A STUDY OF THE PERFORMANCE OF AGRICULTURE IN THE STATE OF RAJASTHAN

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ABSTRACT

Rajasthan, the largest state of India, is endowed with diverse soil and weather conditions comprising of several agro-climatic situations that helps the state to adopt a diversified cropping pattern. The state is India's largest producer of mustard, pearl millet, and spices, cluster beans, isabgol and it is the second largest producer of maize. The state has a substantial area under vegetable crops. It is also having the second largest herd of livestock amongst Indian states contributing about 10 percent of the country's milk and 30 percent of mutton production. The diversified cropping pattern and the presence of livestock as a major livelihood source has helped the state in managing the wide range of risks associated with dryland agriculture. However, the state faces many challenges that are to be addressed systematically so as to facilitate a sustainable development of the sector. The present study evaluates the performance of agriculture in the State of Rajasthan in the recent years and also presents what could be the future options, given our objectives of accelerated growth, inclusiveness and reduction of poverty. This study will be useful to agricultural scientists, economists, non-governmental organizations, policy makers and planners in understanding the present state of agriculture sector in Rajasthan.

KEYWORDS: Rajasthan, Agriculture, Mustard, Pearl Millet, Spices, Cluster Beans, Isabgol

Rajasthan is the largest state of India constituting 6.67 per cent of total population of India. The state is divided into 7 divisions, 33 districts, which are further subdivided into 244 tehsils, 249 panchayat sammitees and 9,168 gram panchayats. Physio-graphically, the state can be divided into 4 major regions, namely (i) the western desert with barren hills, rocky plains and sandy plains; (ii) the Aravalli hills running south-west to north-east starting from Gujarat and ending in Delhi; (iii) the eastern plains with rich alluvial soils; and (iv) the south-eastern plateau. Mahi, Chambal and Banas are the three major rivers of the state. The state is endowed with diverse soil and weather conditions comprising of several agro-climatic situations, warm humid in south-eastern parts to dry cool in western parts of the state. About 65 per cent population (i.e. about 56.5 million) of the state is dependent on agriculture and allied activities for their livelihood. Agriculture in Rajasthan is primarily rainfed covering country's 13.27 per cent of available land. The diversity in climatic conditions of the state creates potentiality to develop certain belts of horticultural crops. Major portion of the state is parched, the risk and instability in agricultural production and productivity are quite high.

Diverse mountains and Changeability in Rainfall

In the economic development of Rajasthan, the most influencing factor is harsh geo-climatic conditions. Uneven and scare rainfall has produced a unique set of cultural and economic milieu in Rajasthan where lack of water is visible in every sphere of life. Physiographical, Rajasthan is vastly diverse from mountains, plateau to alluvial pains. Among these physiographic features the Aravalli Mountains are most deterrent on climate and its economic life. These are relict Mountains which divides Rajasthan into two natural regions. The north-western which comprise about three-fifth of the state, is predominantly a desert and rest north-eastern part is plain or plateau. Although Aravalli is seen as a physiographic division dividing relief of Rajasthan into two half, but in reality it is climate and cultural divide also. West of Aravalli, harsh climate and sandy soil has produced a different form of life as compare to eastern Rajasthan. West of Aravalli rainfall is very low, highly erratic and variable seasonal. The variability of rainfall is very high it ranges from 50 to 70 percent. This variability has caused many periods of sever water shortages in the state. Under the given harsh climate, population and agriculture of Rajasthan has performed in somewhat different ways as compare to rest of country. In this study an attempt has been made to study dynamic performance of agriculture in relation to behavior of population.

Agricultural Performance of Rajasthan

Ever since, the formation of Rajasthan in 1956 agricultural sector remained in policy focus, as agricultural of Rajasthan shows greater recumbence with prevailing climatic conditions, especially with the amount of rainfall. Highs and lows in the production are very common feature

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in agriculture and it is highly uncertain economic activity and it entire depends on the mercy of rain god. After independence, under the influence of favourable policies agricultural development in India started showing constant improvement and significant jump in production and productivity of almost all the crops. But at the same time agriculture of Rajasthan was never able to keep the pace with the agricultural development in India. Evidences shows that the poor performance of Rajasthan agriculture can be attributed to two basic causes, firstly, being a desert state Rajasthan has poor agriculture to sustain agriculture. Second, along with year round drought like conditions also put hurdles for robust agricultural growth in the state. During initial years of its formation, when irrigation technology was almost absent in the state, the state was highly dependent of monsoonal rains, good rains produced good output otherwise droughts. But as irrigational technology spreaded under the influence of green revolution farmers of Rajasthan were also benefited. Under this section an attempt has been made to analysis the contours of over time agricultural performance in the state. The whole analysis is done by dividing total agricultural history of Rajasthan into following three phases; the pre-green revolution period (1956-1980), the beginning of green revolution (1980-1995), the maturing green revolution. (1995 onwards).

It is interesting to note that phase in agricultural development in Rajasthan has great resemblance with the agricultural development of India. The green revolution acts as water divides in history of agricultural of both the units. But, in terms of time period they differ a great deal. As any new trend stating in agriculture at national level has definite time lag to diffuse at the state. This time lag may be even longer in states having difficult geo-climatic conditions. In the pre-green revolution phase, agriculture of Rajasthan was characterized by pre-Newtonian technology and regular highs and lows in production. Poor agricultural base in terms of absence of irrigation facilities and other modern farm implements was causing mass hunger and starvation a common feature at that time in Rajasthan. The performance of agriculture at that time was highly synchronized with the rhythm of monsoon. When the monsoon rains are good, agricultural performance use to good. Primarily, in this phase Rajasthan agriculture was in true sense can be termed as gamble of monsoon. During pre-green revolution period irrigation facilities were virtually absent in whole of Rajasthan, as during this period area under irrigation to gross cropped area was merely 8 percent. And in this phase whatever agricultural expansion was taking place that was purely because of newer area coming under plough or due to area expansion.

Owning to highly erratic nature of monsoon, dependency of Rajasthan determines its food status of Rajasthan in a very dismal way, as frequent fluctuations in the amount of rainfall received and frequent famines are very common feature. Government initiated many schemes including schemes to expand irrigation facilities such as building longest canal in desert in the form of Indira Gandhi Canal in western Rajasthan. At the same time government promoted R & D activities favouring arid climate of India by establishing agricultural universities and research institutions. Among premier institutions working in this direction includes, Central Arid Zone Research Institute (CAZRI) to prompt research and development activities in agriculture which support harsh arid climate of the state. These instructions were also asked to developed agricultural technologies to meet the needs of desert state keeping in mind the arid nature of the state.

Government efforts stared to show their impacts in the beginning of 1980s. This was the time when green revolution technology diffused from Haryana and Punjab to Rajasthan, especially in well irrigated north-western districts and in eastern districts where irrigation facilities were present. The diffusion of HYV based technology was rather slow, given the harsh climatic conditions prevailing over Rajasthan. This made spread of green revolution highly restrictive activities to the areas where sufficient irrigational facilities were available. The beginning of green revolution led to marked increase in yields of most of crops especially in wheat, Bajara and oilseeds. During this phase yield growth became prime driver of agricultural growth as area expansion slowed down due to limited availability of land which can be brought to plough. In other word this can be said that in early 1980s options towards area expansion were almost exhaust.

Period after 1990s in agriculture of Rajasthan witnessed somewhat similar trends as they were prevalent in agriculture at national level. In Rajasthan also agriculture witnesses plateau and even falling of growth rates in terms of yield. By this period almost all the land which can be put to plough economically was brought to plough hence there

was no further scoop for increase in area for boosting agricultural production. As agricultural growth due to area expansion was not taking place and at the same time growth in yield was slowing therefore this phase in agricultural development in Rajasthan can be term as period of pleating agriculture. One more interesting feature of this phase of agricultural development was area re-allocation from coarse cereals to wheat and towards pulses and oilseeds. This reallocation caused sharpe reduction in production of Jowar, Bajara and in rice also. Although during this phase total pulses witnessed increase in area but they recorded reduction in production. This might have happened as land allocated to pulses was poor and un-irrigated. Pulses were re-located in poor land therefore increase in area was not able to boost the production of pulses to the higher levels.

Modernization of Rajasthan Agriculture

Dry land in India always regarded as non-core areas for agricultural activities. In arid regions lack of irrigational facilities, harsh climate along with low and erratic rainfall has never allowed agriculture to flourish in big way. In the absence of certainty and assurance of good agricultural production in Dry lands has always driven by traditional farm technology in which animal or man driven farm instruments are common. Moreover, in absence of R & D in dry land changes in technology are very slow if not absent. In India the green revolution marks the time divide in terms of agricultural technology. In 1960s green revolution came as shift in technology from traditional animal driven to mechanical. Ranging from tillage of land, irrigation to harvesting green revolution over hauled all the existing farm technologies. Interestingly most of the farm mechanization was concentrated in irrigated regions only as availability of irrigation was prime requirement for green revolution technology. As it is known that green revolution was not universal in case of India. It was highly skewed towards regions with irrigational facilities were ready available. Green revolution ignored dry lands including dry lands of Rajasthan and it by-passed it except some areas of Ganganagar and some Eastern districts. But on hand profound transformation in farm technology was recorded in Haryana, Punjab, eastern Uttar Pradesh, Bihar, and West Bengal in 1970s and 1980s. Changes in farm machinery led marked jump in productivity and production. As new farm implements are power driven, they are more powerful and efficient and up to mid-1980s they replaced almost all the animal driven technology.

With reference to Rajasthan the direction of spread of new farm technology and farm machinery was from the core regions of green revolution. As discussed earlier that technology was reaching only towards regions where irrigation facilities were readily available. This is also true in the case of Rajasthan. Over time technology spread of non-irrigated regions also but its diffusion was very slow. After 1980s spread of irrigation to other districts which were earlier remained by-passed also witnessed changes in farm equipments , but that too was slow progress as compare to regions where canal irrigation was available. The table below shows progress of modern farm technology in Rajasthan, this table reveals that pace of farm machinery gained with time as green revolution spread use of machinery also witnessed increase.

Rajasthan: Trend of Machinery in Agriculture, 1966-2009

Machinery	1966-67	1970-71	1980-81	1990-91	2008-09
Tractor	28908	39200	69300	99080	287654
Power Tiller	NA	1700	21000	49000	88543
Combine Harvester	NA	1031	4866	21000	98432
Diesel Pump	2300	6000	39089	89076	189767
Sprayer	1660	9005	31876	87905	143245

Source: Rajasthan Agriculture in Brief, 2010

Cropping Pattern

Cropping pattern means the proportion of area under different crops at a particular period of time. Change in cropping pattern means a change in the proportion under different crops. Cropping pattern in any region is determined by many climatic and socio- economic factors. In determination of cropping pattern climatic conditions especially failure or success of monsoon and diffusion of green revolution technology has played prominent role with reference to Rajasthan. Under the influence of drought like

conditions farmers opt to cropping pattern which is led by less water intensive crops and that matures early. In Rajasthan, green revolution changed the contours of agriculture by pushing new technology and impact of technology is visible in all the crops but higher impact is visible in commercial crops especially in terms of oilseeds.

Cropping pattern of Rajasthan throughout history has remained dominated by food grain, especially led by Bajara which is a form of millet grown in arid regions globally. Food grain in 1964 had 69.47 % area of gross cropped area, out of which Bajara lone occupied around 30%. Area under food grains reduced to 51.56 % in 2007-10. This reduction in area under food grain can be attributed in rapid increase in area under non- food crops especially under oilseeds.

CONCLUSION

There is a need to increase crop production, productivity and income through improved seed management and cultivation practices. Supply constraints of farm inputs are to be eased and input prices are to be properly monitored so as to facilitate adequate supply of required farm inputs at reasonable prices. The improvement in water use efficiency is urgently required for irrigation expansion and for reducing the excess pressure on ground water. More priority should be given to rain water harvesting and effective water management through promotion of micro-irrigation methods, while efforts should also be made to bring more area under canal irrigation through expansion of irrigation network from neighboring states.

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