780	2019.270	306.440	0.000	0.000	1.260	0.000	2601.27	0.18
4.	Acacia tortilis	10421.420	8463.840	0.000	54971.850	1.260	1546.890	32075.740	0.000	107481	7.59
5.	Albizia spp.	3714.960	608.420	353.590	415.750	12.600	22.050	108.150	106.290	5341.81	0.38
6.	Azadarachta indica	25130.220	397.540	15.540	553.430	542.360	75.810	487.880	152.460	27355.24	1.93
7.	Dalbergia sissoo	59983.360	3455.310	56.280	3770.340	350.350	47.610	1343.020	33.330	69039.6	4.88
8.	Eucalyptus spp.	18140.560	117.600	0.000	4592.940	111.100	28.560	21.420	1608.820	24621	1.74
9.	Ficus spp.	15476.590	336.340	4799.720	1123.760	1521.570	47.460	51.240	0.000	23356.68	1.65
10.	Mangifera indica	1006.400	0.000	0.000	27.510	0.000	0.000	0.000	0.000	1033.91	0.07
11.	Melia azedarach	167.950	50.400	0.000	0.000	0.000	0.000	0.000	0.000	218.35	0.02
12.	Morus spp.	6286.080	6.720	1.260	90.300	1.260	3.780	109.360	0.000	6498.76	0.46
13.	Populus spp.	19.740	0.000	0.000	111.510	0.000	0.000	0.000	0.000	131.25	0.01
14.	Prosopis cineraria	1.260	9680.870	736373.450	4485.000	1691.440	293.650	1900.100	0.000	754425.77	53.27
15.	Prosopis juliflora	2258.330	75.540	36.900	209.490	142.710	62.370	239.440	0.000	3024.78	0.21
16.	Psidium guyava	242.280	0.000	0.000	234.660	0.000	0.000	2.520	0.000	479.46	0.03
17.	Salvadora spp.	0.000	2009.100	86396.300	5167.270	1597.710	488.600	157.290	0.000	95816.27	6.77
18.	Syzygium cumini	1360.290	0.000	0.000	45.780	0.000	0.000	0.000	0.000	1406.07	0.10
19.	Tamarix aphylla	660.160	59.430	354.610	1.260	0.000	0.000	71.400	0.000	1146.86	0.08
20.	Zizyphus spp.	1242.040	251.110	29296.610	387.390	200.220	23.940	277.450	0.000	31678.76	2.24
21.	Miscellaneous	4200.700	598.220	48874.470	4179.410	4541.460	26.670	271.980	126.000	62818.91	4.44
	Total	233498.99	61764.06	915612.38	92360.39	12400.76	5629.19	92745.83	2086.69	1416098.29	100.00
	%age	16.49	4.36	64.66	6.52	0.88	0.40	6.55	0.15	100.00	

Contents

Appendix-I

List of villages selected for Pilot Survey in Haryana State.

S.No.	Name of the village	Area of Village (Ha.)
1.	Baghana	1479.51
2.	Baidwala	1416.38
3.	Bhandari	677.00
4.	Dhatoo	583.00
5.	Dondkalan	2353.00
6.	B. Busna	248.00
7.	B. Tauru	184.94
8.	Dachaur	2728.00
9.	Dighal	2211.00
10.	Dobhi	2896.00
11.	Gorakhpur	4370.00
12.	Gurauthi	1720.00
13.	Haliaki	480.00
14.	Kalnaur	2762.00
15.	Khandal heri	2324.00
16.	Kharkhara	979.00
17.	Kona	266.28
18.	Kuramanwali	1479.00
19.	K.Lakhasingh	110.00
20.	Lalheri	267.09
21.	Mammonmaira	199.51
22.	Mohammedpur	1731.00
23.	Nandgaon	825.14
24.	Nathusari	1741.00
25.	Phadani	208.00
26.	Ratpur	130.00
27.	Saundhad	2753.00
28.	Shampura	1017.00
29.	Shoadapur	316.05
30.	Siwara	1126.00
31.	Sulehra	572.00
	Total	40182.90

Appendix - II

Districtwise number of the villages selected for Inventory Survey in Haryana State.

S.No.	Name of the District	Total no. of villages in the District	No. of villages selected for survey
1.	Ambala	1306	39
2.	Bhiwani	428	23
3.	Faridabad	505	11
4.	Gurgaon	721	14
5.	Hisar	510	33
6.	Jind	354	16
7.	Kurukshetra	743	20
8.	Karnal	634	18
9.	Mohindergarh	743	16
10.	Rohtak	458	19
11.	Sirsa	323	21
12.	Sonipat	348	11
	Total	7073	241

Appendix - III

List of species found in Sample villages in Bhiwani district.

S.No.	Botanical name	Common name
1	2	3
1.	Acacia catechu	Khair,Velsundra
2.	Acacia lenticularis	Safed babul, Amiar, Kanti, Gohira
3.	Acacia nilotica	Babul, Kikar, Bawar, Baval
4.	Acacia tortilis	Israeli kikar
5.	Acacia spp.	
6.	Aegle marmelos	Bel, Belpara, Bil, Billi
7.	Ailanthus excelsa	Maharukh, Ardusa,Butazod, Arru,Dhella
8.	Albizia lebbek	Kala siris, Kalbage, Koko, Siris, Bhander, Sarsaoda
9.	Albizia procera	Safed siris/siras, Karha, Karhar, Karhai
10.	Albizia spp.	Moroi,Mog.Kunis,Pujala, Kako,Miharu,Sundi
11.	Azadirachta indica	Neem, Nimbo, Nibbaro, Vepa
12.	Bauhinia spp.	Kachnar, Papri, Jhingora
13.	Bombax ceiba	Semal,Simul,Semer,Savar
14.	Cassia fistula	Amaltas, Bahra, Bhawa, Sonari
15.	Cassia siamea	Minjari,Nellatangedu
16.	Citrus spp.	Lemon
17.	Cordia spp.	Lassora, Bairula, Borala
18.	Daemonoropis jenkinsianis	
19.	Dalbergia sissoo	Sisoo, Shisham, Tahli
20.	Delonix regia	Gulmohar, Krishnachura, Golmohan
21.	Eucalyptus spp.	Nilgiri, Safeda
22.	Ficus bengalensis	Bargat, Bad, Fig
23.	Ficus religiosa	Pipal, Pipli, Papada, Pripari
24.	Ficus spp.	Anjar, Akhar, Budita
25.	Flacourtia indica	Kakai,Kangu
26.	Mangifera indica	Am, Amb, Ambo, Mavu, Moru
27.	Melia azedarach	Bijain, Baknia, Betain, Bakain
28.	Moringa spp.	Sajna, Sohjna, Sanjna, Saijna
29.	Morus spp.	Tut, Kimu, Shahtoot

30.	Populus spp.	Banpipal, Godhpipal, Pahari Pipal
31.	Prosopis cineraria	Jand, Jant
32.	Prosopis juliflora	Juliflora
33.	Prosopis spp.	Pahari kikar
34.	Prunus spp.	Aru, Aria, Gont, Khurmani
35.	Psidium guyava	Amrud
36.	Pterospermum canesc	Hathipalli
37.	Salvadora spp.	Jal, Jhal
38.	Syzygium cumini	Jamun, Jamoon, Jamak
39.	Tamarindus indica	Imli, Amli, Ambli, Chinch
40.	Tamarix aphylla	France, Farash
41.	Tecomella undulata	
42.	Zizyphus spp.	

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Appendix-IV

List of the villages surveyed in Bhiwani District.

S.No.	Name of the village	Name of Tehsil	Area (Ha.)	Map sheet No.
1.	Siwara	Bhiwani Khera	1126.00	53D/1
2.	Bond Kalan	Dadri	2353.00	53D/5
3.	Nandgaon	Bhiwani	825.14	53D/2
4.	Pahladgarh	Bhiwani	637.78	53D/2
5.	Baola	Bhiwani	1681.04	53D/1
6.	Bisalwas	Loharu	845.00	44D/15
7.	Salmwas	Dadri	760.00	53D/2
8.	Budhsaili	Loharu	1174.00	44P/9
9.	Premnagar	Bhiwani	806.53	53D/1
10.	Jhinjar	Dadri	1203.00	53D/6
11.	Dandma	Dadri	953.00	44P/14
12.	Chhapar	Dadri	2115	53D/2
13.	Jitwanawas	Bhiwani	793.00	44P/14
14.	Bardu Chaina	Loharu	851.00	44P/14
15.	Khorda Khorra	Dadri	979.00	44P/14
16.	Dhana Ladanpur	Bhiwani	751.09	53P/1
17.	Kaila	Bhiwani	1061.00	53D/5
18.	Ashawari	Dadri	968.00	53D/2
19.	Jagramwas	Dadri	660.00	44P/14
20.	Kailali	Dadri	501.80	53D/2
21.	Garera	Bhiwani khera	1653.00	44P/9
22.	Unnear Badhwana	Dadri	677.00	53D/3
23.	Bond Khurd	Dadri	719.00	53D/5
	Total		24093.38	

Appendix - V

Definitions of Categories

Code No.	Category	Definition
1.	Farm forestry	Trees along the farm bunds and in small patches upto 0.1 ha. in area.
2.	Roadside plantation	Trees planted along the roadside.
3.	Village woodlot	Naturally growing trees on private/ community land.
4.	Block Plantation	Block plantation having an area of more than 0.1 ha. and not falling in any of the above categories.
5.	Ponds	Trees planted in and around water ponds.
6.	Railway lines	Trees planted along the railway lines.
7.	Canals	Trees planted along the canals.
8.	Rest	Trees not falling in any of the above categories.

APPENDIX-VI

FIELD FORMS

Contents

DISTRICT TREE FORM

(ABSTRACT OF ENUMERATION IN SAMPLE VILLAGES)

JOB NO.	CARD DESIGN NO.	STATE	DISTRICT	NO. OF VILLAGES IN THE DISTRICT	NO OF SAMPLE VILLAGES IN THE DISTT.	TOTAL AREA OF THE VILLAGES IN THE DISTT. (Km^2)	SAMPLE VILLAGE	GEOGRAPHICAL AREA OF THE SAMPLE VILL. (Hect.)	CATEGORY OF THE SAMPLE VILLAGE
1-3	4-6	7-8	9-10	11-15	16-17	18-22	23-27	28-31	32

Number Of Trees In The Sample Village According To Category Of The Plantation / Trees

FARM FORESTY	ROAD SIDE PLANTATION	VILLAGE WOODLOT	BLOCK PLANTATION	PONDS	RAILWAY LINES	CANALS	REST	TOTAL
33-36	37-40	41-44	45-48	49-52	53-56	57-60	61-64	65-70

DATE ..... 199..

Page No. .....
Total No. Of Pages .....

Sign Of Crew Leader .....
Name Of Crew Leader .....

VILLAGE DESCRIPTION FORM

1. State and code
2. Division and code
3. District and code
4. Mapsheet and code
5. Name of the Village
6. Area of the Village
7. Crew Leader (Name)
8. Date of commencement of survey
9. Date of completion of survey
10. Conspicuous feature selected as the centre for starting the survey
11. Description of this centre and approach to this point
12. Number of angular quadrants into which the area of village has been divided (give size of quadrants in degrees)
13. Compassing done by
14. Tree enumeration done by
15. Height measurements taken by

P.T.O.

गाँव वृक्ष गणन फार्म/VILLAGE TREE ENUMERATION FORM

जॉब संख्या Job No.	कार्ड रूप रेखा Card design	राज्य State	जिला District	प्रतिदर्श गाँव Sample Vill.	Geographical Area of the Sample Village (Hect.) प्रतिदर्श गाँव का भौगोलिक क्षेत्र हैक्ट.
1-3	4-6	- 7-8	9-10	11-15	16-19

वृक्षों का कुल संख्या Total No. of Trees
- 42.47

स्पीशिज/जाति SPECIES नाम Name	कोड Code	डी बी एच ओ बी (सें.मी.) DBH OB (Cm.)	वृक्ष की ऊंचाई (मी.) Tree Height (Mt.)	क्लीयर बोल/स्पष्ट प्रतना (मी.) Clear Bole (Mt.)	पौध रोपण/वृक्षों का वर्ग Category of Plantation/Trees	स्पीशिज/जाति SPECIES नाम Name	कोड Code	डी बी एच ओ बी (सें.मी.) DBH OB (Cm.)	वृक्ष की ऊंचाई (मी.) Tree Height (Mt.)	क्लीयर बोल/स्पष्ट प्रतना (मी.) Clear Bole (Mt.)	पौध रोपण/वृक्षों का वर्ग Category of Plantation/Trees
	20-22	23-25	26-27	28-29			31-33	34-36	37-38	39-40	14

दिनांक 19
Date.......................19

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हस्ताक्षर दल नायक.......................
Sig. of Crew Leader......................
नाम दल नायक.............................
Name of Crew Leader ....

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