



# Land Use Pattern and Tribal Livelihood: A Geographical Study of Mid- Indian Tribal Belt of Madhya Pradesh

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## Abstract

Land use and land cover change have been most important perceptible change around us. Millions of tribal's live in forest and near to protected area. Their food security and livelihood almost depend on forest and land this paper aims to provide a comprehensive introduction about the land and tribe relationship. The study region comprises of 19 districts<sup>2</sup> of the State. This region of Madhya Pradesh is known as mid-Tribal –Belt of the country. The major part of the study area lies in the Son – Narmada basins, also including parts of the Tapi basin, Wainganga basin and a fraction of Mahi basin. It is presumed that the land use pattern is a significant factor in influencing the sustainability of land.

The aim of the paper is to also examine the land use pattern of the study area in context of sustainability of agricultural land of the region. Based on the availability of data that may be used to measure sustainability of agricultural land in this region, attention has been paid to the pattern of density of net sown area and cropping intensity as indices of sustainability of agriculture in the region. The paper is based on conventional primary and secondary sources of data with relevant methodology.

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**Key Words:** Livelihood, Mid-Indian Tribal Belt, Regionalization, Sustainability, Wild Crops

## I. Introduction:

Tribal Groups have the complex interaction with environment and they live in close context to land resource thus have the unique

perspective on land. Agriculture is the main occupation of Tribal groups of Madhya Pradesh. This tribal belt has Gond, Baiga, Bhariya, Madhiya, Kol, Korku and Halba. The paper presents an overview of the spatial pattern of the land utilization, particularly of agricultural land, in the 'Mid-Indian Tribal Belt' of Madhya Pradesh. It may be mentioned that 'agricultural land is land typically devoted to agriculture, along with the systematic and controlled use of other forms of life—particularly the rearing of livestock and production of crops—to produce food for humans<sup>1</sup>. Sustaining agricultural productivity depends on the availability and retaining the quality of natural resources like soils and water.

Aims of the study -

1. The study aims to discuss the land utilization pattern of the mid- Indian tribal belt of Madhya Pradesh.
2. To study the status of tribal livelihood.
3. to make an assessment of the emerging spatial patterns of agricultural land utilization in study area, and
4. To examine the land use pattern in context of sustainability of land resource in the region.

Study Area –

The paper discusses agricultural land use pattern of 'Mid Indian Tribal Belt'<sup>1</sup> (Dash, 1998). The crescent shaped study area is located between 21<sup>0</sup> 00' N to 24<sup>0</sup> 00' N lat. and 74<sup>0</sup> 02' E to 82<sup>0</sup> 49' E long. The total geographical area of the belt is 120737 sq. km. which comes to about 39% of the total area of the state of Madhya Pradesh.

<sup>1</sup> Oxford English Dictionary, 3rd ed. "agricultural, adj." Oxford University Press, (Oxford), 2012.

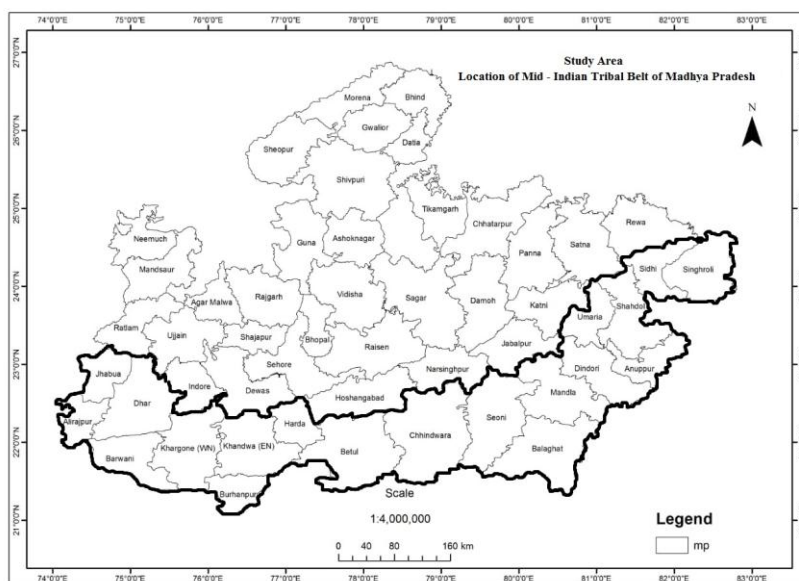


Fig. 1

The study region thus comprises of 19 districts<sup>2</sup> of the State – i.e. Anuppur, Alirajpur, Badwani, Balaghat, Burhanpur, Betul, Chhindwara, Dhar, Dindori, Harda, Hoshangabad, Jhabua, Khandwa, Khargone, Mandla, Seoni, Shahdol, Sidhi, Singrauli and Umaria. This region of Madhya Pradesh is known as mid-Indian Tribal – Belt of the country. The major part of the study area lies in Son – Narmada basins, also including parts of the Tapi basin, Wainganga basin and a fraction of Mahi basin (Fig. 1)<sup>2</sup>

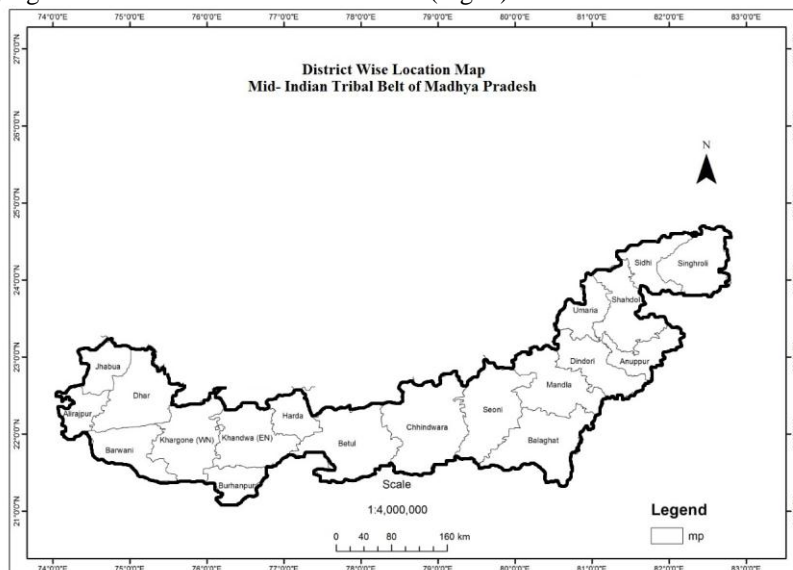


Fig.2

<sup>2</sup> Four major tribal clusters have been identified in the country- the sub- Himalayan north west, the Mid-Indian Tribal Belt, the Southern and the North- eastern tribal belts (Dash N.R.1998).The paper, however, includes only those districts of mid-Indian tribal belt which lie in Madhya Pradesh.

3. Each of the included districts has over 20% of the total population as tribes.

4 <https://www.Maps of India.com/maps/Madhya Pradesh>



It is obvious from fig. 2 that these districts form the southern periphery of the State. The region is in linear shape. Vindhyan ranges to the north and the Satpura ranges to the south define the area.

### **The Physico-Social Configuration of the Study Area-**

The mid-Indian tribal belt generally lies between the Vindhya and the Satpura ranges lying to its northern and southern parts, respectively. In between two major rivers, the Narmada and the Son, traverse almost the entire area in diverse directions (east and west respectively). Partly the area is also drained by rivers Tapi, Mahi and Wainganga. It is a tableland composed of the old crystalline, igneous and metamorphic rocks. The plateau has broad and shallow valleys and rounded hills. Thick tropical forests cover the study area from Badwani in the west through, Narsinghpur and Mandla in the north and up to Betul, Chhindwara and Balaghat in the south. Generally mixed red and black soils are noted in the area. So far as the climate is concerned, the study area falls under Central Narmada Basin, Satpura Plateau and Nimar Valley agro-climatic regions. The changing pattern of climatic character influences the soils and the vegetation cover of the Mid-Indian Tribal Belt. These characteristics make an impact on the quality and resilience of the soils, so far as sustainability of agriculture is generally concerned.

So far as social configuration of the study region is considered, it has been stated that it is an area dominated by schedule tribe population, every district having more than 20% of tribal population to its respective total population, as per Census, 2011. The highest tribal population is noted in Alirajpur (89.0%) and Jhabua (87.0%) districts in the west and Dindori (64.7%) and Mandla districts (57.9%) in the east. The lowest share of tribal population to total population is seen in Balaghat district (22.5%) in the south east.

The majority of the tribal population is rural. The urban share of tribal population is significant in Anuppur (11.4%), Balaghat (9.5%) and Chhindwara (7.3%) only. The major tribes of the region are Gond, Baiga, Bhil, Bharia, Korku, Halba, Kol and Maria. Each of the tribe has its own perception of making a living. Cultivation of land is common among them. The tribes understand and practice environmentally friendly methods of cultivation. The Baigas, among them, have excellent understanding of weather and they are able to adjust their agri-calendar accordingly. They practice crop rotation/selection according to the character of the soils. They are capable of empirical

observation-based weather predictions, pesticide herbs and plants for disaster etc. (Gangwar and Bose, 2012). Similar understanding of agri-practices in relation to physical factors effecting agricultural productivity, quality of soils and changing weather is inherent among other tribes as well. This is an inbuilt sustainability of the soils mechanism and needs further study and implementation (Shrivastava & Mansuri, 2016).

**Livelihood of Tribal group-** livelihood of tribal groups of tribal belt of Madhya Pradesh is heavily reliant on environmental resources like Land, water, forest and Faunae. So financially they depend on Agriculture, Livestock and food gathering for. Most of the person Baiga of Dindori Bhariya tribes of Patakot (chindwada) are agricultural laborer. they domesticate animals such as cow, buffalo, goat, sheep and pig. They eat twice in a day mostly they use rice flour pulse and vegetables in their daily routine. Culturally the tribes of the area are rich. Bhariya and Baiga are rich in traditional culture and bamboo of tattoo work. In study area main source of drinking water is tube well and well. Most of the tribal groups like Gond are having education and they are going towards modernization.

### **Spatial Pattern of Land Use in the Study Region**

Attention may now be paid to the existing land use pattern of this area. Land use in the tribal belt of Madhya Pradesh is presented in table I. The table and figure 3 show that the net sown area has exceeded the area under forests in the study region. Net sown area expansion over forest area is marginal but significant from the point of view of sustainability of agriculture. The smaller ratio of land not available for cultivation shows its decreasing proportion. It means that the pressure on cultivable land is on the rise. Forests cover nearly 40% of the total land. The increasing trend of arable area may be at the cost of forest cover and the decrease in that later may signal pressure on the soils through cultivation.

Table I also reveals that a very large proportion of arable land of most of the region has been already brought under cultivation. It indicates an increasing dependency of the tribes on cultivation of crops as compared to wild edible foods. Much arable land has been brought under the plough bringing pressure on the quality of the soils. The forest cover is above the 33% norm needed for a balanced ecology of any region. But, at the same time the increasing dependence of the tribes on cultivation indicates that the forest cover may be soon be over



run by expansion of cultivated land. It may raise problem of sustainability of agri-practices.

Coming to the indices of sustainability of agriculture in the region attention has been paid to -

- i. The pattern of density of net sown area, and
- ii. The cropping intensity.

### The Pattern of Density of Net Sown Area & Sustainability –

So far as density of net sown area is concerned the high density of net sown area is observed in the middle area comprising mainly of Chhindwara, Baitul, Khandwa and Jhabua. The density of net sown area decreases in the western and the eastern parts of the study region (Fig. 4). The high density is marked in the middle area of Narmada Basin. Towards the eastern and the western parts of the region there is a gradual decrease in the density of net sown area. The eastern part consists of hilly areas mainly in the upper part of Narmada and Son river basins. The western part consists of Dhar, Khargone, Khandwa and Alirajpur districts where the nature of terrain and lesser rains seem to restrict the expansion of net sown area.

The second criteria in context of the assessment of sustainability of agriculture in the region are the pattern of cropping intensity. It has been presumed that higher the cropping intensity higher is the frequency of cropping of net sown area and vice-versa. It means that with increasing cropping intensity pressure on the soils will be more

and chances of threat to sustainability of agriculture will increase.

The assessment has been made in comparison to the average cropping intensity and its district wise variation. The average cropping intensity of the region comes to 181. It may be underlined that the majority of the districts have lower than average value of cropping intensity. It shows the frequency of crops sown on cultivable area is low on an average. Umaria, Harda, Khandwa and Jhabua districts have higher than average values of cropping intensity. It may be due to local physico-social configuration of the area.

It may be repeated the paper examines the pattern of cropping intensity in context of sustainability of agriculture. The general belief is that higher the pressure on net sown area greater will be the danger to sustainability of agriculture. It is also generally believed that tribal areas are more susceptible to danger to sustainability of agriculture.

In order to test the validity of criteria district wise density of net sown area and cropping intensity have been accounted for in relation to sustainability of agriculture in the study region. The correlation between density of net sown area and the pattern of cropping intensity has also been worked out to find out to measure of the degree of association between the selected variables.

It has been noted that the selected variables are positively correlated. The value of 'R' comes to +0.42. It also shows that the selected variables are correlated. The strength of correlation is, however, weak.

**Table I**  
**The Mid-Indian Tribal Belt of Madhya Pradesh: Land Use Pattern (2011-12)**

Unit - 000 ha.

S.No.	District	Geographical Area	Net Area Sown		Not Available for Cultivation	Uncultivable Land Excluding Fallow Land	Fallow Land	
			Forest				Old Fallow	Current Fallow
1	Singrauli	567.5	240	169.8	63.9	12.4	16.9	24.7
2	Sidhi	471.9	195.1	169.2	41.6	53	12.7	17.9
3	Shahdol	561	227.9	178.5	57.4	7.1	29.2	28
4	Umaria	490.3	236.7	4.2	43.5	14.5	17	156.8
5	Anuppur	374	76.4	159.3	55.2	4.3	25.3	25.9
6	Dindori	358.9	25.4	204.6	39.2	13	28.4	33
7	Mandla	965.6	593.2	228.6	56.4	17.3	24.9	24.2
8	Balaghat	924.5	505	275.2	57.8	30.9	14.6	10.6
9	Seoni	875.4	328.5	397.8	61.3	20.3	14.6	16.3
10	Chhindwara	1184.9	476.3	499.6	70.3	53.6	27.6	18.6
11	Betul	1007.8	397.4	426	65.9	27.7	38.5	6.7



12	Harda	330.6	104.9	186.2	24.2	3.5	1	0.1
13	Burhanpur	342.7	201.9	104.1	21.4	10.8	1.8	0.8
14	Khandwa	775.6	305.3	403.6	98.7	4.2	4.3	2.4
15	Khargone	818.7	247	306.3	75.6	64.6	6.6	2.2
16	Badwani	529	183	263.8	102.8	4.2	6.6	2.2
17	Dhar	293.1	119.7	188.1	132.5	47.3	2.8	1.9
18	Alirajpur	382.7	121.1	172.4	73.9	3.3	2.6	2.3
19	Jhabua	819.5	11	500.6	67.1	4.9	8	1.7
	<b>Total</b>	<b>12073.7</b>	<b>4595.8</b>	<b>4837.9</b>	<b>1208.7</b>	<b>396.9</b>	<b>283.4</b>	<b>376.3</b>

Source – State Agricultural Plan 2017, Bhopal (MP)

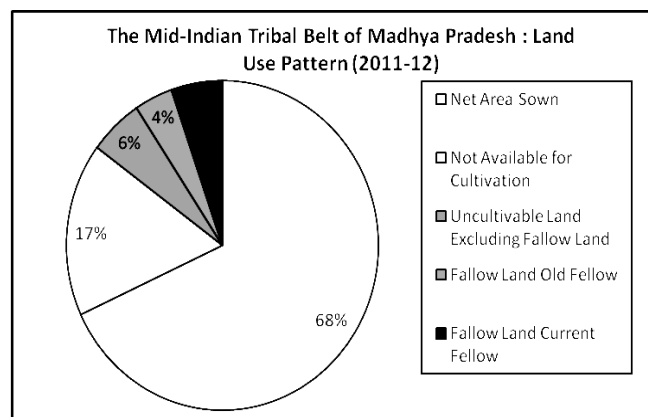


Fig. 3

Table I reveals in the total area of mid- Indian tribal belt of India in Madhya Pradesh is 39.81 % of its total. The largest district in the belt is Chhindwara and smallest district is Dhar.

The area under forests is around 39 % of total geographical area. However it may be noted that for environmental balance 33% of geographical area may be under forest cover. It could be suitable for the sustainability of the environment. Land put to non agricultural uses has barren land and uncultivable land is around 14 %.

It has been noted that the net sown area of the study area is around 41% of the total geographical area of the study region. Forest area marginally exceeds the net sown area.

The district wise details of net sown area are also given in the table. Area sown more than

once has shown a little upward trend over the period considered (Table - III) this is a good sign of improvement for agriculture.

#### Land Use Pattern in Context of Sustainability -

The land use pattern in context of the sustainability of agriculture may be examined. It has been depicted in fig.4. The area is divided in to 3 levels-high, low and medium. It is very important to note that the high density area of NSA comprises the mid part of the belt like districts of Chhindwara, Betul, Khandwa, and Jhabua. All these districts have 8 to 12 % area under the net sown area category of their total geographical area of. It means the middle part of the belt is more productive in comparison to the rest.

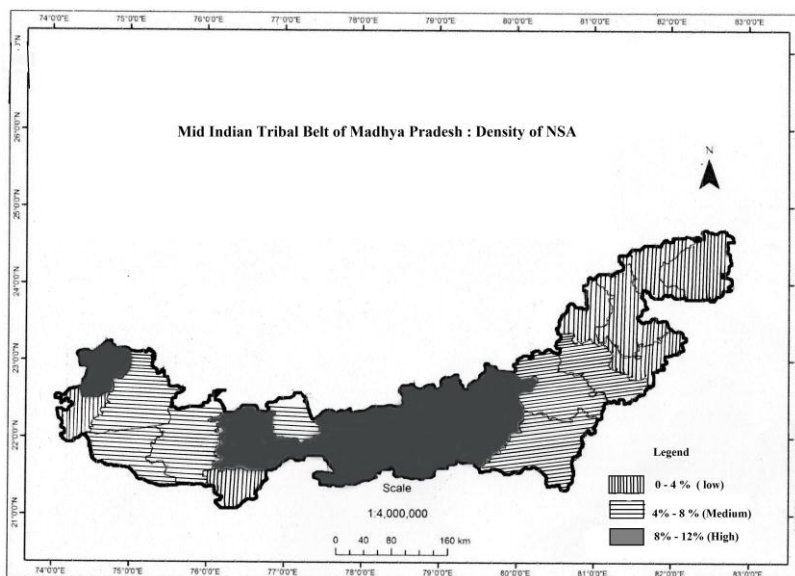


Fig. 4

The cropping intensity is calculated by formula has given. Cropping intensity helps to evaluate the utilization of agricultural area. It is showing large variation in the level of utilization of agricultural land resource. It is the most important way to evaluate the level of utilization of agricultural land.

$$\text{Cropping intensity} = \left( \frac{\text{Grossed Cropped Area}}{\text{Net Sown area}} * 100 \right)$$

The higher cropping intensity means that higher portion of net sown area is being cropped more than once during a year. If cropping intensity is more than 100 % area has effective production.

Table – III

The Mid-Indian Tribal Belt of Madhya Pradesh: Cropping Intensity (2011-12)

Unit - 000 'ha.

S.No.	District	Geographical area	Net Sown Area	Area Sown more than once	Grossed Cropped area	Cropping Intensity
1	Singrauli	567.5	169.8	58.7	228.5	134.6
2	Sidhi	471.9	169.2	63.6	232.7	137.5
3	Shahdol	561	178.5	33.8	212.3	118.1
4	Umaria	490.3	4.2	34.1	38.3	921.9
5	Anuppur	374	159.3	30.4	201	118.9
6	Dindori	358.9	204.6	83.7	288.3	140.9
7	Mandla	965.6	228.6	98	326.6	142.9
8	Balaghat	924.5	275.2	68.5	343.8	124.9
9	Seoni	875.4	397.8	140.6	638.4	135
10	Chhindwara	1184.9	499.6	176.3	675.9	135.5
11	Betul	1007.8	426	141.8	567.8	133.3
12	Harda	330.6	186.2	168.9	355.2	190.6
13	Burhanpur	342.7	104.1	17.1	126.2	116.5
14	Khandwa	775.6	403.6	5.56	909.2	225.3
15	Khargone	818.7	306.3	117.9	424.2	138.5
16	Badwani	529	263.8	48.5	275.4	121.4
17	Dhar	293.1	188.1	491	237.3	126.1
18	Alirajpur	382.7	172.4	30.4	202.8	117.7



19	Jhabua	819.5	500.6	268.1	769.7	153.7
	<b>Total</b>	<b>12073.7</b>	<b>4837.9</b>	<b>2076.96</b>	<b>7053.6</b>	<b>Average 180.7</b>

Source – State Agricultural Plan 2017 Bhopal (MP)

This table shows the maximum net sown area is noted in Jhabua and Chhindwara districts. The minimum net sown area is found in Umaria district. If we discuss about cropping intensity so, maximum cropping intensity is noted in Umaria district with a figure of 921 and minimum in Burhanpur district with 116. It is concluded that the overall the intensity of crops is below average. The cropping intensity of the tribal belt is little above average (188.04 %).

When farmer takes one crop in the same field in one agricultural year than the pressure will be low on the fertility of soils, but when farmer takes two or more than two crops during one agricultural year than the soil fertility may be vulnerable, gradually depleting. In the study region it is found that the cropping intensity is 180 % which means higher percentage of agricultural land is cropped more than

once during a year. The utilization of land for agriculture is thus very high in the belt.

**The Mid-Indian Tribal Belt of Madhya Pradesh: Correlation between Proportion of Tribes and Net Sown Area -**

Generally it is expected that if tribal population is large than the area would be normally rich in forestry or wild agriculture. It may be mentioned that the maximum tribal population in the region is found in Jhabua (86%) and the minimum in Dindori (64%) districts respectively. The minimum tribal population in the belt is found in Balaghat district (21%).

The paper has attempted an analysis of correlation between proportion of tribal population and the net sown area of the districts concerned in order to elucidate its impact on the sustainability of agriculture in the region (Appendix-I, Fig. 5).

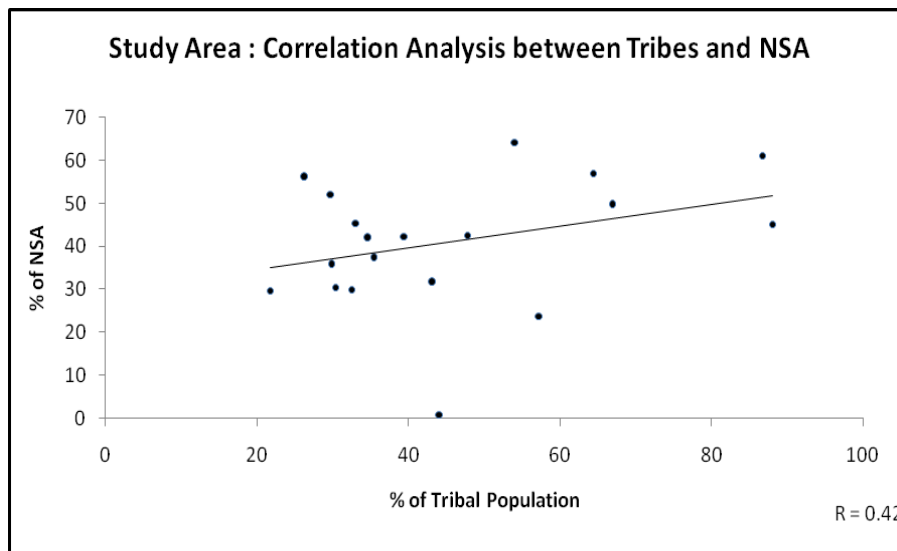


Figure - 5

Figure 5 shows that there is positive correlation (+0.42) between the proportion of tribal population and the share of net sown area. The correlation is, however, weak. High net sown area and high share of tribal population is noted among five districts only (Fig.5). It means that the anticipation that sustainability is not at risk in the study region, has its own limitations.

**II. Conclusion:**

The small attempt in hand only highlights that sustainability of agriculture is not threatened in

all tribal areas, as the general conception is. It needs further investigation into the aspects of tribal ethics and philosophy of cultivation, their understanding and practice of the soils, the crops and the weather of their area. Agriculture is the most primitive occupation of the tribal people in Madhya Pradesh. The incidence of shifting cultivation 'Jhum' also plays a role in decreasing the pressure on soil resources. This character of tribal agriculture reduces the pressure on the soils. This aspect has not been noted in the area.



It may be said that agricultural growth can be sustained by promoting conservation and sustainable use of these scarce natural resources.

The pattern of utilization of agricultural land in the study region shows much variation across and within the region. It is noted that most of the area is covered by forest and it is more than 39 %. Forests are the main element of maintaining and controlling the fertility of the soils and the nature of weather. The higher cropping intensity is characteristic feature of areas where the availability of suitable agricultural land is highly limited. This is due to traditional agri-techniques practiced by the tribes. These techniques are critical for sustainability of agriculture. It is found that the cropping intensity is 180 % which is more than 100% in the study region. It means that a higher percentage of agricultural land is being cropped more than once during one year. The utilization of land for agriculture may be said to be rather high in the belt, a risk for sustainability.

It is clear that growing more than one crop in difficult physiographic conditions, like the one under study, is more a traditional response of the tribes to the environment rather than the impact of modern inventions.

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#### Appendix - I

S.No.	District	% of ST Population 2011	% of NSA
1	Singrauli	32.58	29.92
2	Sidhi	29.89	35.98
3	Shahdol	43.1	31.81
4	Umaria	44.04	0.8
5	Anuppur	47.85	42.59
6	Dindori	64.48	57
7	Mandla	57.2	23.76
8	Balaghat	21.8	29.7
9	Seoni	33	45.44
10	Chhindwara	34.6	42.16
11	Betul	39.4	42.27





12	Harda	26.23	56.32
13	Burhanpur	30.4	30.37
14	Khandwa	29.68	52.03
15	Khargone	35.48	37.49
16	Badwani	67	49.86
17	Dhar	54.5	64.17
18	Alirajpur	88.07	45.04
19	Jhabua	86.8	61.08
	<b>Total</b>	45.58	40.93

Source – State Agricultural Plane 2017 Bhopal (MP)