Various Aspect Of Irrigation in North Bihar

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ABSTRACT:

Agriculture activities are directly or indirectly related to relief conditions, and temporal distribution of rainfall and soil characteristics. The region under perusal is a macro region lying in the middle gangetic plain. It has interior location causing a transitional type of geographical personality. 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 1 . 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 unraveled with the advent of sophisticated geophysical techniques and deep drilling carried out mainly to meet the needs of the prospecting for hydro carbons 2 . The Indo-gangetic trough part of North Bihar is asymmetrical due to subsidence of five kilometers 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 Ramchandran 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:

Water Resources, River, Rain, Canal, Underground water..

INTRODUCTION:- Relation between irrigation and agriculture is highly depend on each other in the context of Monsoon. Basic need of population to grow are agriculture and another aspect is that agriculture doesn't grow in the absence of population as they nurture and consume.

***M.A. GEOGRAPHY, N.O.U. PATNA, UGC NET**

North Bihar is overwhelmingly an agrarian region having enormous reservoir of surface and sub-surface water resource. Its utilization for irrigation of crops has neither been successful nor fruitful. Delivery system and timely water dose calculation are not effective. Due to ignorance of soil character and timely requirement of water to various plants our irrigated agriculture has not shown encouraging picture for prosperity. In Nigeria and Israel effective system of water utilization has proved that at minimal use of water better cropping may be achieved. A region like North Bihar with mismatch growth of population vis-a-vis agriculture needs immediate evaluation of relationship between water use and its efficiency. Bihar faces twin problems of floods and droughts simultaneously. Water level is slowly but uninterruptedly going down year to year and month to month. Hence, concept of tremendous water reservoir must be changed. For us assessment and evaluation of the productivity of irrigated water is the most urgent step to be taken. The ground reality clearly justifies selection of the proposed research topic.

METHODOLOGY: The approach used in the study would be case study based using primary surveys. Four river basins in North Bihar have been selected for the study. They are Gandak, BurhiGandak, Bagmati and Kosi river. 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 outputs (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 was 90 in the same location; but limited to only situations where sufficient samples for different modes of irrigation were available.

OBJECTIVE: For all round growth and development of agriculture more availability of water does not work. Human civilizations have witnessed in the past both glorious and gloomy effect of water. The main objectives of efficient irrigation management are as such:

(a) high yield of good quality.
(b) high water use efficiency:
(c) least damage to soil productivity and
(d) low irrigation cost

This entire objective can be attained by following optimum irrigation schedules for different crops. In the study area, schedules of watering standing crops are not in practice consequently, farmers are following vague irrigation practices which result is either under-irrigation or over-irrigation of crops. In both these conditions agriculture is adversely impacted and production per unit of water applied continues to be low. Despite tremendous surface water supply through the Tirhut canal and Kosi canal production, productivity and diversification of crops have not taken place to the desirable level.

The growers broadly face two situation with respect to water supplies viz. (i) where adequate water is available at demand and their aim is to produce maximum yield per unit of land without wasting water, and (ii) where only limited quantity of water is available, the main aim is to maximize production per unit of water by rationalizing its distribution over the available land applying water at relatively more sensitive stages of crop growth.

Development of Irrigation: Benjamin Franklin has rightly opined, when the well's dry, we know the worth of water. Really water has many facets. It is vital for drinking, irrigation, power, transport, household affairs and industry. But among its various uses, irrigation is its main user. So, great emphasis has been laid on the various aspects of irrigation. The study area is purely an agrarian track having ever mushrooming stock of population. To copy with the ever rising demand of food as well as water for household purposes, water must be oriented in proper direction.

The Study area is more or less beset with the problems caused by the factors mentioned above. So the purpose of introducing irrigation is to help increase agricultural production from the lands served. The services provided by irrigation may be viewed from the aches, viz. (i) Protective aspect (ii) Additional land use aspect.

By protective aspect of irrigation it is meant to make up the moisture deficiency in soils during the cropping season so as to ensure proper and sustained growth of the crop grown.

Additional lands use aspect is meant to enable second or third crop being raised on the lands provided with irrigation which could

otherwise not be cultivated efficiently, more particularly during the post or pre-monsoon period.

While the protective aspect helps in stabilizing agricultural production against droughts, the second facility carat be thrown by an intelligent and responsible agriculturist.

Besides the two vital aspects of irrigation it has a third aspect also, that is of changing soil sterility caused by drought into fertility. It can overcome low productivity due to dryness orexcessive water supply. In this study area initiation of irrigation scheme has taken placein the post as a measure of drought relief. Faminesfathered the idea of artificial watering. But, with the population swelling rapidly in the face of non-alternative means of livelihood irrigation has now come to have a new purpose - increased agricultural production.

HISTORY OF IRRIGATION INTHE NORTH BIHAR PLAIN: Irrigation has been practiced in this segment of the middle Ganga plain since ancient time. It was necessary, given the kind of weather we have It was easy, with the kind of physiographic we have. All the modern methods of irrigation were in operation but on very very miniature scale. But the present day scenario of irrigation is a rather recent development. Modern innovation in the field of irrigation took place during the last quarter of the 19th century. The region suffered from several droughts and famines between the years 1873-74 and 1899 - 1900. In this tract the only state irrigation work actually in operation was the small Madhuban in old Champaran District, drawn from the Tiur river. It used to irrigate annually 4.1 thousand acres. Earth work on other two public irrigation projects, Triveni canal and Dhaka canal also began as a famine relief work after 1896-97 famines. Triveni canal project was finally sanctioned in 1901. In 1876, it was proposed to throw a wean across the river Bagmati and to construct a canal for the irrigation of 1.5 lakh acres of Kharif and 5O000 acres of Rabi at a cost of Rs. 4l lakhs in old Muzaffarpur district. but this scheme was rejected by the Govt. of India, but was revived on a smaller scale after the famine of 1896-97. In order to provide water to indigo planters of Saran district, between 1877 and 1880. It was proposed to make five sluices in the Gandak embankment so as to allow the Gandak water flowing freely down the Channels to the fields. These sluices ware named as Saran Canals. The main Saran canal was 6.25 miles in length andthe branch canals were 12.5 miles long. This project was completed in March 1886. The total

irrigable area of the canals was 30 thousand acres. However, the canals were virtually closed on 31st March 1894.

The plain area was also served by private irrigation works carried on from Pines one satisfactory instance was of a pine made from the river Masan in the N.W. corner of Champaran. It was dug as a famine relief work in 1697 and which used to irrigate on area exceeding 10 thousand acres. Further, by the order of the then the Maharaja of Darbhanga private irrigation works on a much larger scale were drawn toutilise the water of the Kamala river in 1977. A main canal of 12.5 miles long with three distributaries to command an area of 460 miles. The cost of this project was estimated at Rs.10.41 lakhs and the area to be irrigated was 52.3 thousand acres. The motive force behind this development was to mitigate the sufferings from droughts and famines.

Development of Irrigation during First Half of 20th Centuries:

The beginning of the 20tn century was marked by very important event in the history of irrigation in India, namely the constitution of the first Indian irrigation commission in 1901. But its recommendation for the North Bihar did not materialize till the end of the British rule. Lord Dalhousie had written rightly in one of his minutes, "Everywhere I found lands of vast extent, fertile properties now lie comparatively waste, but wanting only water to convert them into plains of the richest cultivation."

After the completion of Triveni canal in 1912,there was a complete inertness in the development of Irrigation works forabout 35 years (1913 to 1947) Till independence out of a total of 39 lakh acres of cultivable land only 1.40 lakh acres was irrigated by Teur, DhaKa, Saran and Tribeni canals, which is just 1.41 % o£ the total cultivable land.

Progress of irrigation has been slow. Omally's district Gazetteers provide us with preliminary data with whichwork could be started and other up-to-date statistics could have been collected in course of work. The necessity for more irrigation works and flood control schemes were keenly belt but nothing tangible in this direction was done. He gives a very precise description of canals working at that time.

TEUR CANAL: This canal was previously known as "Madhuban canal". It was *constructed* as a protective canal. The length of the main canal taken off from Teur river rising in Nepal is 6.2 miles only. The average area irrigated from this canal between 1916-17 to 1935-

36 was 2100 acres and gross area under its command is about 3640 acres. The area irrigate from this In 1950-51 was 3817 acres for both Kharif and Rabi crops taken together.

DHAKA CANAL: This canal was taken off from the water of Lal Bhakhiya river in the old Champaran district near Bairgania station. It was completed in 1908 though construction started in 1896-97. The length of the main canal is 19 miles and of its distributaries 23 miles. The estimated cost was Rs. 293145 and gross area under command is 20000 acres. This Canal is said to be very useful for irrigation.

TRIBENI CANAL: Among all the canals developed in the whole Bihar it is only next to the Sone canal in importance. The head works of this canal is situated at Tribeni (Bhainsalotan) on the left bank of the Gandak river on the Indo-Nepal boarder. The canal is aligned in an easterly direction on a failing contour across numerous rivers and drainage channels having their origin on the southern stops of the Himalayas. The main canal is 61 miles long and its distributaries have a length of 185 miles. Its total command area is about 2.7 lakh acres, between the area covered by the tharia river on the east and the SiKrahna river on the south. The irrigation commission recommended in 1903 to extend its length by 10 miles from taeThitharia river but no executed.

No new irrigation scheme except Harbara spill Syphon was constructed in 1928 to take a discharge of 550 cusecs of water from the Gandak only.

The remodeling and extension of Triveni canal was done only after 1947. Its hundred percentage capacity is utilised for Kharif crops only. Till 1951 total area irri-gated by it was 114444 acres for kharif and 961 acres for hot-weather crops. The following Table 4.1 gives us a sketch of the utilisation of water potential of the area through above canals.

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 behaviour. 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.

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