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A GEOGRAPHICAL STUDY OF CROPPING INTENSITY IN DROUGHT PRONE AREAS OF NASHIK DISTRICT (M.S.)

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Abstract

Drought is an environmental hazard which highly influence on socio-economic status of drought prone areas. The rainfall of Eastern part of Nashik district is low and scarcity of water is increasing day to day. This research paper has given emphasis on the study of cropping intensity in drought prone areas of Nashik district. The cropping intensity index indicates the scenario of agricultural development of study region. The drought is the prime element which highly influence on the cropping intensity

Key Words: Drought prone area, Cropping Intensity, Major Crops etc.

Introduction:

Cropping Intensity denotes the ratio between total cultivated area to Net sown area. It is one of the major indicators of agricultural development. The present research work is throwing lime light on the investigating Cropping Intensity of drought prone areas of Nashik district. The cropping intensity signifies the irrigated area, double cropped area, crop rotation and mix farming area of the study region. Higher cropping intensity indicated higher use of technology in the agriculture too.

Drought prone area

A drought prone area is defined as one in which "the probability of drought year is greater than 20%. A chronic drought prone area is defined as one in which the probability of a drought year is greater than 40%.

The criterion described above is useful for a continuous monitoring of the monsoon season. The sum of the seasons rainfall becomes the basis for describing a region under moderate or severe drought. When more than 50% of the area in the country is affected is described as severely affected by drought & when the area of 26 - 50% of the country is affected it is described as an incidence of moderate drought.

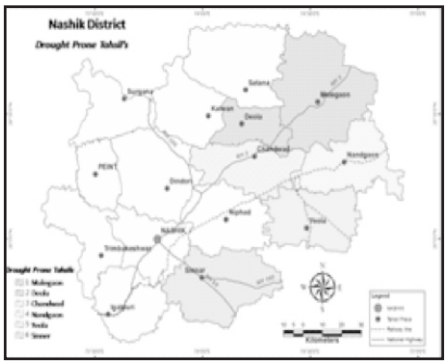
Aims and Objectives:

1. To study the Geographical setup of study area.
2. To study the Cropping Intensity of study region.

Study Area:

Nashik district is situated in the Deccan trap of Maharashtra which is partly in the Tapi Basin and partly in the upper Godavari Basin. It lies between 190 35' 18" North latitude to 200 53' 07" North latitude and 730 16' 07" East longitude to 740 56' 22" East longitude. It is surrounded by Dhule district in the North , Jalgaon and Aurangabad district in the East, Anmednagar district in the South, Thane district in the South-West and Gujarat state in the North-West(map1.1). Nashik district has an area of 15530 sq. km. and population of 6,109,052, as per the 2011census. There are 15 tahasils and 66 revenue circles are in the Nashik district.

The main stream of hills in the Sahyadri which runs North-South in the western proportion of the district. From the main Sahyadrian range, three prominent spurs Stretch out of the East. In the extreme north is the Selbari range which approximately forms the boundary between Nashik and Dhule district. Next in the Satmala and Ajanta range which runs right across the district. It acts as a watershed between the Girna and its tributaries which drain towards the Tapi to the north and the Godavari and its tributaries to the south. Some of the ranges are flat topped and regular in height and slope, while others are conical and irregular.



Though average rainfall of the district is between 2600 to 3000mm, there is wide variation in the rainfall received at various blocks. Most of the rainfall is received from June to September. The maximum temperature in summer is 42.5 degree certigrade & minimum temperature in winter is less than 5.00 degree centigrade. Relative humidity ranges from 43% to 62%.

Since last 20 years the grape has acquired dominance on the agricultural economy of the district. Due to water shortage in Kalwan, Deola, Baglan & Malegaon blocks, the farmers have shifted to pomegranate from sugarcane & grape crops. Some progressive farmers are cultivating flowers in green houses. These developments also indicate that the farmers in the district adopt new technologies & methods of cultivation very fast.

According to the report of Relief & Rehabilitation, Revenue & Forests Department, Government of Maharashtra, 2003-04 Sinner, Yeola, Chandwad, Nandgaon, Malegaon and Deola tehsils are declared permanent drought areas of Nashik district.

Methodology:

Present study includes data collection from various sources, data analysis, map preparation and results. The methodology is adopted to fulfill the objectives of the present study, which can be ivied into two major components viz. fieldwork and laboratory components.

Field work component mostly comprises with collecting secondary data of crops from various government offices and rainfall data of the study area. Base map of the study area has been prepared using SOI topographical maps on 1:50,000 scale. DEM of the study area has been generated by contour digitization in GIS environment. The data of crops take into consider for the period of 1991 to 2009. The present work implies Cropping Intensity Index with the formulae i.e.

C.I.=(GCA)/(NSA) x100
Where, C.I.= Index of Cropping Intensity
GCA= Gross Cropped Area
NSA= Net Sown Area

Explanation

Nashik district is divided into two division on the basis of rainfall. The western part of the district is in the high rainfall due to the relief rainfall. This region is in the mountainous area of *Sahyadri*. The eastern part of the district is in the rain shadow zone so rainfall is very low. These two regions characteristics highly influence on the cropping pattern of the study area. The present research work throws limelight on the study of cropping intensity of study region.

Table No.1. Nashik District: Change in Cropping Intensity

	Cropping Intensity		
Tahsil	1990 - 91	2008 - 09	Change
Surgana	105.16	101	4.16
Kalwan	126.42	103.65	-22.77
Deola	N.A.	121.86	N.A.
Baglan	112.87	109.21	-3.66
Malegaon	105.56	103.81	-1.75
Nandgaon	120.11	107.29	-12.82
Chanvad	106.09	103.65	-2.44
Dindori	108.98	112.88	3.9
Peth	110.45	101.38	-9.07
Trimbak	N.A.	100.73	N.A.
Nashik	109.89	126.28	16.39
Igatpuri	114.82	105.73	-9.09
Sinnar	112.75	118.48	5.73
Niphad	107.46	126.26	18.8
Yevla	123.95	136.78	12.83
District	112.67	111.83	-0.84

Source: Compiled by Researcher

Cropping Intensity: Cropping intensity refers to raising of a number of crops from the same field during one agricultural year. It is the ratio of Gross cropped Area to Net Sown Area. Higher cropping intensity means that a higher proportion of the net sown 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.

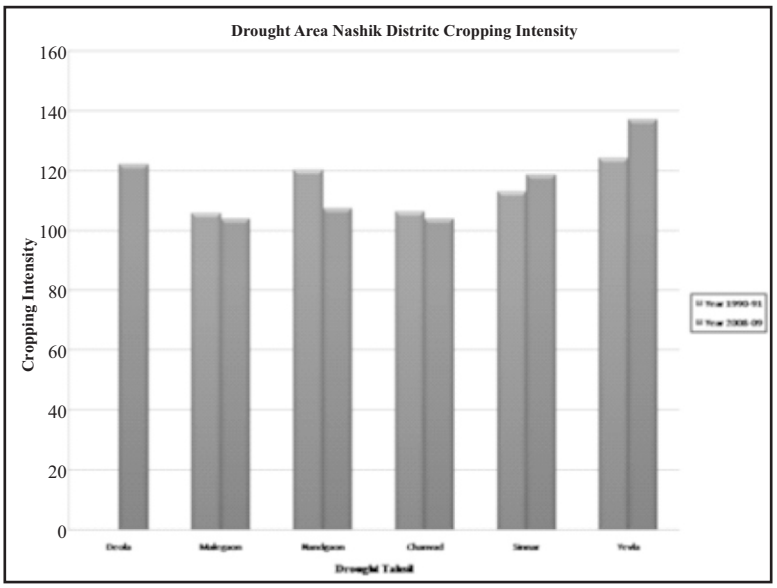


Fig. No. 1

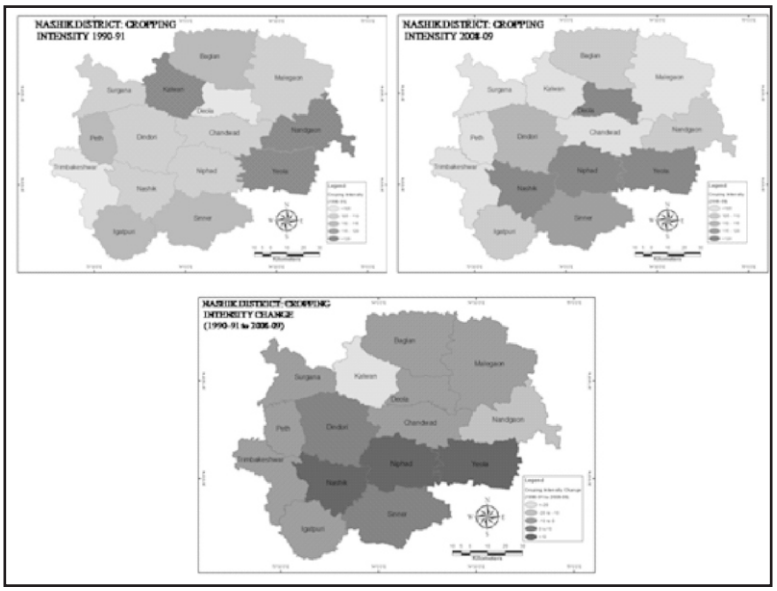


Fig. No. 2

Cropping Intensity and change therein:

Cropping intensity has found increased significantly in Niphad, Nashik, Yeola and Dindori tahsils of Nashik district. While other 9 tahsils cropping intensity her decreased in last two decades. (Table. 1, Fig. 2)

The present research work focuses on change in cropping intensity of drought prone areas of Nashik district. Where, Deola, Malegaon, Chandvad, Nandgaon, Sinnar and Yeola these drought tahsils are considered for study. Tahsilwise cropping intensity and change investigated for the period 1990-91 to 2008-09.

1.Deola: This tahsil is newly created. The cropping intensity index is 121.26.(2008-09) which shows that the crop rotation and mixed crop method is used in farming. Bajara is the dominant crop in this tahsil which is altered by Rabbi onion, gram and ground nut. Scanty rainfall implies the impact on cropping pattern which survive with shortage of water.

2. Malegaon: This tahsils cropping intensity decreases (1990-91 to 2008-09) with change to -1.75. In 1990 -91 the cropping intensity was 105.56 which found decreases at 103.81 on 2008-09. Double cropped area is decreased because of scarcity of water in 2008-09. It indicates the impact of drought on this region.

3. Nandgaon: This drought prone tahsils cropping intensity is high in the nature but it decreases rapidly by -12.82(1990-91 to 2008-09). The cropping intensity of this tahsil was 120.11 in 1990-91 but decreased to 107.29 in 2008-09. The area under pulses are decreasing slowly because of shortage of water which results to dropped out of double cropped area.

4. Chandvad: This tahsils cropping intensity slowly dropped to -2.44 (1990-91 to 2008-09). This is the rain fed area so alternate crops and mixed crop is one of the opportunity for getting more production in this area. Farmers are more interested for Bajra, Gram and Horse gram. So the cropping intensity of this area was 106.09 in 1990-91 and it declined to 103.81 in 2008-09.

5. Sinnar: The cropping intensity of this area is inclined positively with significantly by 5.73(1990-91 to 2008-09). It found that the cropping intensity of sinnar was 112.75 in 1990-91 it increased to 118.48 9n 2008-09. It shows that farmers of this region imply modern technique of harvesting. The trend of farmers altered by vegetable crops and fodders to traditional farming.

6. Yeola: This tahsil not only recorded highest cropping intensity in the tahsils but also Nashik district too. The cropping intensity inclined by 12.83(1990-91 to 2008-09). The shortage of water given lesson to farmers to motivate for taking alternative crops i.e. oilseeds and pulses which needs low water. The cropping Intensity of Yeola was 123.95 in 1990-91 which increases significantly to 136.78 in 2008-09. It increased due to taking short period crops in this region.

Conclusions:

1. The highest cropping intensity is investigated in Yeola tahsil i.e. 123.95 in 1990-91 and 136.78 in 2008-09 which is highest in Nashik district as well as drought prone areas of Nashik district too.
2. The lowest cropping intensity found in Nashik district i.e. 105.16 in 1990-91 in Surgana tahsil and 100.73 in 2008-09 in Trimbak tahsil.
3. The lowest cropping intensity found in drought prone areas of Nashik district i.e.105.56 in 1990-91 in Malegaon tahsil and 103.65 in 2008-09in Chandvad Tahsil .
4. The highest positive change in cropping intensity noted in Nashik district is 16.39 in Nashik tahsil
5. The highest positive change in cropping intensity noted in drought prone areas of Nashik district is 12.83 in Yeola tahsil.
6. The lowest insignificant change in cropping intensity investigated in Nashik district is -22.77 in Kalwan tahsil
7. The lowest insignificant change in cropping intensity investigated in drought prone areas of

Nashik district is -12.82 in Nandgaon tahsil

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