

STUDY OF CLIMATIC ENVIRONMENT AND AGRICULTURAL SCENARIO IN PURULIA

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Abstract

Purulia is identified as the 'Drought Prone' undeveloped area of the state. A close examination of per capita income, cropping intensity, proportion of seasonal and permanent fallow land, undoubtedly indicate its backwardness. The diverse physical environment, particularly weather and climate, topography and soil are usually blamed for its backwardness. Agriculture is the most weather sensitive activity. So it is essential to know for the farmers, which crop is suitable for which season, rainfall intensity, temperature and also seasonal hazards which are related to this area. The data from the potential evapo-transpiration has been collected and the water budget prepared for implementing ideal crop planning in this area.

Keywords : climate, agriculture, water budget, drought-prone

Introduction

The present Purulia district was born on November 1, 1956. Purulia, the western most district of the state of West Bengal, lies between 22°43'00" N and 23°42'00" N latitude and 85° 49' E and 86° 55' E longitude. The district is covering a total area of 6256.46 sq km. Purulia is identified as the 'Drought Prone' undeveloped area of the state. A close examination of per capita income, cropping intensity, proportion of seasonal and permanent fallow land etc. undoubtedly indicate its backwardness. The district comprises three subdivisions: Purulia Sadar East, Purulia Sadar West and Raghunathpur.

Selection of the Study Area

Purulia is identified as the 'Drought Prone' undeveloped area of the state. A close examination of per capita income, cropping intensity, proportion of seasonal and permanent fallow land etc. undoubtedly indicate its backwardness. The diverse physical environment, particularly weather and climate, topography and soil are usually blamed for its backwardness. Purulia is highly affected by its weather and suffered most in agricultural sector of the district. So, Purulia District has been selected for the study for little benefits of the district as well as districts agriculture.

Objectives

- Agriculture is the most weather sensitive activity. So it is essential to know for the farmers, which crop is suitable for which season, rainfall intensity, temperature and also seasonal hazards which are related to this area.

- ❑ Increasing hazards in different seasons has become a matter of concern to all sections of people of the country, particularly summer weather hazard in western part of the country like, Purulia.
- ❑ Weather and climatic condition is a resource in a district. All sectors activity depends and influenced by it.
- ❑ In order to find out the weather condition of the district and implementing ideal crop planning in this area and provide suggestion for managing.

Methodology

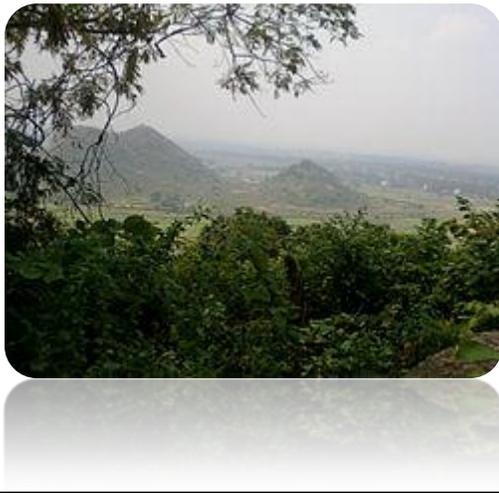
- ✓ In doing work certain methodology has been undertaken. On the basis of the collected data the work has been prepared.
- ✓ On the basis of the monthly values of rainfall, annual rainfall has been calculated. From that data the no. of rainy days have been prepared and zonation map have been prepared.
- ✓ On the basis of the collected data of the daily average maximum temperature, daily average minimum temperature, monthly average temperature, diurnal range have been prepared.
- ✓ On the collected data of the daily bright sunshine hours have been divided it with 3 agricultural seasons
- ✓ The amount of wind speed data have been collected and represent it graphically.
- ✓ The data from the potential evapo-transpiration has been collected and the water budget prepared.

Physical Set Up

Topography

Topographically the region is a part of Chotonagpur plateau.

The largest and highest among these are Ajodhya Hills, the highest point of which is located at 677 meter.



Drainage

Kangsabati, Kumari, Silabati(silai), Dwarakeswar, Subarnarekha and Damodar are the important rivers.

Soil

- Red and lateritic soil dominates the landscape.
- In general the soils are thin, coarse grained, poor in organic matters and very poor in moisture holding capacity.



Vegetation

- Mostly Sal forest mixed with species like Palash, Kusum, Mahua, Neem.
- Haritaki, Amla, Neem, Sal seeds, Bamboo, Kendu leaves are major Non-Timber Forest Produce found in this District.

Climate and Weather

- Weather and Climate of the district is mainly influenced by----
- Continental location,
- Undulating terrain with residual hills
- porous soil with very poor moisture capacity
- Absence of large water bodies on perennial rivers.
- The climate of the district may be called ‘tropical sub-humid continental with prolonged dry season’.

Rainfall & Rainy Days

Purulia is known as the driest district in the state.

- ❖ Average annual rainfall of the district is 1321.9mm. which varies from 1218.8 mm. at Burrabazar to 1426.6 mm. at Bagmundi.

- ❖ The no. of rainy days varies from 66.1 days in Para to 74.1 days in Hatwara

Temperature

- Purulia is one of the warmest districts of the state.
- May is the hottest month when the average daily maximum temperature lies close to 40°C,

January is the coldest month with average daily minimum temperature lies close to 12°C

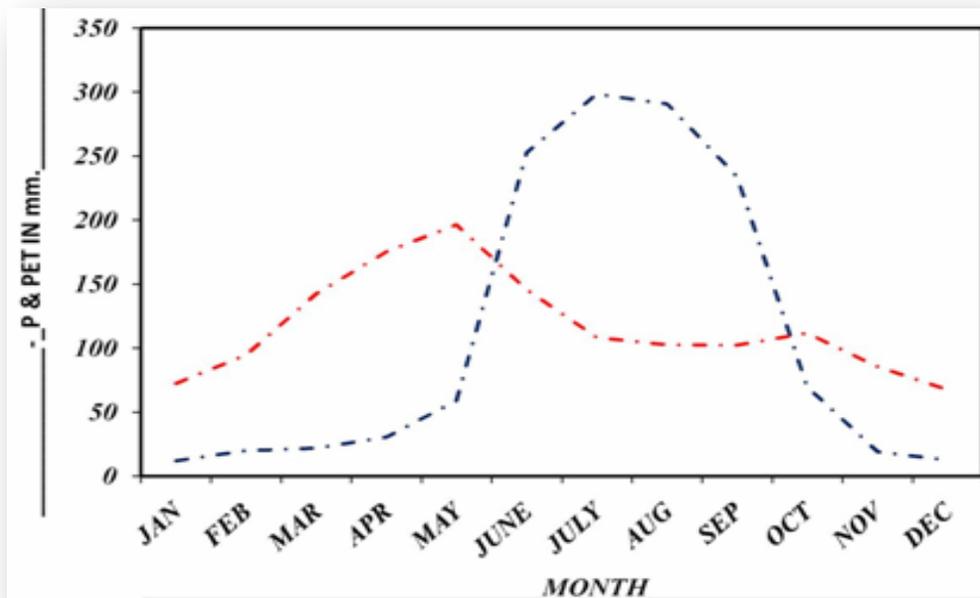
Relative Humidity

- ❑ Purulia is the driest district of the state
- ❑ Average daily morning (at local mean time 07:00 hrs.) and noon (at 14:00 hrs) relative humidity values of both above hours are 79 and 50 respectively

Water Budget

- ❑ This region comes in the zone of deficit rainfall.
- ❑ June to September are the water surplus period
- ❑ October to May is water deficit period.
- ❑ The amount of water surplus is 617.7 mm. and the water deficit is 742 mm.

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Growing Season and Humid Period

- ❑ The growing season starts from 26th-30th May & the cessation of growing season starts from 13th - 17th October.
- ❑ Onset of Humid Period starts in 10th-14th June & cessation of Humid Period starts from 3th - 7th October

Special Weather Phenomena/Weather Hazard

SUMMER SEASON:

- HEAT WAVE
- Violent Thunder Storm.

MONSOON SEASON:

- DROUGHT
- Early withdrawal of monsoon

POST MONSOON SEASON:

- Early withdrawal of monsoon.
- Cyclonic Storm.

WINTER SEASON:

- Low temperature injury
- Fog
- Blight incidence
- Evil invading

Present Status of Agriculture

Cropped Area & Cropping Intensity

- Total area is 625646 hec
- Forest area is 75048 hec.
- Current fallows are 115531 hec.
- Other cultivated land is 18621 hec.
- Area not available for cultivation is 106206 hec.
- Amount of net sown area is 310240 hec.
- Cropping intensity in Purulia is 106.88.

Shortcomings of the Present Cropping Pattern

- Lack of proper water conservation technique.
- Cultivation of Boro paddy. This is huge wastage of valuable water.
- Traditional cultivation
- Reduced cultivation of less water requirement crops.

Proposed Crop Planning

- Cultivation of crops whose water requirements is less.
- Preservation of surface runoff.
- Cultivation of short duration paddy.
- Ideal land use plan on undulating terrain
- Plot to plot water storage.

Benefits of the Proposed Crop Planning

The benefits are---

- Cropping intensity of the district will be increase.
- It will be more economic.
- Farmer may face a good amount of profit and suitably utilized.

Source of Data

- India Meteorological Department, Govt. of India
- Agro-Meteorological Division, Dept. of Agriculture, Government of West Bengal.

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Appendix

Agricultural Production

<u>CROP</u>	<u>AREA('000 hec)</u>	<u>PRODUCTION('000 ton)</u>
Rice	280.6	731.4
Wheat	1.8	3.7
Other Cereals	11.7	19.3
Pulses	14.3	6.2
Oil Seeds	9.0	4.7
Potato	1.5	15.8

RAINFALL & RAINY DAYS

STATION		ANNUAL TOTAL
	R.F(mm)	1277.0
	R.D	66.1
KASHIPUR	R.F (mm)	1329.5
	R.D	71.0
HATWARA	R.F (mm)	1338.6
	R.D	74.1
HURA	R.F (mm)	1365.9
	R.D	69.1
JHALDA	R.F (mm)	1272.6
	R.D	72.0
BAGHMUNDI	R.F (mm)	1426.6
	R.D	74.0
BURRABAZAR	R.F (mm)	1218.8
	R.D	68.1
MANBAZAR	R.F (mm)	1347.0
	R.D	73.4

Water Budget

MONTH	Winter Season		Summer Season			Monsoon Season				Post Monsoon Season		Annual	Water Surplus		Water Deficit		
	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct		Nov	Amt.	period	Amt.	period
PPT	12.6	12.1	20.0	22	30.6	59	252.9	298.5	290.9	233.8	70	19.3	1321.9	617.7	JUNE-SEP(4)	742	OCT-MAY(8)
PET/ 2	67.6	72.3	94.7	142.5	175.2	196.3	145.5	108.2	102.5	102.2	111.8	85.6	1405.1				
P-PE	-55	-60.20	-74.7	-120.3	-144.6	-137.30	107.4	190.3	188.4	131.6	-41.8	-66.3	-83.2				
PET/ 2	33.8	36.15	47.35	71.25	87.6	98.15	72.75	54.1	51.25	51.1	55.9	42.8	702.55				