

A Study of Land Use and Agriculture Scenario in Viratnagar Tehsil, Jaipur (Rajasthan, India)

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Abstract:

This Research paper is for analysis of the land use and agriculture in viratnagar Tehsil. The study is based on data collected from sources of Government data at viratnagar tehsil. Therefore, viratnagar Tehsil has great potential to increase agricultural area in order to make the economy and agriculture development. Land use directly or indirectly affect agriculture and its productivity. Agriculture land use shows area under different crops and have direct proportion about change. Factors like relief, climate, soil, irrigation, technology affect agriculture and its production. In study area due to population growth, it observed that agriculture and residential area had increase due to which vacant and barren land are also under used with variation of cropping pattern. Agriculture production have increase significantly due to adoption of modern technologies i.e. commercial farming as fruits and vegetables, irrigation facility, variety seed, procurement facilities, improved transports and agriculture markets, minimum support price offered on food products. Study area have potential to improve agriculture by changing the agriculture technique such as organic farming, hydroponics etc. and can make sustainable growth.

Keywords: Agriculture, cropping pattern, economic factor, Land Use.

Introduction:

India where more than 60% population live in rural areas, with main occupation as agriculture. Initially agriculture contributed two third of national income, however after the initiation of planning share of agriculture decline. Now agriculture contributed almost 14% in India's GDP whereas agriculture still largest employment generating sector about 64% of total labour force depend on agriculture. It also provided raw material to various industries.

Utilization of land according to its use and capability ensure the best advantages. It involves the management and modification of natural and built environment such as settlement and semi-natural habitats such as- pastures, managed woods and arable fields. In agriculture land use, It is generally viewed a shift from traditionally grown less economical crops to more economical due to which economic and living standard of farmers have improved.

Cropping pattern means the proportion of area under various crops at a point of time or yearly sequence and spatial arrangement of crops and fallow on a given area. After 1960s food shortage problem, growth and stability in agriculture are vital for food and nutrition security. For this reducing instability in agricultural has been a major policy concern over the years. The agricultural land in viratnagar Tehsil is 69% of the total geographical area which include 39% area of the net sown area out of which 30% area, is sown more than once. Mostly cultivated area are covered by food crops.

The major crops cultivated in rabi season (October to march) cereals- wheat, barley; oilseeds-mustard, rapeseed; vegetables- onion, methi, carrot; and fodder crops- rajaka, kasanietc; kharif season (July to October-November) pulses-gram, mug, moth; cereals-bajra, maize; vegetables- chili, cauliflower; oilseed-

guar, groundnut etc. grown in the study area. Thus various crops are taken in viratnagar tehsil and its distribution changes because of relief, climate, soil and irrigation.

Objectives:

1. To find out general land use environment of viratnagar.
2. To search agriculture cropping pattern in the study area.
3. To examine the relation between irrigation, land use with agriculture.
4. To study the agriculture development and its impact.

In this context, this study evaluates the land use pattern, performance of agriculture, employment and livelihood status in the viratnagar Tehsil and presents possible way forward towards improving agriculture productivity, economic growth and poverty reduction.

Study Area:

The study area viratnagar is a Tehsil place in Jaipur district, state of Rajasthan in India. Viratnagar with a total geographical area of 482.3 sq km, is located 82 km towards north from district headquarter.



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Viratnagar Tehsil is bounded by Thanagazi Tehsil towards east, shahpura Tehsil towards west, Kotputli&Bansur Tehsil towards north. It is in the 264 m elevation.

As per census 2011, the population of viratnagar Tehsil was 1,66,087 out of which 87.61 percent was rural population. The population density in the region is 344 person/ km sq. and decadal growth is 22.40%.

The overall sex ratio of the population of region (number of females per thousand males) was lower (907.5) than Rajasthan (926) in 2011. The literacy rate of the region was very low 53.72%, of which the male and female literacy rates were 66.53% and 39.61% respectively.

The climate of the Tehsil is semi-arid (steppe). The mean maximum and minimum temperature are 45 degree C and 23 degree C respectively. The mean annual rainfall is 640mm. The numbers of rainy days are 36. The co-efficient of variability of annual rainfall is 38%. The natural vegetation of this region is mixed xeromorphic thorn, forest and woodland. Common among species are babul, acacia, Senegal, prosopisspiagera etc. Thus xerophytic plants combat drought with certain devices of water preservation like partial or complete replacement of leaves by waxy leaves, water storing cells, hair on the stalk etc. Soil are light brown and well drained. Some areas is under alluvial soils that are formed by the process of deposition of silt, sand, clay etc. These are found along with courses and in low laying tracts. Due to diversity of parent rock material, variation in climatic condition and soil forming process, soil character varies from region to region.

Viratnagar Tehsil is drained by ephemeral rivers banganga, bandi and their tributaries. Banganga River flow southwesterly passes through shahpura, jamwaramgarh and contributes water to famous ramgarh lake while Sabi River in the northern part of Tehsil flow northeasterly.

Methods and tools:

For this study the data of land use, crops and cropping pattern is collected from the statistical review of the district census, crop Khasara register of Tehsil, agriculture, irrigation and forest offices for the year 2012-13. All statistical data which is taken as information data, tables, maps, graphs are used for the analysis of land use and agriculture environment of the study area.

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Result and discussion:**Population:**

Urban, Rural, Cultivators & Agricultural labour: As per census 2011, the population of viratnagar Tehsil was 1,66,087 out of which 87.61 percent was rural population. The overall sex ratio of the population of viratnagar (number of females per thousand males) was lower (907.5) than Rajasthan (926) in 2011. The literacy rate of viratnagar was very low 53.72% of which the male and female literacy rates were 66.53% and 39.61% respectively.

Table 1: Composition of population in Viratnagar Tehsil (2011)

S.No.	T/R/U	Total Persons	No. of cultivator	% of total	Males	Females
1.	T	39,042	100.00	23.50	20,236	18,806
2.	R	37,210	95.30	25.87	19,341	17,870
3.	U	1,832	4.70	8.90	900	936
No. of Agricultural Lab ours						
4.	T	6,722	100.00	4.04	2,916	3,806
5.	R	5,579	83.00	3.83	2,433	3,146
6.	U	1,143	17.00	5.57	483	662
Others (Other workers + non-workers)						
7.	T	1,20,323	100.00	72.44	63,917	56,406
8.	R	1,02,730	85.37	70.45	54,498	48,231
9.	U	17,593	14.63	85.53	9,414	8,173
Total Population						
10.	T	1,66,087	100.00	100.00	87,069	79,018
11.	R	1,45,519	87.61	100.00	76,272	69,247
12.	U	20,568	12.39	100.00	10,797	9,771

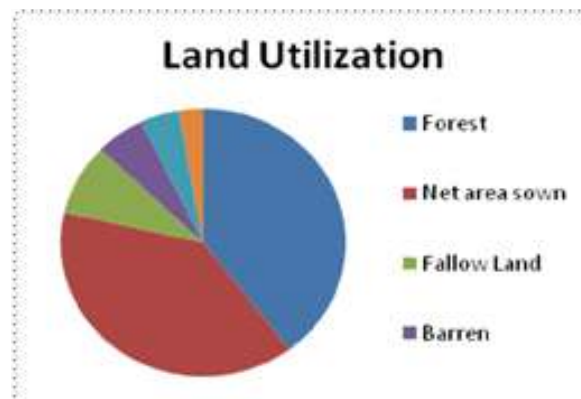
Source: Census Department, Raj.

Note: In Table1: T for Total; R for Rural; and U for Urban.

Land use pattern:

The variation in the topographical features in combination with the human and technological inputs have been responsible for a variety of uses of land. Viratnagar Tehsil is the predominantly of agriculture region. The total geographical area is 48,236 Ha. The land uses are different categories- cultivated land, forest cover; pastures and grazing land, barren, fallow land etc.

Figure2: Land utilization in ViratnagarTehsil(2012-2013).



Source: Crop Khasara Register, Tehsil Viratnagar

The high density of cultivated land in some villages is mostly due to deep alluvial soil, moderated rainfall by hills and good irrigation potentialities. Scrub and grassland is found in small patches in the interiors of the Tehsil with scanty rainfall and thin soil cover. Hill slopes with thin soil cover is the main areas under forest cover.

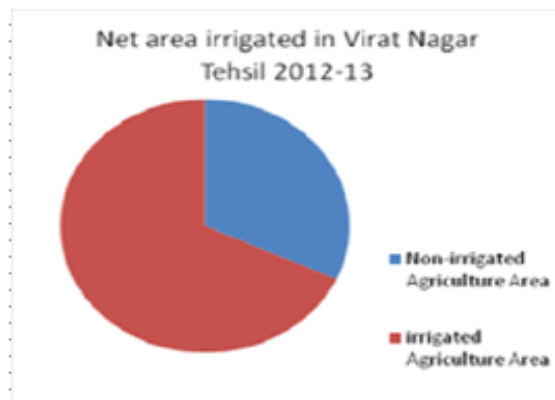
Table 2: Region wise proportion of area under land use (in%)

S.No	Classification of Reporting area	Total area (Hac.)	% of Total
1	Forest cover	19,080	39.55
2	Pasture and grazing land	2112	4.37
3	Agriculture uses	18,760	38.89
4	Barren land	2714	5.62
5	Cultivable waste land	1318	2.80
6	Fallow land	4152	8.60
	Total	48,236	100

Source: Crop Khasara register, Viratnagar

Irrigation:

Irrigation is most important and vital source for realizing full potential of agriculture sector and efficient utilization of our water resources. In study area, Kharip crops mainly depend on monsoon which is seasonal and unequal. Rabbi crops depends largely in irrigation as winter are mostly dry in this area. Irrigation facility is needed not only for rabbi but also for kharip because of partial failure or delayed arrival of the monsoon may cause extensive damage of crops.

Figure 3: Net area irrigated in Viratnagar Tehsil 2012-13

Source: Crop Khasara Register Tehsil Viratnagar.

In viratnagar Tehsil, 14801 Hac. Area is sown more than once. The irrigation facilities are available in 12,776 Hectare area that are 70% of net sown area.

Table3: Irrigated area in viratnagar Tehsil 2012-2013.

Cultivatedsown area	Irrigated (Ha.)	Non- Irrigated (Ha.)	Total
Gross Sown area	15351	18201	33552
Sown more than once	2575	12226	14801
Net sown area	12776	5975	18751

Source: Khasara Resister Tehsildar Office, Viratnagar

Cropping Pattern:

Mostly food crops are grown in study area as jawar, bajra, wheat, musterd, barley, ragi, rye and maize. With the development of irrigation and technology, commercial crops like fruits-vegetable are occupying land, due to which socio-economic condition of farmer also changed.

Agriculture:

In study area, mainly two crop season recognized, which are Firstly, Monsoon season (Kharip crop) period July to October and winter Season (rabbi crops), period October to March. March to June zaid crops growing some area. The extend of rabbi crop is indicative of availability of soil moisture after harvest of Kharip and irrigation resources, as these crops are grown under irrigation such as-wheat, barley etc. To some extent, wheat is grown in unirrigated area, but major area is irrigated. In the season of kharip crops, soils are texturally light and utilize rainwater effectively such as- bajra, maize, groundnut, guar etc.

Table4: Principal cereals in Kharip (rainy/unhalu season) crops

S.No	Cereals	Cultivated area (In Hac.)		
		Irrigated	Non-irrigated	Total
1	Bajra	101	14495	14596
2	Guar	0	940	940
3	Groundnut	726	0	726
4	Maize	445	0	445
5	Vegetable & others	222	1557	1779
	Total	1494	16992	18486

Source: Dept. of Agriculture, Viratnagar Tehsil

Table5: Principal cereals in rabbi (Winter/sialu season) crops

S. No.	Cereals	Cultivated area (In Hac.)		
		Irrigated	Non-Irrigated	Total
1	Wheat	6671	0	6671
2	Barley	1955	0	1955
3	Mustard Seed	2318	778	3096
4	Rapeseed	26	307	334
5	Pulses	1801	109	1910

6	Vegetable	545	0	545
7	Fodder & other	541	15	555
	Total	13,857	1,209	15,066

Source: Dept. of agriculture, Viratnagar Tehsil

The farmers decision on choice of crops and cropping systems is depend on several interrelated factors i.e. socio economic issues, soil and climate, cost of seeds and fertilizers, needsof households, market price of product, yields, post-harvest storage, availability of Labour and labour-cost, market infrastructure, technological developmentetc. In the study area, cropping system is mostly double cropping, multiple cropping etc.

The significant increase of the cultivated area is because of availability of irrigation facilities, demands of markets and modern technologies adopted in the Study area.

Intensive Agriculture:

It involve various type of agriculture with higher level of input and output per unit of agriculture area. After green revolution, irrigation facilities are provided to crops due to high yield variety seeds. As per Table3, in viratnagar Tehsil, 14801 Ha. Area is sown more than once.

Agriculture Development:

Before independence Indian agriculture economy was subsistence in nature andafter independence, goal was to be self-reliance in food grains, so production have to increase via switch from cash crop to food crop, intensification of cropping. In green revolution, new technology and seeds product are introduced. After LPG reform in 1991, there was decline in agriculture infrastructure so agriculture output does not change.

Growth of Agriculture output and technology:

Production and yield of crops like wheat, rice, mustard etc are impressive. Irrigation play an important role and become base of modern agriculture technology such as high yield variety seeds, chemical fertilizers, pesticides, farm machinery like tractors, thresor etc. consumption of chemical fertilizer have increased.

Challengesfor agriculture sector:Intensive agriculture have some limitation as high dose of fertilizer causes faster depletion of soil nutrient; loss of native crop breeding due to new crop breeding; high cost of farm equipment, fertilizers, pesticide and high variety seed; ecological imbalance and pollution due to deforestation and chemical fertilizers. Some other challenges for agriculture sector in study area are- Frequent droughts; Climate change and global warming; Technology based developmental approach to promote dry land and arid agriculture; Deteriorating soil health; Low productivity, unfavourable prices; Lack of efforts for stabilization of sand dunes and for greening the desert through agro-forestry programmers; Lack of integrated farming approach; Gender mainstreaming in agriculture; felt constraints coming in way of the farm prosperity in the state.

Conclusion and recommendation:

After independence, increase in agriculture land is largely as a result of clearance of forest under population pressure due to which environment instability occur. The Inclusive growth can be possible only when agriculture growth accelerates and widely shared among all section of society with all areas of

countries. That mean agriculture sector should be at the centre of any policy formation, reform agenda or planning process. The way to make agriculture more stable and renewable is sustainable agriculture. It define as any set of agronomic practices that are economically viable, environmentally safe and socially acceptable. It is biologically focused and hope to reduce chemical use. For this reduce use of off-farm input with less harm to environment and consumers; more productive use of biological and genetic potential of plants and animals. There is diversity in land use pattern. Agriculture is main occupation of this region. Crops like food grains and cereals are taken everywhere. Due to road network, fruits and vegetable are also taken largely.

For sustainability and inclusive growth in agriculture, there are the follow suggestions-

- Forest cover and forest density should be increased in the forest land area in plateau and plain region.
- Storage house facility should be available in every village so that farmers can sell their agriculture products according to market rates.
- To increase irrigation facilities is essential.
- A better match between cropping pattern and physical capacity of lands.
- Modern cropping pattern and technology should be used.
- As for as possible with mixed farming involving crops, trees and animal.
- Harvesting of rain water to improve the availability to water.
- An improved emphasis on conservation of soil, water, energy and biological resources. In sort, a small farm management to improve productivity, profitability and sustainability of the farming system will go a long way to ensure the all-round sustainability.

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