

Research article

# Agricultural Land-Use Pattern in Pulwama District of Kashmir Valley

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## Abstract

In this present paper an attempt has been made to analyze the agricultural land use pattern at micro level in Pulwama district of Kashmir Valley. Study is based on the primary as well as secondary data. Agricultural land use pattern and production is influenced by physical, socio-economic, technological and organizational factors. An effort has been made here to study the changing land use pattern, cropping pattern, pattern of crop diversification, crop combination and ranking of the crops in Pulwama district for the year 2010 - 2011, which is considered to be a normal year from agricultural point of view. The crop data has been computed with the help of Jasbir Singh's method of crop diversification and weaver's method of crop combination. Seven major crops have been considered for crop diversification and ten major crops have been considered for the crop combination and ranking. The major crops of the area are Rice, Wheat, Maize, Pulses, Mustard, Fodder and Vegetables etc. **Copyright © IJEBF, all rights reserved.**

**Keywords:** Cropping pattern, Crop diversification, crop combination, Rabi Season, Kharif Season

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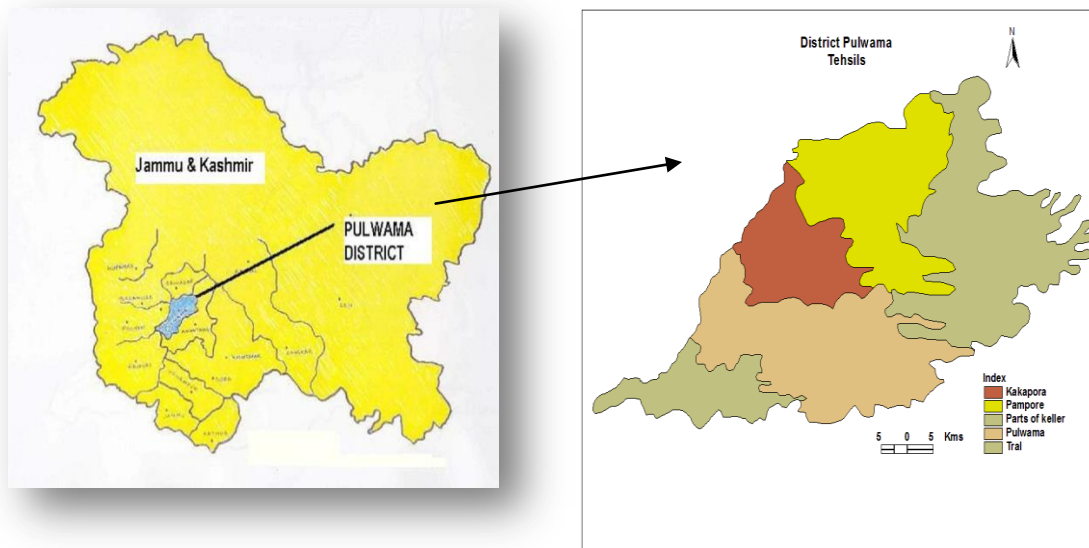
## Introduction

In country like India where agriculture has been practiced since ancient time, still form a backbone of Indian economy, in spite concern efforts towards industrialization in last three decades. Farmers are growing numerous crops in the field rather than single crop. The distributional pattern of crops in any region is an outcome of predominance of certain crop or combination of crops, which give birth to an agricultural region. For proper execution of agricultural planning programme, agricultural regionalization at micro level is indispensable and in this endeavor crop combination plays a pivotal role. Agricultural development is a multidimensional concept which includes a variety of aspects such as agricultural land utilization, crop diversification and concentration, crop productivity, commercialization of agriculture, intensity of cropping, maintenance of ecological balance and so on. Crop combination is of vital importance to understand cropping pattern and level of diversification. Agriculture land may be defined as land used primarily for production of food and fiber. Cropping pattern in any region has undergone an evolutionary process. The choice of cropping system is dependent primarily on physical variables and secondarily on size of operational holding, market and transport facilities, capital, price policy of the government and techno-organizational factors. In any region cropping pattern is yield oriented because the farmers try to maximize their production. Our cropping systems and farm practices have evolved and matured after a long process

of trials and errors. The soil and other natural environmental factors along with the socio-economic factors, affect the cropping pattern in the study region.

## STUDY REGION

Pulwama district is located at 32 km away from Srinagar. Pulwama is situated between 33°, 50' to 33°, 54' North latitudes and 74°, 52' to 74°, 58' East longitudes. The total notified area of Pulwama is 1,398 sq Km. The district is bounded by Srinagar in the North side, Budgam and Poonch in the West side and Anantnag in the south side.



District Pulwama came into being in the year 1979. Pulwama is one of the pretty spots on the earth, because of its congenial climate, streams, waterfalls, fragrant flower, delicious fruits, innumerable springs and other natural sceneries. The district is also called Rice Bowl of Kashmir for maximum production of rice grains in the Jammu and Kashmir state. Pulwama is often called the Anand of Kashmir or Dudha Kul of Kashmir on account of its high milk production. The Physiographic of district Pulwama is highly uneven. The high hills and the elevated plateaus of alluvial and locus trine materials are present in the district. The elevated plateaus of alluvial and locus trine materials are locally known as “Wudars” (Karewas) owing to their elevated position these karewas cannot generally be brought under irrigation. The karewas are divided from each other, sometimes cut into strips by ravines from 30-92 mts (100 to 300 feet) in depth, occasionally they are surrounded altogether by lower ground by more generally they connect on to some of the mountains that bound the valley. The karewas of the district are famous for the cultivation of saffron, apples and almonds. Besides, major crops grown in the district are Rice, Wheat, Maize, Vegetables and Fruits, oil seeds and Saffron. There are number of large/medium industries existing in the district e.g. Ply Board Industries in Pampore. River Jhelum is the major rivers with its tributaries drain the district. Three major tributaries of River Jhelum viz a viz Sazara, Rambiar and Romushi river drains the sloping land in the south-west and have wide channels. Sub humid temperate type of climate is found in Pulwama. The temperate varies between -3° to 32° C. Average temperature in the district is 19° C. Overall the weather condition of the district in summer is slightly muggy while the winters are extremely cold. Pulwama is divided into four Tehsils viz Pulwama, Pampore, Tral and Awantipora. There are five blocks in the district viz Pulwama, Tral, Keller, Pampore and Kakapora.

## Objectives

The major objectives of this paper are to assess the land use pattern, cropping pattern, crop ranking, and crop combination, followed by the level of crop diversification in the district of Pulwama.

## Data Base and Methodology

The present study mostly relies on secondary data sources, collected from agricultural department, office of the economic survey and district statistical department of the Pulwama district. For the present investigation district is selected in general and blocks in particular. Simple statistical method has been used to compute crop ranking, weaver's technique for crop combination has been applied to compute crop ranking region at block level. The percentage of each crop placed in descending order for ranking. For simplification and generalization, crop occupying less than 1.5% of the net sown area have been excluded to calculate crop combination. As per Weaver's method, six crop combination regions have been identified with thirteen crops. Likewise Jasbir Singh's technique for crop diversification, here crop share of less than 5% of the net sown area have been excluded. In order to assess crop combination and crop diversification, the following methods have been adopted:  
 Weaver's method:

$$D = \frac{\sum d^2}{n}$$

Where D: is the difference between the crop percentage in a given area (areal unit) and appropriate percentage in the theoretical curve.

Here n=the number of crops in a given combination.

Jasbir Singh' method:

$$\frac{\text{Area occupied by individual crop}}{\text{Total cultivated area}}$$

## Discussion

Agricultural land use means land under net sown area, fallow land and cultivable land excluding permanent fallow land. The cultivable area is known as agricultural land. Cropping pattern mean the proportion of area under different crops at a point of time or year, it is a dynamic concept because it changes over space and time. The study of agricultural land use pattern is necessary to feed the human requirement, to study and solving land use problems and for optimum use of land to take optimum benefit without any harm to land. For better understanding of agricultural land use pattern in any region, the observer should have a deep knowledge of the general land utilization pattern of the region. It is clear from **the table 1**, that on an average there is a decline in almost all categories (except, other uncultivated land excluding fallow land and area under grooves and bushes) from 1990-91 to 2000-01. Total forest area of the Pulwama district decreased from **732 hectares in 1990-91 to 661 hectares in 2000-01 and 412 in 2010 – 2011** Similarly, area not available for cultivation (barren and uncultivable land and land put to non agricultural uses) decreased from 1990-91 (14015 hectares) to 2000-01(12037), and in 2010-11(8387 hectares). But on the contrary, area under other uncultivated land excluding fallow land increased from 15534 to 18005 during the period1990-91-2000-01. But registered a drastic decrease of 40.73 % stands at 10672 hectares only (2000-01-2010-11) because Shopian was separated from the Pulwama.

**Table 1:** Land Use Pattern in Pulwama District

S. No.	LAND USE CLASSES	YEAR			CHANGE 1990-91 TO 2000-01		CHANGE 2000-01 TO 2010-11	
		1990-91	2000-01	2010-11	ABSOLUTE	%	ABSOLUTE	%
1	TOTAL FOREST AREA	732	661	412	-71	-9.7	-249	-37.76
2	AREA NOT AVAILABLE FOR CULTIVATION	14015	12037	8387	-1978	-14.11	-3650	-30.32

A	BARREN AND UNCULTIVABLE LAND	4163	2592	2542	-1571	-37.73	-50	-1.92
B	LAND PUT TO NON AGRICULTURAL USES	7874	9445	5845	1571	19.92	-3600	-38.11
3	<b>OTHER UNCULTIVATED LAND (EXCLUDING FALLOW LAND)</b>	15534	18005	10672	2471	15.90	-7333	-40.73
A	PASTURES	8935	10356	5953	1421	15.90	-4403	-42.51
B	AREA UNDER GROOVES AND BUSHES	1475	1710	1102	235	15.93	- 608	35.55
C	BARREN CULTIVABLE WASTE LAND	5124	5939	3617	815	15.90	-2322	-39.09
4	FALLOW LAND	8206	9511	6707	1305	15.90	-2804	-29.48
A	PRESENT FALLOW LAND	985	1142	171	157	15.93	-971	-85.02
B	OTHER FALLOW LAND	7221	8369	6536	1148	15.89	-1833	-21.90
5	NET SOWN AREA	57005	53229	32052	-3776	-6.62	-21177	-39.78
6	AREA SOWN MORE THAN ONCE	26828	30907	24952	4079	15.20	-5955	-19.26
7	NET IRRIGATED AREA	35372	35770	21283	398	1.12	-14487	-40.50
8	GROSS IRRIGATED AREA	58092	58142	38458	50	0.08	-19684	-33.85
	Total	97606	97606	60772				

Source: FC's office Srinagar

Due to adoption of new agricultural technology in Pulwama district, there has been major decline in fallow land, during the year 1990-91 (8206 hectares) to 2010-11(6707 hectares). If we put a glance over the net sown area which were 57005 hectares (1990-91) decreased to 53229 hectares (2000-01) , and the area sown more than once from 26828 hectares (1990-91) to 30907 hectares(2000-01), net irrigated area from 35372 hectares (1990-91) to 35770 hectares (2000-01), and gross irrigated area from 58092 hectares (1990-91) to 58142 hectares (2001), all are continuously declined but at same time the area under these categories have increased over the last decade i.e. 2000-1 to 2010-2011, to the tune of -21177, -5955, -14487 and -19684 hectares in gross irrigated area respectively. The continuous decline during 1990-91 to 2000-01 is attributed to the separation of Shopian District from Pulwama.

### Land Use and Agriculture potential

Farming is the main stay of the people engaging more than 80% of the working population. About 62% of area is under cultivation and about 15% is under forest and fruit trees. The remaining area is either left barren or uncultivable/ cultivable waste. The land use statistics of the district is shown as Table: 2)

**Table 2:** Land use statistics of District Pulwama

S. No	Description	Magnitude
1.	Geographical Area	1090 Km <sup>2</sup>
2.	Area as per village papers	60772 ha
3.	Area under forests.	412 ha
4.	Land put on non Agriculture use	70494 ha
5.	Barren & uncultivable land	2592 ha
6.	Pastures & other grazing land	6447 ha
7.	Land under miscellaneous crops (Not included in area sown)	1065 ha
8.	Cultivable waste land	3758 ha (0.05%)
9.	Currents land other than (CF)	5947 ha

10.	Fallow land other than (CF)	812 ha
11.	Land under fruit crops	8420 ha (10.79%)
12.	Net cultivated Area	32245 ha
13.	Gross cultivated Area	56984 ha
14.	Area sown more than once	24739 ha (76.72%)
15.	Cultivable Area	70.37%
16.	Mono cropped Area	7506 ha
17.	Area irrigated	22000 ha (68.31%)
18.	Water Logged Area	2000 ha
19.	Flood prone Area.	3000 ha

**Source:** FC's office Srinagar

Paddy, Maize, Mustard, Potato, Saffron, Vegetables and fruits crops are the major crops grown in the district. There is also a big scope for wheat cultivation and adopting Paddy – Wheat Double Cropping system, which will in turn help in raising the existing cropping intensity of 152% to 180%. Besides, there is also a handsome potential for Bee-Keeping, Mushroom Cultivation, Floriculture, Vermi composting, Organic farming and cultivation of Medical and Aromatic plants (MAP). There is also a good scope for tapping irrigation water resources as about 42% of the cultivated area is rain-fed. The production of food crops of the district is about 43 TMT's and that of fruit crops is 108097 TMT's (Fresh fruits 96425 MT and dry fruits 11672MT's). The production and productivity level of the crops can be improved significantly through technological intervention, capacity building and quality inputs (Seed, Fertilizer and Plant Protection Chemicals).

The major thrust will be on integrated Nutrient Management (INM), Integrated Pest Management (IPM), Farm Field Schools (FFS), Front line Demonstrations (FLD's). Seed mini kits, Adaptive trails and action research. Small and marginal farmers, Landless / asset less poor agriculture labourers, farm women, shepherds and SC/ST persons having common identity and interest will be organized through self help groups (SHG's) for their livelihood. Similarly, those having land holding will be strengthened through user groups (UG's) in order to derive direct benefits from a particular work or activity. Promotion of hill Agriculture through farm credit (KCC) and mechanization by introducing farm friendly tools will also be on the sharp focus. In short, increased per unit production, economic farm production with quality and bio-safe production of food grains are to be our future goals. The crop wise/season wise area is shown as under (2008-09).

### Land use pattern & land holdings

The District is extended over an area of 1090 Sq. Kms. The net sown area in the District is 32245 hectares where as 17664 hectares area is under orchards. There are 56,280 numbers of operational holdings in the District, out of which 36476 are marginal, 10097 are small and 8872 are semi medium farmers holdings with average size of 0.61 hec. (Table 3)

**Table-3:** Professional/Work Profile of the Populace of Pulwama District

S.No	Category	No of Workers in 1981		No of Workers in 2001	
		Number	Percentage	Number	Percentage
1	Cultivators	76906	65.33	64418	42.81
2	Agricultural Labourers	2404	2.05	12659	8.41
3	Livestock Hosting Forestry	3652	3.11	0	0
4	Mining & Quarrying	143	0.12	0	0

5	Manufacturing & processing other than household sector	8410	7.17	0	0
6	Household industry construction	5976	5.09	12662	8.43
7	Construction	1727	1.47	0	0
8	Trade & Commerce	4848	4.13	0	0
9	Transport storage & communication	2015	1.72	0	0
10	Other workers	11275	9.61	60726	40.35

Source: FC's office Srinagar

### Cropping Pattern of Pulwama District

Although the cropping activity goes on throughout the year in this district but there are two distinct seasons i.e. Kharif season and Rabi season. Kharif season related to rainfall, if it is good the crop response will be good on the other hand if the rainfall is unfavorable the crop response will be poor. In kharif season the temperature is relatively high and rainfall is around 670 mm. the crops grown in Pulwama district in this season are Rice, Maize, Pulses, Fodder, fruits etc. In case of inadequate rainfall, farmers use the irrigation facilities which are quite satisfactory to meet the water shortages. While the rabi season is marked with the onset of winter, temperature starts coming down. Irrigation plays a very important role in this season. Almost every crop requires water at some point of time. Where pulses require least, vegetable needs the most.

**Table-4:** Land Utilization in Rabi Season in Pulwama District (2010-11)

	AREA IN HECT ARE	PERCENTAGE OF THE CULTIVATED AREA	PERCENTAGE OF NET CROPPED AREA	TOTAL PERCENTAGE OF CULTIVATED LAND	TOTAL PERCENTAGE OF NET CROPPE
<b>GRAIN CROPS</b>				0.92	0.71
Wheat	220	0.92	0.71		
<b>PULSES</b>				9.51	7.47
Gram	935	3.94	2.83		
Pea	821	3.46	2.72		
Masur	501	2.11	1.92		
<b>OTHER CROPS</b>				89.15	84.4
Mustard	6830	28.97	27.52		
Potato	4300	18.12	17.12		
Onion	1500	6.32	5.42		
Other Vegetables	1985	8.36	7.97		
Fodder	6430	27.10	26.11		
Others	103	0.43	0.26		
<b>FALLOW</b>	96	0.40	0.09	0.40	0.09
<b>TOTAL</b>	23721	100	92.67		

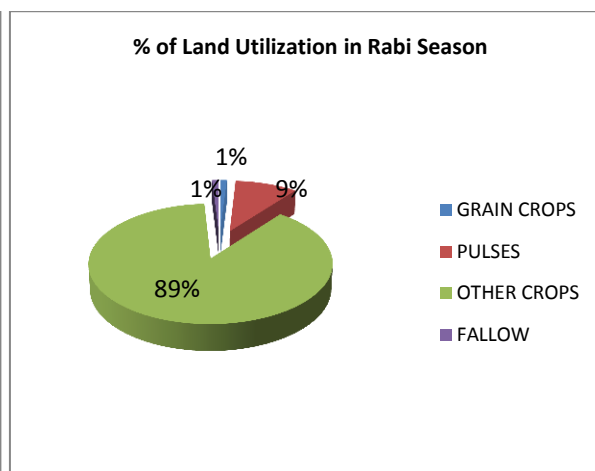
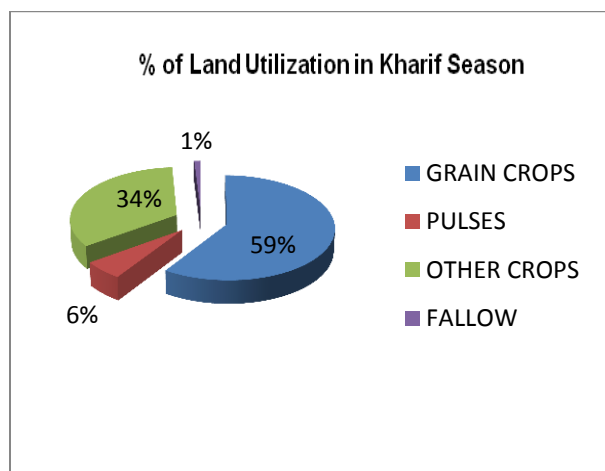
Source: FC's office Srinagar

In Rabi season when the temperature is relatively low the crops grown in this region are wheat, pulses (gram, peas, masur) fodder, mustard, potato and other vegetables. Table 4, indicates the cropping pattern of the rabi season in which excluding 0.40 % ( 96 hectares) area, almost the whole area of the cultivable land in under cultivation. The largest area is under mustard (28.97%) crop, which is the main diet of the people living in this area, followed by the fodder (27.10%), potato (18.12%), other vegetables (8.36%), onion (6.32%) and gram (3.94%). While the other crops like pea, masur, wheat etc. shares a very little portion of the cultivated area.

**Table 5:** Land Utilization in Kharif Season In Pulwama District (2010-11)

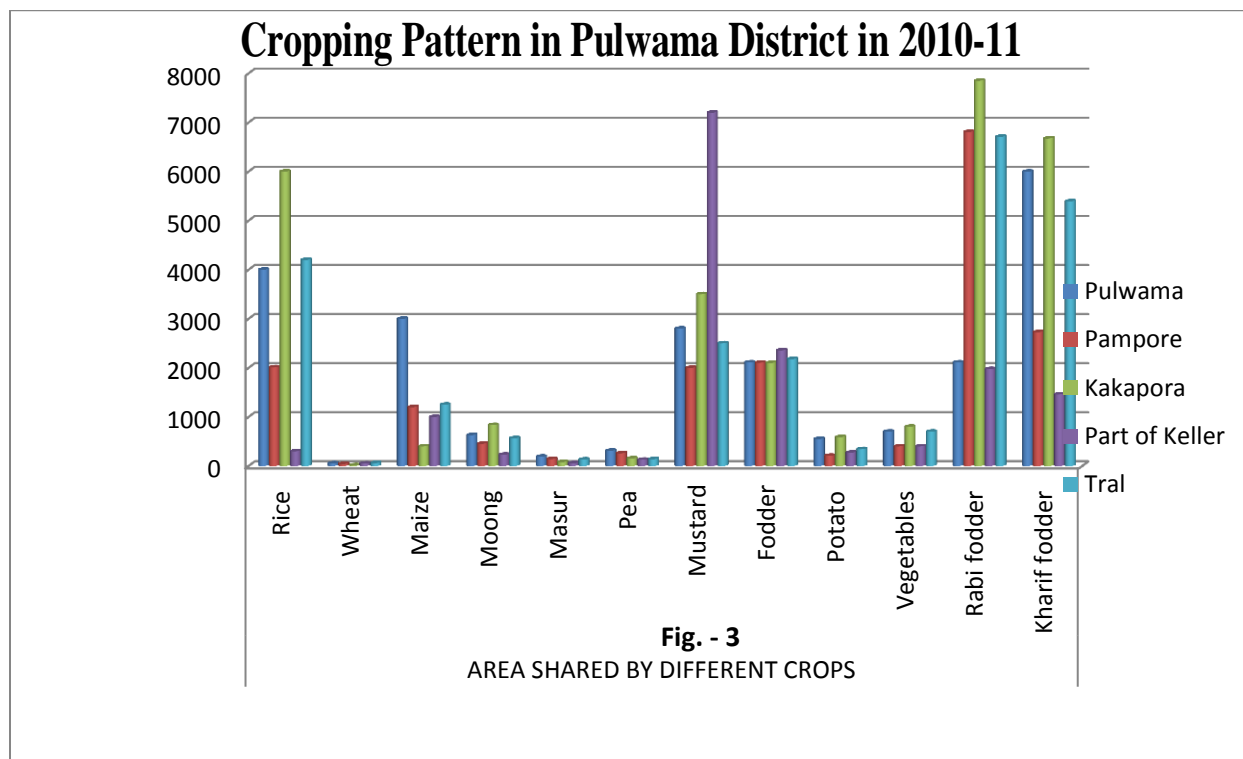
CROPS	AREA IN HECTARE	PERCENTAGE OF CULTIVATED AREA	PERCENTAGE OF NET CROPPED AREA	TOTAL PERCENTAGE OF CULTIVATED LAND	TOTAL PERCENTAGE OF NET CROPPED AREA
GRAIN CROPS				59.86	57.51
Rice	16500	47.71	46.33		
Maize	4200	12.14	11.18		
PULSES				5.78	3.11
Arhar	445	1.26	0.92		
Moong	1236	3.57	1.87		
Others	319	0.92	0.32		
OTHER CROPS				34.35	31.15
Fodder	480	1.38	1.00		
Vegetables	3000	8.67	7.55		
Fruits	8223	23.78	22.43		
Others	103	0.29	0.04		
FALLOW	73	0.21	0.13	0.21	0.13
Total	34579	100	91.71		

Source: FC's office Srinagar



Name of the Blocks	AREA SHARED BY DIFFERENT CROPS											
	Rice	Wheat	Maize	Moong	Masur	Pea	Mustard	Fodder	Potato	Vegetables	Rabi fodder	Kharif fodder
<b>Pulwama</b>	4000	53	3000	630	191	312	2800	2110	551	700	2110	5997
<b>Pampore</b>	2010	42	1200	454	143	260	2000	2105	209	400	6805	2728
<b>Kakapora</b>	6000	14	400	835	81	155	3500	2100	589	800	7850	6674
<b>Part of Keller</b>	300	50	1000	231	56	128	7200	2357	273	400	1975	1460
<b>Tral</b>	4200	61	1250	567	132	140	2500	2180	343	700	6708	5393

Table-6: shows the cropping pattern in kharif season, in which the largest area (59.86%) of the total cultivated area is shared by the cereals, rice is the major crop, covering 47.71% of the area, followed by maize 12.14%, other cereals cover less than 5% area of the total cultivated area of the district. The area shared by the pulses is only 5.78% of the total cultivated area in which moong occupies (3.57%), arhar (1.26%) and others (0.92%) respectively. Among the cash crops fruit is the major crop which covers 23.78% of area, while the share of fodder and vegetables lie below 5% of the total cultivated area. Apart from food grains and cash crop, it is vegetables which claim a significant area of (8.67%) in this season. Fig-2 shows the area shared by different crops in district.



Source: FC's office Srinagar



A broad picture of the major cropping pattern in the study region can be obtained by taking the major crops in to consideration. With such an approach the crop occupying the highest percentage of the net sown area of the region is taken as the base crop and all other possible alternative crops which are sown in the region either as substitute of the crop in the same season or as the crop which fit in the rotation in the subsequent season, are considered in the pattern. There are various ways of utilizing the land intensively. In any locality, the prevalent cropping system is the cumulative result of percent decision by individuals, communities or government and their agencies. These decisions are usually based on experience, tradition, expected profit, personal preferences and resources, social and political pressure and so on.

### Ranking of Crops

Ranking of the crop depend on geographical reality and cropping structure. It is founded by seeing the percentage of area occupied by a crop to the total cropped area (fig-3). The ranking of crop show the nature of farmer or cultivator i.e. weather the farmer is traditional or market oriented or partly subsistent and partly market oriented farmer. In this method that crop occupy the highest percentage of the total cultivated area, is chosen as first rank crop and after it crops are taken in decreasing order (table-1). Three levels of ranking of the crops has classified here.

**Table-7:** RANKING OF THE CROPS IN DISTRICT Pulwama in 2010-11

S. No.	NAME OF THE BLOCKS	FIRST RANK CROPS	SECOND RANK CROPS	THIRD RANK CROPS
01	Pulwama	Rice	Maize	Mustard
02	Pampore	Fodder	Rice	Mustard
03	Kakapora	Rice	Mustard	Fodder
04	Part of Keller	Mustard	Fodder	Maize
05	Tral	Rice	Mustard	Fodder

**Source:** Data is calculated by Author from table 4.

### First Ranking Crops

It is clear from the table no.4 that the rice has attained supremacy in all blocks, except Pampore and Keller where it is taken over by fodder and mustard. A Kakapora block is on top list, and having more than their 60% area of the net sown area under wheat cultivation. Similarly, Pulwama and Tral are on second place, having their largest area under rice cultivation. Apart from this other blocks of the district are also the leading member in rice, maize, fruits and wheat cultivation.

### Second Rank Crops

Mustard emerged as second ranking crop in all blocks except Pulwama, where maize is on second rank. Rice occupies second rank in Pampore blocks. Fodder occupies second rank in Keller part of Pulwama.

### Third Ranking Crops

Those crops which were on second place in some blocks are on third rank in other blocks. Among the five blocks, mustard is on third rank in two blocks namely, Pulwama and Pampore. The other three crops, emerged as third ranking crops are, fodder, which is also on third rank in two blocks I – e Tral and Kakapora. While maize stands third in Keller part of Pulwama blocks only. (Fig.3)

### Crop Combination

The crops are generally grown in combination and it is rarely find that particular crop occupies a position of total isolation rather than other crops in a given in a given time. The physical factors determine the shape of area of crop, while socio-economic relationship determines their extent. The government policies can decide to select the type of

crop to grow. With the development of better irrigation facilities, new varieties of crops can be induced in the place of traditional and profitable agricultural system.

**Table-8:** CROPS ARE ARRANGED IN ORDER OF THEIR AREA OCCUPANCY

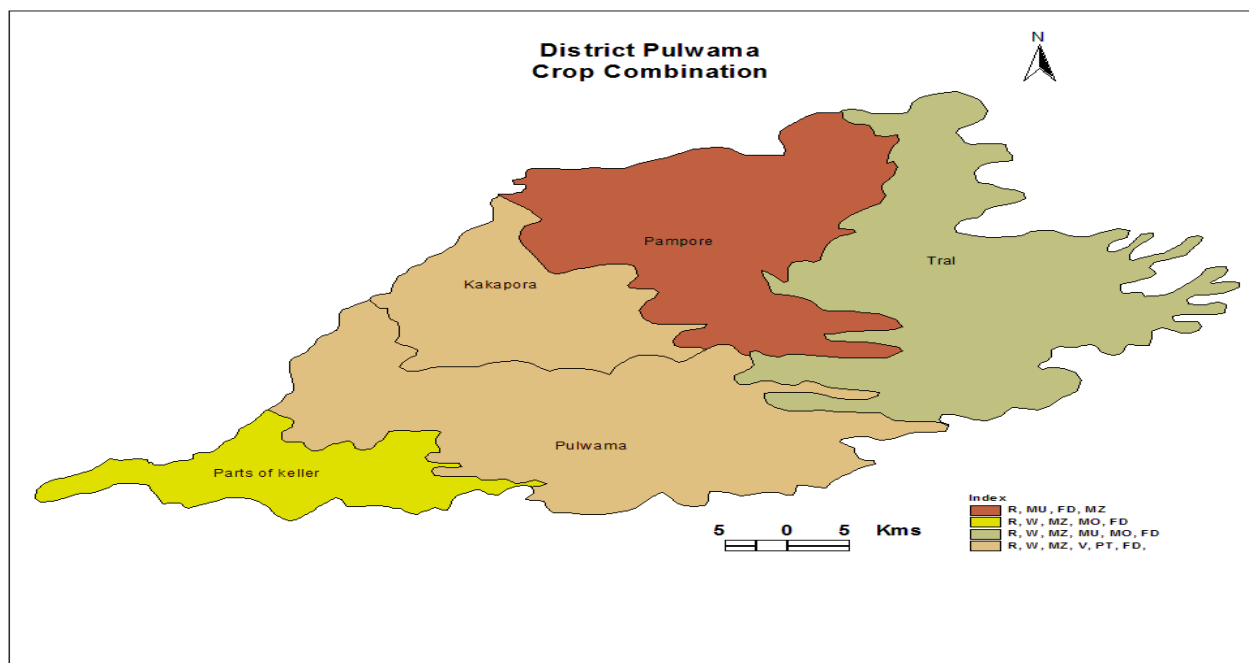
No. OF CROP COMBINATION	CROPS IN COMBINATION ( CROPS ARE ARRANGED IN ORDER OF THEIR AREA OCCUPANCY)	NAME OF THE BLOCK
4	R, MU, FD, MZ	Pampore
5	R, W, MZ, MO, FD	Part of Keller
6	R, W, MZ, MU, MO, FD,	Tral
7	R, W, MZ, V, PT, FD, MO,	Kakapora
8	R, W, MZ, V, PT, FD, MO, PE	Pulwama

**Source:** Data is calculated by author with the formula of crop combination developed by Weaver.

(Crops-(W = wheat, R = rice, MZ = maize, Pt = potato, FD = fodder, PE = peas, MO = moong, V = vegetables, MU = mustard.)

As a result of statistical processing of the data based on weaver’s method, eleven crop combination regions emerged out. In 2010-11 among the total of 20 crops only 10 crops (rice, wheat, maize, pulses, mustard and vegetables) were involved in various crop combinations (Table-8). The area has from five combinations to ten crop combinations. In the district **ten** crops appear to be dominated and cover the five blocks namely **Pampore, Part of Keller, Tral, Kakapora and Pulwama**. However, eight crops appear dominating in Kakapora block. Largest number of crops i.e. eight crop combination are found in only one block ( Pulwama) while **six** (Tral) crops and **five** (Parts of Keller) combination are found in single blocks. Only Pampore have least crop combination i.e. only **four**. It is clear from the table 5, that there is no sign of crop specialization farming. A very striking feature association region is a relatively dominance of particular combination of region in all the regions. Wheat, rice, maize, pulses and fodder are such crops. The other striking feature of these crop combination regions is the absence of monoculture. The district is dominated by number of crops which show high level of crop diversification because greater the number of crops in crop combination higher the level of crop diversification and vice versa. So the Weaver’s method gives the most unwieldy combination for the unit of high crop diversification.

**Fig. 4**



**Table: 9:** Blocks Wise Level of Crop Diversification In District Pulwama in 2010-11 (According To Jasbir Singh’s Method)

S. No	NAME OF THE BLOCKS IN 2010-11	NO. OF CROPS	TYPE OF CROPS	LEVEL OF CROP DIVERSIFICATION
01	Pulwama	8	R, W, MZ, V, PT, FD, MO, PE	High
02	Kakapora	7	R, W, MZ, V, PT, FD, MO,	
03	Tral	6	R, W, MZ, MU, MO, FD,	Medium
04	Pampore	5	R, W, MZ, MO, FD	
05	Parts of Keller	4	R, MU, FD, MZ	Low

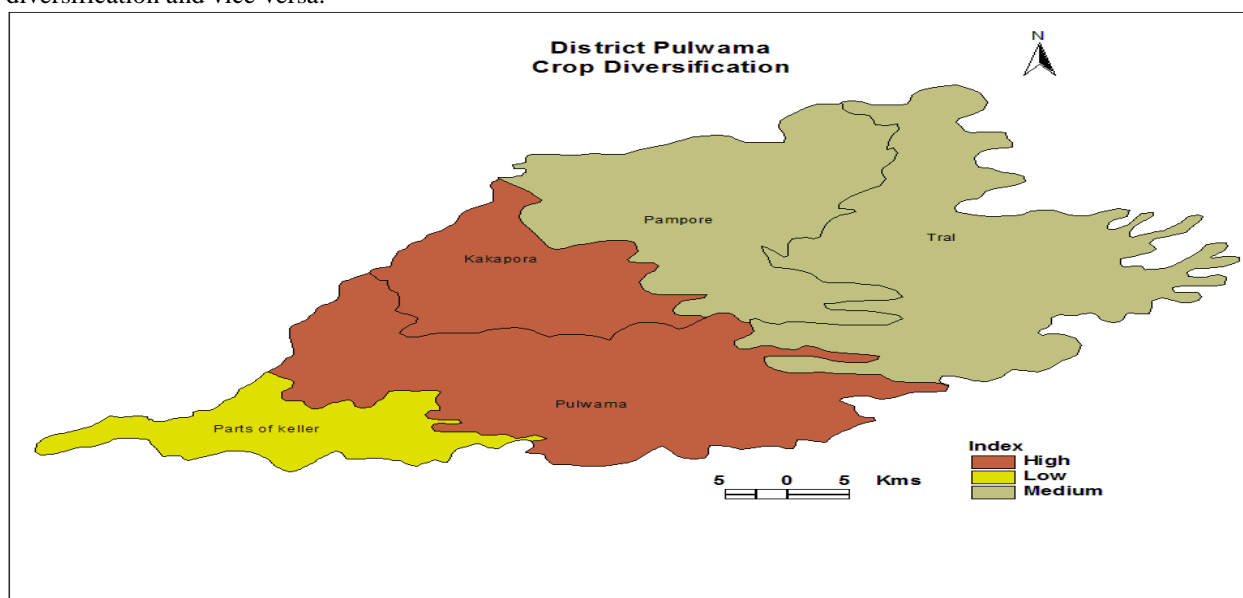
**Source:** Data is calculated by author with the formula of crop combination developed by Jasbir Singh’ method.

**High crop diversification-** in 2010-11 the number of blocks under the category of high crop diversification is four (fig-3). Here the index value is by less than 14. The study reveal that the cropping pattern is more diversified in Pulwama block , here the dominant eight crops are rice, wheat, maize, vegetables, moong, potato, pea fodder except masur. Kakapora comes at second place; here except masur, peas and mustard all of the former crops have their dominant position. The crops grown in this block are rice, wheat, maize, fodder, vegetables, potato, and moong. Although, both the blocks have same cropping pattern and the dominant crops are rice, wheat, Maize, vegetables etc.

**Medium crop diversification-** During the period, 2010-11 two blocks namely Tral and Pampore falls under the category of medium crop diversification (index value varies between 14.6% to 17.9%). Tral is on third place with six crops having their dominant position except vegetables which have their dominant position in Pulwama, because of the nearness to the market. Pampore is on fourth place with five crops having their dominant position except vegetables and pulses.

**Low crop diversification-**In 2010-11 only one blocks come under the category of low crop diversification and that is parts of Keller. Tral is on fifth place with four crops having their dominant position except vegetables, wheat and rice, because of the rugged topography and cold climatic conditions.

Hence it is clear from the ongoing study that greater number of combination led to greater degree of crop diversification and vice versa.



### **Constraints for backwardness and issues impeding growth**

The major obstacles affecting the progress and productivity of the district as identified by participatory approach are as follows.

- ❖ Emphasis on single commodity/ crop approach rather than farming system approach
- ❖ Inadequate availability of quality seeds (including vegetables)
- ❖ Slow pace of diversification
- ❖ Lack of orientation in development department
- ❖ Lack of farm finance and marketing awareness
- ❖ Depleting soil fertility
- ❖ Non-judicious use of fertilizers and chemicals
- ❖ Rising costs and diminishing economic returns
- ❖ Increasing infestation of insect-pest and disease complex
- ❖ Lack of Public Private Partnership
- ❖ Shift in weed flora
- ❖ Low productivity and poor management in large and small ruminants
- ❖ Fragmented small holdings
- ❖ Declining / Rising water table
- ❖ Farmers inability to invest
- ❖ Personal and social outlook

### **Priority setting for the district**

- Intensification of crop husbandry with vegetable and horticultural crops, animal husbandry, mushroom cultivation and other non crop based farming
- Water resource conservation and management
- Soil health improvement
- Paradigm shift from production oriented farming to market oriented agriculture
- Resource conserving technologies
- Systematic shift from and/or integration of single crop enterprise to multiple cropping and intercropping
- Bridging yield gaps of crops, animals and other enterprises
- Human resource development of rural youths, farm women, other disadvantaged groups and field staff

### **Conclusion and Suggestions**

In greater part of the Pulwama district, agricultural is still subsistent in character. Consequently, the food grains occupy more than 60 percent area of the gross cropped area. Among the cereals, rice and wheat rank first and second respectively. While the other important cereal crop like maize, which rank third in choice of cereals. Potato and mustard seeds are major cash crops in which fruits occupy first place since a long time as a cash crop, but stand third in the total crops of the district. Among the pulses, moong is the main crop which is followed by the other pulses like arhar, masur, pea etc. the subsistence cropping pattern of the district is based on the inherent fertility of the soil without the intensive use of the modern inputs and technology. The land which is under the full impact of green revolution and has high diffusion of HYV, fertilizers and irrigation with modern technology, though generally carried out by large farmers only. The horizontal expansion of agriculture is not possible without heavy capital investment. Only judicious utilization of land by adopting more remunerative cropping pattern, scientific rotation of crops and multiple cropping patterns may help in overcoming the food and raw material problems in the region. The change in the cropping pattern and introduction of crops which enhance the soil fertility are imperative to make agriculture more remunerative and sustainable.

So for better utilization of land, the suitability of crops or cropping pattern may be judged on the basis of the following:

- The crop should not accentuate certain diseases as a result of a fixed continuous rotation.

- The crop should not exhaust on some specific plant nutrients from a particular depth of the soil.
- The crop should be fertility building and soil improving.
- The crop should fetch handsome return to the cultivator and should provide the farmer employment and income all the year round. The crop should ensure the optimum utilization of his resources, particularly inputs like irrigation water, chemical fertilizers, insecticides
- And pesticides, equipments, power and family labour.

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