

Prospect of Irrigation in East Champaran

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Abstract

The region under reference, one of the most fertile areas in the country, owes its fertility largely to rivers that flow through it. The depth of the alluvium is so much so that it has not ascertained as yet. The behaviour of almost all rivers traversing through it is more or less the same, the difference being only in degree of intensity. They all are land forming rivers bestowing immense fertility to the soil. Streams, destructive as they are when untamed, are great source of the irrigation water for farms and the farmers. The irrigational potentials both of the surface water - flow and the subterranean water flow are extremely tremendous. Major portion of water - flow has not been converted into the irrigational potentials and even major chunk of created irrigation potentials have remained unutilised by virtue of many factors.

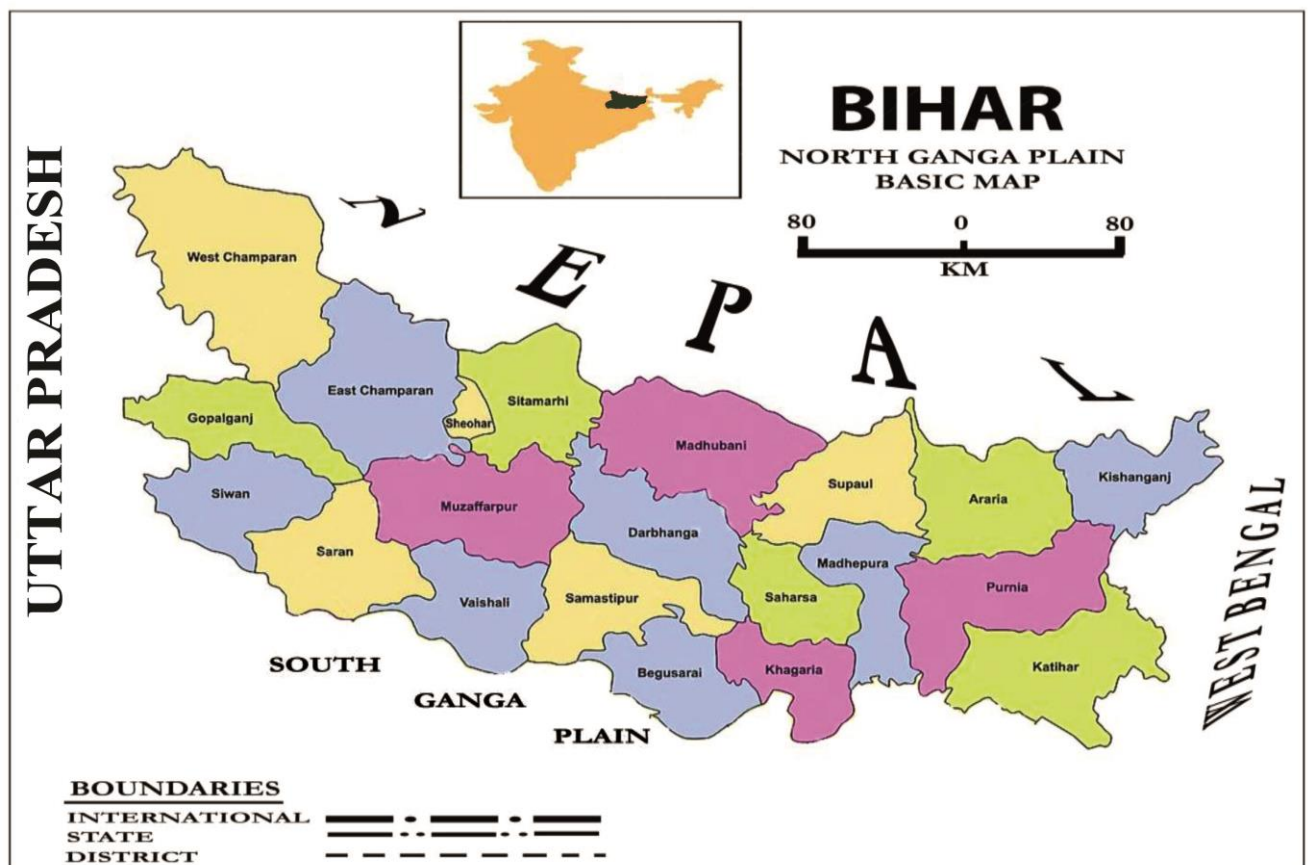


Fig.-1

The non - utilisation of created irrigation potentials occurs mainly due to delay in the construction of field channels and drains, non-availability of water in the canal of the nick of time, defective regulation system of canals, non - levelling of the fields, lack of engagement of farmers and lots of other factors. For better prospect of irrigation all these bottlenecks must be removed at theearliest.

The study area is predominantly agrarian. Agriculture is not an occupation rather it has been a tradition since time immemorial. More than 65% people of the region are dependent on agriculture, Not only this. This area does not have the deposition of any sort of minerals except sands and clay. Agriculture is the solitary mainstay of life. It is also obvious that for modern agriculture irrigation is considerable to be the most fundamental input without which other inputs like fertilizers, HYV insecticides, pesticides, etc. are dormant. Thus the growth of modern agriculture is largely dependent on irrigation facilities created. Water potentials are tremendous. But the due progress of irrigation, during the rolling back of 53 years of the plan period, has not been commensurate with the mushrooming population. A number of irrigation, drainage and flood control and the river training schemes were taken up for execution. But much is awaited to be happened.

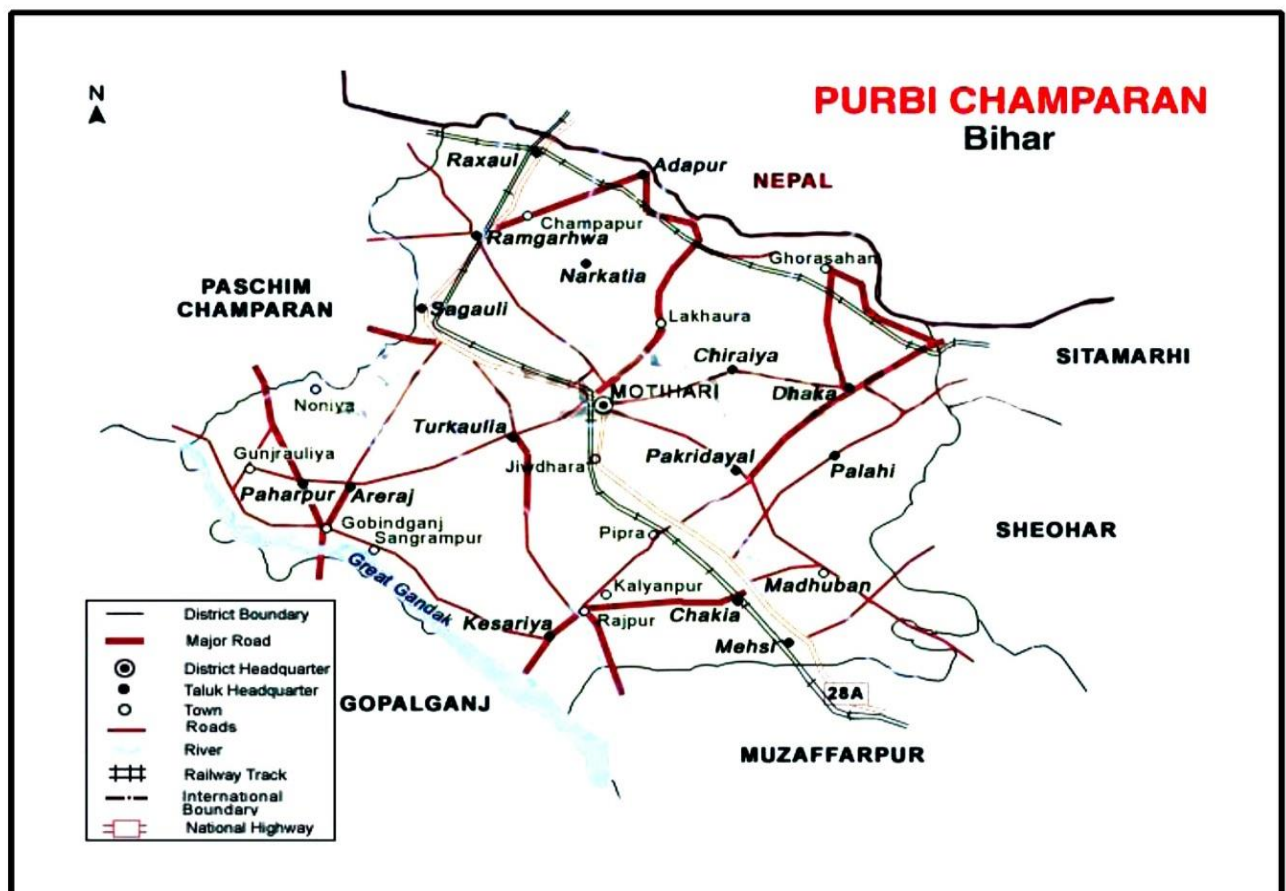


Fig.-2

Creation of additional irrigation facilities along with already created facilities for promoting agricultural production received top priority. Considering the high cost of creating irrigation potential, its effective utilisation is needed. For this, One of The primary prerequisites is completion on time “on - Farm” Development works (OFD) consisting of land levelling or shaping, field drains, etc. In the first plan document it has been mentioned that large scale development of irrigation helps to rebuild the agricultural economy. Expansion of irrigation from large as well as small projects is an essential condition for diversifying agriculture and increasing crop fields. It has become even more urgent in such parts of India which are on the path of population explosion. The region is one of the segments of India which is famous for its multiplying population. In the light of the above perusal of the planning commission, the prospect of irrigation in the region is self - evident.

The growth of population is spectacular and the net cultivated area is shrinking due to increasing share of non - agriculture fields. To cope with this awkward situation intensification and diversification of crops are most urgent that cropping pattern must be changed. It is a good sign that the traditional character of agriculture is undergoing change though steadily but unmistakably. It has materially changed due to introduction of canal irrigation and tube well irrigations after 1975. The traditional diversion of crops into three seasonal groups - Aghani,

Rabi and Bhadai have undergone some changes during the succeeding plan periods after 1971. Introduction of the summer crops and adoption of maize cultivation during the winter season are an innovation.

Increase in cultivable area under more than twice, thrice and even more in an agricultural calendar is a clear sign of the intensification of agriculture. Crops are rotated more extensively than previously. Despite of all these positive development, there lies vast scope for more intensification in the region. The Gandak Command Area has been evaluated by Agricultural Finance Corporation Limited, Mumbai. According to its observation, the agricultural intensity in its CCA can be enhanced upto 225% from 148% (1985) without adding more in irrigational potential already created but removal of constraints in utilisation of potential are needed urgently. From its perusal it may be deduced that prospect of the progress of irrigation in the study area is very encouraging.

Prof. B. N. Poddar, has done sample survey of Sakra C. D. B. of Muzaffarpur district and utilised Cobb Douglas production function.

His observation may be cited here in the context of the role of irrigation in enhancing farm productivity. "It appears from the study that the productivity of land can be multiplied by irrigation. Irrigation emerges as the most important growth factor and investment of Rs. 1.00/- in irrigation facility increases output by Rs. 2.34 Investment in irrigation causes increase in output by 234% of the amount invested. Extension of new area has shown negative contribution," In the light of above consideration it can be said that lack of technical knowledge on the part of the farmers for the use of modern input and lack of irrigation facilities explain low productivity of capital used for cultivation. It again manifests the importance of irrigation vis – a - vis agriculture and consequently the prospect of irrigation is without doubt very encouraging.

The study area is a flood-prone area, each year it is visited by the ravaging floods of the river Gandak, BurhiGandak, the Bagmati Adhwara group of the rivers and the Baya river. The 2nd Irrigation Commission of Bihar has accepted drainage as one of the most vital factors for flood control in the Gangetic basin. Hence, any scheme of irrigation has, therefore, to be coordinated with flood control schemes. Dams and reservoirs have to be constructed at the heads of all the rivers emerging from the Himalayan side. This could provide huge potential for irrigation and power and the intensity and occurrence of floods may be minimised. A network of canals and field canals would assure adequate quantities of water to every field at the appropriate time the construction of dams and reservoirs and the utilisation for irrigation has become the matter of controversy. Some are in its favour and others oppose it. But views of majority experts are in its favour. Even Pandit Nehru termed it as the "temples of modern India". Again by this statement prospect of irrigation in the region seems to be bright.

All these are the optimistic and glorious sides of the prospect of irrigation. Water - logging, siltation, salt action and environmental degradations in many other forms are negative side effects of agriculture. By controlling and balancing all these factors, irrigation will remain the "Golden egg" for ever not only for the region but for the whole north India.

Mr. Pugh, a noted expert of, agriculture has studied in depth the pros and cons of irrigated agriculture and this finding may be cited here for consideration. Tracing back the history of agriculture he remarked that irrigation water when misused spoils soils beyond repair. Soil civilization in the Middle East disappeared because of misuse of irrigation water.

The Agricultural Reorganisation Committee of U.P. (1949) points out that at some places yield of crop decreased due to irrigation water.

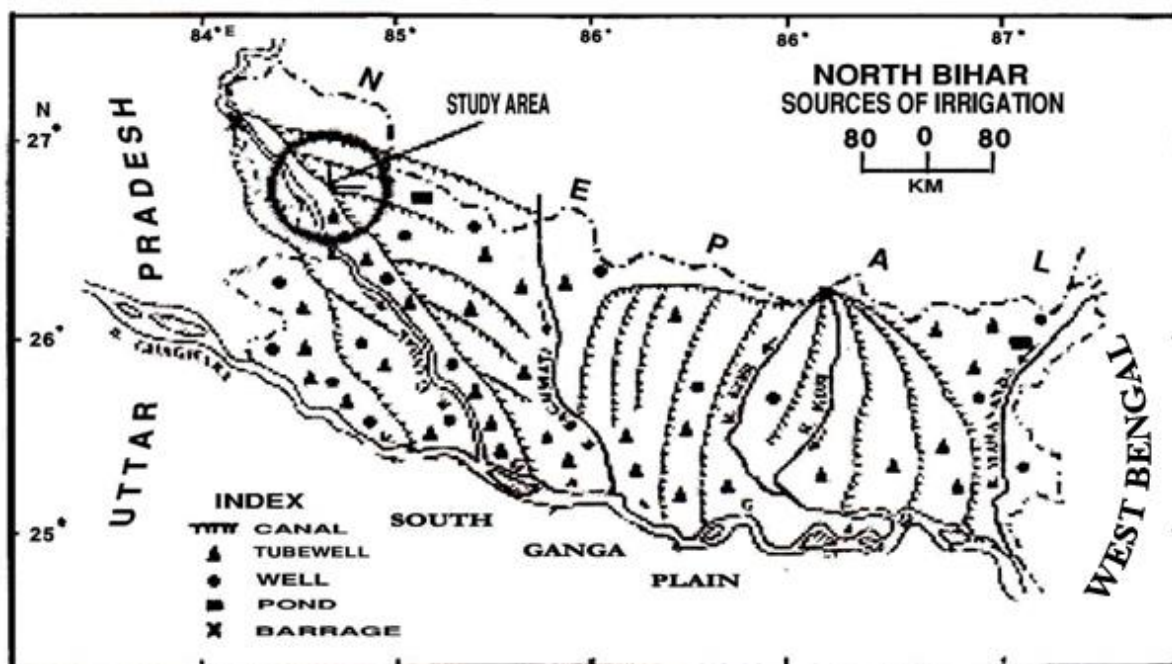


Fig.-3

A team of experts from Pantnagar Agriculture University, studied the effect of irrigation, especially in the context of water logging caused by irrigation at a small farm at Rauni near Patila. The study showed that the yield per hectare of cotton which was about 746 kg in 1951 - 52 dropped to 10 kg in 1959 - 60 and the fields had become unfit for the cultivation of cotton. This decrease in yield has been due to (a) greater demands on soil nutrients to produce higher yields (b) leaching effect of irrigation and (c) accumulation of injurious salts in the upper layers of the soil. A.P. Bhattacharya, another noted expert on agriculture, did a path making experimental studies. According to him- "even irrigation is harmful from the point of view of lowering of yields because the unused water not consumed by the plant brings down nutrients while percolating to the ground water table, which keeps on being augmented ultimately leading to waterlogging which in turns brings malaria in with complete loss of fertility." A rough estimate shows the yearly loss to the country is of the order of Rs.45 crores at the then price index, apart from the long - terms effects of waterlogging and malaria.

Waterlogging is of two types - depressional and irrigation related. Canal irrigation breeds water logging due to mismanagement of water. Sometimes canals supply water in abundance.

It does not only lead to a great waste of water but also what is more serious is that it causes waterlogging and salt effervescence. What happens actually is that the salts for the soil come upto the surface with the rise of the sub - soil water level. The canals act in two ways in ensuring this phenomenon. Firstly, they intersect drainage lines and cause rain and flood water to be held up. Secondly, they cause their own water fall vertically until it reaches the spring level. If the sub - soil outflow is not enough to balance the inflow, the spring level rises, being drawn up by capillary attraction and all the salts of the earth come to surface and make the land unfit for crops. This results in the deterioration of soil by bringing out alkali or reh to the surface of the soil.

The study area has a considerable portion of area under the effect of waterlogging. The problem of waterlogging can be contained by a certain measures such as cropping of Canal beds, opening out of closed and obstructed drainage, replacing canal irrigation by well irrigation, pumping out of excess water by tubewells and other methods of drainage, replacing canal irrigation by well or tubewell irrigation, prevention of over - irrigation to force the cultivators to economise water, sides of canals be lined, and by other flood control measures. Till all these remedial measures are adopted, irrigational waterlogging will continue to happen in future. Hence, it needs immediate redressal for bettering the prospect of irrigation.

Some experts believe that irrigated areas have created unhealthy conditions. The northern portion of the district and other canal irrigated areas have shown susceptibilities to encourage malaria with its very harmful and pernicious effect on the health of the peasants and the village folk. In order to safeguard against this danger the Royal Commission on agriculture recommended long back that careful drainage surveys should be made in future in all irrigation projects and drainage maps should be prepared. Sir John Russel also emphasised the urgent need for proper soil surveys and agricultural analysis." It may be laid down as an absolute rule that no irrigation scheme should ever be carried out until the proper soil survey of the region has been done. Barely one half of the water delivered at the head of the canal reaches the field." From table 1.1 and 1.2 Further assessment may be done.

Table – 1.1

Extent of salinity (Household Survey of 1000 persons)

Particulars		Size/Group Percentage of Farmers				
		i	ii	iii	iv	v
(i)	Land affected by salinity	31.0	41.2	37.8	59.0	53.9
	Yes	69.0	58.8	62.2	41.0	66.1
	No	8.6	11.1	9.5	20.0	10.8
	Less than two years	19.8	38.1	38.1	24.0	44.3
	Two to 5 years	41.6	50.8	52.4	56.0	45.7
	>Five years					
(ii)	Area affected is a percentage of operational area	5.3	6.0	5.0	3.2	4.6
(iii)	Extent of salt area Slight	60.8	63.5	66.7	48.0	61.1
	Moderate	33.0	33.3	31.0	40.0	33.3
	Heavy	6.2	3.2	2.3	12.0	5.6
(iv)	State of salinity <i>Increasing</i>	56.5	49.2	42.9	40.0	52.2
	<i>Decreasing</i>	15.3	5.5	11.9	12.0	53.6
	<i>Constant</i>	28.2	41.2	45.2	48.0	34.2
(v)	Contented with irrigation, yes	44.7	29.4	36.9	41.0	41.3
	No	55.3	70.6	63.1	59.0	58.7
(vi)	Reasons for non - contentment (a) Taxes without irrigation	53.1	87.0	75.7	50.0	60.8
	(b) Excessive Tax	33.5	13.0	24.3	33.3	29.6
	(c) Irrigation not available	13.1	-	-	16.7	9.4
	(d) Drainage problem	0.3	-	-	-	0.2

i, ii, iii, iv category of farmers (previously discussed) O = Overall

Source : Self - survey work (Sample)

Table 1.1 indicates the extent of salinity at the field level, while the area affected by salinity as percentage of operational area was only 4.6% of the effected area. Out of it 61.1% had experienced only slight salinity, while as, 52.5% reported that salinity was increasing and 13.6% felt that same was decreasing.

The table 1.2 indicates that the extent of waterlogging and field drainage while 87.7% of the sampled farmers had no waterlogging problem, 8.9% reported that waterlogging was increasing and 12.2% felt that it was decreasing. However 86.2% of the farmers felt that the drainage problems have started after the execution of irrigation project in the study region.

Table -1.2

Waterlogging & Drainage (Household survey) Percentage of Farmers

Particulars		Size/Group Percentage of Farmers				
		I	II	III	IV	V
1.	Easy Drainage: Yes	59.6	66.7	61.3	52.5	60.4
	No	40.4	33.3	38.7	47.5	39.6
2.	Seepage Problem: Yes	14.8	17.6	13.5	31.1	16.1
	No	85.2	82.4	86.5	68.9	83.9
3	Accumulation of water: Yes	21.8	32.0	32.4	44.3	25.9
	No	78.2	68.0	67.6	55.7	74.1
4	Percentage of area affected by accumulation of water	7.6	15.4	10.9	10.6	10.6
5.	Reasons for water accumulation:	54.5	79.6	69.4	85.2	64.5
	Drainage Problem					
	Low Land	475.5	20.4	30.6	14.8	35.5
6.	Wet Logging: Yes	10.7	11.1	13.5	31.1	12.3
	No	89.3	88.9	86.5	68.9	87.7
7.	Percentage of Area waterlogged to operational areas	5.3	3.2	4.7	9.1	6.0
8.	Waterlogged area: Increasing	5.5	11.8	13.3	15.8	8.9
	Decreasing	15.3	-	6.7	15.8	12.2
	Constant	79.2	88.2	80.0	68.4	78.9
9.	Drainage problem before project: Yes	14.7	19.6	2.7	9.8	13.8
	No	85.3	80.4	97.3	90.2	86.2

Explanation: As mentioned in 1.1

Source: Self Sample Survey

Keeping in view that the facts mentioned in the above paragraphs the following relevant points go against the bright prospects of irrigation in the region:-

- (i) An overwhelming number of farmers (82.7%) do not get irrigation water at proper time and the main reasons given are shortage of water in canal, low level of water in canal, damaged canal, late arrival of water, etc.
- (ii) In terms of quantity of irrigation water, large number of farmers (72.1%) were not satisfied with the supply through it was found that about 47.6% of the farmers did not report their problems to the irrigation Department. This was primarily due to fact that in a large number of the reported cases (70.5) no action was taken by the irrigation department.

Irrigation department has to improve the supply, repair the damaged canals, release of water on scheduled dates to ensure reability in the supply of water. Complaints on supply of irrigation water are seldom attended to by the irrigation department officials. As yet, there is no fixed regulations for operation and maintenance of Gandak canal. In its absence the canal.officer and his sub - ordinate handle complaints in their vested interest way resulting in inefficiency in supply of water and maintenance of canal.

- (iii) Even after construction of field channels about 50% of the farmers still continue to irrigate their fields by flooding from plot to plot. Evidently this large percentage in the result of absent of subsidiary channels to field channels to serve upto two hectares block which have not been constructed though long ago suggested by the government of india team july 1979.
- (iv) Irrigation by wild flood still continues to most of the crops irrespective of whether the same is paddy, wheat, maize & sugarcane. Evidently there is lack of agricultural extension to give proper direction on water management, whereas the results in wastage of water, there are other bad side. Side effects of over - irrigation resulting in reduced yield.
- (v) Whereas only a small percentage (4.6%) of operational area is salt affected, a major part of the affected area (56.1%) has slight salinity, which could be removed by improved agricultural practices and use of chemical amendanty like pyrites. The agricultural extension organisation has to play an important role in suggesting remedial measures.
- (vi) The percentage of area under waterlogged to total operational area is still small (6%) whereas 8.9% of those affected report that waterlogging is increasing 12.2% have reported it is decreasing. Thus, this is not vital problem. But 80% farmers complain that after introduction of canal irrigation the drainage problem has aggravated.
- (vii) Due to above lopsided approach of the canal authority, the increasement of area under canal irrigation has not taken place further. Contrary to it, percentage share of canal irrigation to the total irrigated land of the area has declined.
- (viii) As a substitute and complementary tubewell irrigation is showing promising upward trend as evidenced by its share mentioned earlier. Tubewell irrigation has many advantages. But again government tubewells are not performing well. Even its channels are in deplorable conditions. Acute power shortage and apathetic attitude of the Minor irrigation Department have added problem in its well - functioning. So far private tubewells are concerned, these are working comparatively well. But non - availability of diesel and electric power also affect adversely even its functioning. Further, prices of diesels are often increased and due to non - checking, black marketing has cropped up in the supply of diesel.

Those farmers who are not capable of sinking tubewells, are bound to pay more money for watering their fields. This is why farmers do not purchase water at the time of need of the crops.

Conclusion

These are some of the noticeable constraints which more the prospects of irrigation in the region. All above - mentioned problems are such which can be managed, the only need is coordination and honesty both on the part of the authority and the farmers. Sooner the problems are readdressed better will the prospect of irrigation. Again it can be suggested that for the region irrigation may be considered as life line for the sustenance and prosperity of the study area. This is the matter of top most consideration in each and every planning for prosperity of the region. But unfortunately the tremendous water resources which are available for irrigation in vast amount go unused. Hence, proper action must be taken by the Government in particular area and people in general.

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