

7.22 PUNJAB

7.22.1 Introduction

Punjab, an intensively cultivated State having more than 84% area under agriculture, is situated in the north-western part of the country. It has a geographical area of 50,362 km² and lies between latitude 29°33' and 32°32' N and longitude 73°53' and 76°56' E. Punjab shares its boundaries with Jammu & Kashmir in the north, Himachal Pradesh in the north-east and Haryana and Rajasthan to its south. The State also shares 300 km long international border with Pakistan on the western side. Physiographically, the State can be divided into three regions viz Mountainous Himalayas, Sub-Mountainous Himalayas and Eastern & Western Alluvial Plains.

Satluj, Beas, Ravi and Ghaggar are four important rivers of the State. The State has a subtropical climate with hot summers and cold winters. The minimum temperature in winter falls to 0°C and the maximum in summer touches 47°C. The average annual rainfall varies from 480 mm in plains to 960 mm in the hilly region.

As per Census 2001, the total population of the State is 24.29 million of which the rural population constitute 66.10%. The population density is 484 persons per km². The projected population of the State is 27.05 million (as projected by the Office of RGI) for 2009 which constitutes 2.32% of the country's population. The livestock population of the State is 8.61

million (Livestock Census 2003), which has decreased by nearly 15% since the census of 1992.

Land use pattern of the State is given in Table 7.22.1.

7.22.2 Recorded Forest Area

The recorded forest area of the State is 3,058 km² which is only 6.07 % of State's geographical area. Reserved Forests constitute 1.44%, Protected Forests 37.70% and the Unclassed Forests 60.86% of the total forest area.

7.22.3 Protected Areas

Punjab has a total of 12 Wildlife Sanctuaries and two Conservation Reserves spread over an area of 340 km², constituting 0.68% of the geographical area. The natural and man-made wetlands constitute about 0.31% of the State's area. The State has three internationally recognized wetlands at Harike, Kanjli and Ropar which have been declared as Ramsar Sites.

7.22.4 Joint Forest Management

Joint Forest Management started in the State in 1993. There are 1,224 JFM Committees managing about 0.18 million ha of forest area, which is about 58% of the forest area of the State. More than 91,000 families are involved in this programme.

Source: MoEF, 2005.

Table 7.22.1: Land use pattern

Land Use	Area in '000 ha	Percentage
Total geographical area	5,036	
Reporting area for land utilization	5,033	100.00
Forests	308	6.12
Not available for cultivation	450	8.94
Permanent pastures and other grazing lands	4	0.08
Land under misc. tree crops & groves	4	0.08
Culturable wasteland	9	0.18
Fallow lands other than current fallows	0	0.00
Current fallows	13	0.26
Net area sown	4,243	84.30

Source: Land Use Statistics, Ministry of Agriculture, GOI, 2006.

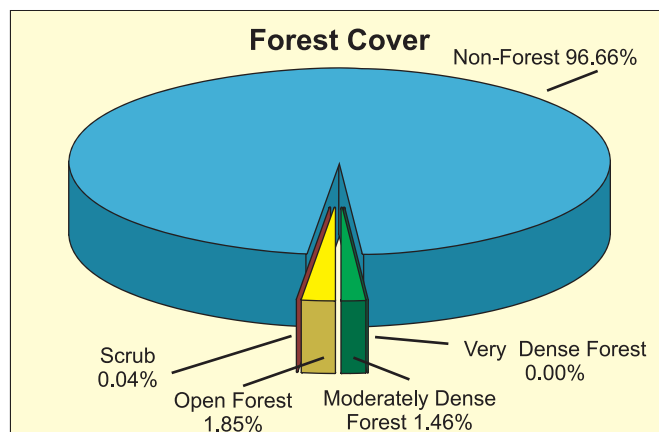
7.22.5 Forest Cover

The forest cover in the State, based on interpretation of satellite data of Oct 2006-Jan 2007, is 1,664 km², which is 3.30% of the State's geographical area. In terms of forest canopy density classes, the State has 733 km² moderately dense forest and 931 km² open forest. The distribution of forest cover of the State is shown in Fig. 7.22.

Comparison of the current forest cover (satellite data of Oct 2006 - Jan 2007) with the previous assessment (satellite data of Oct - Nov 2004) shows a gain of 4 km² of forest cover.

The change matrix, given in Table 7.22.2, reveals that there has been a decrease of 5 km² in the moderately dense forest and an increase of 9 km² in open forest.

On the basis of ground truthing by the officials of FSI, main reasons for increase in forest cover were



plantation in private lands and road sides plantations in the districts of Amritsar, Bathinda, Firozpur, Mansa, Muktsar and plantations in the airport area of Amritsar district.

District wise forest cover in different canopy density classes and scrub along with the changes compared to 2005 assessment is given in the Table 7.22.3.

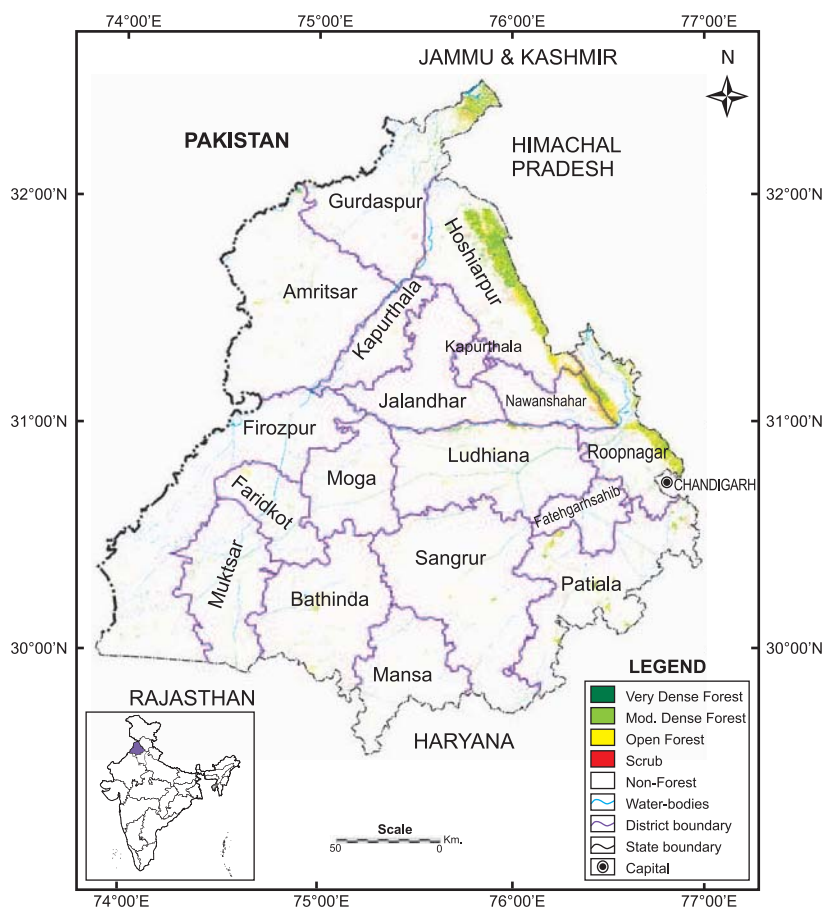


Fig. 7.22 : Forest cover map of Punjab

Table 7.22.2: Forest cover change matrix

(area in km²)

2005 Assessment (Data of Oct - Nov 2004)	2007 (Data of Oct 2006 - Jan 2007)					Total of 2005
	VDF	MDF	OF	Scrub	NF	
Very Dense Forest	0	0	0	0	0	0
Moderately Dense Forest	0	721	3	0	14	738
Open Forest	0	1	912	0	9	922
Scrub	0	0	1	18	1	20
Non-Forest	0	11	15	2	48,654	48,682
Total of 2007	0	733	931	20	48,678	50,362
Net Change	0	-5	9	0	-4	

Table 7.22.3: District-wise forest cover in 2007

Number of districts: 17

(area in km²)

District	Geographical area	Very dense forest	Mod. dense forest	Open forest	Total	% of G.A.	Change*	Scrub
Amritsar	5,088	0	15	14	29	0.57	5	0
Bathinda	3,353	0	10	28	38	1.13	2	1
Faridkot	1,458	0	5	7	12	0.82	0	0
Fatehgarh Sahib	1,180	0	1	0	1	0.08	-1	0
Firozpur	5,874	0	11	7	18	0.31	1	0
Gurdaspur	3,551	0	94	84	178	5.01	-1	5
Hoshiarpur	3,386	0	355	328	683	20.17	-1	3
Jalandhar	2,624	0	2	2	4	0.15	0	3
Kapurthala	1,633	0	1	3	4	0.24	0	0
Ludhiana	3,578	0	34	29	63	1.76	-3	0
Mansa	2,198	0	1	2	3	0.14	1	0
Moga	1,689	0	0	7	7	0.41	0	0
Muktsar	2,593	0	13	4	17	0.66	1	0
Nawanshahar	1,282	0	24	86	110	8.58	-1	3
Patiala	3,654	0	36	50	86	2.35	1	2
Roopnagar	2,113	0	126	261	387	18.32	0	3
Sangrur	5,108	0	5	19	24	0.47	0	0
Total	50,362	0	733	931	1,664	3.30	4	20

* Change compared to 2005 assessment (revised).

7.22.6 Altitude Zone wise Forest Cover

Forest cover of the State in different altitude zones is given in Table 7.22.4.

Table 7.22.4: Altitude zone wise forest cover

(area in km²)

Altitude Zone	VDF	MDF	OF	Total
0-500m	0	530	785	1,315
500-1000m	0	203	146	349
Total	0	733	931	1,664

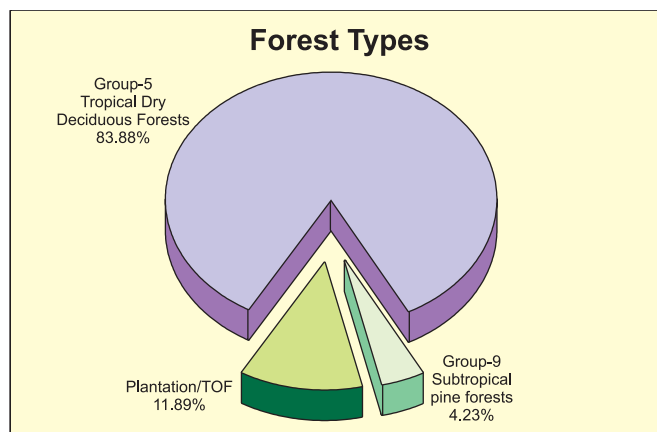
(based on SRTM Digital Elevation Model)

7.22.7 Forest Cover in different Forest Types

As per Champion & Seth Classification, the State has 5 forest types which belong to 2 forest type groups viz Tropical Dry Deciduous and Subtropical Pine Forests. Distribution of forest cover in different forest type groups found in the State is given in the pie diagram.

7.22.8 Tree Cover

Tree cover of the State has been estimated using sample data of TOF inventory collected over a period of six years i.e. 2002-08. The estimated tree cover in the State is 1,699 km² which is 3.37% of the geographical area of the State. Four districts of the State



(Amritsar, Kapurthala, Muktasar and Rupnagar) have been inventoried. The forest and tree cover of the State is presented in the Table 7.22.5.

Table 7.22.5: Forest & tree cover

(area in km²)

Category	Area	% of Geographical area
Tree Cover	1,699	3.37
Forest Cover	1,664	3.30
Forest & Tree Cover	3,363	6.67