

AGRICULTURE ACTIVITIES: COMPARATIVE STUDY BETWEEN SELECTED DISTRICT OF HARYANA AND SELECTED DISTRICT OF RAJASTHAN STATE REGARDING AGRICULTURE ACTIVITIES

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ABSTRACT

Agriculture is the mainstay of more than 75 per cent people in Haryana and Rajasthan. Various measures have been taken to raise the standard of living of its farmers. Several crops like Rice, Wheat, Jowar, Bajra, Maize, Barley and Pulses, Sugarcane, Cotton, Oilseeds and Potato are the major crops of both the State. Under the diversification of crops, more and more area is being brought under cash crops like sugarcane, cotton and oilseeds. New crops like sunflower, soyabean and fruits and vegetables are also being encouraged. Efforts are being made to encourage intensive and extensive farming in the States.

Keywords: *Wheat, Bajra, Climate, Seeds Rate, Irrigation, Villages.*

Introduction

Haryana has a proud history going back to the Vedic Age. The state was the home of the legendary Bharata dynasty, which has given the name Bharat to India. Haryana finds mention in the great epic of Mahabharata. Kurukshetra, the scene of the epic battle between the Kaurvas and the Pandavas, is situated in Haryana. The state continued to play a leading part in the history of India till the advent of the Muslims and the rise of Delhi as the imperial capital of India. Rajasthan's history is very old and goes back to 3000 B.C. Rajasthan has always been known as the land of chivalry and the brave deeds of its warriors heroes, like Maharana Pratap are part of our historical and semi-historical collection of stories. The Chauhan dynasty dominated Rajput affairs from seventh century onwards and they became the rulers of the state from 12th century B.C.

Irrigation in Haryana

The irrigation network has made Haryana into one of the frontline states of India in terms of food grain production. Haryana is a beneficiary of the multi-purpose project in Sutlej and Beas, sharing benefits with Punjab and **Rajasthan**. Major irrigation projects are Western Yamuna Canal, Bhakra Canal System and Gurgaon Canal. Haryana has raised water from lower levels to higher and drier slopes. It is a new endeavour that gave practical shape to the lift irrigation for the first time in India. The Jui, Sewani, Loharu and Jawaharlal Nehru lift irrigation schemes have helped to carry irrigation water against gravity flow to arid areas. This has served as an effective check against the advance of the Rajasthan desert. Techniques of Sprinkler and Drip Irrigation have been introduced in the highly undulating and sandy tracts of Haryana. The controversy between Haryana and Punjab over the Sutlej Yamuna link, which would bring additional water to the state, has not yet been settled but the state has an extensive tubewell system thanks to the enterprises of its farmers and the spread of electricity to all village of the state. The State undertook implementation of the six-year Haryana Water Resources Consolidation Project from 1994-95. The project objectives are to manage the total available water resources efficiently and economically to improve equitable distribution of water amongst the beneficiaries by rehabilitating the existing canal and drainage system.

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State at a Glance	
State Came into Existence	1 st November 1966
State Capital	Chandigarh
Area (in square km)	44,212
Total Number of Households	3,712,319
Household Size	5.7
Population	21,144,564 (Persons), 11,363,953 (Males), 9,780,611 (Females)
Population	21,082,989
Status	Ranks 20 th in area and 16 th in population in India
Total Number of District	20
Total Number of Towns	106
Total Number of Villages	6,955
Major Rivers	Ghaggar
Percentage of Urban/Rural Population	28.9 (Urban), 71.1 (Rural)
Administrative Language	Hindi
Principal Languages	Hindi, Punjabi, Urdu
Per Capita Income (NSDP) (2005-2006)	Rs. 32,724/- (At Constant 1999-2000 Prices)
Population Density	478/sq.km.
Sex Ratio	861 Females/1000 Males
Birth Rate (2006)	23.9/thousand (Estimated)
Death Rate (2006)	6.5/thousand
Literacy Rate	68.59% (Persons), 79.25% (Males), 56.31% (Females)
Major Religions (1991 Census)	Hindu (89.21%); Muslim (4.64%); Christian (0.10%); Sikh (5.81%); Buddhist (0.01%); Jain (0.21%); others (0.02%)
Schedule Caste Population	4,091,110 (Persons), 2,188,585 (Males), 1,902,525 (Females), Percentage of SC (19.3)
Number of Workers	8,377,466 (Persons), 5,715,526 (Males), 2,661,940 (Females)
Work Participation Rate	39.6 (In %)
Major Source of Income	Agriculture (80% people's occupation)
Major Industries	Automobiles, cycles, woolen products, handloom
Major Tourist Places	Blue Jay (Samalkha), Skylark (Panipat), Chakarvarty Lake and Oasis (Uchana), Parakeet (Pipli), Kingfisher (Ambala), Magpie (Faridabad), Dabchick (Hodel), Shama (Gurgaon), Jungle Babbler (Dharuhera), Gauriyye (Bahadurgarh), Myna (Rohtak), Blue Bird (Hisar), RedBhishop (Panchkula) and Pinjore Gardens (Pinjore). Surajkund and Badkhal Lake, Sultanpur bird sanctuary (Sultanpur, Gurgaon) and Damdama in Gurgaon, Morni Hills, The Surajkund Crafts Mela
Major Festivals	Lohdi, Tikka, Holi, Dashera, etc.

Table 2

District-wise Number of Sub-Districts, Towns and Villages in Haryana (Census 2001)							
District	Sub Districts	Total Towns	Statutory Towns	Census Towns	Total Villages	Inhabited Villages	Uninhabited Villages
Panchkula	2	4	3	1	236	224	12
Ambala	3	6	4	2	493	482	11
Yamunanagar	2	11	6	5	639	613	26
Kurukshetra	3	4	4	0	416	407	9
Kaithal	2	4	4	0	270	270	0

Karnal	5	7	6	1	434	422	12
Panipat	3	6	2	4	192	179	13
Sonipat	4	4	4	0	336	323	13
Jind	4	5	5	0	307	306	1
Fatehabad	3	4	4	0	243	243	0
Sirsa	4	5	5	0	325	321	4
Hisar	4	5	5	0	275	272	3
Bhiwani	6	6	6	0	444	437	7
Rohtak	2	3	3	0	147	146	1
Jhajjar	3	5	3	2	260	247	13
Mahendragarh	2	5	4	1	370	368	2
Rewari	3	4	2	2	410	397	13
Gurgaon	7	12	9	3	726	694	32
Faridabad	5	6	5	1	432	413	19
Haryana	67	106	84	22	6955	6764	191

Table 2 shows that total Sub-District is 67, Towns 106, Statutory Towns 84, Census Towns 22, and Total Villages 6955 out of which 6754 are Inhabited Villages and 191 are Uninhabited Villages. Under the study, only five District namely Fatehabad, Sirsa, Hisar, Bhiwani and Mehendergarh is to be selected at randomly.

Irrigation in Rajasthan

38,600 hectares had raised irrigation potential of the state during 2002-03 and the total irrigation potential of the state is 29.94 lakh hectares.

As on 2005-2006, Net Irrigated Area was of 6,294 thousand hectares and Gross Irrigated Area 7,093 thousand hectare in Rajasthan.

State at a Glance	
State Came into Existence	1st November 1956
State Capital	Jaipur
Area (in square km)	3,42,239
Total Number of Households	93,17,675
Household Size	6.1
Population	56,507,188 (Persons), 29,420,011 (Males), 27,087,177 (Females)
Status	Ranks 1st in area and 8th in population in India
Total Number of District	32
Total Number of Towns	222
Total Number of Villages	41,353
Major Rivers	Loni, Ghagar, Chambal, Banganga, Mahi
Percentage of Urban/Rural Population	23.4 (Urban), 76.6 (Rural)
Administrative Language	Hindi
Principal Languages	Hindi, Urdu, Punjabi, Sindhi, Rajasthani
Per Capita Income (NSDP) (2006-2007)	Rs. 15,420/- (At Constant 1999-2000 Prices)
Population Density	165/sq.km.
Sex Ratio	921 Females/1000 Males
Birth Rate (2006)	28.3/thousand (Estimated)
Death Rate (2006)	6.9/thousand
Literacy Rate	61.03% (Persons), 76.46% (Males), 44.34% (Females)
Literates	2,77,02,010 (Persons), 1,80,47,157 (Males), 96,54,853 (Females)
Major Religions (1991 Census)	Hindu (89.08%); Muslim (8.01%); Christian (0.11%); Sikh (1.48%); Buddhist (0.01%); Jain (1.28%); others (0.03%)
Schedule Caste Population	96,94,462 (Persons), 50,67,679 (Males), 46,26,783 (Females), Percentage of SC (17.2)

Schedule Tribe Population	70,97,706 (Persons), 36,50,982 (Males), 34,46,724 (Females), Percentage of ST (12.6)
Number of Workers	2,37,66,655 (Persons), 1,46,95,802 (Males), 90,70,853 (Females)
Work Participation Rate	4.21 (In %)
Major Source of Income	Agriculture, Industry
Major Industries	Mineral-based industry, Textile and woolen garments, electrical & electronics etc.
Major Tourist Places	Jaipur, Jodhpur, Udaipur, Mount Abu, Ajmer, Alwar, Jaisalmer, Chittorgarh etc.
Major Festivals	Teej fair, Pushkar Fair, Shree Mahavir Mela at Sawai Madhopur, tribal Kumbh of Beneshwar, Ajmer Sharif Festival, Galiakot annual Festival, Kartik Purnima and national religious festivals etc.

Table 3

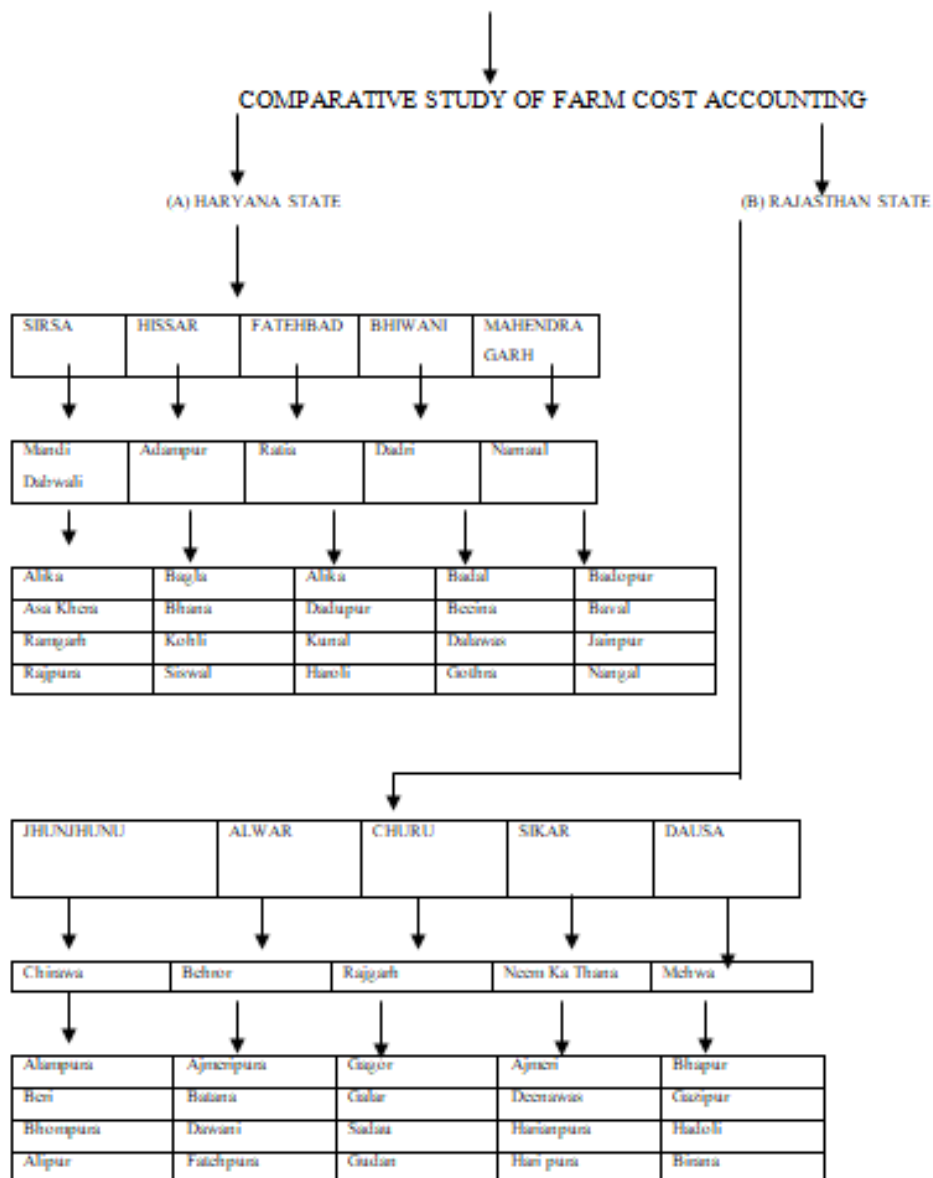
District-wise Number of Sub-Districts, Towns and Villages in Rajasthan							
District	Sub Districts	Total Towns	Statutory Towns	Census Towns	Total Villages	Inhabited Villages	Uninhabited Villages
Ganganagar	9	12	10	2	3014	2830	184
Hanumangarh	7	6	6	0	1905	1773	132
Bikaner	7	3	3	0	778	712	66
Churu	7	11	11	0	979	946	33
Jhunjhunun	6	13	12	1	859	855	4
Alwar	12	9	6	3	1994	1954	40
Bharatpur	10	9	9	0	1472	1366	106
Dhaulpur	5	3	3	0	802	786	16
Karauli	6	3	3	0	798	755	43
Sawai Madhopur	7	4	2	2	794	719	75
Dausa	5	5	3	2	1058	1025	33
Jaipur	13	11	11	0	2131	2077	54
Sikar	6	9	9	0	992	986	6
Nagaur	10	12	10	2	1500	1480	20
Jodhpur	7	4	4	0	1063	1058	5
Jaisalmer	3	2	2	0	637	600	37
Barmer	8	2	2	0	1941	1933	8
Jalor	7	3	3	0	706	697	9
Sirohi	5	5	5	0	462	455	7
Pali	9	11	9	2	949	936	13
Ajmer	9	9	8	1	1038	1025	13
Tonk	7	7	6	1	1093	1032	61
Bundi	5	7	6	1	849	839	10
Bhilwara	12	8	7	1	1745	1693	52
Rajsamand	7	5	4	1	987	973	14
Udaipur	10	10	5	5	2351	2339	12
Dungarpur	4	3	2	1	858	854	4
Banswara	5	3	2	1	1504	1476	28
Chittaurgarh	13	8	8	0	2395	2201	194
Kota	5	11	4	7	892	812	80
Baran	8	6	4	2	1207	1089	118
Jhalawar	7	8	5	3	1600	1477	123
Rajasthan	241	222	184	38	41353	39753	1600

Table 3 shows that total Sub-District is **241**, Towns **222**, Statutory Towns **184**, Census Towns **38**, and Total Villages **41353** out of which 39753 are Inhabited Villages and 1600 are Uninhabited Villages. Under the study, only five District namely Jhunjhunnu, Alwar, Dausa, Sikar and Churu is to be selected at randomly. As far as the two state Haryana and Rajasthan is to be compare, Total Sub-District, Towns, Statutory Towns, Census Towns and Total Villages are more in Rajasthan State than the Haryana State.

Defining the Sample

The following diagrams (**Sample Profile at a Glance**) show the Five District from each state (Haryana & Rajasthan) selected at randomly and thereafter four villages form each District is to be selected at randomly. Five farmers from each village selected randomly i.e. **5x4=20x5=100** respondents from Haryana State and **5x4=20x5=100** from Rajasthan State, it comes a sample of total **200** farmers. Before study the 200 respondents.

Sample Profile at a Glance



Research Methodology regarding Wheat & Bajra

Wheat

Wheat is the second most important food crop of the country, which contributes nearly one-third of the total foodgrains production. This contribution has increased over years and was less than 10% in the early fifties. It is consumed mostly in the form of unleavened pan backed bread, called chapatti. Wheat straw is used for feeding the cattle. The common bread wheat, is the most important species, occupying more than 90% of the total wheat area in the country. It is grown all over India from the sea level up to an elevation of 3500 m in the Himalayas. This crop is mostly grown under irrigated conditions in sugarcane-wheat rotation. It has a very high degree of heat tolerance and can be sown a late as December and January without much fear of heat damage during grain filling, even in the southern zone. It is preferred for several south Indian Dishes that use granular form of wheat.

The area under wheat has steadily gone up since the start of the Wheat Revolution in 1967 and its production and productivity has increased tremendously. The wheat area has risen from 12.8 million ha in 1966-77 to 26.6 million ha in 2003-04. During the same period production has increased from 11.4 to 72.1 million tones and the productivity has gone up from 887 kg/ha to 2707 kg/ha. Another major change that has occurred in wheat cultivation since Independence is that the proportion of area under irrigated wheat has increased greatly. It has gone up from 34% in 1967 to 51% 1970 and more than 88% in 2001. Thus the crop has now become largely irrigated as compared to being primarily rainfed earlier.

Climate

In India wheat is a winter (Rabi) crop. The sowing is done in autumn and harvesting in summer. The high temperatures at both ends of the crop season determine the duration available for wheat cultivation, which ranges from 100 days in down south to more than 145 days in northwestern plains and 180 days in the hills. High temperatures in October do not permit early seeding of the main crop. Early seeding increases the incidence of root rot and seeding blight fungi and severely restricts tillering capability, crop duration and yield potential of most varieties.

Sowing Time

Normally wheat is sown when the average daily temperatures fall to around 22-23°C, which happens only November, in most wheat growing areas. Sowing wheat while the temperatures are high results in poor germination reduced tillering and early onset on flowering, thereby exposing the floral parts to cold damage. All these factors depress the crop yields. Under irrigated conditions, the first fortnight of November is considered the optimum time of sowing the medium- and long duration varieties, which are capable of producing the highest possible yield. Such varieties include PBW 343, WH 542, CPAN 3004, PDW 233, K 88, HD 2336, RAJ 1555, GW 190, MACS 2486, and DWR 162 in the zone of their recommendation.

Seed Rate

The seed used for sowing should be well developed, healthy, with good germination capacity, free from seed borne diseases and weed seeds. It is advisable to sow certified seed. For varieties with the medium-sized grains a seed rate of 100 kg/ha is recommended. For bold seeded varieties (around 45 g/1000 seeds) a seed rate of 125 kg/ha is optimum. For late sown wheat, seed rate of 125-150 kg/ha is recommended. Under rainfed conditions a reduced seed rate of 75-80 kg/ ha is recommended. Most of the improved varieties are susceptible to loose smut disease, and the seed used should be given either solar or hot water treatment or should be treated with appropriate fungicide before sowing.

Sowing Method

For proper germination the seed must be placed in moist soil. Drilling or broadcasting of seeds does sowing. Sowing with speed drills, whether tractor drawn or bullock drawn, despite the seed at a uniform depth, gives a more uniform stand and leads to early emergence of vigorous seedlings. In many places the seed is sown by hand in furrows behind the plough, drawn by bullocks by the kera method. The seed of semi-dwarf varieties should not be placed below 4 to 5 cm depth, since they have a short coleoptile, but that of the tall types can be placed up to a depth of 6 to 7 cm. For irrigated timely sown wheat a spacing of 22.5m between the rows is considered optimum. For irrigated late-sown conditions, the row spacing is reducing to 15-18 cm. After seeding the furrows are covered by running a wooden plank. Under rainfed conditions seed is required to be practiced in rough, dry and light soils, whereas comparatively shallow sowing is done in moist soils. Rain-fed wheat is sown at relatively wide spacing of about 25 to 30 cm between the rows.

Irrigation

Wheat sown under irrigated conditions requires 4-6 irrigations, depending on the soil and weather conditions. There are several methods to decide when to apply irrigation. These include soil moisture level determination, consumptive water use and physiological crop stage. The last method is the easiest to follow since no specific measurements and estimates are required and can be readily followed by farmers. Under limited water supply the number of irrigations depend on the quantum of its availability, i.e. (a) if water is available for 1 irrigation, it should be applied at the crown-root-initiation state (CRI), (b) if water is available for 2 irrigation, the first irrigation should be applied at the crown-root initiation and the second at boot leaf stage, i.e. 7 to 8 weeks after the first irrigation, and (C) if water is available for 3 irrigation, the first irrigation should be given at the crown root initiation stage, followed by boot and milk stages.

Bajra

Bajra (Pearl millet) is consider as the fifth most important cereal crop, and most important millet (constitutes more than 55% of global millet production) and is grown in over 40 countries, predominantly in Africa and the Indian subcontinent.

India produced 8.83 million tonnes of Bajra in 2008-09. The major producing states in India are **Rajasthan, Haryana, Uttar Pradesh, Maharashtra and Gujarat.**

The major producing countries are Senegal, Mali, Niger, Nigeria, Sudan, and India.

Pearl millet is used as a staple food grain and it is a source of feed, fodder, fuel and construction material in the hottest, driest, semi-arid and arid regions where rain-fed agriculture is practiced.

Weed Control

Keeping weeds under controls is very crucial for achieving high yield levels. Weeds cause maximum damage during early growth stages. Several methods are available for their control including hand held equipment, power driven implements and chemical weedicides. Hoeing or inter culturing a few days after the first and second irrigations or rain will break the crust and also help remove the weeds. On small-scale hand held equipments, viz. khurpi, hand hoe, etc. are used. Several power drawn implements, viz. cultivators, are also used.

Fertilization

To achieve high productivity levels use of synthetic fertilizers is very essential. It should be remembered that large quantities of plant nutrients are removed from the soil along with the harvest of grain and straw. The nutrients removed from the soil include large quantities of N.P. and K along with small amounts of several other elements. Unless these nutrients are replaced through considered application sustaining high productivity over time is not possible.

Use of organic manures is highly effective to achieve and sustain reasonable yield levels since these contain small amounts of all plant nutrients. Organic manures are also essential to maintain biological progress and soil physical properties. However, to achieve higher levels of productivity use of synthetic fertilizers is essential.

Soil and Water Conservation: Land Shaping and Development

Soil conservation measures includes conservation arming, bunding, terracing and safe disposal of water, whereas water conservation reflects in mostly storage of rainwater in the soil profile and the measures include soil surface amelioration or treatment for higher infiltration rate, modification of soil profiles for higher water receptivity through structural variants or addition of high water retaining substances. The basic principle of water conservation should be to retain the water where it falls and utilized it efficiently.

Conservation of water can be divided into 3 categories, (i) conservation of water received through precipitation, (ii) large dams, tanks and ponds, conservation of water in irrigation system, and (iii) checking losses in seepage and evaporation and conservation of water through crop management and crop replacement or substitution and soil management. Various soil and water conservation technologies, which are at present under recommendations, are:

- **Land levels:** To protect the sloppy land a leveling of land with a slope of 1 to 2% is recommended. It has been observed that after land leveling with a slop of 1 reducing the run off to 5 to 6% of the rainfall in comparison to the natural slope of 5% yielding a run off of 50%.

- **Contour bunding:** On sloppy lands raising bunds of same height can effectively conserve the soil and water.
- **Contour trenching:** Long slopes can be broken by excavating trenches for trapping the soil particles being carried by run-off water and run off water will get enough time for infiltration to recharge the soil profiles of hill slopes.
- **Terracing:** On slopes with 8% gradient, leveled terraces are constructed to break the slope for soil and water conservation. A mild slope is given towards the hillsides of the terrace.
- **Contour cultivation:** Soil as well as water on cultivable sloppy lands can also be conserved by practicing all the cultural practices across the slope of land on contours.
- **Stabilized drains:** It has also been observed that proper disposal of excess rainwater through stabilized drains help in maintaining lands of cultivable fields and reduces soil as well as water losses.
- **Strip cropping:** By following alternate strip cropping of erosion permitting and erosion resisting crops the soil and water can be conserved.
- **Seasonal land rest:** To conserve water, in certain areas lands are kept fallow during kharif or monsoon season and cultivation of Rabi is carried on residual conserved moisture.
- **Mixed cropping:** Under low rainfall situations, mixed cropping also conserves and uses the rainwater effectively.
- **Cultivation of fast growing and early maturing crops:** To conserve soil, cultivation of fast-growing and early maturing crops or crop varieties is done so that cultivated bare land gets covered and impact of raindrops in detaching soil particles is reduced.

Table 4

Sowing and Harvesting Period of Crops				
Season	Period	Sowing Period	Harvesting Period	Principal Crop
Kharif	May to middle of October	Generally at the beginning of the South - West monsoon - May to July	At the end of the South - West monsoon - Sept. to Oct. (May continue upto Nov. in some cases)	Rice, Jowar, Bajra , Maize, Ragi, Tur, Moong, Castor, Urad, Sugarcane, Groundnut, Sesamum, Tobacco, Jute and Cotton.
Rabi	Middle of October to middle of April	At the beginning of the cold weather -October to December	February to April (may continue till May in some cases)	Wheat , Barley, Gram, Linseed, Mustard, Masur, Peas, Oats and Potato.

Source: Bulletin on Food Statistics 1998-2000, Directorate of Economics & Statistics, Dept. of Agriculture & Cooperation, Ministry of Agriculture, Govt. of India.

Table 4 shows the month in which Wheat and Bajra are to be sowing in both the state i.e. Haryana and Rajasthan. Here, Bajra come in preview of Kharif while Wheat comes in the preview of Rabi.

Comparative Study between Selected District of Haryana and Selected District of Rajasthan State regarding Farming Activities

Selected District of Haryana State

Sirsa District

Sirsa District was created out of South-Western part of District Hisar in the year 1975. Punjab, Rajasthan and District Fatehabad of Haryana State surround it. Only a seasonal river Ghaggar is flowing through central part of the district and Bhakra Canal is the only source of irrigation.

The climate of the district is of tropical type with intensive hot summer and cool winter with a temperature of 47 Degree Centigrade in June and 3 Degree Centigrade in December and January. The average rainfall of the district is 200 to 300 mm out of which 80% precipitation is received from July to September.

80% of the inhabitants are villagers and their main occupation is Agriculture. The main cropping pattern is two-crop system. Paddy, Cotton and Bajra crops are grown in Kharif whereas Wheat, Gram, Barley and Rape-mustard in Rabi season. Cotton and Rabi oilseeds are two main cash crops. Now,

some farmers are shifting from their traditional cropping system to Horticulture and Flower culture. Area under garden and flower culture is 1400 and 10 Hectares respectively. The production of green and dry fodder is 20 Lacs and 10 Lacs Tonnes respectively. From agriculture point of view, District Sirsa comprises of three agricultural Sub-divisions namely Sirsa, Dabwali and Ellenabad. Total geographical area of the district is 4.27 Lac Hectares, which is spread over in 326 villages. Total cultivable area of the District is 4.3 Lacs Hectares.

Hissar District

Hissar is an important district of Haryana, situated at a distance 164 km west of Delhi on the NH - 10 (National Highway- 10). The city of Hisar was founded by a Muslim ruler, Firozshah Tughlaq in 1354 A.D. 'Hisar' is an Arabic word which means 'Fort'. A fort by the name of Hisar-e-Firoza was constructed. Hisar is famous for its steel industry, therefore sometimes called as the "Steel City of Haryana". The town has several sites to visit and rediscover. The Bishnoi Mandir, Jain Mandir (Hansi), Gujari Mahal (Hisar) and Barsi Gate (Hansi) are famous tourist destinations of the district. The town is home to India's two famous universities - Guru Jambheshwar University and Choudhary Charan Singh Haryana Agricultural University.

Fatehabad District

Fatehabad is located in the southwestern part of Haryana at 29° 3' north latitude and 75° 30' east longitudes. It is surrounded by Punjab in North, district Hisar in south, district Jind in East and Rajasthan & district Sirsa in the West. The total geographical area of the district is 2520 sq.km, which comprises of 5.4 % of the total areas of the state. The name Fatehabad has been derived from its headquarters town Fatehabad. The town was founded by Firuz Shah Tughlak in the 14th century and named it after his son FatehKhan. Fatehabad district has a long lasting history dating back to Harappan period. The archaeological excavations done near Banawali reveals that a 'well-constructed fort town of the Harappan period overlying an extensive proto-urban settlement of the pre-Harappan culture. There is a small and a beautiful mosque known as Humayun Mosque located at Fatehabad town. Firuz ShahTughlaq (the founder of Fatehabad) had built a fort, which is now in ruins; the fortification walls can be seen on the east of the town.

Bhiwani District

Bhiwani district is located on the western part of Haryana between 28.19 deg & 29.05 deg North latitude and 75.26 deg & 76.28 deg. East Longitude. The District is surrounded by Hissar District on its North, some areas of Jhunjunu & Churu District of Rajasthan on its west, Mahender Garh and Jhunjunu District on its south and District Rohtak on east. The district was founded on 22 December 1972 and was named after the administrative city Bhiwani. The Rajput Neem founded it after his wife named Bhani. Gauri Shankar temple of Bhiwani is known throughout the country. Another important city of the district is Dadri, which was founded by the son of Prithvi Raj Chauhan. It is also a place for industrial and commercial activity.

Mahendragarh District

Mahendragarh district is located in the south western part of the state of Haryana. Its west-southern portion and a major section of eastern part touch Rajasthan state and the last portion of the eastern part shares borders with Rewari. District Bhiwani is situated in the northern part of Mahendragarh.

The historical sites include the Jal Mahal, Chor Gumbad, Birbal Ka Chhatta, Tomb of Shah Wilayat, Mausoleum of Ibrahim Khan Nasibpur, Tomb and Tripolia of Shah Quli Khan. Among religious places the worth visiting sites are the Chamunda Devi Mandir, Modawala Mandir and Dhosi Hill.

Selected District of Rajasthan State

Jhunjhunu is a town in the state of Rajasthan in India, and the administrative headquarters of Jhunjhunu District. It is located a 180 km from Jaipur and 245 km from Delhi. The town is famous for the frescos on its grand Havelis, a special artistic feature of this region. Jhunjhunu gets name after Jujhar Singh Nehra (1664–1730) or Jhunjha, a Jat chieftain of Rajasthan. The Jats through Jujhar Singh and Rajputs through Thakur Shardul Singh agreed upon a proposal to fight united against Muslim rulers and if the Nawab were defeated Jujhar Singh would be appointed the Chieftain. Jujhar Singh one day found the right opportunity and attacked Nawabs at Jhunjhunu and Narhar. He defeated the army of Nawab Sadulla Khan on Saturday, aghan sudi 8 samvat 1787 (1730 AD). According Kunwar Panne Singh Jujhar Singh was appointed as Chieftain after holding a darbar. After the 'tilak' ceremony of appointment as a sardar or chieftain, the Rajputs through conspiracy killed Jujhar Singh in 1730 AD at a lonely place.

Jujhar Singh thus became a martyr and the town Jhunjhunu in Rajasthan was named so after the memory of Jujhar Singh or Jhunjha. Jhunjhunu lies in the core of the well-known erstwhile Shekhawati province. Every corner of Jhunjhunu speaks its own history of Shekhawat Rajput's bravery and valour. Thakur Shardul Singh Shekhawat was a very courageous, bold, brave and efficient administrator. He conquered the Jhunjhunu in 1730 from Rohilla Khan, the last Nawab of Jhunjhunu. This is clear from the following poetry, made by the Charan of Shekhawats in the Rajasthani language

Alwar has an important place in Agriculture production in Rajasthan. Total geographical area of the district is 7, 82,897 hectares which is about 2.5 percent of the State. In the year 2001-2002 the net cultivated area is 5,09,107 hectares from which about 83 percent area viz. - 4,26,204 is irrigated and remaining 17 percent area viz. - 82,903 is unirrigated. Double cropped area is 2,72,508 hectares of which 32,230 hecter (12%) area is irrigated and remaining 2,40,278 hecter (88%) area is unirrigated. Thus, the total cropped area of the district is 7,81,615 hectares. In Kharif season Bajra, Maize, Jowar, Karif pulses, Arhar, Sesamum, Cotton, Guar etc. are sown in about 3,29,088 hectare (42%) and in Rabi season Wheat, Barley, Gram, Mustard, Taramira, Rabi pulses etc. are sown in about 4,52,527 hectare (58%). The main sources of irrigation are wells and Tube Wells. By 26064 Tube Wells about 192861-hectare area is being irrigated and by 57196 wells about 265169 hectares area is irrigated. By other sources like canals, tanks about 404 hectares area are irrigated. About 35470 electric motors and 66502 Diesel pump sets are being used for Irrigation purposes. The normal rainfall for the district is 657.3 mm. The average rainfall in last ten years in the district is 724 mm. The rainfall distribution in the district is uneven and scattered, which resulted sometimes flood problems and sometime draught position, which affect the Agriculture production as well as cropping pattern in Kharif & Rabi season. Thus, the Agriculture in the district by and large depends on rainfall distribution. The average rainfall in the year 2002 unto Sep. is 220 mm.

Churu lies in the state of Rajasthan in northwestern India. Founded in 1620 AD Churu, a chieftain of the Jats (an agricultural people of northern India), the city has a hospital and an affiliated college of University of Rajasthan. Churu district (16,829 sq. km) includes a semi-arid sandy plain, watered only by the Katli River in the northeast. The rolling sand dunes in the neighborhood southwest part of Bagar tract, where the rearing of sheep, cattle and camels is extensive. Bajra (pearl millet), gram and pulses are the main crops gypsum deposits are worked.

The Churu town is located at 26 ° 36'N 75 ° 27'E. This City show maximum range of temperature in a given 12 months and often appears in news for extreme temperatures in winters and summers; with lowest rainfall. The recorded minimum and maximum temperatures -6 ° C (21 F) and 52 ° C (125 F), respectively.

Kamadhajdhara {the Land of the Kamadhajs} CHURU is a district of enchanting topography in Thar Desert. The Churu City is encircled by large shifting sand dunes. About one lakh energetic hardworking honest and peace loving people and the District populations about two million inhabit the town. The majority practices Hinduism yet Muslims and Jains are also in good number. The area is scanty in vegetation. Phoge and Kair bushes and Khejra, Royara and Babul trees are to be mainly found on the sand dunes. In the towns Neem and Peepal and Sira trees can also be noticed. One can find Sand dunes all over the area with a couple of small limestone hills.

Sikar was known as 'Veerbhan-ka-baas' in ancient times and it was under the rule of Nawab of Fatehpur Shekhawati. The Kachwaha ruler of Amber Raja Udaykaran (1367-1389 AD) handed over the Jagir of Barwara along with 12 villages to his son Bala, who is considered to be the person from whom Shekawats have descended. In 1430 Bala died and his son Mokal became his successor. Mokal left the Jagir of Barwara and settled in village 'Amara-ki-dhani' founded by Amara Jat of Khasoda gotra. Mokal got son here with the blessings of Sekh Burhan so he named his son as Shekha. Shekha had **360 villages** in his rule. The center of Shekha was Amarsar (earlier Amara-ki-dhani).

Shekha's son Raimal and his son Raisal had supported Akbar in his campaign of attack on Gujarat. During Akbar's second attack on Gujarat, Raisal's son Tirmal impressed Akbar by his bravery and Akbar awarded the title of 'Rao'.

Tirmal's son Gangaram made Kasali as his capital. Gangaram's son Syamaram and his son Jaswant Singh made Dujod as their capital. The ruler of Khandela had enmity with Jaswant Singh so he killed Jaswant Singh. Later to have friendly relations the Khandela ruler gave the Jagir of **Veerbhan-ka-bas** to Jaswant Singh's son Daulat Singh. Daulat Singh changed the name of this village to Sikar in memory of Rao Shekha and constructed a fort here in 1687.

The rural areas of the Shekhawati region are dominated by Jat. The Jats of the Sekhawati region are considered to be the most advanced in the state of Rajasthan. The Shekhawati region has the highest literacy in the state. Jats are politically and economically very sound. The major land holdings in the present times are with Jats. Then come the Rajput community who were the Jagirdars before independence. The farmers of the region have done great struggle to come to the present status.

Before independence the conditions of the farmers were worst. The farmers of the Shekhawati region were exploited and oppressed by the Jagirdars during British Raj. They were deprived of fundamental rights. They were given inhuman treatment when the Jagirdars did not get cesses known as "lag" or "begar" in time, they were given hard punishments and their crop used to be destroyed. A newly married bride was forced to go first to Jagirdar.

There was no tenancy law and one could be thrown away from the land one cultivated at the pleasure of Jagirdar, his "malik". In most of the Jagirs a Jagirdar would in the first instance be taking fifty percent of the produce. This would be taken by actual division of the produce on the thrashing floor or by appraisal of the standing crop (kunta). Then over and above the share of the produce the Kisan had to pay numerous "lags" or cesses. There were 37 kinds of 'lags" prevalent in the Shekhawati area. Together with the share of the produce known as "Hasi" these cesses meant that the Kisans had to part with more than eighty percent of their produce. The findings of the Sukhdeonarin Committee in the years 1940-42 bear this out. If a Kisan had to marry his daughter he had to pay "Chavri Lag" if he held a dinner then a "Kansa Lag"; if members of the family separated then "Dhunwa Lag" and so on. If the Jagirdar had a guest then fodder for his mount had to be supplied. Then there was "begar" that is forced labour, for tilling the personal lands of the Jagirdar. The homestead in which the Kisan lived in the Abadi had to be vacated in case he ceased cultivating the land. He could not alienate the plot to anyone.

Dausa district is located in the state of Rajasthan, in the Jaipur Division. 6 districts, namely-Tonk, Sawai Madhopur, Karouli, Bharatpur and Alwar, surround it. Occupying a total area of 3404.78 sq. kms, the district is roughly semicircular, or C-shaped, tapering towards the eastern and western corners. The hills found in the district belong mainly to. The Lalsot Hill range, runs from Lalsot to Bayana, and demarcates the boundary between Dausa and Sawai Madhopur districts. The Aravalli exposures have a perfect concordant sequence of beds from Lalsot to Bayana ridge. A belt of crystalline quartzite is found in the hills from Dausa to Bhankari, schistose quartzite is also predominately exposed. Morel and Ban Ganga are the major rivers located in the district.

The soil of the district is yellowish to dark brown, mostly fine textured, generally suitable for all type of crops. Further, a watershed scheme has been implemented in the district to avoid erosion. The district has 219575 hectares of arable land of which about 128169 hectares 58.92 percent is under irrigation. Crops are grown here according to the Kharif and Rabi season. The principal crop of the district in Kharif is Bajra. The most important food grain crop in Rabi is. During Kharif season; groundnut is produced in irrigated areas also requires irrigation. Generally other crops are sown at the commencement of the rainy season. Broadcasting the seeds sows groundnut, maize and cotton. Fertiliser is applied before sowing of groundnut and cotton. During Rabi, mustard and gram is sown from September to October, in unirrigated land, while in the irrigated land, barley, gram and mustard are sown in October-November and wheat in November-December. The district has 94652 hectares of double-cropped area with crop cycles of moong-wheat, groundnut-wheat, moong-mustard, bajra-mustard, bajra-gram etc. The major sources of irrigation in the district are wells and tube wells. A large part of the irrigation in the area is covered by these sources. Besides this, a very limited area is irrigated through small rivers and ponds. There are a total of 36 dams in the district. The most important ones are Sainthal Sagar, Kalakho Bandh. Dausa district falls under the Indus Plains floristic region of India. Each region has its distinctive species. This district is endowed with *Acacia nilotica* (Babool), *Asenegal* (Kumta), *Anogeissus* (Dhok), *Prosopis* (Khejadi), *Capparis* (Kair) and *Caotropis* (AK). This vegetation is typical of tropical thorn forests. The district is endowed with a variety of habitats. Although not rich in dense forest growth, Dausa sustains considerable biological diversity. As far as the fauna is concerned, the district falls under the Oriental region. Of the characteristic wildlife of the region, the wild animals still surviving in the district include the monkey, panther, black buck and peafowl.

Respondents: - An Introduction

The following table shows that 100 respondents are taken from the Rajasthan State i.e. $5 \times 4 = 20 \times 5 = 100$ and same number of 100 respondents are taken from the Haryana State i.e. $5 \times 4 = 20 \times 5 = 100$, it comes a total of 200 respondents. These respondents are selected at randomly from each state, which shows that some of the respondents use their Land in 100% while some are not use

their land in 100% either Irrigated or Non-Irrigated. As the Agriculture is depends on the rains and some times non-availability of seeds, it may be the reason for which respondents are not able to use their whole land for agriculture activities. The information shown in the table are to be obtain from the farmers by using interview technique and fill all the information in the prescribed form so that a deeply study is to be made.

General Observations

- Farmers are not maintaining any written records regarding farming activities carried out by them. But they could report about the facts on the basis of their memory when they were asked as per our questions schedule, of course their replies were in their own style. The facts reported by them were converted appropriately and were used for the purpose of ascertaining the cost and developing a method of maintaining cost accounting records.
- The written records have not been maintained because:
 - Most of the farmers are not exposed to formal education.
 - There is no legal binding for maintaining written records.
 - Farmers are not carrying out farming as an economic activity.
 - Most of the cost items are notional in nature therefore, farmers did not feel the need of recording and the cash expenses could be remembered on tips as they were fewer in number.

Conclusion

The logical analysis of the aforesaid factors reveals that the factors of production, land and labour are there in sufficient quantum whereas the other factors of production, capital, management and enterprises are not up to mark.

It is therefore, suggested that the agriculture sector be provided with necessary entrepreneurial leadership which is capable of offering necessary capital and efficient management. This suggestion if implemented shall offer reasonable return to the landowner and will turn the agriculture a profitable venture. The same will also help in getting per hectare production comparable with world standards.

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