



# A Geographical Study Of Cropping, Production And Yield Pattern Of Selected Crops In Parbhani District (Maharashtra State)

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**Abstract:** The primary goal of this study is to investigate the Parbhani district's planting, production, and yield patterns for a particular crop. The research paper's foundations are secondary data, and pertinent statistical data were gathered from a variety of government sources. When it comes to food grains, wheat and jawar crops took up the most space. A total of 3.54 percent of the gross cultivated land was brought under non-food grain crops, according to the position of all oil seed crops. Jawar produced the most overall cereals, followed by maize, according to the production pattern in the study. Groundnut yields in the Parbhani region were 1639.66 kg, 1281 kg, 1181.67 kg, and 1065.33 kg for jawar, according to the study area. The District Per Hector ranking of food grain crops shows maize in first place, followed by wheat. It was also noted that during the investigation, wheat, Bajara, Jawar, and rice all showed negative changes. However, all of the crops in the district have demonstrated a good change. Crops grown for food grains saw a rise in yield of 17.13, with a 17.73 percent increase in crop output for cereals.

**Index Terms - Agriculture Production, Cropping Pattern, Yield Pattern, Food grains, Oilseeds, Cash Crops, Parbhani District..**

## I. INTRODUCTION

It is impossible to imagine a nation's economy growing without its agricultural sector. The development of the Indian economy is significantly influenced by agriculture. With the predicted drop in agriculture's GDP share, which fell from 55.1% in 1950–1951 to 14.6 percent in 2016, the Indian economy has undergone structural changes over time. The Parbhani District covers 15021 square kilometres, or 4.88% of the state's overall size. Urban areas make up around 414 (2.76%) square kilometres of this total, while rural regions make up 14607 (97.24%) square kilometres. † Rainfall is crucial to agriculture in the Parbhani District. Mainstream agricultural land in the Parbhani District is farmed without irrigation. There are no significant irrigation projects. Thus, crop rotation, crop pattern, and overall land productivity in the District are all influenced by rainfall. In general, the District experiences meagre and erratic rainfall, with an average annual total of 625 mm. The soils in the District have been divided into four major types based on depth and structure, namely. (a) Soils that are just 7.5 cm deep. (b) Shallow soils between 7.5 and 22.5 cms. (c) Medium-depth soils from 22.5 to 90 cm. (d) Soils with a depth of more than 90 cm.

## Study Region :

Parbhani district is situated in the central of Maharashtra and lies between 18 45' North to 20 01' North latitudes and 76 13' East to 77 26' East Longitudes. The boundaries attached to the neighboring districts on north by Buldhana and Akola, on east by Hingoli and Nanded, on south Latur and Beed and on west Jalna district. The river Purna runs on the boundaries of Hingoli and Parbhani district and work as attach these two regions. The other River Godavari which runs on the boundaries of Beed and Parbhani forms a part of study region. It runs through Pathri, Sonpeth, Manwat, Gangakhed, Palam and Purna tahsils. The area of study region is 6511 sq. kms, which is 2.11 percent of the total area of the state. The population of the study region is 1491109 (2001 census) which is 2.76 percent of the total population is 229 persons per sq.km. Among the

thirty five districts of the state, the district ranks 26th in terms of population and 18th in terms of density. The region includes 830 inhabited villages and eight urban centers. The study region is administratively subdivided into nine tahsils namely Parbhani, Gangakhed, Palam, Sonpeth, Purna, Pathri, Manwat, Sailu, and Jintur.( Fig no.1)

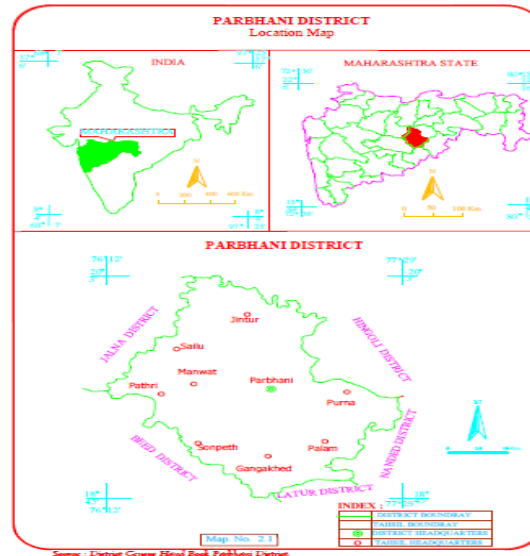


Fig no.1

### Objective:

The main purpose of this research paper is to examine the cropping pattern, production pattern and yield pattern of selected crop in the Parbhani district of Maharashtra state.

### Data Source:

Research paper is based on secondary data. Relevant statistical data have collected from Maharashtra data bank, economic abstract of Parbhani district.

### Research Methodology

Analytical research methodology have used for the analysis of cropping pattern, production pattern and yield of selected crop. Pluses, cereals and foodgrains, cash crop, oilseeds have selected

### Data Tools:

Percent of change and percent of share used for analysis of statistical data.

### Cropping Pattern:

Cropping pattern means the proportion of area under different crop at a particular period. The change in cropping pattern in a particular span of time clearly indicates the changes that have taken place in the agricultural development. Agricultural loans play a vital role in this connection. Moreover, Area under different crops would determine the generation of income and employment. The trends in the cropping pattern in Parbhani District with three year average for the year 2008-09 and 2018-19 is shown in the table 1. In the Parbhani District Jawar, wheat and maize are the major cereal crops in the year 2018-19. The area under food grain crops was 7867.67 hectors (i.e. 69.24 percent). Among the food grain Jawar crop occupied highest area (i.e.51.70 percent) followed by wheat crop (4.95 percent) in the year of 2018-19. Moreover among the pulses gram crop occupied highest area (i.e.3.75 percent) than other pulses. Thus the cropping pattern in the District showed that, the foodgrains crop are main. Among the food grains crops Jawar, occupied lion share in the cropping pattern.

In case of non-food grain crops the position of total oil seed crops showed that of the total gross cropped area 3.54 percent area was brought under these crops in the year 2018-19. Moreover, among oilseeds groundnut is the major crop having 0.70 percent. Among the cash crops the sugarcane has occupied largest area 15.47 area, whereas the cotton has occupied a very small area 0.10 percent of the gross cropped area in the District. Over a period it was observed from table 1 that in the District the area under sugarcane increased by 165.73 percent during the period of 2008- 09to 2018-19.

Table No. 1 Cropping Pattern in Parbhani District (Three Year Average) Area in "00" he

| Sr.No | Crops              | 2008-09         | 2018-19         | % of change |
|-------|--------------------|-----------------|-----------------|-------------|
| 1     | Rice               | 13.67 [0.13]    | 6 [0.05]        | -56.11      |
| 2     | Wheat              | 510 [5.19]      | 486.33 [4.95]   | -4.64       |
| 3     | Jawar              | 6752 [68.82]    | 5352.33 [51.70] | -20.73      |
| 4     | Bajara             | 300.67 [3.06]   | 115.33 [1.11]   | -61.64      |
| 5     | Maize              | 264.33 [2.69]   | 437.33 [4.22]   | 65.45       |
| 6     | Other cereals      | 13.00 [0.13]    | 35.01 [0.33]    | 169.31      |
| 7     | Total Cereals      | 7853.67 [80.05] | 6432.33 [62.14] | -18.10      |
| 8     | Tur                | 174.33 [1.77]   | 274 [2.64]      | 57.17       |
| 9     | Gram               | 565.34 [5.76]   | 388.66 [3.75]   | -31.25      |
| 10    | Other pulses       | 61.00 [0.62]    | 72.67 [0.70]    | 19.13       |
| 11    | Total Pulses       | 800.67 [8.16]   | 735.33 [7.10]   | -8.16       |
| 12    | Total Food grains  | 8554.33 [87.20] | 7167.67 [69.24] | -16.21      |
| 13    | Sugarcane          | 603 [6.14]      | 1602.33 [15.47] | 165.73      |
| 14    | Cotton             | 49.67 [0.50]    | 10.67 [0.10]    | -78.52      |
| 15    | Groundnut          | 114 [1.16]      | 72.67 [0.70]    | -36.25      |
| 16    | Safflower          | 168.33 [1.71]   | 35.67 [0.34]    | -78.81      |
| 17    | Other oil seeds    | 404.34 [4.12]   | 258.33 [2.49]   | -36.11      |
| 18    | Total oilseeds     | 686.67 [6.99]   | 366.67 [3.54]   | -46.60      |
| 19    | Gross Cropped Area | 9810            | 10351           | 5.51        |

Source: <http://mahaagri.gov.in/level3detaildisp.aspx?id=6&subid=11&sub2id=1>

**Note:**

1. Figures in parenthesis on shows percentage to gross cropped area
2. Area under sugarcane shows actual area.

The area under maize and Tur crops under also increased during the same period in the District. Otherwise all other crops in the District observed negative growth in the District over the period. **Production Pattern:**

The climatic condition of the District contribute to inferior output pattern. Table 2 given the output pattern of the District for 2008-09 and 2018-19 (Three year average). Food grain production was predominant in the District, cereals contributing the major chunk. Of the total cereals, output of Jawar was commanding and next came maize. These two crops together comprised 74.05 percent of food grains production of the District. Besides Jawar, maize and wheat also produced and its share 13.73 percent of the food grains production. Pluses were relatively less important, sharing only 8.60 percent of total food grains production of the District. Gram contributed 5.21 percent of the pulses output. Among the non-food crops sugarcane, cotton, groundnut and the oil seeds were conspicuous. Perusal of trends in output changes in 2010- 13 over 2008-09 that have taken place in the District reveals the performance of maize (190.24 percent), sugarcane(186.51 percent) and other cereals (184.43 percent), Tur (63.77 percent) other pulses(52.23) and gram (12.54 percent ) were the other crops which followed the growth over the period. For the District, output of main crops like maize, sugarcane, Tur, and gram revealed an uptrend's in more or less proportions, whereas the other crops like rice, safflower, Bajara, cotton, groundnut and also Jawar revealed a downtrends in more or less proportion. A positive feature treated of the agriculture development of the District because of upward trends in main crops.

**Table No.2 Production Pattern in Parbhani District (Three year average)**

| Sr.No | Crops                    | 2008-09             | 2018-2019           | % of change |
|-------|--------------------------|---------------------|---------------------|-------------|
| 1     | <b>Rice</b>              | 15 [0.36]           | 1.67 [0.03]         | -88.87      |
| 2     | <b>Wheat</b>             | 601.67<br>[14.55]   | 598.67<br>[13.73]   | -0.50       |
| 3     | <b>Jawar</b>             | 2757 [66.71]        | 2357 [54.06]        | -14.51      |
| 4     | <b>Bajra</b>             | 123.33<br>[2.98]    | 45.67 [1.05]        | -62.97      |
| 5     | <b>Maize</b>             | 300.33<br>[7.27]    | 871.67<br>[19.99]   | 190.24      |
| 6     | <b>Other cereals</b>     | 38.67 [0.94]        | 109.99<br>[2.52]    | 184.43      |
| 7     | <b>Total Cereals</b>     | 3839 [92.89]        | 3984.67<br>[91.40]  | 3.79        |
| 8     | <b>Tur</b>               | 61.67 [1.49]        | 101 [2.32]          | 63.77       |
| 9     | <b>Gram</b>              | 202 [4.89]          | 227.33<br>[5.21]    | 12.54       |
| 10    | <b>Other pulses</b>      | 30 [0.73]           | 45.67 [1.05]        | 52.23       |
| 11    | <b>Total Pulses</b>      | 293.67<br>[7.11]    | 375 [8.60]          | 27.69       |
| 12    | <b>Total food grains</b> | 4132.67<br>[100.00] | 4359.67<br>[100.00] | 5.49        |
| 13    | <b>Sugarcane</b>         | 48460               | 138843              | 186.51      |
| 14    | <b>Cotton</b>            | 74                  | 31                  | -58.11      |
| 15    | <b>Groundnut</b>         | 104.33<br>[29.89]   | 82.33<br>[27.54]    | -21.09      |
| 16    | <b>Safflower</b>         | 52.67<br>[15.09]    | 19.33 [6.46]        | -63.30      |
| 17    | <b>Other oil seeds</b>   | 192.01<br>[55.02]   | 196.67<br>[65.78]   | 2.43        |
| 18    | <b>Total Oilseeds</b>    | 349 [100.00]        | 299 [100.00]        | -14.33      |

Source:<http://mahaagri.gov.in/level3detaildisp.aspx?id=6&subid=11&sub2id=1>

#### Note

- 1.The output of foodgrains & sugarcane is in tones
2. The output of cotton is in lakh bales
3. Figure in parenthesis shows percentage to total food grain and total oil Seeds.

#### Yield Rates of Mains Crops:

Table no 3 given the yield rates of the principle crops for the year 2000-03, and 2018-2019 as a three year average. Taking as the reference year, 2008-09 crops having higher yields are Groundnut (1639.66 kg) maize (1281 kg), wheat (1181.67 kg) and Jawar (1065.33 kg). Among the food grain crops, maize has occupied first rank in the District with yield of 1281 kg. Per hectore and then come the Wheat. Other cereals have also given more yields in the District such as rice, Jawar, Gram and Bajara. The low level yield crops such as Tur, safflower and cotton were observed in the District. Variation in the yield rates of various crops were caused mainly by the bio-chemical technology. It was observed that crops having higher yields also had higher coverage under high yielding varieties.

**Table No.3 Yield of Main Crops in Parbhani District (Three Year Average) (In Kg per ha)**

| Sr.No | Year/ Cops                    | 2008-09 | 2018-2019 | % of change |
|-------|-------------------------------|---------|-----------|-------------|
| 1     | Rice                          | 1024    | 273       | -73.34      |
| 2     | Wheat                         | 1181.67 | 1116      | -5.56       |
| 3     | Jawar                         | 1065.33 | 861       | -19.18      |
| 4     | Bajara                        | 420.33  | 316.33    | -24.74      |
| 5     | Maize                         | 1281    | 1941      | 51.52       |
| 6     | Other cereals                 | 297     | 314       | 5.72        |
| 7     | Total cereals                 | 488.67  | 575.33    | 17.73       |
| 8     | Tur                           | 313.67  | 361       | 15.09       |
| 9     | Gram                          | 517     | 581       | 12.38       |
| 10    | Other pulses                  | 491     | 628       | 27.90       |
| 11    | Total pulses                  | 415.33  | 494.33    | 19.02       |
| 12    | Total food grains             | 482.67  | 565.33    | 17.13       |
| 13    | Sugarcane (tones per hectors) | 80      | 85.67     | 7.09        |
| 14    | Cotton                        | 243.67  | 506.33    | 107.79      |
| 15    | Groundnut                     | 1639.66 | 1935      | 18.01       |
| 16    | Safflower                     | 313.33  | 473.67    | 51.17       |
| 17    | Other oilseeds                | 289.62  | 536.36    | 85.19       |
| 18    | Total oilseeds                | 497.67  | 830.33    | 66.84       |

Source:<http://mahaagri.gov.in/level3detaildisp.aspx?id=6&subid=11&sub2id=1>

Moreover, it was observed that during 2008-09 to 2018-2019, Rice, Bajara, Jawar and Wheat have shown negative change. While remaining all the crops have showed the positive change in the District. In case of cotton it has registered the increase of 107.79 percent, followed by maize (51.52 percent) in yield in the District. The yield of food grains crops increased by 17.13, where the growth in yield of cereals was 17.73 percent. Moreover the yield of pulses has increased by 19.02 percent. About the sugarcane crop its yield was increased by 7.09 percent during the same period in the District.

### Conclusion:

The cropping intensity in the Parbhani District was declined in the period. It was found that, the area under food grain crops was 69.24 percent. Among the food grain Jawar crop occupied highest area followed by wheat crop in the year of 2018-2019. Moreover among the pulses gram crop occupied highest area 3.75 percent than other pulses. In case of non-food grain crops the position of total oil seed crops showed that of the total gross cropped area 3.54 percent area was brought under these crops. According to output pattern in the study area of the total cereals, output of Jawar was commanding and next came maize. These two crops together comprised 74.05 percent of food grains production of the District. Besides Jawar, maize and wheat also produced and its share 13.73 percent of the food grains production. Pulses were relatively less important, sharing only 8.60 percent of total food grains production of the District. It was observed that, yields of Groundnut (1639.66 kg) maize (1281 kg), wheat (1181.67 kg) and Jawar (1065.33 kg) found in study area. Among the food grain crops, maize has occupied first rank in the District Per hector and then come the Wheat. Moreover, it was observed that during study, rice, Bajara, Jawar and wheat have shown negative change. While remaining all the crops have showed the positive change in the District. The yield of food grains crops increased by 17.13, where the growth in yield of cereals was 17.73 percent.



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individual security are not perfectly positively correlated, the  $\beta$  of portfolios can be much more precise estimates of the true  $\beta$  (Blum, 1968).

