

9.9 HARYANA

9.9.1 Introduction

The state of Haryana, with a geographical area of 44,212 km², lies between 27°39' N - 30°55' N latitude and 74°27'E - 77°36' E longitude. Physiographically, the state is divided into three zones, viz. the Shiwaliks, the Aravalli hills and the Indo-Gangetic plains. Agriculture is the main occupation of the population with more than 80% of land area in the state under agriculture. Climate of the state varies from moist sub-tropical in north bordering Himachal Pradesh to arid in southern part bordering Rajasthan. The

annual rainfall varies from 213 mm in south-west to 1,400 mm in the north-east and the temperature ranges between 1°C to 45°C.

The population of the state is 25.35 million (*Census 2011*) which constitutes 2.09% of the country's population. Of this, rural population is 65.21% and urban population 34.79%. The population density is 573 persons per km². The livestock population is 8.86 million (*Livestock Census 2007*).

Land use pattern of the state is given in Table 9.9.1.

Table 9.9.1: Land Use Pattern

Land Use	Area in '000 ha	Percentage
Total geographical area	4,421	
Reporting area for land utilization	4,371	100.00
Forests	40	0.92
Not available for cultivation	573	13.11
Permanent pastures and other grazing lands	30	0.69
Land under misc. tree crops and groves	12	0.28
Culturable wasteland	29	0.67
Fallow lands other than current fallows	5	0.12
Current fallows	105	2.40
Net area sown	3,576	81.81

Source: *Land Use Statistics, Ministry of Agriculture, GOI, 2008-09.*

9.9.2 Recorded Forest Area

The recorded forest area is 1,559 km² which is 3.53% of the geographical area of the state. Reserved Forests constitute 15.97%, Protected Forests 74.28% and Unclassed Forests 9.75%. Most of the road side plantations in the state have been notified as Protected Forests.

9.9.3 Protected Areas

An area of 303.92 km² is being managed as protected area under two National Parks and 8 Wildlife Sanctuaries. This constitutes 0.69% of the state's geographical area. The state has taken an initiative in conserving the depleting population of vultures by establishing a conservation centre at Pinjore.

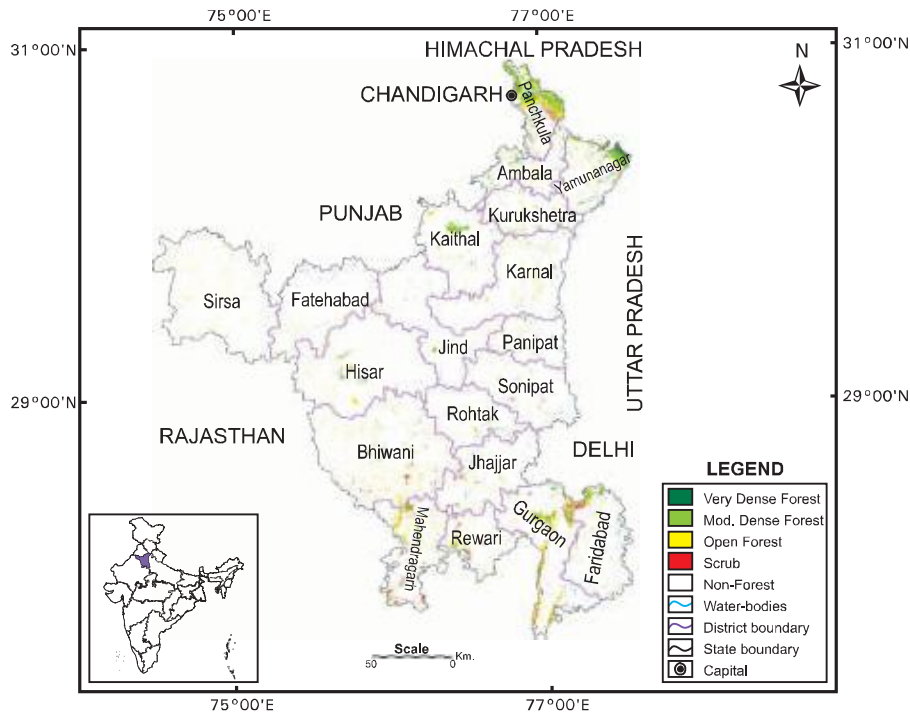
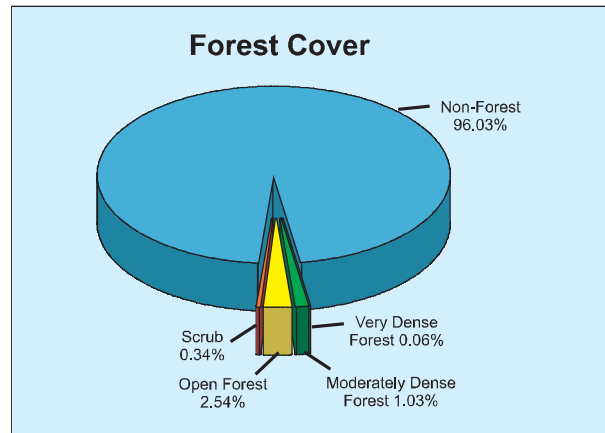


Fig 9.9 Forest cover map of Haryana

9.9.4 Forest Cover

The forest cover in the state, based on interpretation of satellite data of October-November 2008, is 1,608 km² which is 3.64% of the state's geographical area. In terms of forest canopy density classes, the state has 27 km² very dense forest, 457 km² moderately dense forest and 1,124 km² open forest. The forest cover of the state is shown in Fig. 9.9.



District-wise forest cover in different canopy density classes along with the changes

compared to 2009 assessment and scrub are given in Table 9.9.2.

Table 9.9.2: District-wise Forest Cover (Area in km²)

District	Geographical Area	2011 Assessment				Percent of GA	Change	Scrub
		Very Dense Forest	Mod. Dense Forest	Open Forest	Total			
Ambala	1,574	0	16	29	45	2.86	1	0
Bhiwani	4,778	0	14	138	152	3.18	5	20
Faridabad	2,151	0	28	65	93	4.32	0	17
Fatehabad	2,538	0	2	16	18	0.71	0	0
Gurgaon	2,766	0	50	181	231	8.35	2	44
Hisar	3,983	0	13	29	42	1.05	0	1
Jhajjar	2,702	0	3	29	32	1.18	0	4
Jind	1,834	0	5	15	20	1.09	0	0
Kaithal	2,520	0	36	39	75	2.98	3	0
Karnal	2,317	0	5	36	41	1.77	4	0
Kurukshetra	1,530	0	10	17	27	1.76	-2	1
Mahendragarh	1,859	0	16	55	71	3.82	1	25
Panchkula	1,268	6	151	243	400	31.55	0	25
Panipat	898	0	4	13	17	1.89	-1	1
Rewari	1,745	0	8	45	53	3.04	2	10
Rohtak	1,582	0	3	18	21	1.33	-2	0
Sirsa	4,277	0	3	52	55	1.29	-1	0
Sonipat	2,122	0	4	17	21	0.99	1	1
Yamunanagar	1,768	21	86	87	194	10.97	1	1
Grand Total	44,212	27	457	1,124	1,608	3.64	14	150

Comparison of current assessment with the previous assessment shows a gain of 14 km² of forest cover.

Reasons for Change detected in 2011 Assessment

Changes reported in current assessment, which have been validated through ground

truthing of selected sample points in the field, are mainly due to enhanced plantation activities undertaken in recent past by the State Forest Department and spurt in agroforestry practices in the state.

Table 9.9.3: Forest Cover Change Matrix (Area in km²)

2009 Assessment	2011 Assessment					Total 2009
	VDF	MDF	OF	Scrub	NF	
Very Dense Forest	27	0	0	0	0	27
Moderately Dense Forest	0	457	1	0	5	463
Open Forest	0	0	1,087	2	15	1,104
Scrub	0	0	6	133	6	145
Non-Forest	0	0	30	15	42,428	42,473
Total 2011	27	457	1,124	150	42,454	44,212
Net Change	0	-6	20	5	-19	

The change matrix given in Table 9.9.3 reveals that there has been an increase of 20 km² in open forest and a decrease of 6 km² in the moderately dense forest. There is no change in the category of very dense forest.

9.9.5 Altitude Zone-wise Forest Cover

Forest cover of the state in different altitude zones is given in Table 9.9.4.

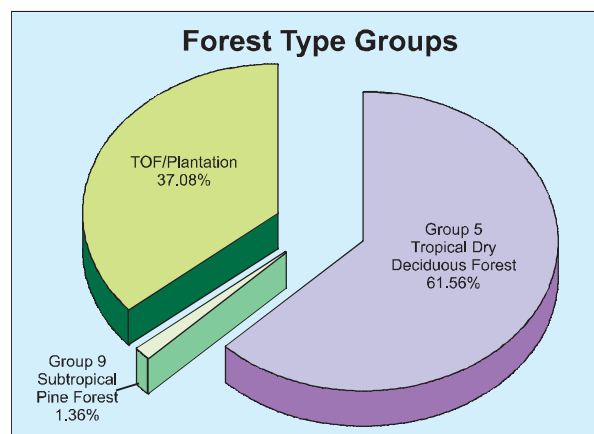
Table 9.9.4: Altitude Zone-wise Forest Cover (Area in km²)

Altitude Zone	VDF	MDF	OF	Total
0-500m	16	337	972	1,325
500-1000m	11	100	133	244
1000-2000m	0	20	19	39
Total	27	457	1124	1,608

(Based on SRTM, Digital Elevation Model)

9.9.6 Forest Cover in Different Forest Types

Forest type mapping using satellite data has been undertaken by Forest Survey of India with reference to Champion & Seth's Classification. As per this assessment, the state has four forest types which belong to two forest type groups, viz. Tropical Dry Deciduous and Subtropical Pine Forests. Percentage-wise distribution of forest cover in different forest type groups found in the state is given in the pie diagram.



9.9.7 Tree Cover

Tree cover of the state has been estimated using TOF inventory data collected over a period of six years, i.e. 2004-2010. The

estimated tree cover in the state is 1,395 km² which is 3.16% of the geographical area of the state. The forest and tree cover of the state is presented in Table 9.9.5.

Table 9.9.5: Forest and Tree Cover (Area in km²)

Category	Area	% of Geographical Area
Tree Cover	1,395	3.16
Forest Cover	1,608	3.64
Forest & Tree Cover	3,003	6.80

9.9.8 Growing Stock

The growing stock in the recorded forest area has been estimated on the basis of the current forest cover map, forest type map and forest

inventory data. For trees outside forests (TOF), the same has been estimated using TOF inventory data. It is presented in the Table 9.9.6.

Table 9.9.6: Growing Stock (million cum)

Forest	TOF	Total
4.893	15.268	20.161

9.9.9 Bamboo

The extent of bamboo bearing area in the forest

area of the state is 19 km². Density-wise occurrence is given in Table 9.9.7.

Table 9.9.7: Bamboo bearing area by density in recorded forest area (Area in km²)

Recorded Forest Area	Pure bamboo	Dense bamboo	Scattered bamboo	Clumps hacked	Bamboo regeneration	No bamboo
1,559	0	3	9	7	0	1,540