



AGRICULTURAL PROBLEMS AND PROSPECTS OF PANCH PARGANA PLAIN–JHARKHAND

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ABSTRACT

Agriculture and land use being associated with mankind from the very beginning of human civilization have been fundamental assets not only in India but also all over the world. In this paper an emphasis is given on the agricultural problems and its prospects of Panch Pargana which is located in Ranchi district of Jharkhand state.

The development of any region is dependent on agriculture. And the development of agriculture depends on different factors of this region. The main factors are physical factors like – structure of land , size of land, drainage system, slope, soils .Climatic factors like rainfall, humidity etc. Factors of cultural background like population , settlement , livestock, irrigation, transport, market etc. affects agriculture of the region. So we can say that the agricultural development of any region depends on plain and fertile agricultural land, large plain area or land where the proper irrigation can be done and modern tools and techniques can be used. Moreover good qualities of seed can be used for better production. Facilities of market and transport are very important factor to the development of agriculture.

But in Panch Pargana plain we find a lot of problems in agriculture . For example –the structure of land is uneven, unequal distribution of rainfall , soils are not fertile for agriculture, uncertainty in monsoon . Moreover a large number of population is greatly dependent on agriculture. However due to uneven land , scarcity of water .irrigation machines and modern tools not being properly used to their optimum level , lack of awareness in the field of agriculture ,illiteracy, lack of fertilizers and high quality seeds. These amounts to the causes for low productivity of this region.

In this way for the development of agriculture and to raise the productivity the proper use of land, increasing number of check-dams, water harvesting system should be compulsory, plantation to control soil erosion and for better production ,good fertilizers, manure ,good quality seeds, modern machines will be needed.

Thus in this research work based on various primary and secondary data of research methodology. The researcher has tried to analyse in detail the existing agricultural problems and prospective steps that can be taken for the growth of agricultural productivity.

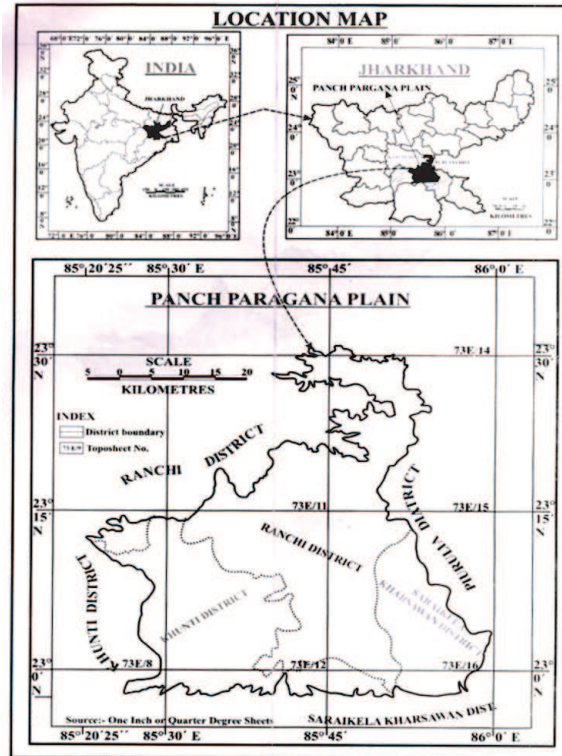
Keywords: Land use , water harvesting , check dam , Cropping Pattern, Soil Erosion.

INTRODUCTION

Panch Pargana Plain is an important part of Jharkhand State. It is situated on a variable terrain and bears very contrasting geographic aspects of Ranchi district. Panch Pargana Plain is bounded by latitude 22°20'25" East and 86°0' East. It covers an area of about 2112km².



Location Map



The topography of this region is uneven. The western or upper Ranchi Plateau lies to its west separated by Ganga Ghat escarpment. The plain or planation surface is delimited in the west and south by 300 meters contour. The surface descends gradually to the east and south easterly direction and finally merges in the middle part of the Subernarekha Basin. The middle and lower part of the plain is dominantly low land, although numerous hills rise conspicuously above general level where as hills dominate the topography of the upper ghat section. This region is drained by many rivers but among them five rivers are very important viz;- Subernarekha, Karkari, Kanchi, Raru and Raisa river. The nature of these rivers are seasonal.

OBJECTIVES :-

1. To study and evaluate the agricultural problems and prospects of the study area.
2. To prevent soil erosion and facilitate economic use of land.
3. To examine the agricultural variations of the study area.
4. To evaluate the land use pattern of the study area.
5. To examine the cropping pattern of the study area.

HYPOTHESIS

Soil, climate, topography, water and development of technology (tools and techniques) plays an important role in making the changes in the agriculture, the proposed research work for the Panch Pargana Plain will identify the physical and socio-economic problems related to the development in agricultural land use. This research will make analysis of the agricultural development, land use development, cropping patterns, changing methods of cultivation problems etc through the study of intensive field work.



METHODOLOGY

The present study realizes upon primary and secondary data concerning rainfall, population, land use and cropping. This primary data collected from different sources for which special questionnaires were designed. Information was collected through some government and semi government offices, farmers and agricultural officers.

In secondary data rainfall data is collected from District Agriculture office, Ranchi (DAO), population data from Nabard and Census Office, Data of Land use pattern of Ranchi district block wise from District statistical office, Ranchi.

DISCUSSION:-

Panch Pargana Plain is an agricultural based region where the maximum population is dependent on agriculture. This area is monsoon based where agriculture is dependent on monsoon. But it is found that here the rainfall is unequal.

The Table shows the unequal distribution of rainfall:-

Table 01 : Distribution of Rainfall in Panch Pargana Plain of Ranchi District (Block Wise)

Silli Block					
Year	2005	2006	2007	2008	
Rainfall in (mm)	947.7	1,372.1	1,568.4	1,696.9	Total
Average Rainfall (mm)	78.975	14.341667	130.7	141.40	465.415 Average 116.35
BUNDU					
Rainfall in (mm)	783.3	1,899.8	1,124.6	1,159.3	Total
Average Rain fall (mm)	65.275	158.31	93.7	96.6	413.885 Average 103.47
TAMAR					
Rainfall in (mm)	648	1,430.6	1,346.1	733.6	Total
Average Rain fall (mm)	54	119.21	112.175	61.	346.485 Average 86.62
SONAHATU					
Rainfall in (mm)	625	1,269	1,909.5	1,328.9	Total
Average Rain fall (mm)	52.0	105.75	159.125	110.7	427.575 Average 106.89
ARKI					
Rainfall in (mm)	939.4	1,551.6	1,285.1	1,605.3	Total
Average Rain fall (mm)	78.28	129.3	107.09	133.775	448.445 Average 112.11

Source - District Agriculture Office, Ranchi

Above table shows that the (rainfall of study area is unequally distributed in 4 years) reporting in the year 2005. 78.945 whereas in 2008 average rainfall of Silli Block has 141.40 mm. The average rainfall of this region is 116.35 mm. Average Rainfall in the year 2005 of Silli block measured 78.975 whereas the average rainfall was 141.40 mm in the year 2008. In this way average rainfall of Silli Block of four years is 16.35mm.

Land is the main factor of agriculture. Agriculture is greatly affected by the structure of land. Where the land on large scale is flat, the agricultural activities like irrigation, the use of tractors and machineries can easily be done. Punjab is a good example of this type of flat surface where agriculture production has always increased.

The table below shows Blockwise the land use pattern of this area (in ha.)

Block wise land use pattern of Ranchi District (in ha)

Block	Total	Forest	Not available per cultivation	Cross potential for agriculture	Cultivable waste including Pasture & graze	Net Potential for agriculture
Silli	3.2093	8918.12	4922.85	802.29	1566.08	6456.21
Bundu	2.6419	4377.50	322.77	10323.87	974.52	9449.35
Tamar	5.1349	11446.29	4400.02	12946.00	3457.11	9088
Sonahatu	3.7658	2236.60	5006.92	6,0066.73	6739.90	232
Erki	5.1497	19831.90	-	6504.65	-	6504.65



Population can be said as the mirror image of the development of any region, because any development in relation to agriculture, industries etc is dependant on population. And these development affects the growth of any region and the status of living of the people. However over population or low population is harmful for the growth and development of any region when we talk of the Panch Pargana Plain we find that it is an agricultural based land, where large population is engaged in agriculture based activities. But unequal structure of agriculture land, shortage of irrigation facilities, use of primitive methods of cultivation, unfertile land and lack of awareness are the reasons for low productivity and poverty.

This table shows that the large number of population is dependant on agriculture:-

POPULATION TABLE

Sl. No.	Particulars	Silli	Tamar	Sonahatu	Bundu
1.	Total Population (in 000)	94347	99182	94990	619
2.	Non-agriculture workers	7823	4772	4603	3724
3.	Agriculture labour	16475	21113	18568	9346
4.	Agricultue workers	21565	32969	27625	14822
		38,040	54,082	46,193	24,168

Source : Nabard & Census - 2001

This figure shows that a large no of people is dependent on agriculture or.

This figure shows that total population of Silli is 94347 (in 000) in which a number of people who engaged in non-agriculture workers are 7823, whereas 16475 People are agriculture labour and 215656 people are agriculture workers this type of condition (condition) also found in Tamar, Sonahatu & Bundu Block. So This figure is clear that a large number of population is engaged on agriculture.

In regard to the area of Panch Pargana Plain the analysis of slope is very much important, because here agricultural land use is dominating over the landscape; and the physical factor that widely determines the extension as well as intensity of land use is slope.

"As the slope increases, the percentage of land under plough decreases"². "The term slope, as used throughout the science of geomorphology, designates some small elements or area of the land surface which is inclined from the horizontal."³

In average slope over different regions of the Panch Pargana Plain has spatial variation. The variation of slope depends on the altitudinal character of the area. It shows that the eastern part of this area mainly the lower courses of the Karkari, Kanchi and Raru rivers are characterized by level and gentle slope categories. The western and southern borders of the study area has moderate and moderately steep slope gradually lower down to gentle slope or nearly level slope in the east which are generally found in the North-East to South and South-East direction of the study area.

The areal distribution of slope categories of average slope of this Plain can be seen from table-I

Areal Slope Distribution

Table-I

Slope Categories in Degree	Area in Sq. Km.	% of the Area	Slope Type
> 4	318	15.058	Moderate & Moderately steep slope.
2-4	1278	60.511	Very gentle & Gentle Slope
< 2	516	24.431	Nearly Level
Total	2112	100.00	

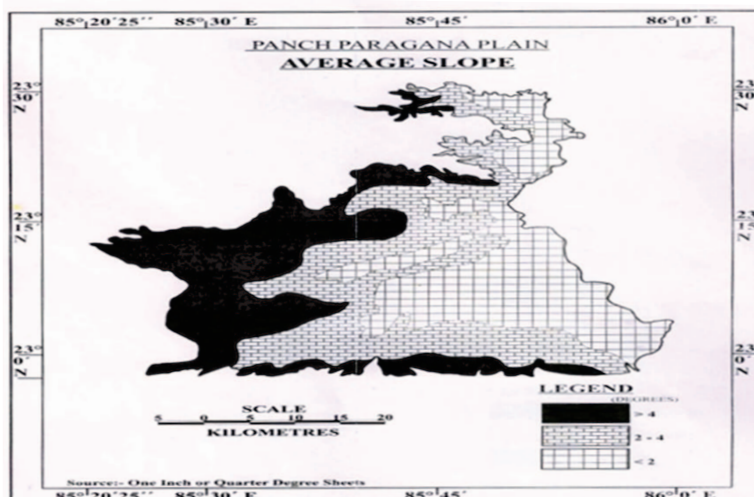
This region has been divided into three categories :

1. Moderate & Moderately steep slope.



2. Very gentle & gentle slope
3. Nearly Level.

This figure shows the distribution of slopes in different area of Panch Pargana Plain.



Soil is an important factor of agriculture "Soils have begun to be realized as one of the Chief natural resources of a country". The most important factor of agricultural land use is soil. For the growth of plants and trees soil is an important resource which contains water, air and different other nutritive minerals. It is an important means on which the type of crop husbandry develops. and on this resource the productivity of agricultural commodities depends.

The soil of this plain are generally residual. It being developed on the parent rocks - granite, gneiss and basalt or laterite. On the other hand to soil over the valleys and along the river in tracts are gently of drift origin characterized as alluvial soil. The soil of the this area are mostly sandy, acidic, laterite and less fertile except over the vally. The soils of the valleys have large admixture of clay minerals. the river basins of Panch Pargana Claim (The basins of subarnarekha and its tributary Roru, Raisa, kanchi and Karkari river) contain good clayey, loamy or clayey - loam soils of fertile nature. However, the soils are generally sandy and gravelly on the uplands. Thus the soil texture of higher grounds is not much favourable for agricultural purposes when compared with the soils of the lowlands. "The cultivable land of the district is divided into two classes, viz., `don' and `tanr'. The don lands are the terraced low patches on which only rice is grown and the `tanr' are the upland patches which produce a course variety of rice, known as `gora', millets, pulses and oil-seeds. In the Khunti Subdivision these lands are known as "Loyong' and `Piri', respectively."

Natural vegetation of this plain is represented by forest. This basin was formerly represented a densely forested area of Chotnagpur plateau.but now, the forest concentrates on mainly the north - western and western parts of the district.

PPP - Block wise forest area (in ha (2001)

Block	Total Area (in ha)	Forest Area (in ha)	% of the total area	
Silli	3,2093	8918.12	27.788	27.79
Bundu	2,6419	4377.50	16.569	16.57
Tamar	51349	11446.29	22.291	22.29
Sonahatu	37658	2236.60	5.939	5.94
Erki	5,14497	19831.90	38.510	38.51
Total	199,016	46810.41	23.520	23.52

District statistical office, Ranchi



Forest had been an important resource of the area. Although, this areas (PPP) had been dense, forested 3 to 4 decades earlier but now the forest area elementared of PPP is 199,016 ha which constitute 23.52% of the total area. The block wise area dominated as forest land, varies from a minimum, 5.94% i.e. 2236.60 hectares land of Sonahatu block, a maximum of 38.51% i.e.19831.90 hectors of land which is Erki block. It is clear from Table No. 2.3. That Silli covers 27.78% first land, Bundu Covers 16.57%, Tamar covers 22.29% area.

The forests of this region fall under tropical deciduous type with sub classes of moist and deciduous and (ii) dry deciduous in which Sal trees are the dominant specie. In this plain sometimes mixed forest type also occurs. Moist deciduous types of forest occurs in the valley, on the hill slopes of this region and on. The pat areas. Sal, Mahua, Peepal, Neem, Kusum, Palas, Kathal, etc. are seen on the hill slopes of this region. On the upland areas mainly found Palas trees, hill slopes are scarp countries. Due to lack of sufficient soil moisture, the species of the dry decious type of forest occurs. Karanj Tetar, Kathal, Pipal, Ber, Jamun and Sal are also other important trees species in the forest of this region. In the forest of the Pat areas Bamboo occurs extensively. The Western hilly zone contains the host forests and forms almost a compact block of predominant species of Sal while bamboo of good quality is also found in it. Sabai dominates the ridges and hill tops. The forests in the eastern zone have been over exploited and now contain only sapling crop. The other economic products are Biri leaves, Sabai grass, Lac, Mahua flowers, myroblanas.

If we talk about deforestation, we find that the deforestation began initially with the "Thuyming" or shifting cultivation practiced by he aboriginal tribes. Who started felling trees and burning them to enrich the soil on which they raised crops for a year or two and then left it to resume the process elsewhere. As their numbers multiplied and more and more forests were thus destroyed for cultivation. Another factor is fire and grazing. who also the main cause of deforestation. Some people are inclined to think that these are minor factors for deforestation. But the latest researches have shown that the maximum damage to forest occurs through fire and grazing. Fire removes all the humus from the forest floor and burns down the seedlings and thus makes the reproduction of the forests impossible and opens up the soil to erosion. Crazing is equally harmful.

PROBLEMS AND PROSPECTS

In this way we find several problems is currently or presently being faced by the study area. Mainly such problems can be grouped into two broad categories. The first one is the physical difficulties (climatic condition like rainfall) and the second is the social problem arising from cultural background of the people.

The monsoon contributes above 80% of total rainfall in the study area of Panch Pargana Plain. Agriculture is gamble against monsoon variations making it the most outstanding problem. The monsoon is marked by variations ranging from the normal like climate uncertainly.

Soil erosion is also a big problem of this agricultural region. Soil erosion is a process of detachment and transportation of soil materials by erosion agents like water and wind. Deficiency of vegetation cover has agricultural implication. Lack of forest cover in many parts has reduced the infiltration of moisture leading to increasing run-off to soil erosion.

The land which is not fertile and cannot be used for agriculture, such type of land can be made fertile by the use of manure, fertilizers and proper irrigation facility for the development of agriculture. But on the other hand the cause of failure of the implementation of new tools and techniques is the physical factor of the area. The uneven structures of the land is unsuitable on for the use of modern machinery like tractors, irrigation machines etc.

We find the lack of transport facilities. This is also one of the cause of low productivity. Till now even to this day people use bullock carts or on-foot to carry the agricultural products to market. But we find



there is shortage of big markets and storage room. As a result the brokers or middle man take advantages of this situation in their own way of favouring themselves. The farmers due to this mismanagement suffer losses and do not get proper return of their investment.

The small farmers are not economically rich to invest and purchase high quality seeds , fertilizers , urea and different modern machinery to increase their agricultural productivity.

In this way we can say that mainly the majority people in the study area are dependent on agriculture. The problems of agriculture land use planning is envisaged in the following aspects :-

In this study area the proper planning of watershed management is needed. Here water Conservation is important. So some methods should be applied for conservation of water. Such as well and tube-well recharge, build check-dams to adopt water harvesting system, controlled water application should be needed.

For the better development of agriculture in study area ,new methods of irrigation should be applied i.e- sprinklers, perforated pipe, drip irrigation etc.

It has been observed that excess population ,mainly young male working people in rural areas prefer to work and engage in agriculture. There is little possibilities of positive change in the status of farmers unless subsidiary supplement activity as milk, poultry, fishery etc. can be developed through proper ways.

Agro based processing industries should be started in the study area on co-operative basis. These industries not only increase employment potential but also raises the socio-economic status of the people of study area.

In the study area plant protection measure is implemented in the irrigated area. Little progress has been made in adopting improved agricultural methods. Small and marginal farms should be provided. Modern agriculture methods implemented on concession rate.

The most important thing is to control deforestation and increase the area of forest. Planting of forest vegetation in study area also be needed . One more thing is the subsidies should be given to farmers for the innovative ideas in farming.

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