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# AGRICULTURE IN JAMMU AND KASHMIR

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***ABSTRACT***

***Jammu and Kashmir is an agrarian region. About more than 65% of population depends upon agriculture and allied activities directly or indirectly. Agriculture is the backbone of its economy as it provides employment to its rural population as well as raw material for all agro based industries. Agriculture contributions about 27% of its GDP. The union territory of Jammu and Kashmir having different agro climatic zones as well as different socio economic conditions. The region has different types of agricultural activities and various stages of its development. There are various challenges and issues in the development of agriculture in Jammu and Kashmir via, unpredictable climatic conditions due to global warming, hilly terrain, lake of infrastructure , modern technological equipment's, High yielding variety of seeds , unscientific use of agricultural land, traditional methods of agriculture, substandard pesticides, weedicides and fertilizers, lake of government policies for sustainable agriculture, lake of suitable irrigational facilities and storage units, unavailability of local market for agricultural products, conversation of agricultural land into non-agricultural activities. Because of these drawbacks and hindrances the Jammu and Kashmir is not self-sufficient in the production of food grains and other agricultural products so most of the food grains and other editable are imported from adjacent neighboring states of India. Despite of these drawbacks Jammu and Kashmir has huge potential for the development of agriculture as only 30% of total land is under net sown area. Conversation of waste land into cultivable land , interlinking of various river and there tributaries for diversion of water from surplus area to water deficit areas , use of organic fertilizers to maintain the fertility of soil, practicing terrace farming in the hilly areas etc. Are some of the important methods to improve the development of agriculture in Jammu and Kashmir.***

## INTRODUCTION

Jammu and Kashmir lies on the northern side of Indian subcontinent. Jammu and Kashmir is richly endowed with natural resources and competitive advantage stretches from 32°17' to 36°58'N latitudes and 73°26' to 80°30'E longitudes. Total areas of Jammu and Kashmir on 15 August 1947 was 222236 sq. kms .Out of which only 30% (666701 sq. km) of total land is under Net sown area. The people of Jammu and Kashmir mainly depends upon agriculture directly or indirectly as it provides employment to about 65% of its total population and contributes about 65% of its total revenue which explains the dependency of region on agriculture and allied activities. As the population of region is continuously increasing with the decadal growth of 17% so it's necessary to have sustainable use of its land resources to meet the increasing needs of its 1.24 cr population. The process of cultivation of crops and domestication of animals is called agriculture. The agricultural activities of a region depends upon number of factors viz physical and nonphysical factors.

**Physical factors includes**

1: Topography of the region like mountains plains plateaus hills lowlands highlands etc. Directly controls the nature of agriculture and its development**.**

2: Climatic conditions. Jammu and Kashmir has different climatic conditions we have cool and moist temperate Kashmir region, warm moist Jammu region

3: Precipitation; various forms of precipitation like rain, snow sleet etc. also determines the nature of agriculture in a region. Snowfall in Kashmir valley during winter season effects the agricultural activities very badly. Magnitude and intensity of precipitation also determine the types of agricultural activities in a region.

4. Irrigation; Availability of water for irrigation purposes has profound impact on the development of agriculture. Areas with the availability of water for irrigation purpose has well flourished agriculture compared to areas with shortage of adequate water resources.

5. Nature of soil; Area's with good fertile soil has high agricultural productivity and vice versa in low fertile soils.

**Socio cultural factors.**

1. Size of land holdings. Regions having large size of land holdings have good productivity compared to regions having small land holdings.

2. Technological Development; Region's with advanced technology know how have high yield per hectare of agricultural productivity compared to under developed regions.

3. Work force. Agriculture is labour intensive activity areas with large working population has good agricultural production compare to areas having shortage of agricultural labours.

4. Culture of the society. Nature of agriculture also depends upon type of food eaten by the population. People having rice as staple food most grow rice (Kashmir) .while as in Jammu region people mostly eat wheat and grow the same to feed its population.

5. Family size. Small sized families mostly grow labour extensive crops while as large sized families grow labour intensive crops.

6. Roads. Roads are mostly considered as life line of a country. Region's having good road connectivity have good returns of agricultural income as the agricultural products can be easily transported from field to market and storage units.

7. Market .Market plays an important role in the nature of agriculture. Most of the regions grow crops as per market demand. Availability of market facilitates the cultivation of cash crops having good economic return.

8. Culture of the society. Vegetarian societies mostly grow crops for the own consumption as they only depends on vegetables for food while as non-vegetarian societies grow crops to feeds their cattle and for economic returns.

## LITERATURE REVIEW

1. Barah.B.C. (2010*),* A Rapporteurs in Indian Journal of Agricultural economics, in his work entitled ‘problems and prospects for mountain agriculture’ states that, it is the topographical diversities, distinctive socio-economic features and climatic variability which makes the hilly and mountains areas different from plain areas. These features states that a unique treatment is given to hilly and mountains areas, the infrastructure facilities, transport and communication should play an important role and these facilities should be enhanced.

2. Fatima Kaneez and Hussain Anwar. in May (2014) in their research work entitled ’Problems and prospects of hill farming states that, the important features like topography, physiographic feature, diversity of habitat and elevation are the key elements which creates the difference between hill and plain areas. Hilly areas is generally offer a vast scope for the growers and cultivators of diverse mixes crops like, cereals, pulses, oilseeds, fruits,

vegetables and flowers. The most important and dominant feature of hill farming is the small holding, sloping marginal lands and dependent on rain fall.

3. Alam Badar Iqbal in February (2018) in his work entitled 'Indian Agriculture Issues and Challenges' states that despite being recording the high growth rate by Indian economy the condition of Indian agriculture is worse. There are various issues and concern which are directly as well as indirectly related to the growth and development of Indian agricultural. Since independence Indian agriculture continue to become the back bone of economy and more than 70% of population resides in village and therefore the majority of people believes that" rural India is the real India". After 2012-13 the production of horticulture grows more than agriculture production, the reason is simply because of increase in yield per hectare of horticulture.

4. Kumar Rohitashw and Raj Hardener Gautam in (2014) , in his work entitled 'Climate change and its impact on agricultural productivity in India ' states that , climate change has a very serious issues on almost all the natural resources especially water which sustain the life on this planet. Changes in biosphere, biodiversity and other natural resources has a serious and adverse effect on the human health and quality of life. The changes in temperature, seasonal variation effect the human health.

## OBJECTIVES

1. To Analyse the production of different food crops in the Jammu and Kashmir.

2. To show district wise trend analysis of number, area and size of holding in J&K.

3. To identify the major drawbacks to agricultural production and productivity in J&K.

## METHODOLOGY

This paper is based on secondary data, which has been collected from Statistical digest of J&K,2016-17, Economic survey of J&K 2016. We have used descriptive statistics to analyses the production process of various food grains. The trend lines have been used to show the number, area and average holding size.

Table 1.1Agriculture production of food grains (qtls) from 2000-01 to 2016-17

| S. No | Year | Rice | Maize | Wheat | Other Cereals | Pulses | Total food grains | Growth rate in total food production |
|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 1 | 2000-01 | 4153 | 5258 | 1487 | 170 | 128 | 11196 | 19.31 |
| 2 | 2001-02 | 4223 | 5381 | 3430 | 198 | 125 | 13357 | -0.69 |
| 3 | 2002-03 | 4214 | 4651 | 4055 | 203 | 142 | 13265 | 15.53 |
| 4 | 2003-04 | 5048 | 5326 | 4595 | 225 | 132 | 15325 | -1.9445 |
| 5 | 2004-05 | 4928 | 4922 | 4782 | 243 | 152 | 15027 | -0.047 |
| 6 | 2005-06 | 5574 | 4535 | 4575 | 201 | 135 | 15020 | 5.0399 |
| 7 | 2006-07 | 5546 | 4869 | 4983 | 238 | 141 | 15777 | -0.44 |
| 8 | 2007-08 | 5620 | 4745 | 4559 | 230 | 153 | 15707 | 9.307 |
| 9 | 2008-09 | 5637 | 6331 | 4835 | 227 | 139 | 17169 | -23.20 |
| 10 | 2009-10 | 5011 | 4870 | 2899 | 233 | 172 | 13185 | 15.411 |
| 11 | 2010-11 | 5447 | 5277 | 4663 | 231 | 169 | 15217 | 4.30 |
| 12 | 2011-12 | 5447 | 4745 | 5003 | 231 | 141 | 15872 | -1.594 |
| 13 | 2012-13 | 5465 | 5123 | 4646 | 250 | 144 | 15619 | 10.44 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 14 | 2013-14 | 5567 | 5305 | 6018 | 222 | 138 | 17250 | -39.24 |
| 15 | 2014-15 | 3450 | 3600 | 3143 | 195 | 93 | 10481 | 66.09 |
| 16 | 2015-16 | 6466 | 5237 | 5449 | 163 | 93 | 17408 | -2.72 |
| 17 | 2016-17 | 5725 | 5411 | 5485 | 211 | 101 | 16933 | -100 |

Source: Statistical digest of J&K 2016-17

As shown in the above table 1.1, From 2000-01 to 2016-17 the total food Grains average increase is as follows Rice (5148.294), Maize (5034.471), Wheat (4388.647), Others cereals (215.9412) and pulses is (135.1765) , the total average food grains increase to (14929.88). The production of Rice is minimum in the year 2014-15 (3450), minimum Maize production in the year 2014-15 (3600), minimum Wheat production is in the year 2000-01 (1487), others cereals is minimum in the year 2015-16 (163), pulses

in the year 2014-15 (93) and total food grains is minimum in the year 2014-15 (10481) while maximum production of food grains followed by Rice is maximum in the year 2015-16(6466), Maize in the year 2008-09(6331), Wheat in the year 2013-14 (6018), Others cereals in the year 2012-13 (250), Pulses in the year 2009-10 (172) and Total food Grains production increased in the year 2015-16 (17408).

## GROWTH RATE IN FOOD PRODUCTION

As shown in the above figure the growth rated of total food grains production in a few years 2006-07, 2008-09, 2011-12, 2013-14, 2014-15 and 2015-16 was negative and growth rate remain much positive in the years 2014-15(66.09%) while in all the other years it remains positive.

Table 1.2 Descriptive statics of various food Grains from 2001-2017

| | Rice | Maize | Wheat | Others | Pulses | Total food grains |
|---|---|---|---|---|---|---|
| Mean | 5148.2 | 5034.471 | 4388.647 | 135.1765 | 135.1765 | 14929.88 |
| Manimum | 3450 | 3600 | 1487 | 163 | 93 | 10481 |
| Maximum | 6466 | 6331 | 6018 | 250 | 172 | 17408 |

Source: - Statistical digest of J&K 2016-17

Table 1.3 Number & Area of operational holding

| | (2005-2006) | (2010_2011) |
|---|---|---|

| No of Holding | Area (00)ha | Average H. size | No of Holding | Area (00)ha | Average H. size |
|---|---|---|---|---|---|
| 38.74 | 11.46 | 0.3 | 36.5 | 11.38 | 0.31 |
| 40.98 | 16.77 | 0.41 | 39.82 | 14.8 | 0.37 |
| 79.89 | 44.37 | 0.56 | 113.73 | 49.14 | 0.43 |
| 112.24 | 46.98 | 0.42 | 120 | 46.68 | 0.39 |
| 64.61 | 23.65 | 0.37 | 66.72 | 26.23 | 0.39 |
| 76.8 | 42.79 | 0.57 | 85.54 | 41.36 | 0.48 |
| 38.85 | 18.9 | 0.49 | 40.94 | 22.95 | 0.56 |
| 130.15 | 67.01 | 0.51 | 126.47 | 64.17 | 0.51 |
| 43.66 | 21.07 | 0.48 | 43.69 | 20.78 | 0.48 |

| | | | | | |
|---|---|---|---|---|---|
| 97.68 | 44.85 | 0.46 | 90.6 | 45.9 | 0.51 |
| 24.92 | 17.9 | 0.72 | 21.51 | 14.47 | 0.67 |
| 20.83 | 13.14 | 0.63 | 19.71 | 12.74 | 0.65 |
| 126.39 | 90.89 | 0.78 | 140.25 | 101.7 | 0.73 |
| 33.06 | 30.75 | 0.93 | 44.17 | 38.88 | 0.88 |
| 83.01 | 87.95 | 1.06 | 80.89 | 76.73 | 0.95 |
| 65.26 | 63.36 | 0.97 | 65.2 | 59.52 | 0.91 |
| 48.21 | 66.61 | 1.38 | 41.12 | 33.05 | 0.85 |
| 72.11 | 79.77 | 1.11 | 77.73 | 78.7 | 1.01 |
| 47.83 | 42 | 0.88 | 52.13 | 44.68 | 0.88 |
| 55.95 | 41.52 | 0.74 | 59.56 | 40.63 | 0.68 |
| 44.76 | 21.53 | 0.48 | 42.98 | 21.66 | 0.5 |
| 31.88 | 21.03 | 0.66 | 40.15 | 27.15 | 0.68 |
| 1377.81 | 922.5 | 0.67 | 1449.4 | 895.36 | 0.62 |

As shown in the above table 1.3 in the year2005-06 there is maximum number of holding size 130.15 in Baramulla district and minimum number is in Kargil district which is 20.83 this is because of the reason that Baramulla district is plain and suitable for cultivation on the other hand Kargil district is hilly terrain district and not suitable for cultivation. On the other hand in 2010-11 the maximum holding size is 140.25 in Jammu district and minimum is 19.71 in Kargil district.

Table 1.4 Descriptive statistics of holding size & Area in 2005-06 & 2010-11

| | No. of holding | Area (00) Ha | Average H size | Average H size | NO. of holding | Average H siize |
|---|---|---|---|---|---|---|
| Average | 62.627727 | 41.55909 | 0.677727 | 65.88227 | 40.60682 | 0.6281 |
| Minimum | 20.83 | 11.46 | 0.3 | 19.71 | 11.38 | 0.31 |
| Maximum | 130.15 | 90.89 | 1.38 | 140.25 | 101.75 | 1.01 |

As shown in the above table 1.4 the average no of holding in 2005-06 is 62.6277 which got increased in 2010-11 by bringing more land under cultivation where as area in (00) ha in 2005-06 was 41.559 which declines to 40.6068 in 2010-11 and on the other hand the average size of holding declined from 0.6777 to 0.6281 from 2005-06 to 2010-11 due to declining of land under agriculture. The minimum no. of holding is 20.83 in Kargil district and maximum holding size is 130.15 is Baramulla. The minimum holding size in 2010-11 is 19.71 and maximum is 101.75

Source: - Statistical digest of J&K 2016-17

Status of Agriculture Production and Productivity in Jammu and Kashmir

Table Area wise distribution of various crops in J&K state

| S. No | Crops | Area (lac Ha. |
|---|---|---|
| 1 | Paddy | 2.58 lac Ha |
| 2 | Maize | 3.19 lac Ha |
| 3 | Wheat | 2.62lac Ha |

| | | |
|---|---|---|
| 4 | Pulses | 0.30 lac Ha |
| 5 | Vegetables | 0.51 lac Ha |
| 6 | Flowers | 0.00250 lac ha |
| 7 | Others cereals & millets | 0.38 lac Ha |
| 8 | Oilseeds | 0.62 lac Ha |

Economic survey of J&K 2016-17

The above table analyse that major area is under Maize cultivation which is 3.19 lac Ha which indicates that Maize is the major crop of state. Area under wheat cultivation id 2.62 lac Ha which is 2nd major crop of J&K state. Pulses, other cereals and flowers cultivation have the least area.

## MAJOR CROPS IN JAMMU & KASHMIR

- **Maize.** Maize is the major crop of J&K state.It requires hot dry climate. Required rainfall for maize cultivation varies from 75 to 125 cms. It is Kharif crop and sown in May-June and harvested in August-November. It is cultivated on karewa soil in the valley of Kashmir on about 3,03000 acres. In Jammu division areas like Reasi, Rajouri and Poonch districts contributes in the cultivation of Maize.

- **Wheat.** Wheat is the 2nd major crop of state. It is rabbi crop and its plant require a cool and somewhat moist climate in the beginning and warm and dry weather at the harvest time. The average rainfall should be between 50 to 70 cms and that too at intervals. It is sown in the month of August and harvest in March- April, it is cultivated in the entire outer plains and the outer hills. Important wheat producing areas are Kathua, R.S Pura, Samba and Reasi.

- ***Rice.*** Rice is the 3rd major crop of J&K and its cultivation requires hot and moisture climate. It is a kharif crop and is sown in March- April and harvest in autumn. Sufficient water requires for its cultivation. It is grown mostly in the valley of Kashmir at 2100 meters above sea level. Total area under rice cultivation in the valley of Kashmir is 374000 acres having a yield of 25.5 qtls per acre. In the plain areas of Jammu Division like R.S Pura, Samba, Akhnoor and some part of Poonch District

- **Tobacco.** It requires a warm and moist climate and a rich soil containing lime.it is largely grown in the valley of Kashmir

- **Pulses.** It requires hot and dry climate which suits their cultivation. They are largely grown on small patches of land and the pulses of Kashmir valley are well known for their quality.

- **Saffron.** Saffron is a cash crop and is cultivated on the Pampore in the months of July-August karewas in specially made square beds. Each bed measures 1.5m and is provided with narrow trenches on all sides to prevent the accumulation of water. The soil is alluvial and lacustrine. About 3000 acres are under saffron cultivation in Pampore.

## PROBLEMS AND ISSUES IN J&K AGRICULTURE

There are various problems and issues in J&K agriculture which are as under

1. **Hilly terrain.** The J&K state is a hilly and mountains state, which is hindrance in the way of agriculture production and development. Due to its hilly topography the agriculture of the state is not fruitful and less productive.

2. **Lack of Transportation Facilities.**In the rural areas of J&K there is lack of transportations facilities. There is a bad connectivity of road in rural areas even in urban areas in some places road facility is also poor. Lack of transport and communication facilities act as hindrance in the way of socio-economic development and way to progress of agriculture. Through the lack of transport facility, the agriculture sector suffers with huge problems.

3. **Climatic Conditions.** The climatic condition of the state is not favourable for agriculture production. Due to unfavourable climatic condition almost 4 to 5 months in a year the highways, local roads remain closed for longer period of time. The hilly areas of the state mostly remain closed in winter season which effect the production and productivity.The daily earners workers face a lot of problems during winter season. The water and electricity supply got very much effected through this climatic variation.

4. **Lack of Marketing Facilities.** Marketing facilities is the major problem among all the problems in state. In rural areas there is no marketing facility even in urban areas there is limited marketing facility. Due to lack of marketing facility agriculture production suffers a lot, and major part of agriculture and horticulture got damaged.

5. **Inadequate Infrastructure.** The infrastructure facilities is also poor , the rural infrastructure is very much poor in the state ,through this poor infrastructure agriculture sector suffers a lot.

**6. Irrigation Problems**. The problem of irrigation is the major problem of the state of J&K. Being a hilly and mountains state it is very difficult to provide irrigation facilities. Even in the plains areas where agriculture flourish and grow there is also lack of irrigation facilities.

7. **Political Instability**. The production and productivity of agriculture and horticulture is also affectedin the state due to its political instability. When there is tense situation in the valley at the time of sowing and harvesting of crop it got affected and damaged. The farmers and growers face a lot of problems in the proper growing and harvesting at timely.

**8. HYV's are Not Easily Available**. The high Yielding Varieties of seeds are not easily and cheaply available to farmers and growers at subsidised rates at time, hence due to this defect the agriculture suffers badly.

## SUGGESTIONS

There are some suggestions through which agriculture production can be improved.

1. Construction of Roads in Rural and far flung areas.

2. Infrastructure in both rural as well urban areas should be developed.

3. Easy and assessable supply of water to the reachable areas and tap/ pipe water to the hilly areas for the agricultural purposes.

4. Electricity supply should be provided to each and every place weather it approachable or far flung areas through which the modern means and tools should be easily operated.

5. Construction of Dams through which the deficiency of water can be fulfilled.

6. Easily and assessable marketing facilities in the rural areas and food procurement storages should be maintained through which the loss of farmers can minimised or reduced.

7. Political stability and favourable conditions should be maintained in the state so that the production and productivity of agriculture can be increased and loss to farmers can be reduced, timely agriculture practices can be done so that agricultural production can be boost.

8. High Yielding Varieties of seeds can be easily and timely provided to farmers at subsidised rates

## CONCLUSION& FINDING

The agriculture sector in J&K state is backward and under developed. As compared to other states of the country the agricultural productivity and yield rate is very low. Majority of population depends upon agriculture directly or indirectly for their livelihood. the J&K state is hilly and mountains state in which the agriculture production is very low, lack of marketing facilities, transport, communication, and infrastructure all these acts as hindrance in the way to progress and prosperity of agriculture sector. Investment in agriculture sector and introduction of modern tools and techniques will boost the agricultural sector.

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