IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

EVALUATION OF AGRICULTURE AND WATER RESOURCES IN NORTH BIHAR

REENA KUMARI

M.A. (GEOGRAPHY, N.O.U. PATNA, UGC NET)

ABSTRATCT:

It lies to the north of the trunk river Ganga which cris crosses the central part of Bihar in easterly direction. This plain is covered by immense expanses of unconsolidated sediments and therefore, remained neglected for long by the geologist who directed most of their energies to solid rocks. It is only in the recent years that the nature of the thick pile of the quaternary deposits that make up the plains, the type and affinities of the basement beneath them and their tectonics have started to be unravelled with the advent of sophisticated geophysical techniques and deep drilling carried out mainly to meet the needs of the prospecting for hydro carbons.

The Indo-Gangetic trough part of North Bihar is asymmetrical due to subsidence of five kilometres during the plio-pleistocene times to the north of the trough and very little to the south. As the subsidence was active in the trough very rapid uplift was going on immediately to the north. According to Ramachandran Rao (1973) the Indo-Gangetic depression is divisible from east to west into five units of which one of them is the Ganga plain in Bihar

KEYWORDS:

Ganga River, Water Resources, North Bihar Plain, Water basement, Deep Drilling.

INTRODUCTION:

In The North Bihar Gandak Which is main River also called Salargami and Narayani because of Salagram Sila found in its bed and its association with Narayan (God) in the legend of Gajendra Moksha (Emancipation of elephant from the clutches of a crocodile).

The Burhi Gandak emerges from the western extremity of the Somesvar hills close to the Harha pass with catchments of 900 square miles in the mountains. It flows in a long tortuous course of 270 miles and meets the Ganga near Khagaria. Before the development of the railways it being the longest river of the region served as an important trade route. Its only tributary on the right bank is Dhanavanti which emerges from a lake in Champaran. It is joined by a number of small streams from hills on its left bank. The Burhigandak is called Harha at the foot of hills and Sikrana in the district of Champaran.

The Baghmati with a catchments of 1700 square miles in the hills emerges from the mountains north-east of the Nepal Valley. It is a perennial river by getting regular flow of water from spring heavy rainfall makes its current very rapid which runs 7 miles an hour in the upper reaches. It is flowing in a course of 155 miles in the plains. It passes through the districts of Sitamarhi, Muzaffarpur and Darbhanga after forming the border between the districts of Rautahat and Sarlahi in the territory of Nepal and flows into the Kosi at Belahi, south-east of Kuseshwar Asthan. Its course is changing in the lower reaches. It formerly met the Burhigandak near Rosera. Later it made a new course for itself and met the Tiljuga at Tilkesvar. The Bagmati is known as Siyari in Muzaffarpur and Kareha in Darbhanga. It is joined by the Lalabakaya, the Lamakhola, the Chani and the Bhurengi on its right bank. The Lalabakaya forming the border between the districts of Bara and Rautahat for about 20 miles is joined by the stream Bake Khola on its right bank in the district of Bara and then flows through Rautahat. Further it separates the district of Champaran from that of Muzaffarpur and Sitamarhi. The Lakhandai emerges from the hills south-west of Sindhuli Garhi and runs through the districts of Sarlahi and Sitamarhi passing from the district of Darbhanga where it joins the Bagmati. It flows and ebbs quickly and its current is very swift in the upper reaches. The Adhwara originates from the hills south of Sindhuli Garhi and passes through districts of Sarlahi, Sitamarhi and Darbhanga. It is also joined on its left bank by a number of streams like the Madha, the Rato, the Bighi and the Jamuni.

METHODOLOGY:

Approach and methodology to be used in the study would be case study based using primary surveys supported by secondary sources. Though the whole North Bihar is the subject matter to be studied but basin wise approach will be taken up so that real picture study may emerge.

The study will involve the study of water productivity variations across farms within the same type of crops and with same pattern of irrigation; secondly, irrigation types from wells, tube-wells, canals and conjunctive use of water will be taken into consideration. Consideration of agro-climatic condition within the study area will also be done.

All these works would be based on collection of data on parameters governing water productivity in crop production such as cropping system, cropping pattern, cropped area, crop inputs, water use, irrigation schedules, soil-water movement crop output and method of irrigation. In addition to this, there would be additional samples for each type of irrigation source. The sampling plan to be used in the work will be based on basin-wise, number of locations, number of agro-climates, no of different sources of irrigation and total sample size. In case of purely irrigated crops, water productivity would be estimated at farm level involving formula.

Farm level water productivity of crop (i) and farmer j = yield or Net Return (ii) The mean values of farm level productivity applied water in canal irrigation, well irrigation and conjunctive use would be compared for irrigated crops.

The approach used in the study would be case study based using primary surveys. Four river basins in North Bihar are selected for the study. They are Gandak basin; Burhi Gandak basin; Bagmati & Kosi river basin. The study analyzed water productivity variations across: 1) farms within the same type of crops and with same pattern of irrigation; and 2] irrigation types from wells, canals and conjunctive use; and 3] agro-climates within the same basin, it involved collection of data on parameters governing water productivity in crop production such as cropping system, cropped area, crop inputs (bio and chemical fertilizers, farm labour, irrigation water use, irrigation schedules, and crop technology), crop output (main product, by product, market price of crops), and method of irrigation. For each irrigated crops, the sample size is 30-35 for each agro climate within a river basin. In addition to that, there would be additional samples for each type of irrigation source. Hence, the total sample size may be

90 in the same location; but limited to only situations where sufficient samples for different modes of irrigation are available. The detailed sampling design is given in the case of purely irrigated crops, water productivity would be estimated for both farm-level as:

Using the sample of farmers, with figures of yield and estimated values of irrigation water productivity, regressions would be run analyze the impact of irrigation and fertilizer inputs on yield and water productivity. The regression model could provide indications on how far water allocation and nutrient inputs are efficient form the point of view of achieving highest water productivity in tr existing irrigation and fertilizer and regimes.

OBJECTIVES:

North Bihar is almost a dead level alluvial plain. The only diversities seen on the surface are those due to river action. The imperceptible general slope of the plain is both from the north to the south towards the Ganga and from the north-west to the south east as shown by the course of the rivers. From the north-western to the south-eastern corner of North Bihar plain the slope is roughly 100 feet in 250 miles. The slope is steeper in the east than in the west.

The North Bihar plain is below 250 feet above the sea level except small tracts in Champaran and North Saran. The rest of the plain drops imperceptibly to a height of 200 feet along the Ganga in the west and to 100 feet in the east.

The topography of North Bihar plain consists of the following features :

(a) A narrow moist tarai belt in Champaran below the foothills formed by the re-emergence of the water that is soaked under ground in the upper foothill gravel zone.

(b) A sub-tarai belt of marshy land in the north with intervening tracts of uplands along rivers.

(c) This is succeeded in the south by a wide belts of marshy low lands notably devoid of uplands, characterized by permanent depressions and lakes.

(d) Further south nearer the Ganga the land rises and there is a preponderance of upland with a few intervening depressions and lakes.

There are forests and hills in the north. The Someshwar and Dun hills in the Champaran district have luvuriant forests of Sal, Shisham, Tun, Khair and Simal trees.

CONCLUSION: -

Irrigation has for long been recognized as a basic necessity for sustaining high productivity of crops not only in arid or semi-arid regions but also in water sufficient regions. Our climate is monsoon which is notorious for its whimsical behavior. Hence the region faces twin problems of flood and droughts each year. At the same time the entire socio-economic activities are closely related to agriculture. Agriculture moves everything moves, if it fails, doom is at the doorstep. But agriculture cannot move unless water moves and proper movement of water involves the practices of irrigation.

Mere creation of irrigation facilities does not solve problems. It needs effective use for crop protection and production. Irrigation water is a costly and scarce input and it will be even more costly with the rising prices and extension of irrigation to increasingly difficult terrains in future to meet rising demands for food, fodder, feeds, fiber, and fuel for the growing human and livestock populations. The competing demands on water for uses because of urbanization and impending industrialization may restrain the availability of water for crops. Therefore, simultaneously with the creation of irrigation potential, its optimum and scientific use must be ensured.

Another aspect of irrigation is its farm-water management. This aspect has been remaining out of sight. But we should know that the user is primarily concerned with information on to irrigate, how much water to apply and how best to apply water to individual crops in a cropping pattern. As soil is the medium from which crops draw water and of course nutrients, irrigation practices involve consideration of retention and movement of water in the soil-water measurement, the fate of water in soil-water-crop are continuous, evapo-transpiration yield relationships and so on and so forth. Hence it is essential to utilize every unit of available water for maximum returns.

Another considerable fact regarding irrigation especially in canal irrigation is that huge amounts of water go in waste during conveyance and distribution. Tail ends of channels, distributaries and sub-distributaries do not receive water as per requirement and farmers have to bear the brunt of taxes without being fully benefitted.

By the end of the eighties of the preceding century, urgent necessity was felt for planning the water resource development, its utilisation, its management and working solution with respect to agriculture and working out solution to flood and drainage problems on basin wise concept after reviewing and updating the assessment of land and water potential.

REFERENCE:

1. Chakrabertu, S., Perspective on Managing Man-Environment Relationship, Annals of the NAGAI, Vol. III, p.69, Pune.

2. Brown, L.R., Launching the Environmental Revolution, The State of the World, 1992, pp.16-20.

3. Sinha, L.N., Wealth of Mithila, 1957, Darbhanga, p.19.

4. Ahamd, Enayat, Bihar - A physical, Economic and Regional Geography, 1995, p.18, Rachi.

5. Morrison, C.

6. Sinha, R.L. & Singh, R.N., India: A Regional Geography, N.G.S.I., B.H.U., Dpt. of Geography, 1968, pp.190-91.

7. Geddes, A., The Alluvial Morphology of the Indo-Gangetic Plain, the Institute of British Geographers, Transactions & Papers Published, No.28, 1960, pp.262-63.

8.Ibid., pp.262-63.

9. Sinha, R.L. & Singh, K.N., As per serial No. 13, pp. 192-93.

10. Ken-Berwa.

11. Parwati-Lalisingoh-Chambal.

12. The Statesman, Year Book, Various years.

13. Preliminary Report of Census of India, 2001, Population Bulletin, Published in the Times of India, Patna, May-March 2002.

14. Srivastava, O.S., Demography and Population Studies, Vikas Publishing, Delhi, p.88.