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Analysis Study of Seasonal Under Maize Crop Area in Chh. Sambhajinagar District (Aurangabad) Period of 2000-01 to 2019-20

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Abstract: ***Maize is a major crop in many Chhatrapati Sambhajinagar and its growth is influenced by various physical and manmade factors. These research papers study the seasonal variations in soil physical properties, including temperature, moisture, and aeration, under maize crop area. Results showed significant seasonal variations in soil temperature, moisture, and aeration. Maize is an important crop in study area, providing feed, food and income for ingested agricultural people. However, maize crop production is extremely sensitive to seasonal and physical variations, which can extensively impact crop quality, yield and under area. This study analyzed the seasonal under area of maize crop on the period of 2000-01 to 2019-20 changes on maize crop area in chh. Sambhajinagar (Aurangabad) during study period. We used a combination of observation and secondary data from take in the district survey report. Statistical analysis to assess the yearly changes between seasonal variables on area under maize crop performance. The research findings have important implications for maize farmers and agricultural extension services in study region. highlighting the impact of seasonal variation of area under these crops are rainfall, market of feed and food, decease and water arability.***

Keywords: Agriculture, Maize crop, Seasonal, area

1. Introduction

Agriculture is the science and art of cultivating soil, growing and harvesting of crops, domestication of animals and raising of plants for the human being. Agriculture land use is the basic resource. It forms the basis for all biological, ecological, human and eco-activities. In the developing countries like India, where agriculture is the main source of economic and livelihood for more than 2/3 of the working population, proper utilization of land resource is vital. Agriculture is more diverse than any other human activity. It encompasses all those productive efforts of man on the earth's surface which help him to achieve food, fiber and animal products, through growth process of flora and fauna. The geographer correlates these efforts of man with the various elements of physical and cultural environment. He also tries to delimit and asses the regional characteristics of agriculture. Agriculture is an age-old occupation in India. It is still the main foundation of rural life. Agriculture has been the subject matter of the geographic study since long. It is not only because most of the people depend for food and several raw materials on it, but also because largest fraction of land under human occupancies is used for agriculture purpose. It is largely depends on environmental conditions and present wide spatial variation. Agriculture is the main occupation of working population and major source of income in India. Though significance of agriculture in terms of employment and generation of national income is gradually declining, the development of agriculture is an essential, though by no means, a sufficient condition for rural development in India.

2. Study Area

The district of Chhatrapati Sambhajinagar lies in the north-west corner of his highness the Nizam's Dominions, and is situated between the parallels of 19^0 17' N. and 20^0 40' N. latitude, and between the meridians of 74^0 39' E and 76^0 40' E. Longitude, covering an area of about, 10, 100 sq. km. Its greatest length from east to west is 130 miles and its greatest breadth from north to south 95 miles. Chhatrapati Sambhajinagar district comprises nine tahsil i. e Chhatrapati Sambhajinagar, Kannad, Soygaon, Sillod, Fulambri, Khultabad, Vaijapur, Gangapur and Paithan. But due to non-availability of data, Fulambari tahsil is omitted from this research work.

3. Objectives of the Study

a) To study under area of Maize crop in the study area.
b) To analyses the seasonal under Maize crop area during study period.

4. Literature Survey

Numerous researchers have investigated the seasonal variations in area under maize crop in different regions of country. Following review is important for this study-

Acharya et. al, (2012): has analyzed the growth in the area, production and productivity of different crops in Karnataka by using the compound growth function and has found that area under jowar, bajra, ragi and minor millets are experiencing a substantial annual decrement.

Kumar et. al. (2018): They have analyzed the trends and variability in seasonal rainfall and temperature over Maharashtra, including Chha. Sambhajinagar district. The study found considerable seasonal variations in rainfall and temperature and has impacted on maize crop.

Singh et. al. (2019): Examined the impact of climate change on maize yield in India, as well as Maharashtra. The study found that rising temperatures and changing rainfall patterns affected maize crop, particularly during the kharif season.

Desai et, et. al. (2017): Analyzed the seasonal variation in soil temperature and moisture under maize crop in Maharashtra. The study found significant seasonal variations in soil temperature and moisture, which impacted maize crop growth and yields.

Swamy et al. (2019): they studied the Growth Rate Analysis of Maize Area, Production and Productivity: Special Reference to Karnataka. According to them the Growth rate of area, production and productivity of maize in North Eastern Karnataka (NEK) region for the period ranges from 1998 to 2014.

Tawheed Nabi., and S. T. Bagalkoti, (2017): His article entitled on "Growth in Area, Production and Productivity of Horticultural Crops in Karnataka". According to him Growth rate analysis is usually used in economic studies to find out the trend of particular variable over any period of time which is used for making policy decisions.

5. Methodology

The research methodology is used methods and techniques analysis for maize crop data in the district. The crop data analyzed using various statistical tools and computer applications. The methodology is framework for this study area analysis of data from 2000-01 to 2019-20. It is explained following.

Data collection-
The data set for present study is covering 20 years at Chh. Sambhajinagar district during 2000-01 to 2019-20. For the present investigation used from Secondary data for the mahaagri web site and government official web site. The secondary data for maize crop area is given accurate and reliable data from following sources.

a) Agricultural Data of District-Maize crop area during 2000-01 to 2019-20 taken from agriculture department official website of www.mahaagri. gov. in.
b) District Gazetteers and Socio-Economic Review of Chh. Sambhajinagar district 2013.

The crop data analyzed using various statistical tools and computer applications

Sum-The summation is the addition of a sequence of any kind of numbers called addition or summands; the result is their sum or total. In this Dissertation alculate the total maize crops seasonal and annual.

Mean-Mean is the powerful tool a set of central tendency of data. There are calculating three ways of mean-Arithmetic mean, geometric mean and harmonic mean. In this dissertation used by the arithmetic mean to calculate the average Crop maximum and minimum of annual is computed by using formula of mean –

$$\bar{x} = \frac{\Sigma x}{N}$$

Where-$\bar{x}$= Mean, Σx= Sum of its value, N= Number of value.

Range-Range is the distance between largest value and smallest value. Range of under Maize crop area is calculated by using formula of-r = Max (x) – Min (x)

Data Analysis Software-The collected data will be analyzed by using MS Office Excel, MINITAB and Origin software on the computer. The data analysis such as various tools and various statistical methods will be used for the proper analysis.

6. Results and Discussion

Maize is a major crop grown in study area. Maize is used as fodder and food for animals, and also in human diet, maize has a unique importance. In district, this crop is grown in three seasons namely kharif, rabbi and summer area under Maize is large. As per table 1 we can see that the area under Maize crop is very large. In this kharif season, the area under maize crop is very large during the study period 2000-01 to 2019-20 whereas the area under cultivation in kharif season is less. In summer, this crop is grown on a very small area. But this crop can be seen only in the regions where summer irrigation facilities are available. Its area appears to be very less in study area, as the rainfall in study region is very low, so the availability of water for irrigation during summer is less. Therefore, as the area under irrigation is very less, people here think of other crops, so the area under Maize is less in the summer season.

Table 1: Seasonal Area Under Maize crop in Chhatrapati Sambhajinagar (Aurangabad) District

Years	Kharif Area in Ha	Rabbi Area in Ha	Kharif Area in Ha	Summer Area in Ha	Annual Area in Ha
2000-01	73200	1100	73200	200	74500
2001-02	75700	2000	75700	200	77900
2002-03	82000	1700	82000	300	84000
2003-04	90400	2100	90400	0	92500
2004-05	89900	1800	89900	100	91800
2005-06	96900	1700	96900	300	98900
2006-07	101500	2200	101500	700	104400
2007-08	108000	1500	108000	200	109700
2008-09	113000	1000	113000	200	114200
2009-10	124800	1300	124800	400	126500
2010-11	138400	4300	138400	300	143000

2011-12	144200	2900	144200	1100	148200
2012-13	144200	5300	144200	500	150000
2013-14	167900	6400	167900	1100	175400
2014-15	191700	9000	191700	3400	204100
2015-16	212700	9400	212700	800	222900
2016-17	49300	16000	49300	1700	67000
2017-18	380	7800	380	910	69300
2018-19	39300	0	39300	160	39460
2019-20	44630	23400	44630	8100	76160
Average	104405.5	5045	104405.5	1033.5	113496

According to Figure 1 the area under maize crop in kharif season in district is given in hectare, we can see a continuous increase from 2000-01 to 20-2016 and it has decreased after 2017-18. During the season, the area under maize crop is highest in 2015-16 and lowest in 2017-18. During this season, the area under Maize is between 212700 and 380 hectares. That is, there is a huge difference between the maximum and the minimum area under maize. It can be seen that this year has production area while the lowest production year is 2017-18 and more area is seen in 2018-19, 2019-20, 2016-17 and 2000-01. After kharif crop in study area the season with maximum area is rabbi and the area under maize crop in rabbi season in district is highest in 2019-20 while the lowest area is in 2008-09 and we can see that no record of area under maize crop is available in 2018-19. The area under maize crop in rabbi season is 23400 to 1000 ha during the study period 2000-01 to 2018-19. Among these, the highest area is in 2019-20, followed by 16000 in 2016-17, 9400 in 2015-16 and 9000 in 2014-15 and decreasing to 1000 in 2008-09. As shown in Figure 2, the area under maize during the rabbi season from 2000-01 to 2010-11 is less and the area under it is increasing in the subsequent period. Except for this year as data for 2018-19 is not available, the area under maize during rabbi season from 2014-15 to 2019-20 is seen to have increased significantly over the previous period.

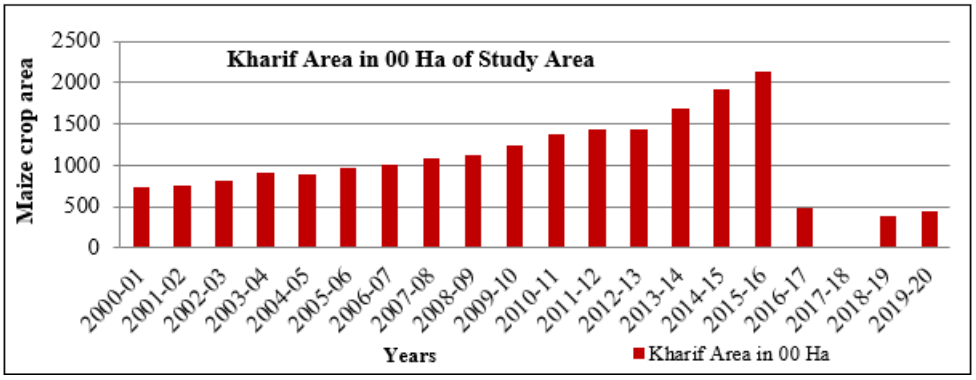

Figure 1: Kharif Area in 00 Ha of Chhatrapati Sambhajinagar

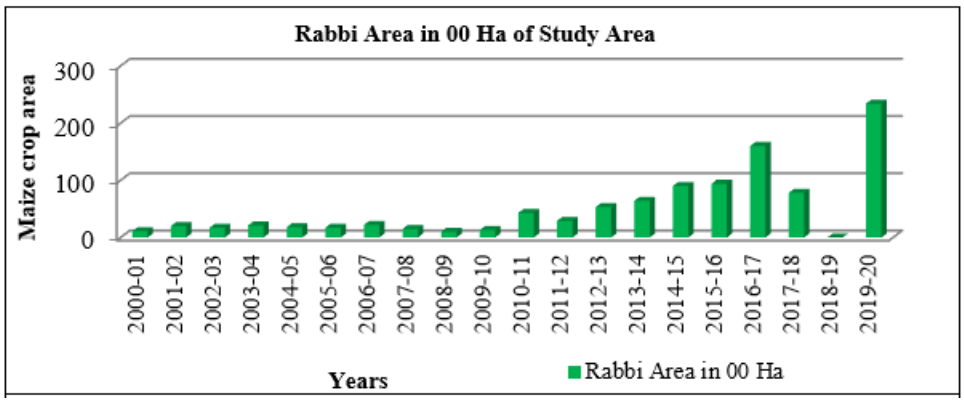

Figure 2: Rabbi Area in 00 Ha of Chhatrapati Sambhajinagar

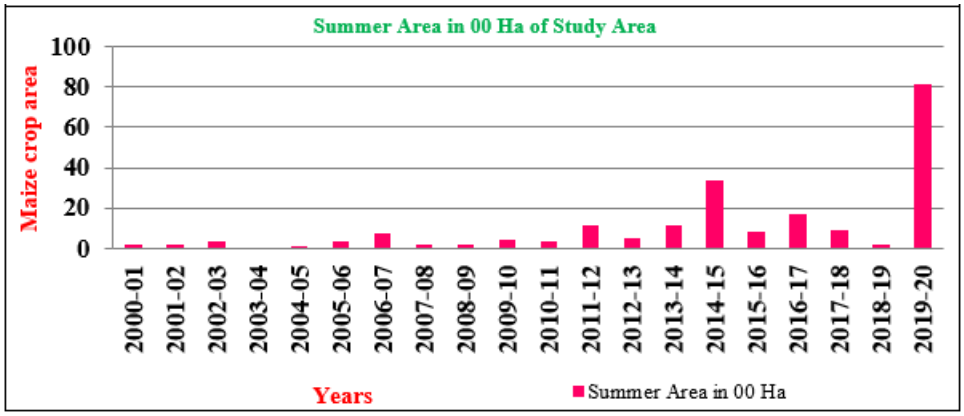

Figure 3: Annual Area in 00 Ha of Chhatrapati Sambhajinagar

Figure 3 shows the area under Maize crop in summer season and we do not see any trend in the area under Maize crop but in 2019-20 it is seen that the area under Maize crop in this season is much below that in 2014-15 and in 2016-17. It can be seen that the area under crop is more. Whereas in the year 2003-04, the area under summer maize crop was not recorded and the lowest area was only 100 hectares in 2004-05, more than this in 2018-19, 2008-09, 2000-01, 2007-08, 2001-02, 2002-03. It can be seen that there has been a slight increase in the area of more than 1000 hectares in the summer season for five years; in addition, the area under the production in the summer season for fifteen years is less than 100 hectares. So in Figure 4 if we consider the total annual area under maize crop, the highest area is 222900 hectares in 2015-16 and the lowest area is 693 hectares in 2017-18. That is, the total area under maize crop in one year is hectare, under which 204100, 175400, 150000, 148200, 143000, 126500, 114200, 109700, and 104400 are the area under maize crop for 10 years and the remaining 10 years are less than 100000. And it can be seen that it has come down to 693 hectares.

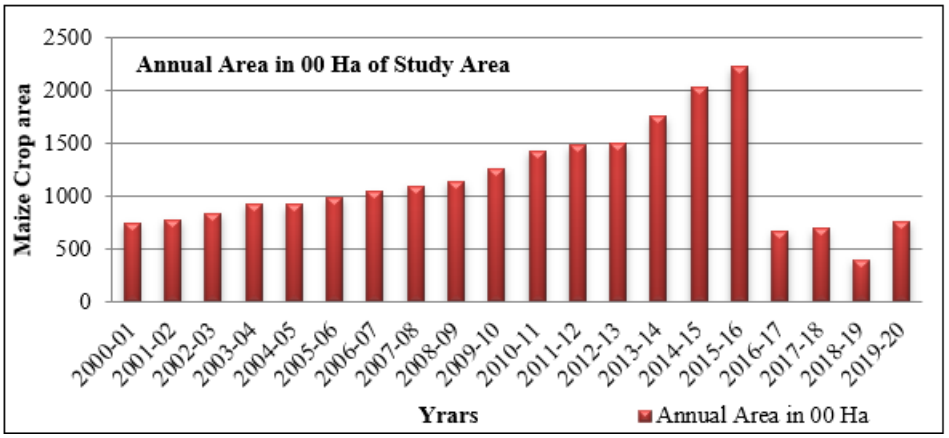

Figure 4: Annual Area in 00 Ha of Chhatrapati Sambhajinagar

7. Conclusion

Just as the maize crop area is more available during Kharif season, also in terms of income, the production of maize crop is higher during the season but it is less during other seasons. Even though irrigation facilities are available in some regions during summer, the maize crop area is very less cultivated because farmers are attracted to other important crops instead. If we consider the annual area under maize, the trend towards this crop has decreased since 2015-16. while maize is grown for food, compose of various food items, fodder and feed for animals, etc., it is cultivated on very less area during summer.

8. Future Scope

The area under various crops in the district is different and their changes also depend on many factors like crop demand, rainfall and temperature. Then while studying these crops, we see that the area under these crops is increasing and decreasing to a greater extent and we acquire to see different areas under the crop in every season. In the future, we will be able to study the area under maize crop, how much production per hectare was done. We can also study the total production and productivities per hectare in intensity. Also, we can discover out the trend of each crop.

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