A Study of Spatio-temporal Agricultural Cropping Intensity in Jalgaon District (MS)

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I. INTRODUCTION

This is an attempt to study the cropping intensity and spatio-temporal changes in Jalgaon district of Maharashtra State. Population growth and its increasing density exert pressure on land use patterns. The rising population needs more food, clothing, and shelter. A close observation population and agrarian relations in the present land use system shows that the forest fallows are associated with sparse population, shifting cultivation, primitive agricultural techniques, and low agricultural intensity.

Cropping intensity depends upon how many times the same field has been cultivated in a year. It means, within a year, more than twice the same area has been cultivated. Cropping intensity is nothing but it is the ratio between gross cropped area and net sown area. The population of Jalgaon District has evidenced not only a mere increase in its numbers. It has registered significance and contributed to an increase in per capita demand for the agricultural product. Population growth and its increasing density exert pressure on the cropping pattern. There are only two ways to satisfy the increasing food and other agricultural demands of the district's rising population: either expanding the net area under cultivation or intensifying cropping over the existing area. Cropping intensity plays an important role in the agricultural development of any region. Higher cropping intensity shows intensive use of land for agricultural purposes. Its significance is further increased in view of the rising pressure of the population on land. There is a need for more food, clothing, and shelter. Land is the main source that provides these requirements, but it is a limited resource. It may seem that areas of high population pressure have higher productive intensity and higher frequency of cropping. This leads to the conclusion that increases in population pressure may cause increased cropping intensity in the agricultural system.

The largest fraction of land under human occupancy is used for agricultural purposes. The concept of population pressure may not be mere the numerical increase of population. This must be viewed as a qualitative expression of the relationship between demand and productive intensity. In the less advanced communities, the demand may be relatively lower than in the more advanced societies, and hence a more advanced population may exert greater pressure on resources than the developed people.

The increase in population pressure would have to be viewed not merely as a consideration in the context of the total qualitative changes in population and the resultant relationship between population and agricultural resources in a territory. The population of Jalgaon district has evidenced not only a mere increase in its numbers. It has a significant impact, contributing to the rise in the per capita demand for agricultural products.

II. OBJECTIVES

The main objective of the present study is to analyse the changes in cropping intensity due to population pressure in Jalgaon district.

1. To study the spatial cropping intensity study area.
2. To assess temporal changes in cropping intensity.
3. To study the gross cropped area and net sown area.

III. STUDY AREA

Jalgaon district comes under the Nasik division of the northern part of Maharashtra state. It was initially known as East Khandesh. It covers the total area of

11765 Sq. Km. (1163898 hectares) comprising of 15 tehsils and 1491 villages. It lies between 20º 15' to 21º 30' North latitude and 74º 55' to 76º 28' East longitude. According to 2001 census the total population of the district is 3682690. The total area of the district is 11765 sq. km. which is about 3.82 percent of the total area of Maharashtra state.

IV. DATABASE AND METHODOLOGY

The present study is based on secondary sources of data. The secondary data is available from the Directorate of Economics and Statistics of Maharashtra, the District Statistics Office of Jalgaon District, the Census Handbook, the Agricultural census, etc. The methods applied include bar diagram, pie chart, Graphs, Maps, Statistical analysis, cropping intensity and finding out changes therein in the last decade, etc.

V. ANALYSIS OF CROPPING INTENSITY

There are only two ways to satisfy the increasing food and other agricultural demands of the country's rising population: either expanding the net area under cultivation or intensifying cropping over the existing area. The net sown area of the country has risen by about 20 percent since independence and has reached a point where it is not possible to make any appreciable increase. Thus, raising the cropping intensity is the only viable option left. Cropping intensity refers to the rise of the number of crops from the same field during one agricultural year. It can be expressed as-

$$\text{Index of Cropping Intensity} = \frac{\text{Gross Cropped Area}}{\text{Net Sown Area}} \times 100$$

Thus, higher cropping intensity means that a higher portion of the net area is being cropped more than once during one agricultural year. This also implies higher productivity per unit of arable land during one agricultural year. For instance, suppose a farmer owns five hectares of land, and gets the crop from these five acres during the kharif season and, again, during the rabi season, he raises a crop from three hectares. He, thus, gets the effective production from eight hectares, although he owns only five hectares physically. Had he raised crops on five hectares total, his cropping intensity would have been 100 percent, while now it is 160 percent.

Cropping intensity depends upon how many times the same field has been cultivated in a year. It means, within a year, more than twice the same area has been cultivated. Cropping intensity is nothing but it is the ratio between gross cropped area and net sown area. It shows the level of agricultural development.

Table No. 1 - Jalgaon District: Agricultural Cropping Intensity of Jalgaon District in 2001

Sr. No.	Name of Tehsil	Gross Cropped Area (hct.)	Net Sown Area (hct.)	Index of Cropping Intensity
1	Chopda	90740	80895	112.17
2	Yawal	63833	63102	101.16
3	Raver	80806	68405	118.13
4	Muktainagar	43340	40568	106.83
5	Bodwad	35102	34230	102.55
6	Bhusawal	35581	34769	102.34
7	Jalgaon	86964	80719	107.74
8	Erandol	52701	51867	101.61
9	Dharangoan	57943	56382	102.77
10	Jamner	146321	114450	127.85
11	Amalner	83014	77185	107.55
12	Parola	62792	60904	103.10
13	Bhadgaon	47602	43362	109.78
14	Chalisgaon	86987	84444	103.01
15	Pachora	77830	73516	105.87
Jalgaon District		1051556	964798	108.99

(Source of Data- Statistic Department Jalgaon 2011)

According to the Table 1, the highest cropping intensity has found in Jamner tehsil that is 127.85 and lowest cropping intensity has been observed in Yawal tehsil that's 101.167 in 2001. Below 105 percent cropping intensity has been noticed in Yawal, Bodwad, Bhusawal, Erandol, Dharangoan, arola and Chalisgaon tehsils because of small area under double and multi-cropped areas. Low cropping density (ranging between 105 to 110 percent) noted in Muktainagar, Jalgaon, Amalner, Bhadgaon and Pachora tehsils. Chopada tehsil has observed medium cropping intensity by 112.17 percent. More than 120 cropping intensities have been detected in Raver and Jamner tehsils.

According to Table No. 1, the total gross cropped area of Jalgaon District is 1051556 that are 89.38 percent to the total area of the Jalgaon District in 2011. The highest gross cropped area is noted in Jamner tehsil that is 146321 hectare which is 1.91 percent to total gross cropped area of Jalgaon district, and lowest gross cropped area is observed in Bodwad tehsil that is 35102 hectares which is 3.33 percent to total gross cropped area of Jalgaon district. Cropping intensity is increase with the increasing the population of study region.

Table No.2 - Jalgaon District: Decadal Cropping intensity of Jalgaon District (1971-2011)

Decades	Gross Cropped Area	Net Sown Area (hectare)	Cropping Intensity
1971	764528	756130	101.11
1981	795729	769805	103.37
1991	817681	771425	106.00
2001	841091	785347	107.10
2011	1051556	964798	108.99

(Source of Data- District Socio-economic Abstract of Concern Year)

Cropping intensity of Jalgaon district has been increased from 101.11 to 108.99 during last four decades (1971-2011). It means cropping intensity is gradually increased with increasing density of population in Jalgaon district.

The cropping intensity increase mainly because of increase in gross cropped area, means the farmers changing attitude towards the agriculture is also responsible for the increasing cropping intensity in the region. Total gross cropped area is nothing but it is the summation of double cropped area and net sown area together. Gross cropped area is always more than net sown area hence it has been includes the area sown more than once.

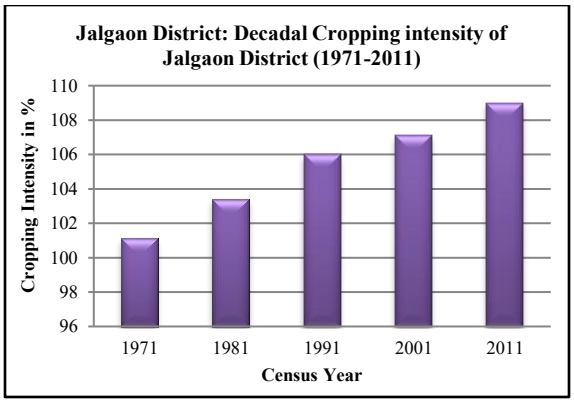

Fig. No. 1

VI. CONCLUSION

The study reveals that growing population and its pressure increase the cultivated area, net sown area, double cropped area, multi cropped area and deduct fallow land, waste land, forest area, grazing and pasture land etc. because of the increasing demand of the increasing population, hence increase the cropping intensity. Urban population expert more pressure on the land due to their high and complex demands than the rural one so that land use is more intensive and non-agricultural like industrial plants, hotels, shopping malls and under the other infrastructural facilities so that cropping intensity is relatively low in urban centers like Jalgaon, Jamner, Yawal, Raver etc. Other hand in Bhadgaon, Muktainagar and Bodwad increase the net sown area, double cropped area, Gross Cropped area due to increasing population pressure hence increase the cropping intensity.

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