

# Analysis of Rainfall for Crop Planning

Pranay Moon  
Civil Engineering Department,  
K. D. K. COLLEGE OF ENGINEERING  
*An Institute under R.T.M.N.U*  
Nandanvan, Nagpur, Maharashtra, India  
moonpranay6@gmail.com

Yogesh Burande  
Civil Engineering Department,  
K. D. K. COLLEGE OF ENGINEERING  
*An Institute under R.T.M.N.U*  
Nandanvan, Nagpur, Maharashtra, India

Saket Vyas  
Civil Engineering Department,  
K. D. K. COLLEGE OF ENGINEERING  
*An Institute under R.T.M.N.U*  
Nandanvan, Nagpur, Maharashtra, India

Pratik Sangolkar  
Civil Engineering Department,  
K. D. K. COLLEGE OF ENGINEERING  
*An Institute under R.T.M.N.U*  
Nandanvan, Nagpur, Maharashtra, India

**Abstract:** The rainfall-based information generated by this study is expected to be of considerable agronomic importance for the efficient planning and management of rainfed cotton based cropping system. A detailed knowledge of the rainfall regime at a place is an important prerequisite for agricultural planning and management. More so for rainfed agriculture, rainfall is the single most important agro-meteorological variable influencing crop production. In the absence of reliable, physically based seasonal forecasts, crop management decisions and planning have to rely on statistical assessment based on the analysis of historical rainfall records.

**Introduction:** Rainfall is one of the most important natural input resources to crop production in semiarid region. About 116.26 MHa areas of the country falls under rainfed farming out of 89.54 MHa grossed cropping area during 1966-67. Rainfall plays significant role in deciding the severity of drought prone area in particular region. The occurrence of droughts and floods is a common phenomenon in India, where average annual rainfall greatly varies across the country. Karnataka is one of the

important spice producing states in India. There are ten agro climatic zone classified based on rainfall pattern – quantum and distribution, soil types, texture, major crops, and type of vegetation in the state. Over major parts of the Indian subcontinent, the southwest summer monsoon period in the principal rainy season. The amount and distribution of rainfall in any particular area are very helpful in sound crop planning. Rainfall also determines the potential of any region in term of crop to be produced. However it is not necessary that a year receiving low rainfall result in a low crop output and an year receiving high rainfall is a better crop year.

## 1. Aim:

Analysis of rainfall for crop planning

## 2. Objectives:

1. To study measurement of rainfall.
2. To collect rainfall data.
3. To analyze rainfall data.
4. Study of crop planning.

**3. Study Area:**The study was done for two different regions namely Bhandara region and Nagpur region. From Nagpur and Bhandara region we selected two station



Fig.1 Bhandara region

**4. Data collection:** To receive daily rainfall data from hydrology department some of us become HDUG (hydrology department of user guide ) member and they are PranayMoon, YogeshBurande, Pratik Sangolkar .then we had applied for daily rainfall data for last 12 year (2000-2012) to SDSC Nashik. On basis of received daily rainfall data we analyzed the Rainfall in following format.

kampteekhairi (Latitude  $21^{\circ}14''N$  & Longitude  $79^{\circ}12''E$ ) and bonde (latitude  $21^{\circ}09''N$  & Longitude  $79^{\circ}42''E$ ) respectively.



Fig.2 Nagpur region

1. Fortnight period
2. Monthly period

#### 5. Analysis:

##### 1. Fortnight:

On the basis of data we analyze average rainfall data for each 15 days from June to October for Bhandara region (1996-2006) & for Nagpur region (2000-2012).

##### 1. Bhandara region:

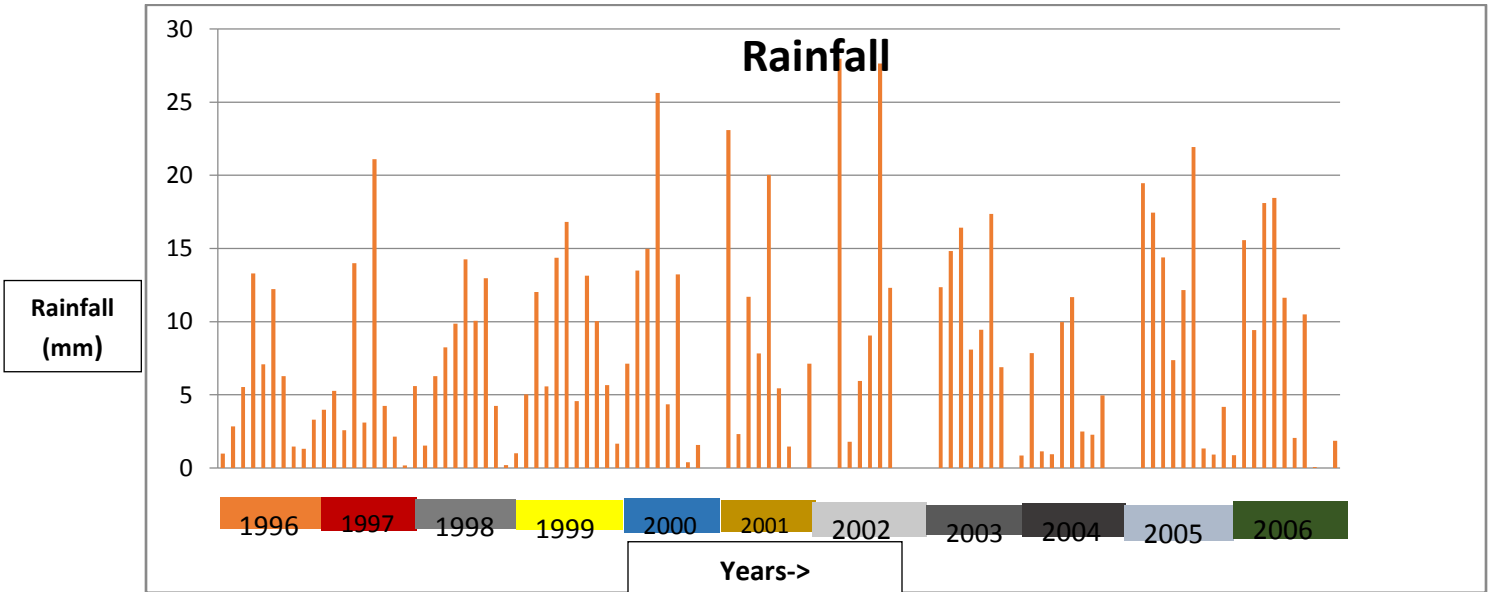


Fig.3 Bhandara region fortnight

Observation:

Maximum rainfall fortnight is observed for year 2005.

2004 is observed as dry year.

**2. Nagpur region:**

October 2002 & 2004 is observed as zero fortnight.

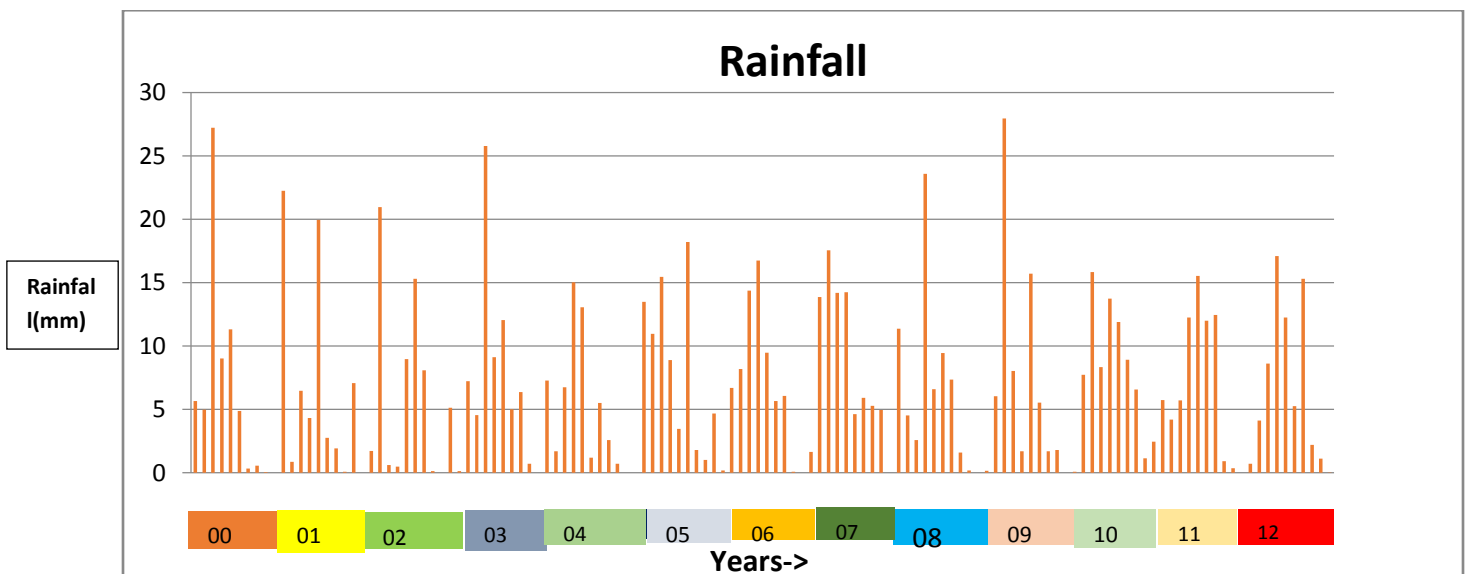


Fig.4Nagpur region fortnight

2007 observe as maximum wet year.

## 2. Monthly Rainfall:

On the basis of data we analyze monthly rainfall data from June to September for Bonde ,Bhandara region (1996-2006) & for KampteeKhairi,Nagpur region (2000-2012).

Observation

2004 observe as dry year.

October2004, 2003& 2001 first fortnight is observe as zero fortnight.

### 1. Bandara Region:

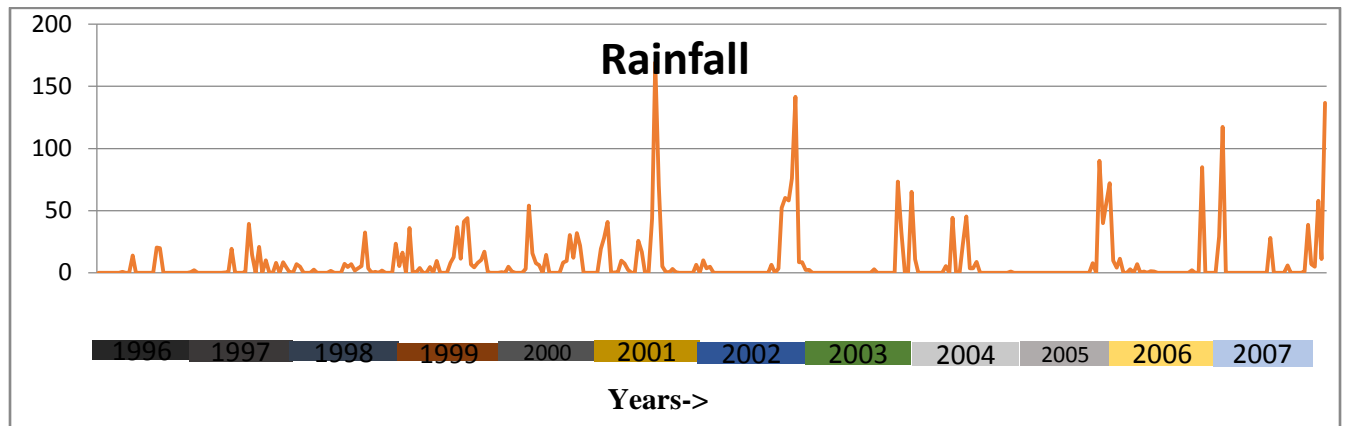


Fig.5 june month Bhandara region

Observation

1996 of june month is observe as dry year.

2002 observe as maximum wet year for june month

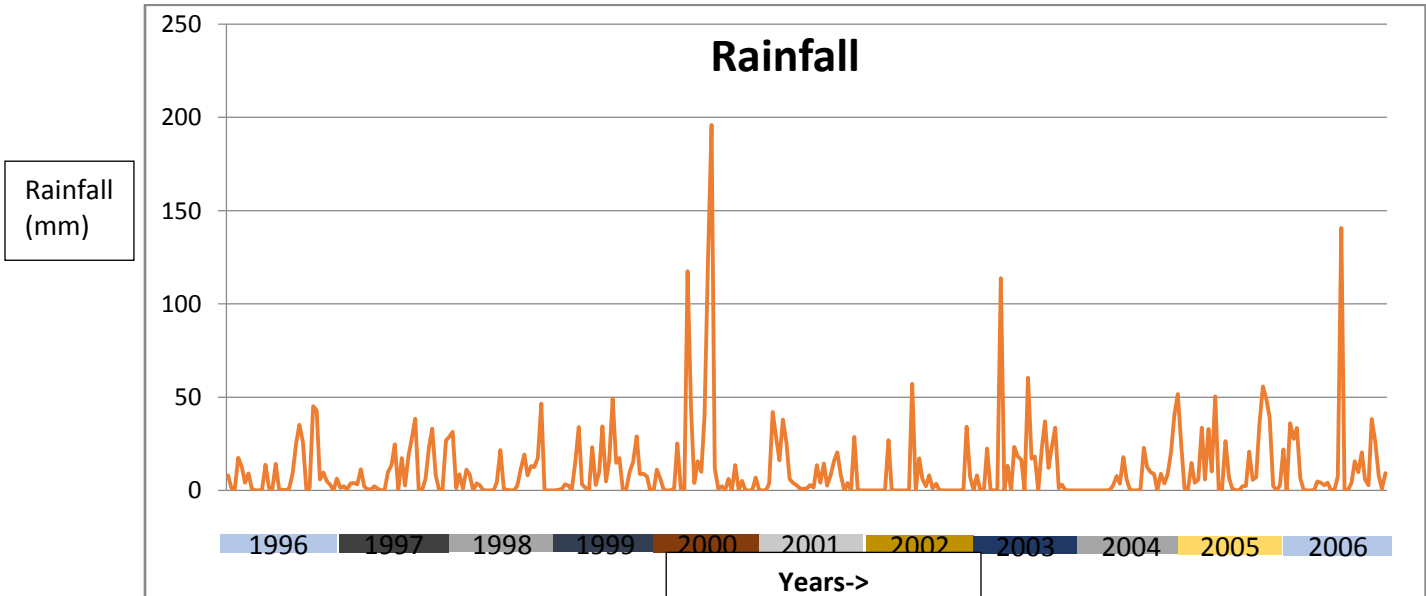


Fig.6 july month Bhandara region

Observation

2000 observe as maximum wet year for july month.

1997 of july month is observe as dry year.

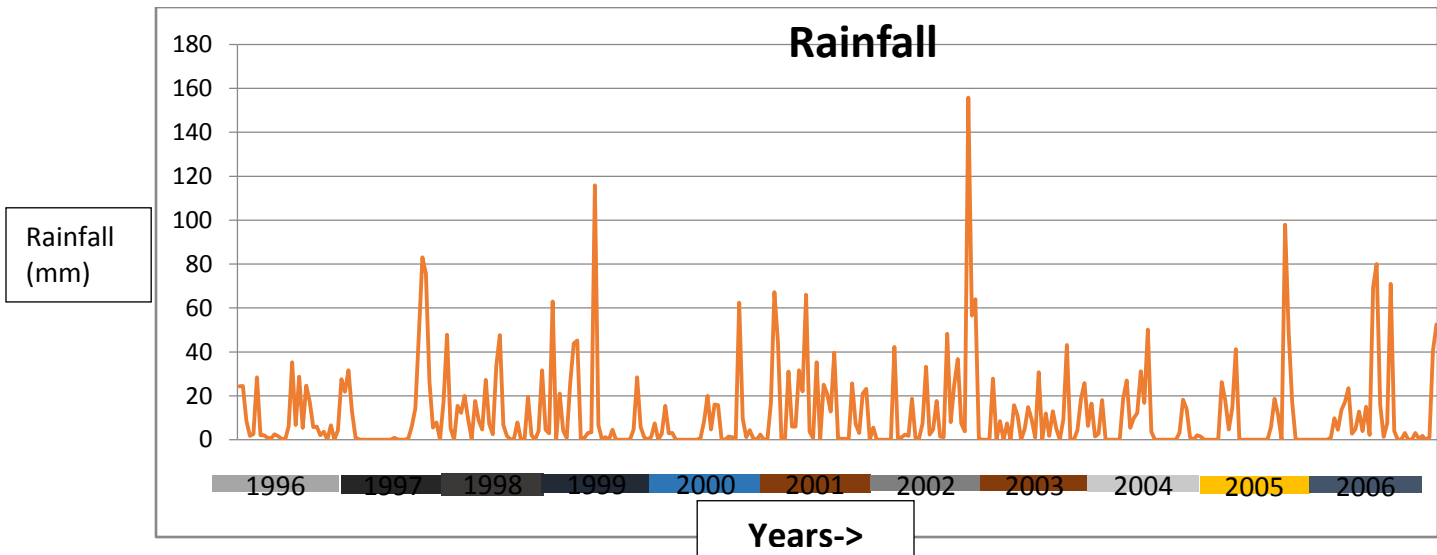


Fig.7 August Month Bhandara region

**Observation**

1997 observe as maximum wet year for August month

2000 of August month is observe as dry year.

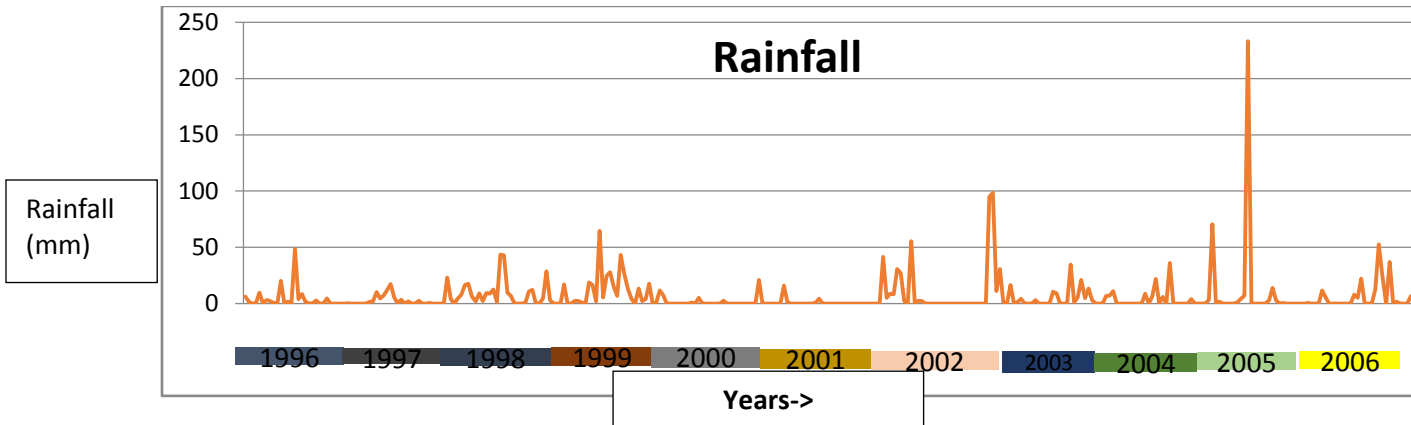


Fig.8 September Month Bhandara region

Observation

2001 observe as maximum wet year for September month.

2009 of September month is observe as dry year.

**2.Nagpur region:**

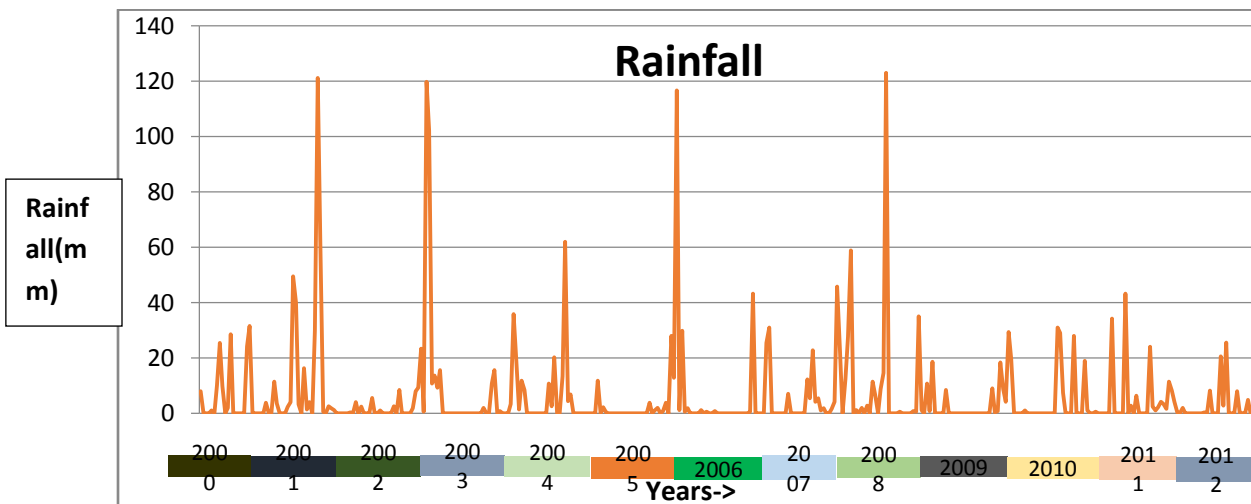


Fig.9 June Month Nagpur region

Observation

2001 observe as maximum wet year for June month.

2009 of June month is observe as dry year.

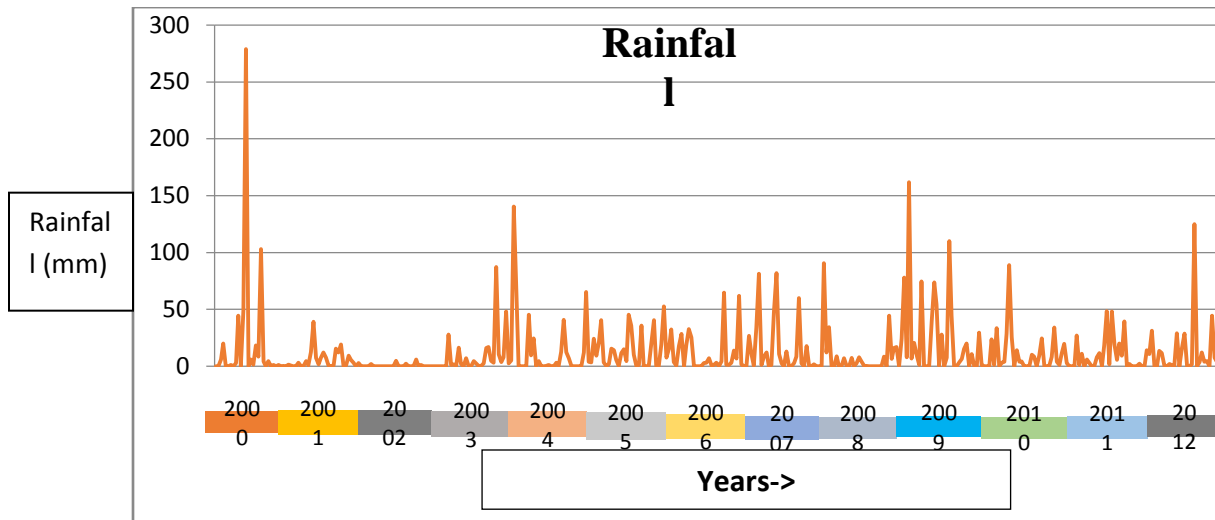


Fig.10 July Month Nagpur region

Observation: 2000 observe as maximum wet year for July month.  
 2002 of July month is observe as dry year.

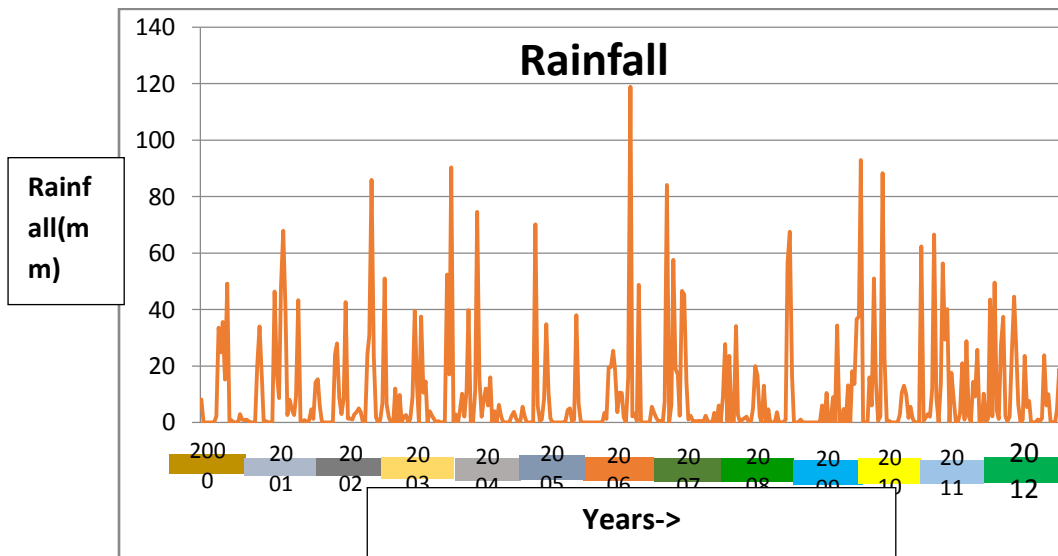


Fig.11 August Month Nagpur region

Observation 2011 observe as maximum wet year for August month.  
 2005 of August month is observe as dry year.

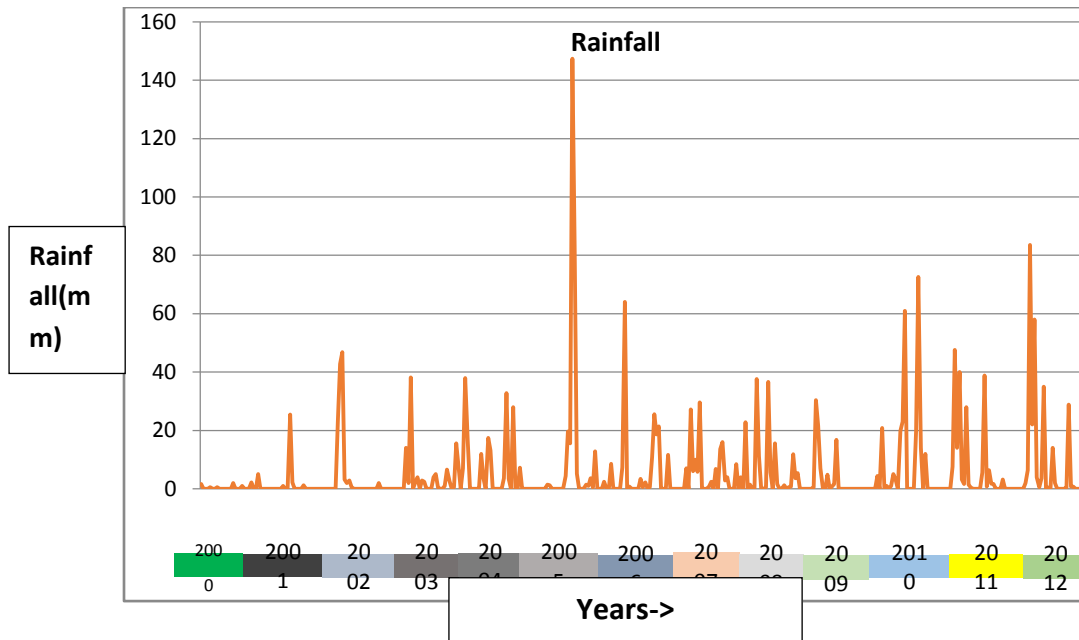


Fig.12 September Month Nagpur region

Observation

2000 of September month is observe as dry year.

2012 observe as maximum wet year for September month.

**2. Storm Period:** On the basis of daily rainfall data we have divided number of storm period, minimum 3 days rainfall taken as a storm for the both the region.

**1. Bhandara region:**

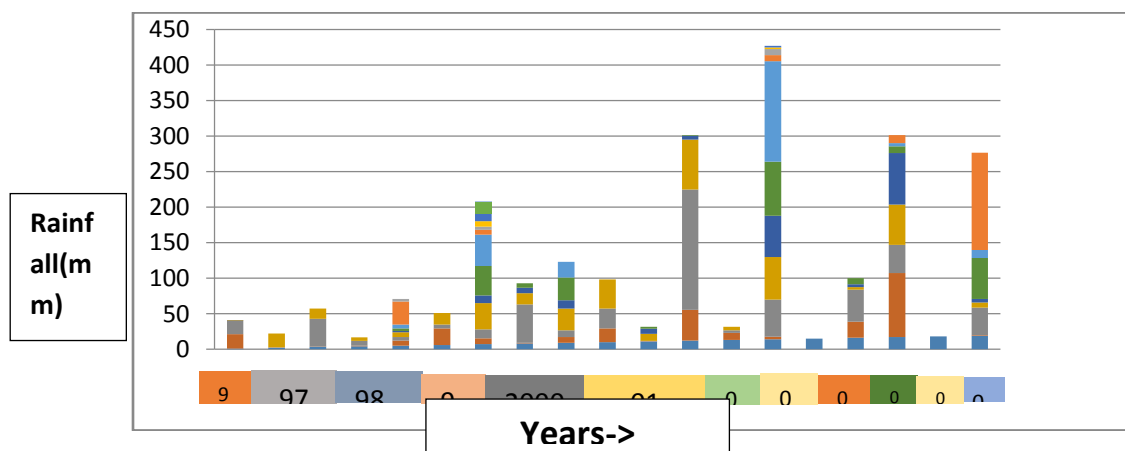


Fig.13 June Month Bhandara region Storm Period



Observation

Less Number of storm occur in 1997

Max Number of Storm occur in 2002 .

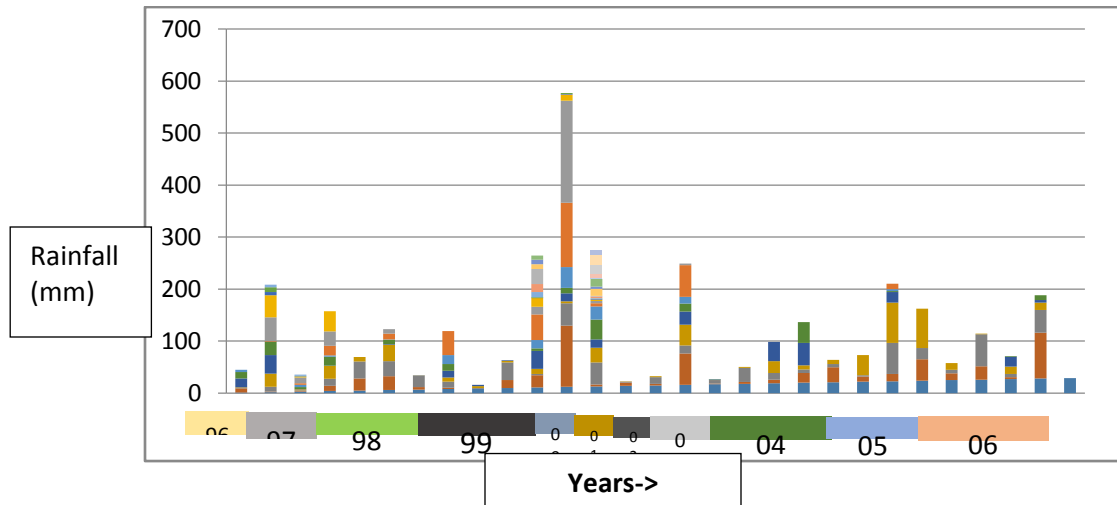


Fig.14 July Month Bhandara region Storm Period

Observation

Less Number of storm occur in 1999

Max Number of Storm occur in 2000 .

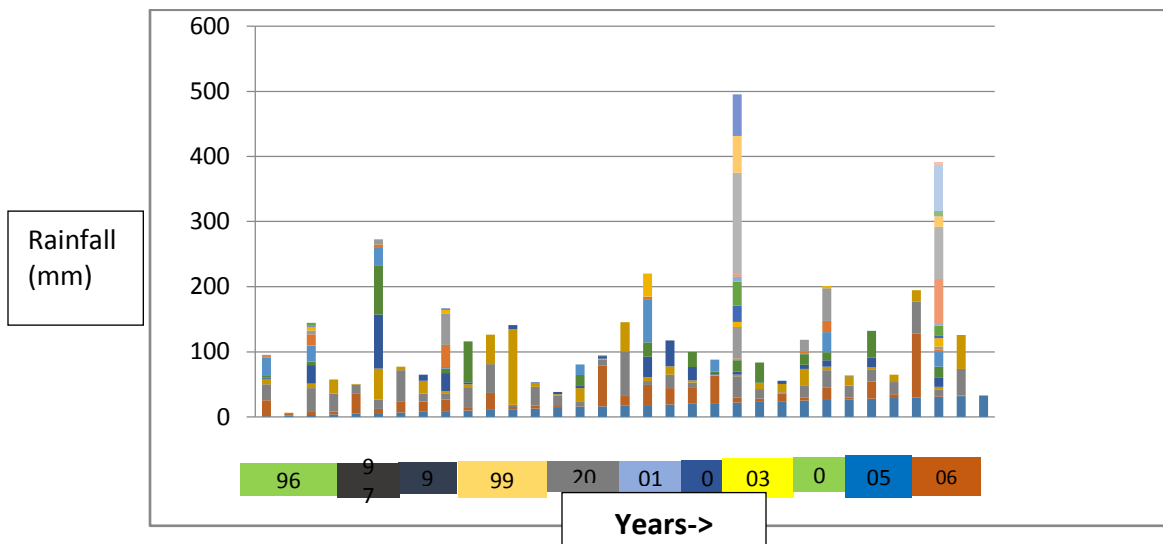


Fig.14 August Month Bhandara region Storm Period

Observation:

Less Number of storm occur in 1996

Max Number of Storm occur in 2002 .

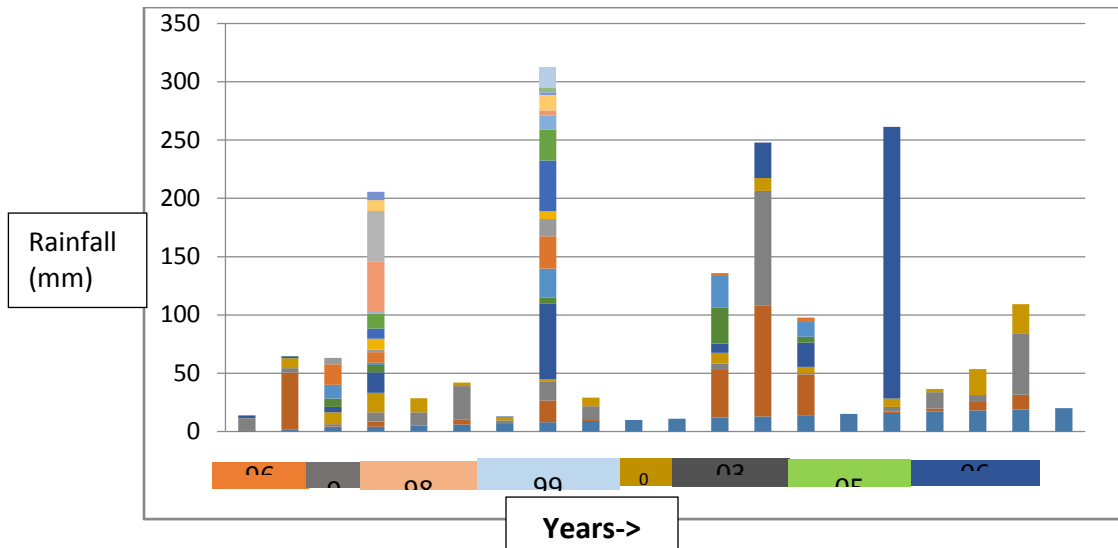


Fig.14September Month Bhandara region Storm Period

Observation

Less Number of storm occur in 2000

Max Number of Storm occur in 2005 .

**3.Nagpur region:**

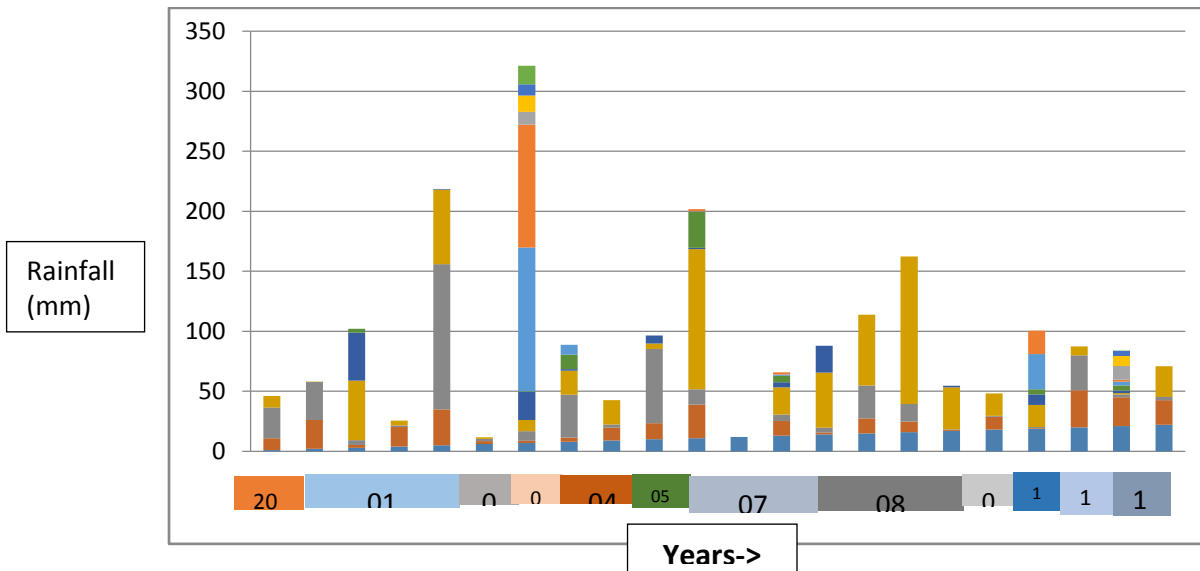


Fig.15June Month Nagpur region Storm Period

Observation

Less Number of storm occur in 2000

Max Number of Storm occur in 2005 .

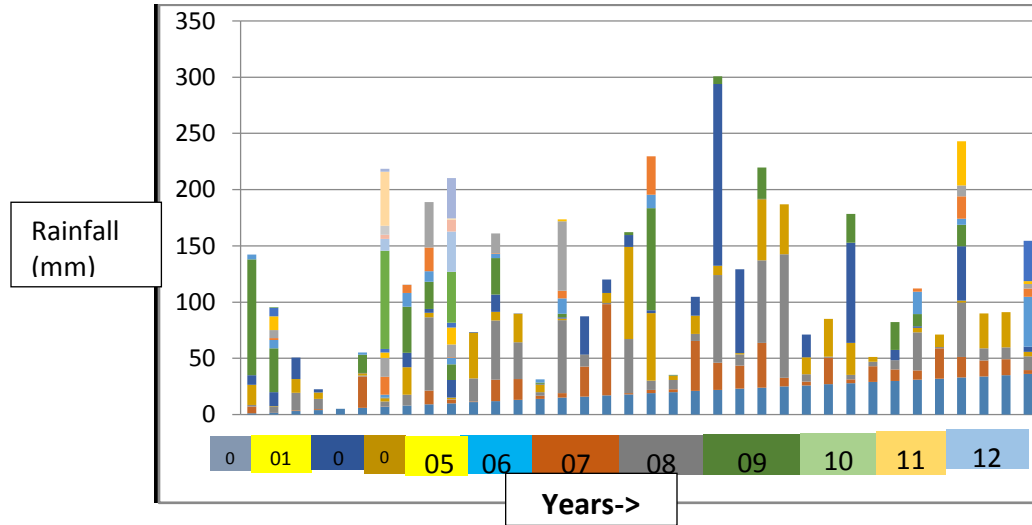


Fig.16 July Month Nagpur region Storm Period

Observation

Less Number of storm occur in 2002

Max Number of Storm occur in 2008 .

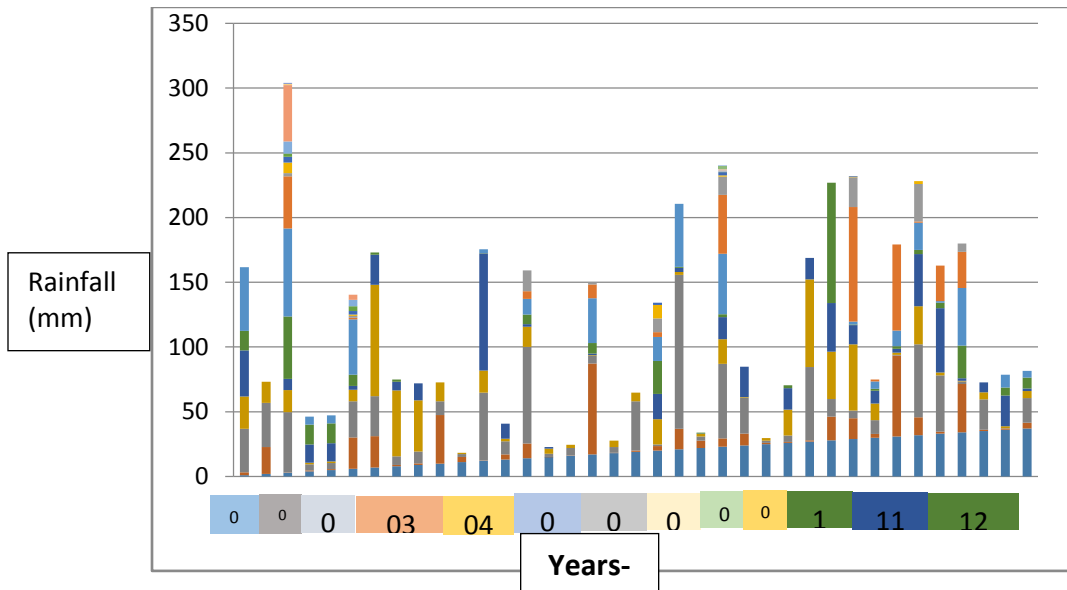


Fig.17 August Month Nagpur region Storm Period

Observation

Less Number of storm occur in 2005

Max Number of Storm occur in 2001 .

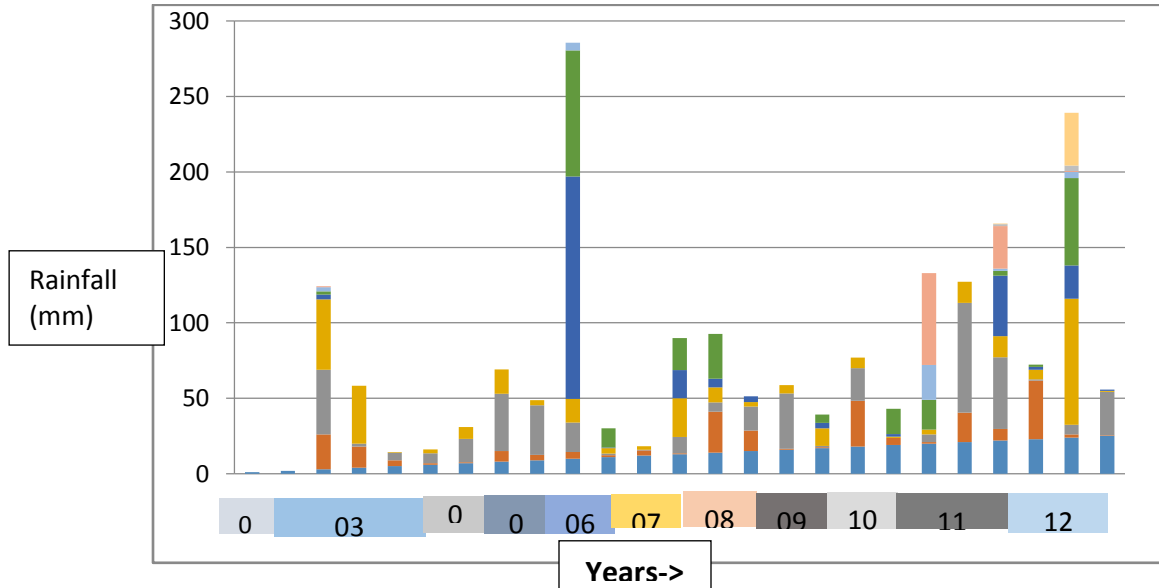


Fig.18 September Month Nagpur region Storm Period

Observation: Less Number of storm occur in 2000  
 Max Number of Storm occur in 2005 .

**4.Study of Crop :**

Crop	Duty(hec/cumec)	Delta(cm)	Sowing	Harvesting
Rice	775	120	June-July	Oct-Nov
Maize	1500	45	June-July	Sep-Oct
Wheet	1500	40	Oct-Nov	March-April
Gram	1800	30	Sep-Oct	March-April
Cotton	2000	45	May-June	Dec-April
Sugarcane	1100	90	Feb-May	Dec-March

**5.Conclusion :**

1. Fortnightly And Monthly Rainfall For Both Nagpur And Bandara Region.
2. Identified Dry Spell & Wet Spell.
3. Crop Intial Studies.

4. On the basis of all observation

further Crop Planning will be done.

**References:**

[1]Barman, D., Jakhar, P., HombeGowda, H.C. and Naik, B.S. 2011. Probability analysis of rainfall characteristics of Semi liguda in Koraput, Orissa. Indian J. Soil Cons. 39(1): 9-13.

[2]Chakra borty, P.B. and Mandal, A.P.N. 2008. Rainfall characteristics of Sagar island in Sunder ban, West Bengal. Indian J. Soil Cons. 36(3): 125- 128.

[3]Chow, V.T. 1964. Handbook of Applied Hydrology, McGraw Hill Book Co., New York.

[4]Dabral, P.P. 1996. Meteorological drought analysis based on rainfall. Indian J. Soil Cons. 24(1): 37- 40.

[5]Jena, D. and Senapati, P.C. 1981. Verification of different probability equation for drainage design for Bhubaneswar. Indian J. Power and River Valley Dev. Vol. XXXI, Nov-Dec.

[6]Kumar, D. and Kumar, S. 1989. Rainfall distribution pattern using frequency analysis. J. Agricultural Engineer. 26(1): 33-38.

[7]Ram Suresh, Kumar, D., Prasad, R. and Rai, R.K. 1992. A note on analysis of rainfall for crop planning at Pusa, Bihar. Indian J. Soil Cons. 20(3): 23-27.

