International Journal of Geology, Agriculture and Environmental Sciences
Volume – 2 Issue – 1 February 2014
Website: www.woarjournals.org/IJGAES *ISSN: 2348-0254*

Major Crops in Jhunjhunu Region, Rajasthan

Dr. Manoj Kumar

Head,P,G,Department of Geography
Shri Radheshyam R. Morarka Govt. PG College, Jhunjhunu

Abstract: ***The district is irregular hexagon in shape in the northeastern part of the State lies between 2702" east longitudes. It is surrounded by Churu district on the northwestern side Hissar and Mahendragarh district of Haryana State in the northeastern part and by Sikar district in the west, south and south eastern part-2. For the propose of administration the district is divided into five administrative subdivision viz, Chirawa, Udaipurwati, Jhunjhunu, Khetri and Nawalgarh Six Tehsil viz Jhunjhunu, Chirawa, Khetri, Nawalgarh, Buhana, Udaipurwati and eight Panchyat Samities viz Jhunjhunu, Chirawa, Khetri, Nawalgarh, Buhana, Udaipurwati, Alsisar and Surajgarh.***

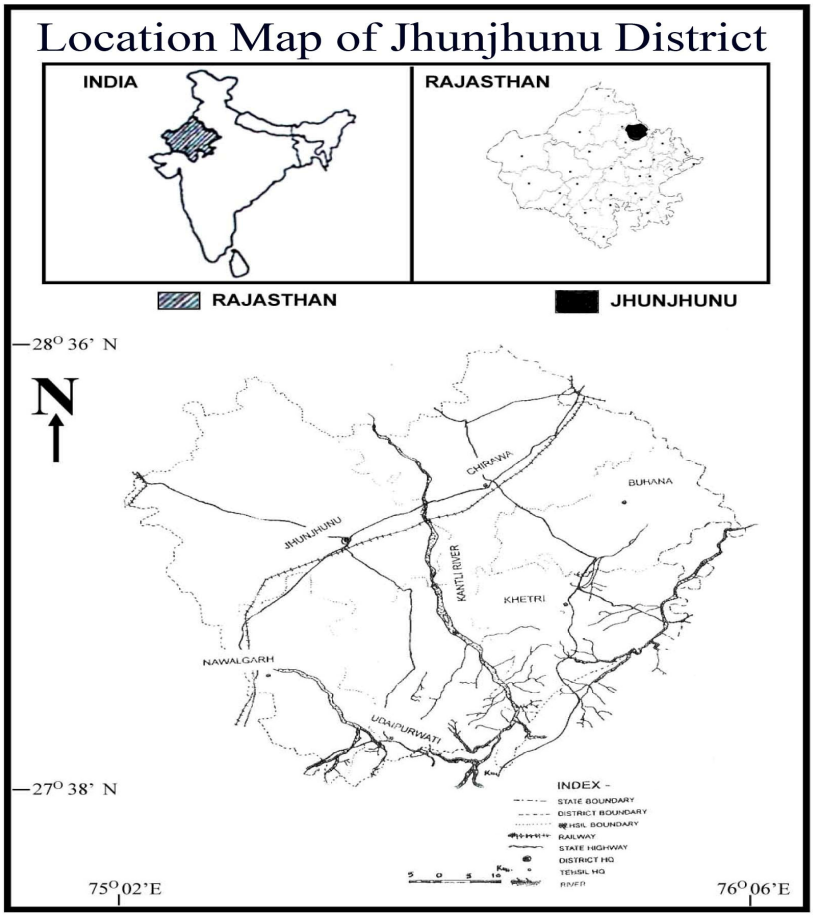
1.1. STUDY AREA :

The total geographical area of the district is 2928 square Kms. This stands at 1.73 percent of the total area of the state from the points of area, Jhunjhunu district stand at 22nd place among the existing 33 districts of the state most of the part of the district is coerce by blow sand and dunes which for part of the great that desert sand shifting and active dunes are main hazards to cultivation. Soil erosion is the Result of constant deforestation and mining activity which have resulted in baring the slopes.

The hilly area in south eastern part of district is characterized by hills of Aravalli range, running in north easterly direction. The highest peak, 1051 m high is in the south of Lohagar village bordering Sikar district. Hills are almost barren of vegetation except a few bushes of acacia and cactus.

The undulating area with small isolated hills having steep slope lies in the south western part of district. The major portion of hills is found in Khetri and Udaipurwati tehsils. The general elevation above mean sea level rests between 300 and 450m Quaternary level forms are represented by sand and colluvial deposits of talus and scree at piedment slopes.

The desertic plain generally lying at an altitude of about 300m amsl occupies the northern part of the district and is covered with sand dunes. The general slope of the area is from south to north. Sand dunes are drifting in nature.



District Jhunjhunu is situated in Arid Rajasthan plain known as Rajasthan. It comprises of Rolling hills, some of the arrival ranges in the southeastern side running in the south eastern Direction and range of the Aravali Hills in extreme southeastern of Udaipurwati existing towards Singhana and Khetri in the east, viz Nawalgarh-Khetri upland its general elevation above means sea level is between 300 to 450 meters. The highest peek is in the south of Lohagarh village and its height is 1051 meters, this is no perennial river in the district katti and Dohan are only seasonal rivers. River katti originated from Khadela hill sides of Shrimadhopur Tehsil. Sikar and enters near south west of Udaipurwati tehsil running towards north –west direction and ultimately disappears in the sandy tracks of the Churu District. This river, however, divides the district almost into two parts. Similarly Dohan River also originates from Shrimadhopur hills and flows to north –eastern direction passing through some eastern part and ultimately disappears in sandy tracks of Mahendragarh district of Haryana Besides, there. Major streams of Udaipur Lohagarh ki nadi chandrawati and sukh nadi. There is no lake in the district however small tanks are in existence in some areas. There are only four tanks used for irrigation purposes. There is also a bound of "Ajit Sagar" about 11Km. from Khetri on Nizampur road.

The district of Jhunjhunu is poor in forest resources as the total area under forest including hills is reported to be 39613 hectares which is 6.65 % of total geographical area of the districts. The forest coverage is below the state average of about 9 % under forest. If compared to the 13 % of forest area at national average. The district comes out to be roughly half of the matomn average.The major species available in forest is 'Jant" tree or Khetri (prosaic specigera) it is found in abundance and is utilized' for various purpose as providing folder to the animals supplying fuel for domestic purpose and checking sole erosion. Other species found are Babul, Shisham, Neem, Pepal, Hingotia, Karli, Akara, Mango trees, Ber tree etc. Among the wild animals, Baghera, soor, Languor, Lakkar Bhaga, Bhedia, Lomari, Gidar, etc. are generally found snakes other poisonous and non-poisonous are also found in the district.

Locally the dust storm is popular by some names as : Andhi, Dhool Bhari Andhi, Andhar etc. It is also a popular proverb among native people of desert land that "the rain follows after dust storms." In Rajasthan there are total 11 districts which fall under the western Rajasthan desert region which has arid and semi- arid climate types viz., Jaisalmer, Barmer, Bikaner, Ganganagar, Nagaur, Jodhpur, Jhunjhunu, Sikar, Jhunjhunu. Ajmer and Pali. Among these 11 districts area under study i.e.Jhunjhunu district,Rajasthan is fully or partly covered by desertic conditions. The desert land of Jhunjhunu district has no river.

Some of the depression which originate in the bay of Bengal in the south-west monsoon season and move across the central parts of the county, reach the district during their last stages of activity and cause windspread rain before dissipating. An occasional post monsoon storm or depression also occurs in the district. Dust storms and thunder-storms occur in the host season. Thunder-storms take place in the south-west monsoon season also. In the wake of western disturbances occasional fog occurs in the cold season.

Even during the monsson period, the skies are only moderately clouded on may days and overcast or heavily clouded skies are seen only on a few days. For the rest of the year, skies are lightly clouded or clear except during the winter season, when in association with passing western distrurbances, cloudy skies appear for short spells of a day or two.

The district experiences very few thunder-storms. It has only about ten thundery days in the year, most of which occur in the period from May to September, But dust-storms are very frequent in this area, and it has eighteen days of dust-storms in the year. Maximum number of dust-storms occur in June but more or less continue up to September. The hailstorm, on an average of one in about three years, occurs generally in January, March and May and to a lesser extent in February. Fogs are reported mostly in the month of January.

1.2. INTRODUCTION :

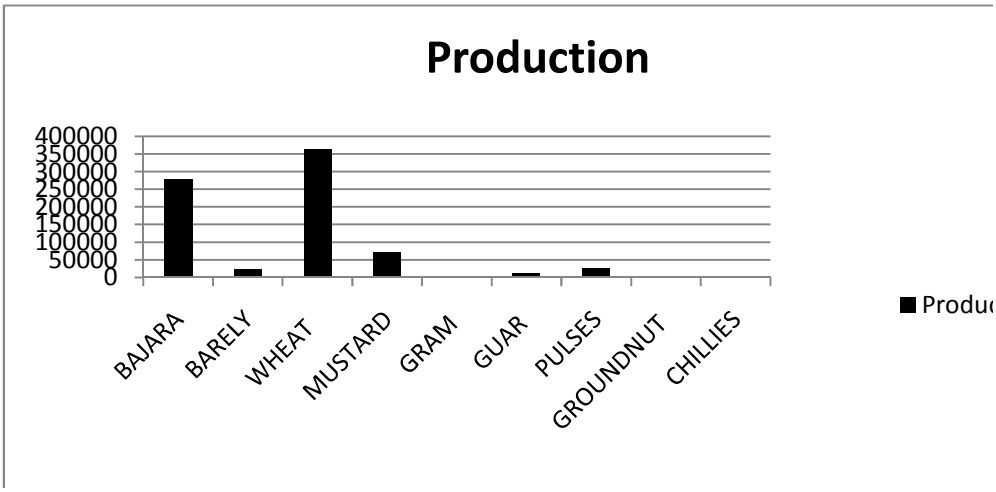
Agriculture refers to the art of raising plants from the soil. It is not just ploughing of land but an effort on the part of man to use soil for his benefit. It includes cultivation of crops and raising of animals. Agriculture is the most important of all primary human occupations and is carried on throughout the globe, except in the polar areas. The percentage of people engaged in agriculture vary from country to country. In many south-Asion countries like those of India, Pakistan and Bangladesh, more then 70 per cent of the people depend upon agriculture. In highly industrialised countries of Europe and Nort American continents, agriculture is also an important activity. Agriculture provides food crops, fibre crops and many other products like dairy, fruits and vegetables. The types of crops, number of crops, production and methods of farming very from region to regian and depend upon a number of geographical and economic factors.

1.3. MAJOR CROPS :

Bajra, whear, Barley, Mustered oil, Guar and pulsed are the important. Crops of Jhunjhunu Region, The other crops of the Region are Taramara , Cotton, Gram, and chilly but the production of these crops are not done on commercial scale , Kharif crops constitute the bulk of the field production on the monsoon. The area and production of different principal crops in Jhunjhunu Region for the year 2011 is given in the following table:-

TABLE 1.1
AREA AND PRODUCTION OF MAJOR CROPS (2011)
PRODUCTION IN TONES AREA IN HECTARES

S. NO.	Crops	Year : 2011	
		Area	Production
1.	BAJARA	141355	279816
2.	BARELY	9368	23655
3.	WHEAT	37400	362567
4.	MUSTARD	121911	71867
5.	GRAM	55440	148
6.	GUAR	67590	11339
7.	PULSES	36107	25714
8.	GROUNDNUT	10005	3000
9.	CHILLIES	352	333



1.3.1 WHEAT :

Wheat is mainly grown in northern states of India which have a temperate climate during winter and also have levelled alluvial land drained by rivers and canals. Punjab, Haryana, Uttar Pradesh, Uttaranchal, Madhya Pradesh, Chattishgarh, Rajasthan and Bihar are the leading states of India, contributing more than 90 percent of the wheat of the country. Mechanized farming viz., use of tractors, seed drills and plant thrashers and combines for harvesting the crops, has also gained momentum in recent years. This has increased production greatly, reducing its cost of cultivation. This crop is grown on loamy or loamy-sandy soils which can retain moistures and are rich in nutrients. The harvests are abundant on clay-loams soils having good drainage.

Rainfed wheat crop can be grown in areas which get 25 to 75 cm of rainfal. The winter cyclonic rains in northern parts of India, locally called "Mahawat", which occure in December through February, due to secondary depression of Mediterranean region, are highly useful for crop growth, resulting in high production. Wheat is usually grown in irrigated area-the means of irrigation being usually canals, wells and tubewells.

Remarkable progress has been achieved in Rajasthan in increasing wheat production in last 50 years. At the beginning of the 1 Five year plan average production of wheat in the state about 8.79 lakh metric tonnes. By end of IX Five year plan average production of wheat 67.94 lakh metric tonnes there by an increasing of more than about 8 times very a period from 1 Five year Plan to IX Five year plan in the year 2003-04 it was about 58.76 lakh metric tonnes.

The productivity of wheat in State has increased incredibly over the years. In 1952-53, the productivity was 1.075 Kg/ha., which in 2003-04 increased to 2,794 kg/ha. This increase has been possible with the development of new hybrid varieties which are high-yielding. Fertilizer-responsive, resistant to pest-diseases and dry conditions/ Today, not less than 400 varieties of wheat are available in the country and their local demands are met by the State Corporations of various states as well as the National Seeds Corporations and the State Farms Corporation of India. The increase in irrigated area, the use of fertilizers and pesticides have also contributed significantly to increase the productivity of wheat throughout the country

In Jhunjhunu, wheat is most important cereal crop. It has a wide climatic and soil adaptation range. It is, however sensitive to soil moisture deficiency and therefore, has to be irrigated for obtaining good harvest. Wheat area is mostly confined to those Regions where canal or well irrigation is possible. Because of its tolerance to saline waters, It predominates over other rabi crops, in saline well irrigated areas.

Wheat is one of those crops which has shown spectacular increase its area. Production and productivity especially after the year 1966-67 when it's high yielding varieties were introduced. In Jnunjhunu Region, Wheat is grown in over 37400 hecrares of land. In 2011, the productivity was 362567 tones.

1.3.2 BAJRA :

Bajra is the major food crop of Rajasthan. This millet can be grown in sandy soil under rainfed conditions and hence assumes importance in arid region of Rajasthan. This food grain crop is also grown abundantly in the arid tract of Gujrat, Uttar Pradesh, Karnataka, Maharashtra and Andhra Pradesh. It is multiple uses besides being a staple food; its fodder is an important feed for milch animals.

Bajra grows mostly in those areas, which have high diurnal temperature. The temperatures during growing season remains between 25^0C to 35^0 C. The optimum rainfall requirements range between 35 to 50 cm. Bajra can be grown in areas which receive less than 35 cm of annual rainfall prolonged spells of warm, rainless weather may be detrimental & may led to crop failures. At harvest time, dry warm warm weather is most suitable.

Although several strains of new hybird of Bajra have been developed, there has not been a substantial increase in its productivity, chiefly for the reason that this crop is still a rainfed crop. Failure of monsoon or its uneven distribution leads to crop failures. The productivity of Bajra in past decades has thus varied from 89 kg/ha (1979-80) 714 kg/ha (2003-2004) in Rajasthan. Because of its tolerance of high temperatures & drought, amongst competing other kharif crops, its cultivation is predominantly high in low & erratic rainfalls areas.

Bajra is grown in over 58.58 lakh hecrares of land in Rajasthan. The major areas lies in western Rajasthan, the highest (above 10.20 lakh ha) is in Barmer Region, alone. In jodhpur, Jalor & Nagaur Regions crop grown over 7.09 lakh

ha, 3.92 lakh ha and 5.61 lakh ha respectively. Other Regions where this crop is significant are Churu, Jhunjhunu, Sikar, Bikaner, Jaipur & Dausa. In Ganganagar, as a also in the entire southern & south-eastern Rajasthan, bajra cultivation is less. The area under this croop, especially in western Regions fluctuates from year to year, as this crop is totally dependent on the rains.

Among the newly developed hybirds, short duration hybirds will be more beneficial for cultivation in western arid tracts while medium maturing types are suitable for rest of the areas. Besides, the hybirds, cultivation of composite varieties has an added advanage. In Jnunjhunu Region, Bajara is grown in over 141355 hecrares of land. In 2011, the productivity was 279819 tones.

1.3.3 GUAR :

Gaur is an important crop grown in various part of the country for its fodder as well for its gum, extracted from its seed which has got a industrial importance. The gum is utilized in textiles, confectionaries, explosives, oil explorations, and basically the gum industries. A large number of factories have come up, particularly in western Rajasthan for extraction of gum. This gum is exported and is a good foreign exchange earner for the state. The crop is grown in more than 30 lakh hectares in the country spread over the states of Rajasthan about (76 percent), Punjab, Haryana, Uttar Pradesh, Uttar Pradesh, Uttranchal and Gujrat. The cropis grown during kharif, mostly as a rainfed crop and so depending on the rainfall pattern, the area and production of this crop fluctuates annually.

Rajasthan, especially in the western Regions which have light textured, well drained soils and rainfall in range of 10 to 30 cms. cover the maximum area under this crop. The crop is sown with onset of mansoon. The crop is sownboth as broadcast or as a line sown, latter practice helping in facilitating the process of inter-cultural operations and give relatively higher production. In many parts of the state with assured of irrigation, its is also grown as a irrigated crop, especially the vegetable types. In Jnunjhunu Region, Guar is grown in over 67590 hecrares of land. In 2011, the productivity was 11339 tones.

1.3.4 GROUNDNUT :

India occupies the first position, both with regard to area and production in the world. The oil contents of the seed vary from 44 to 55 percent, depending upon the varieties and agronomic conditions. Its oil finds extensive use as a cooking medium, both in its refined from as well as vanaspati ghee. It is also used in manufacturing soap, cosmetics and lubricants. Kernels are also eaten raw, roasted or sweetened. They are rich in proteins and vitamins A and B. Being a legume with root nodules, it is capable of fixing atmospheric nitrogen, thereby improving soil fertility.

Rajasthan is one the state which produces groundnut other states are Andra Pradesh, Gujrat and Karnataka, Looking to the high production efficiency ofgroundnut crop, supplemental irrigation is also being provided, particularly to high yielding strains in Gujrat, Andra Pradesh and Karnataka states. In Rajasthan this crop is grown over 61 percent of the area under irrigation in Jaipur & Bikaner Region (2003-04) where the productivity of this crop is high.

The crop can be grown successfully in places receiving a minimum rainfall of 125 cm. The rainfall during the flowering and pegging stages is very helpful for the crop. The crop requires 20 to 25^0C temperature for excellent growth. However, it can not stand frost, long and severe drought or water stagnation conditions. The crop grows well on a variety of soil types. However, it grows best on sandy loam tolomay soils and in black soils with good drainage. Heavy and stiff clay are unsuitable for groundnut cultivation as pod development is hampered in the soils. Soils, rich in calcium contents are considered to be best for its growth. Groundnut is sown mostly as a rainfed kharif crop during June, depending on the monsoon rains. In some areas, or where the monsoon is delayed, it is sown as late as August or early September. As an irrigated crop, in the southern Regions of the state, it is grown to a limited extent between January and March as a summer crop.

There has not been substantial increase in productivity chiefly for the reason that this crop is still a rainfed crop. Frequent failure of monsoon or irregularities in the timing of monsoon showers lead to crop failure. The productivity of groundnut in the past several decades has varied from 448 kg/ha (1952-53) to 966 kg/ha (1999-2000). In the year 2003-04 productivity of the state is 1565 kg/ha. While in Churu, Bikaner, Jhunjhunu, Sikar, Jaipur, Jodhpur, Barmer and Jalor Regions the productivity ranges from 1570 to 2413 kg/ha.

Efforts are underway for development of high yielding, short duration genotypes which possess drought tolerance also in order to reduced the adverse effects of the climate variations particularly rains. In Jnunjhunu Region, Groundnut is grown in over 10005 hecrares of land. In 2011, the productivity was 3000 tones.

1.3.5 KHARIF PULSES :

Pulses are of great significance to human beings as they are rich sources of vegetable proteins. They are grown mostly in rainfed areas. The main focus of development strategy in raising the production of pulses provide area specific technological packages, inputs and service. The result have been over-whelmingly responsive and consequently pulse production has marked increased in recent years.

Pulses are cultivated mostly in Madhya Predesh, Chattisgarh, maharashtra, telangana (Andhra Pradesh), Rajasthan, Karnataka, Haryana and Punjab. In Rajasthan kharif pulses occupy a significant area. It is usually grown mixed with bajra, jowar and other coarse millets. Its production is regarded as more assured, in case, production of main food crops fails due to lack of adequate rains.

A large number of pulses is grown in the kharif season. Among them moong, moth, urad and arhar are important. Pulses have less moisture requirements for their growth and so can be grown even in areas having low rainfall. They are cultivated as individual or also mixed crop with other kharif crops. All the kharif pulses are mostly grown as rainfed crops.

Prodictivity ranges of the last five years in Rajasthan indicate that while in period of lean monsoon, it has been as low as 83 kg./ha. (1992-2000), in case of good rainfall, the increase is as high as 560 kg/ha. (2003-04). The state has 982 kg/ha. of productivity in Alwar Region. Barmer, Jaipur and Sirohi Regions, the yields ranges form 784 to 832 kg/ha. In Jhunjhunu,Baran, Bharatpur, Bundi, Pali, Uadipur, Bhilwara, Dausa, Dungarpuj, Ajmer, Jaisalmer and Ganganagar Regions also, the yields are high than the state average, ranging form 563 to 760 kha/ ha during 2003-04.

There is still considerable scope for increasing productivity in these crops. Developments of short duration, determinate, high-yielding disease-resistant strains have paved way in this direction. Large scale availability of seeds of these genotypes shall go a long way in increasing production of pulses in the

state. In Jnunjhunu Region, Pulses is grown in over 36107 hecrares of land. In 2011, the productivity was 25714 tones.

1.3.6 BARLEY :

Barley is an important cereal of the state. The major portion of this crop is consumed by people, either as flour (Pure or mixed with that of wheat or gram) for chapati making or as parched grain to make sattu. It is also use to prepare malt for manufacturing beer, whisky and other industrial products such as alcohol and vinegar. Malt syrup is also used in making candies. While surplus grain provides feed for cattle and horeses, the straw too being fed to cattle.

The crop is usually grown on loamy or loamy sandy soils. The unirrigated barely crop can be grown in areas which receive 25 to 75 cm of rainfall on conserved soil moisture. Because of its low water requirements, the crop is well suited for drought prone areas. The crop prefers bright cold winter days and nights, free form frost during flowing. The crop can be grown successfully on saline lands or on marginally fertile lands with inadequate water supply where wheat can not give economic results. In any given region cultivated barley matures 2 or 3 weeks earlier than wheat and thus needs comparatively less irrigation. Barley is grown pure or mixed with other rabi crops, such as wheat, gram, peas and lentil. Sometimes rapeseed & mustard, taramira and linseed are also grown mixed with barley or as an inter crop.

The productivity of barley in the has increased remarked over the years. In 1952-53 the productivity was 1,135 kg/ha., which is 2003-04, increased to 2,248 kg/ha This increase has been possible with development of new hybrid varieties which are fertilizer responsive, resistant to diseases and pests and are of short duration. The increase in irrigated area and use of fertilizers have also contributed sufficiently to the increase productivity of barley throughout the country.

Newly developed genotypes which are not only high fertilizer-responsive, dwarf, varieties, but also are disease resistant, which are available and required to be propagated more in the farming community to attain high levels of barley production. In Jnunjhunu Region, Barley is grown in over 9368 hecrares of land. In 2011, the productivity was 23655 tones.

1.3.7 GRAM :

Gram is an important pulse crop of the country. Its vegetable or dal, basen (flour), crushed or whole gram, boiled or parched, roasted or cooled, Salted, insulted or sweetened, both-green foliage and grain are the forms in which it is consumed by the people. It is and important rabi season crop in Rajathan, contributing about 93 percent of the pulse production of the rabi in the state. Combining the total pulse production of both-the rabi and kharif seasons, gram provides about 31 percent of the total production (2003-04)

Gram is generally grown unirrigated during rabi season. However, present varieties and kabuli types require irrigation, especially from flowering to the grain formation period. Frost during flowering and rains during maturity are harmful to thr crop. An early rise in atmospheric temperature during grain filling are result in reduction in yield. In dryland areas, it is grown mixed with wheat, barley, linseed, or mustard in rotation with jowar, bajra etc. But in medium or heavy rainfall areas, it is grown alone as a pure crop.

The productivity of gram has highly varied in the last four decades. This is obviously on account of variation of rainfall in the winter season. It was as low as 355 Kg/ha. in 1963-64 as high as 909 kg/ha. during 1978-79

Being predominantly a rainfed crop, development of genotypes which are high yielding and possess shorter maturity periods (thus escaping high temperatures at the time of maturity), shall contribute considerably in increasing production in the state. In Jnunjhunu Region, Gram is grown in over 55440 hecrares of land. In 2011, the productivity was 148 tones.

1.3.8 RAPESEED MUSTARD :

On the oil seed map of the world, India occupies a prominent position, both with regard to acreage and production. Rapeseed & mustard are the most important source of edible oil. The oil content of the seeds of different form ranges from 30 to 50 percent. The oil is mainly used as a cooking medium in northern India and can not be replaced by other edible oils. The seeds and oil are used as a condiment in preparation of pickles and for flouring curries and vegetables. the oil cake of sarson is mostly used as cattles feed.

It is a rabi season crop which requires cool, dry, weather and bright sunlight. the crop may grown in rainfed conditions but higher yields are obtained under irrgated areas. the crop grows well in areas where the annual rainfall rainfall ranges between 75 to 100 cm.

Allthough several strains of new high yielding varieties of rapeseed and mustard have been introduced in the state, there has not been a substantial increase in its productivity in the rainfed areas. Failure of monsoon or uneven distribution in in the rainfall leads to lower yields and consequently productivity declines. Thus the productivity of rapeseed and mustard in the past five decades has thus, varied from 333 Kg./ha. (1952-53) to 1,306 kg/ha. (2003-04) in Rajasthan.

Owing to its commercial importance, this crop has replaced other rabi crops significantly in major parts of the state. Each year the area under this crop is increasing considerably. Nearly 20.62 lakh hectares are being covered by this crop which is about 32.60 percent of the area covered by rabi crops (2003-04). This crop contributes about 98 percent of the oil seed production (rabi) and 68 percent of the total oil seed production (Kharif+Rabi) in the state (2003-04). In order to increase its production with high disease tolerance and to lower the effect of harmful ingredients in its oil, intensive efforts are underway in the direction of exploitation of hybrid vigour. Thus, high yielding hybrid of this crop will boost production in the state. In Jnunjhunu Region, Mustard is grown in over 121911 hecrares of land. In 2011, the productivity was 71867 tones.

REFERENCES :

[1] Abbi B.L. and Kesar Singh (1997), Post-Green Revolution Rural Punjab : A Profile of Economic and Socio-Cultural Change (1965-95). CRRID, Chandigarh.

[2] Agarwal, M.C., Singh, R., Verma, S.K. and Singh K., (1982), "Yield of Bajra and Wheat with Saline water applied through sprinkler and surface Irrigation methods." Annals of Arid Zone, 21 (1), P. 9-14.

[3] Agricultural Statistics of Rajasthan – 2010, published by Directorate of Economics & Statistics, Rajasthan, Jaipur.

[4] Anonymous (1998), Proceedings of national Seminar on

[5] District Census Handbook, Jhunjhunu, 2011, Directorate of Census Operations, Rajasthan, Jaipur.

[6] Economic Review-2011, Government of Rajasthan, Jaipur.

[7] Singh, Jasbir (1974),An agricultural atlas of India: a geographical analysis. Kurukshetra, Vishal Publications, p.1.

[8] Watts, G. 1908. The Commercial Products of India. John Murray, London.

[9] Wegner, P.L. 1965. Vegetation and Soils. Mc Graw Hill, New York.