



## Irrigation and Cropping: A Study of Crops effected by irrigation

Dr. Dharampal, Principal (SBN College Sidhmukh, Churu)

### The role of the proposed research.

The study of the “Change in cropping pattern and agriculture productivity in Sidhmukh Canal catchment area: A geographical study of Hanumangarh District of Rajasthan”, was conducted in Bhadra Tehsil segment of district Hanumangarh. The Bhadra Tehsil is irrigated by the three main canal systems viz.- Bhakra Canal, IGN, and Sidhmukh Canal. The study is focused on the segment of Bhadra Tehsil which comes under the Sidhmukh Canal irrigation. Further this segment or catchment area is divided into the four geographical circles viz.- Bhadra, Dungrana, Bhirani and Ajitpura. Initially this segment was a deserted area and contained few patches of the rain-fed agricultural lands. Most of the crops that were grown in the area and natural vegetation were semi-arid type. But by the inception of the Sidhmukh Canal Project the entire land use pattern has changed drastically. The components of the agroecosystems has completely changed. The cumulative effect of this land use pattern, agricultural productivity and crop changes is upliftment in socio-economic status of the local farmers. As Rajasthan is the second largest but the driest state in India. It is located in the North-western part of the country and lies between 69030' to 78017' East and latitude 23003' to 30012' North. Rajasthan is sparsely populated with an estimated population of 34.10 million and population density of 100 per sq. km. the third lowest in India. 80 percent of the total population is rural in the state.

The arid and semi-arid areas cover 61.40% of area of State and 36.33% of population. Associated with these areas are approximately 15.00 million cattle wealth. They are used for farm operate and milk production. In addition, there are an estimated 9 million sheep. Rajasthan contributes to about 10% of total milk production and 40% of wool production in India. Non availability of water had been the major hurdle in the development of the desert

area. Concern has been growing in the desert districts of Rajasthan, for search of water irrigation of the land and improving the living condition in the area. Efforts have been made for obtaining surplus waters from Punjab rivers since pre-independence period. Gang Canal with a CCA of 3.07 lacks hectares (7.60 lac acres) had been successfully completed in 1928 creating a greenery in northern Rajasthan, which was once a part of the hostile desert of the princely State of Bikaner. Bhakra Canals have been in operation in the eastern part of the Sri Ganganagar districts since 1954, capable of irrigation a CCA of 3.72 lac hectares (9.20 lac acres). With the signing of Indus Waters Treaty in 1960 with Pakistan, India becomes an entitled to use the entire waters, Sutlej, Ravi, and Beas rivers. Rajasthan was already a participant in Bhakra project for irrigation as well as in power. The water of river Sutlej are being fully utilised through Bhakra Nangal complex. The post partition surplus water in Ravi-Beas assessed as 15.85 MAf, was allocated to States of Rajasthan, erstwhile Punjab, PEPSU (The Patiala and East Punjab States Union) and J & K by an agreement of January 1955.

In general, there is an increase in total area under cultivation in Rajasthan. Permanent pastures and grazing lands and miscellaneous trees and groves are declining having serious unfavourable implications for the ecology of Rajasthan. Although growth in forest area is positive in all the regions of Rajasthan still forest area is only 7.8% of total geographical area, which is well below the minimum norms of 33% of geographical area under forests as set under the National Forest Policy



(1952).

There has been declining growth in barren and other unculturable lands. Land that is being released from barren and unculturable land is shifting towards non-agricultural sector.

## Steps of the proposed research.

Modern agriculture has almost seized to be an economic activity performed in closed economy system characterised with the features of a natural economy. In modern agriculture, activities in the farm are organised akin to the industry and therefore efficient input management is inevitable. Input includes fertilisers, pesticides and other means of production including land and labour. The Application of fertilisers is closely inter-linked to water availability and cropping pattern. Fertiliser consumption (NPK) in Rajasthan is one of the lowest in India. Department of Agriculture, Rajasthan has planned the demand of fertiliser on the basis of consumption during Rabi & Kharif seasons in previous years. Demand of fertilisers is sent to GOI for the approval. GOI gives allotment to State month wise, company wise and fertiliser wise. Estimated demand of fertilisers for Kharif 2015 is 16.23 Lac MT (8.00 LMT Urea, 4.00 LMT DAP & 4.23 LMT other fertiliser) & Rabi 2015-16 is Sunil Kumar Change in Cropping Pattern and Agriculture Productivity in Sidhmukh Canal Catchment Area: A Geographical Study of Hanumangarh District of Rajasthan 76 22.56 Lac MT (14.25 LMT Urea, 4.00 LMT DAP & 4.31 LMT another fertiliser). During the peak seasons sometimes, State has faced shortage of fertilisers. To mitigate the problem of fertiliser shortage in peak season department has initiated necessary efforts regarding Advance Stocking of Fertilisers before onset of sowing season through RAJFED. For the year 2015-16 3.00 Lac MT Urea & 1.00 Lac MT DAP is being advance stocked with RAJFED, which is nearly 10 percent of total demand of these fertilisers. State has been also promoting the consumption of Single Super Phosphate instead of DAP by using it through demonstration organised by Department and providing trainings to farmers to popularise it. State has also been promoting the use of Neem Coated Urea among the farmers to increase the nitrogen use efficiency

## Significance of the proposed research.

Education is one of the key inputs for economic growth and human development. Any economy, whether it is developing or developed, can flourish only when human resources have been developed to the fullest extent. An illiterate population faces many handicaps. During the 1990s the problem of illiteracy was particularly scute in the four States of the Hindi heartland - Bihar, Madhya Pradesh, Rajasthan, and Uttar Pradesh – which have been given the derisive acronym of Bimaru. But the latest statistics provided by the Census of India 2011 show that the rate of improvement has been faster in each of these States than in India as a whole.

Rajasthan's improvement in respect of literacy has been spectacular; in the last decade it has recorded the highest percentage increase in literacy rate among Indian states of particular interest are data concerning the inter-State and inter-district variations in the ratio of literates to the total population. A comparison of data with those of 1991 gives an insight into the variations, pace, emphasis, and progress in this area. The percentage increase in total literacy and male literacy in the 1981-91 decade in Rajasthan was similar to the all - India increase, but in the case of female literacy it was lower than the all-India increase. However, Census 2011 shows that in the last decade the percentage increase in total literacy in the State has far exceeded all – India average. The number of literates aged seven and above has risen by 22.45 percentage



points in Rajasthan against an all - India increases of 13.17 percentage points. Its literacy rate in 2001 has jumped to 61.03% in 2001 from 38.55 in 1991, though it is yet lower than all - India average of 65.38. Census 2011 data show that in the last decade Rajasthan recorded the highest percentage increase in literacy among Indian States.

## Objectives of the proposed research.

- Agriculture in Rajasthan
- Land Use Pattern in Rajasthan
- Land Use Pattern in Rajasthan: Analysis Net-Sown Area
- Agricultural Scenario in Rajasthan
- Water Resource Management
- Ground Water
- Major Crops
- Input Management
- Crop Insurance
- Organic Farming
- Seed Development
- Geographical Profile
- Canal Project

## Findings of the proposed research.

The percentage increase in total literacy and male literacy in the 1981-91 decade in Rajasthan was similar to the all - India increase, but in the case of female literacy it was lower than the all-India increase. However, Census 2011 shows that in the last decade the percentage increase in total literacy in the State has far exceeded all - India average. The number of literates aged seven and above has risen by 22.45 percentage points in Rajasthan against an all - India increases of 13.17 percentage points. Its literacy rate in 2001 has jumped to 61.03% in 2001 from 38.55 in 1991, though it is yet lower than all - India average of 65.38. Census 2011 data show that in the last decade Rajasthan recorded the highest percentage increase in literacy among Indian States.

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