



Original Article

A Comparative Study of Agriculture Density and Caloric Density of Dharashiv District

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Abstract

Agriculture is a major occupation in India as well as in Maharashtra. Marathwada region is a drought prone area. Dharashiv is one of the major districts in Marathwada region. Agriculture development in study area was very poor compare to other districts in Maharashtra. Physiographic, climatic and socio- economic condition of the study area was not favourable for agriculture. The present paper deals with agriculture and caloric density of Dharashiv district. The agriculture and caloric density of Dharashiv district shows drastic changes in last three decade. Agriculture density. Cultivators and agriculture labour population directly affected on agriculture density and caloric density. Increasing population creates pressure on agriculture land as well as on production.

Keywords: Agriculture density, Caloric density, Arable Land, Net sown area, population Distribution

Introduction

Agriculture is the main foundation of economic prosperity. Most of the people of villages ranging from 15 to 60 years of age are occupied in agriculture; infants and the aged to lend a hand in agriculture in same way or other. Rural society is mainly composed of farmer and the main occupation of all the members of the farmers; family & other families are directly or indirectly related to agriculture. Agriculture is main occupation of the Dharashiv district. Most of the people of this region engaged in agriculture and allied activities. Dharashiv district is one of the major districts of Marathwada regions. Marathwada as well as Dharashiv district comes under drought prone area. Physiographic and Geographic condition are not favourable for agriculture development. Industrialisation and urbanisation are in their medieval stage. Agriculture density and caloric density are measures of population distribution and pressure on agriculture. Agriculture density measures the number of farmers per unit of cultivable (arable) land. It shows the pressure of agriculture population on food producing land high agriculture density indicates Limited cultivable land and higher labour-intensive agriculture economic. Low agriculture density indicates a low number of farmers per unit of a cultivable land. Agriculture density expresses as total farmers divided by total arable land.

(Agricultural labors + cultivators)

$$\text{Agricultural density} = \frac{\text{Five years average of net sown area}}{\text{Five years average of net sown area}} \times 100$$

Caloric Density:

Caloric density is calculated by dividing total rural population by total food cropped area. The following formula is used to calculate caloric density.

Total Rural Population

$$\text{Caloric density} = \frac{\text{Five years average of cropped area}}{\text{Five years average of cropped area}} \times 100$$

Objective:

The present study is based certain specific objectives.

1. To study concept of Agriculture density and Caloric density.
2. To study comparison between Agriculture density and Caloric density of Dharashiv district.

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Study Area:

Dharashiv district is located in Maharashtra state. It is located on east side of Marathwada region. The latitudinal extent of study area is 17° 35' to 18° 40' north and longitudinal extend between 75° 16' to 76° 40' east. It is situated about 600 m above mean sea level. Manjra and Terna are major are seasonal river mainly flow in rainy season. Temple of goddess Tuljabhavani at Tuljapur is famous in Maharashtra. There are eight Tehsil in the district. The Dharashiv district comes under drought prone area. Average annual rainfall in within the district is 730mm.

Methodology and Data Collection:

The present study is covering entire Dharashiv district as a study area. Therefore, the analysis is based on secondary data sources. It includes District Census Handbook of Dharashiv District, socio economic abstracts. The data is divided in various categories and processed. The comparative approach applied to shows tehsil wise variation in Agriculture density and Caloric density of study area.

Table No 1 Agriculture density and Caloric density of Dharashiv District (1991, 2001 and 2011)

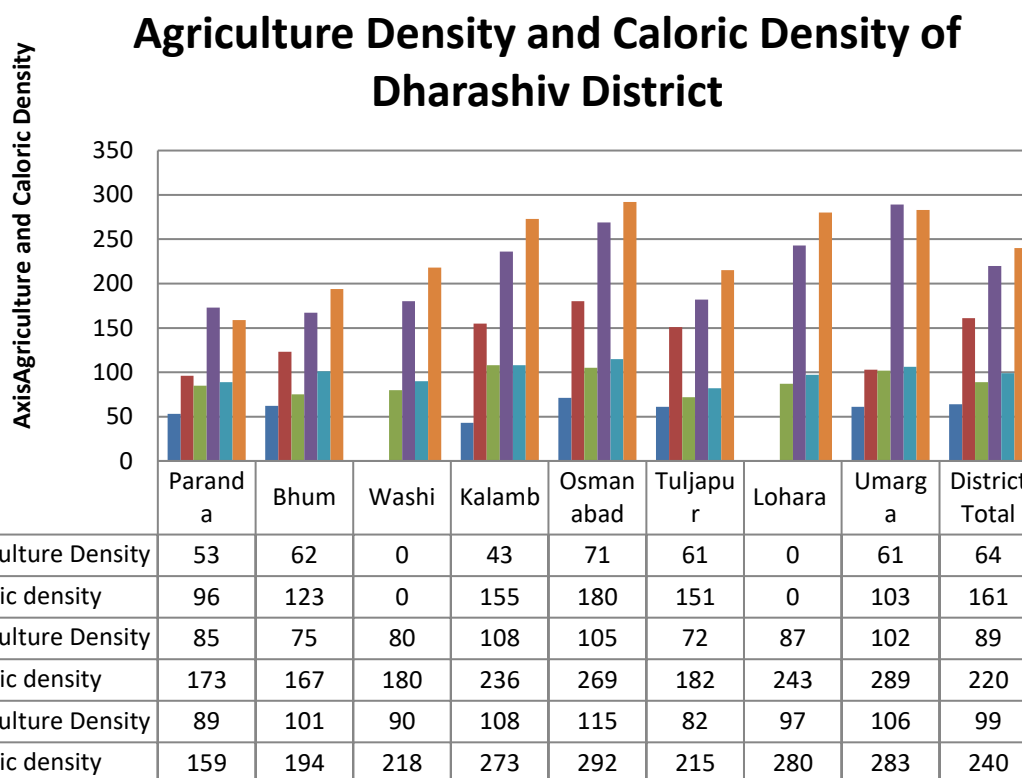
		1991		2001		2011	
Tehsil	Area in Sq.km	Agriculture Density	Caloric density	Agriculture Density	Caloric density	Agriculture Density	Caloric density
Paranda	940.5	53	96	85	173	89	159
Bhum	825.6	62	123	75	167	101	194
Washi	627	-	-	80	180	90	218
Kalamb	917.2	43	155	108	236	108	273
Dharashiv	1,359.10	71	180	105	269	115	292
Tuljapur	1,584.80	61	151	72	182	82	215
Lohara	535	-	-	87	243	97	280
Umarga	1,005.80	61	103	102	289	106	283
District Total	7,569.00	64	161	89	220	99	240

Source: - Socio-economic abstract of Dharashiv district

Table No 2 Cultivators and Agricultural Labour of Dharashiv District 1991, 2001 and 2011

Tahsil	1991			2001			2011		
	Cultivators	Agricultural Labour	Total	Cultivators	Agricultural Labour	Total	Cultivators	Agricultural Labour	Total
Paranda	31186	22974	54160	36914	18747	55661	1342	5081	6423
Bhum	27045	18341	45386	27701	18211	45912	1439	5414	6853
Washi	-	-	-	24467	16746	41213	1009	5504	6513
Kalamb	43937	33078	77015	40333	29954	70287	1707	13625	15332
Dharashiv	42409	47692	90101	48030	58576	106606	1939	17987	19926
Tuljapur	31388	40669	72057	33986	45386	79372	2033	12351	14384
Lohara	-	-	-	16403	23894	40297	687	6053	1340
Umarga	38531	54773	93304	29141	45611	74752	1832	10528	12360
District Total	214496	217527	432023	256975	257125	282100	12291	79231	91522

Source: Socio-economic abstract of Dharashiv district



Graph No 1

Agriculture density of Dharashiv district

Agriculture density of Dharashiv district was very different compare with crude density and psychological density. An agriculture density mainly depends upon arable land number of farmers and physiographic condition of the study area. The scenario in three decades of Dharashiv district was continuously changed. In the 1991 the high agriculture density was observed in Dharashiv tehsil with 71 persons per hundred-hectare net sown area. The moderate agriculture density was observed in Bhum, Tuljapur and Omerga tehsil with 62, 61 and 61 respectively. The low agriculture density was observed in Paranda and kalamb with 53 and 43 persons per hundred-hectare net sown area respectively. Washi and Lohara tehsil was not becoming tehsil in 1991. Dharashiv district average agricultural density was 64. It is higher than all the tehsils except Dharashiv tehsil in 1991. In 2001 agriculture density was increasing all tehsils of Dharashiv district compare to 1991. The high agriculture density was recorded in kalamb, Dharashiv and Omerga with 108, 105 and 102 persons per hundred-hectare net shown areas respectively. The moderate agriculture density was observed in Paranda, Washi and Lohara with 85, 80 and 87 respectively. The low Agriculture density was recorded in Tuljapur and Bhum with 72 and 75 respectively. Agriculture density was above district average compared to 1991. It is 101. All tehsils recorded above agriculture density of previous year average. First time in last 20 years agriculture density crossed over 100. In 2011 agriculture density was again increasing all the tehsils in the study area. The high agriculture density recorded in kalamb Omerga and Bhum tehsil with 108, 106 and 101 per person per hundred-hectare net sown areas. Kalamb tehsil agriculture density same as 2001. There was no change registered in Kalamb tehsil in 2011. The moderate agriculture density observed in Lohara and Washi tehsil with 97 and 90 respectively. The low agriculture density was registered in Tuljapur and Paranda with 82 and 89 respectively. The districts average agriculture density was above 1991 average and below 2001 average agriculture density. It is 99 per person's hundred-hectare net sown areas. The general trend shows that agriculture density continuously increasing in all three decades in all the tehsils of Dharashiv district.

Caloric density of Dharashiv district

Calorie density was a different comparing agriculture density and population density. Dharashiv district primarily driven by the cultivation of cereals, sugar rich crops and oil seeds. The study area is known as a producer of high agriculture of producing district in Marathwada region. The study area is famous for sugarcane, sorgam, Jawar, soybean, Bajra and pulses. The districts total caloric density was 161 per hundred hectare cropped area. Caloric density ranges from 96 to 180 in 1991. The high caloric density was registered in Dharashiv, kalamb and Tuljapur tehsil i.e. above 151 per hundred hectares cropped area in 1991. The moderate calorie density was recorded in Omerga and Bhum tehsil with 103 and 123 per hundred hectares for upper area in 1991. The low caloric density was observed in Paranda tehsil only with 96 per hundred-hectare area in 1991. Washi and Lohara tehsil were absent in 1991. In 2001 caloric density pattern shows drastic changes in all the tehsils. All the tehsils were registered continuously increasing caloric density and crossed over 200 and reached closed to 300 per hundred-hectare areas. The high caloric density was recorded in Dharashiv and Omerga tehsil with 269 and 289 per hundred hectare cropped area. The moderate caloric density was observed in kalamb and Lohara with 236 and 243 respectively. It ranges between 200 to 250. The low caloric

density was registered in Paranda, Bhum, Washi and Tuljapur with 173,167, 180 and 182 per hundred hectare cropped area respectively. Low caloric density was ranges between 200. The average caloric density of Dharashiv district was 220. It is higher than previous decade.

In 2011 caloric density pattern shows changes in all tehsil. All tehsil shows growth in caloric density except Paranda tehsil. The high caloric density recorded in kalamb, Dharashiv and Lohara tehsil with 273. 292 and 280 per hundred hectare cropped area respectively. High caloric density ranges above 250. The moderate caloric density observed in Washi, Tuljapur and Omerga tehsil with 218. 215 and 240 per hundred hectare cropped area respectively. The low caloric density recorded in Paranda and Bhum tehsil with 159 and 194 respectively. It ranges below 200. The average caloric density was 206 in 2011. It is higher than two previous decades. The general trend shows of agriculture and caloric density show growth in all tehsils except Paranda tehsil in terms of caloric density.

Cultivators and Agriculture Labour of Dharashiv District

Cultivators and agriculture labour population directly affected on agriculture density and caloric density. The table number 2 shows continuously decreasing the cultivators and agricultural labours in the Dharashiv district. It is because one of the main reasons it was mechanization of agriculture. The total number of cultivators and agriculture labour was 432023 in 1991, 282100 in 2001 and 91522 in 2011. The tehsil wise farmers and labours were different in numbers. Due to the physiographic, climatic and social, economic conditions, agriculture technology, the ratio between agriculture land and farmers were reduced.

Conclusion

The agriculture and caloric density of Dharashiv district shows drastic changes in last three decade. Agriculture density.

1. The general trend shows that agriculture density continuously increasing in all three decades in all the tehsils of Dharashiv district.
2. Kalamb tehsil agriculture density same as 2001. There was no change registered in Kalamb tehsil in 2011.
3. In 2001 caloric density pattern shows drastic changes in all the tehsils. All the tehsils were registered continuously increasing caloric density and crossed over 200 and reached closed to 300 per hundred-hectare areas.
4. In 2011 caloric density pattern shows changes in all tehsil. All tehsil shows growth in caloric density except Paranda tehsil.
5. The average caloric density was 206 in 2011. It is higher than two previous decades. The general trend shows of agriculture and caloric density show growth in all tehsils except Paranda tehsil in terms of caloric density.

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Conflicts of interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

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