

A study of cropping system in *Kandi* area of Jammu region of Jammu and Kashmir state

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ABSTRACT

The present effort undertaken in the Kandi belt of Jammu region aimed to study the different crops grown in the area, the cropping pattern followed and to find out the cropping intensity of the selected area. The results of the study revealed that among the districts selected the Net Cultivable Area was the highest in Jammu district (59.50 ha) and the least was in Rajouri (55.15 ha). However, the Total Cropped Area was highest in district Udhampur (98.70 ha). The cropping intensity was highest in Udhampur 167.57 and the least in Jammu (163.61).

Keywords: Kandi, cropping pattern, cropping intensity

The state of Jammu and Kashmir is located in North western Himalayan region. It has four distinct agro-climatic zones. These are subtropical Jammu region (up to 800 above mean sea level), intermediate/semi temperate mid hills (800-1500 above msl), temperate Kashmir valley (1500-2500 m above msl) and cold arid zone of Ladakh (>2500 m above msl) (Anonymous, 2011). The climate of these zones is peculiar to their agro climatic characteristics depending upon the location. The state has an area of 10.7 m ha excluding that under the occupation of Pakistan with a net sown area of 0.73 million hectares, cropping intensity of 154 percent, irrigated area of 41.96% and rain fed area accounting to 58.03% (Anonymous, 2008). The average size of holdings in the state as per the 7th quinquennial Agricultural census 2000-01 was 0.66 hectares which is 0.10 hectares less than the national average (Bhatt and Poddar, 2008). About 81% of the holdings in the state fall below 1 hectare (Kumar, M. 2012)

Cropping system may be defined as the order in which the crops are cultivated on a piece of land over fixed period (NIOS). The cropping system of

the state includes rice and wheat as the major crops in irrigated areas whereas in rain fed areas locally called as Kandi the usual cropping system is wheat and maize as the major crops along with oilseed crops like Toria, Mustard and pulse crops like Mash, Moong, Lentils and fodder crops like Bajra. The total area under Paddy, Wheat and maize in the state is 2.63 lakh hectares, 2.78 lakh hectares and 3.02 lakh hectares respectively. The corresponding productivity of Paddy, Wheat and Maize in the state is 21.35 q/ha, 17.82 q/ha and 15.69 q/ha respectively which is less than the national average for Paddy 22.03 q/ha, Wheat 27.85 q/ha and maize 23.37q/ha (Anonymous, 2008). The annual food

consumption in the state was 1.99 million tonnes where as the production in the state stood at 1.57 million tonnes, (Prasad, 2009). We are deficit by about 0.42 million tonnes. The state despite having a varied and favourable climate has low productivity levels ultimately leading to huge gap in production and consumption. The productivity of most of the crops in the state is low as compared to national average. The present study thus aimed at finding out the

different crops grown, the productivity of different crops and how the production can be enhanced and the deficit in production be decreased with the following specific objectives:

- To study the different crops grown in the area and the cropping pattern followed
- To find out the cropping intensity of the selected area

Research Methodology

The present investigation was carried in rain fed *Kandi* belt of Jammu region comprising four districts of Jammu, Kathua, Udhampur and Rajouri covering 240 respondents. From each district two blocks were selected and from each block two Panchayats were selected. From each Panchayat two villages were selected and from these two villages fifteen respondents were selected based on proportional representation of number of households from each village. It took the number of respondents from each block to thirty. Thus from each district sixty respondents were selected ultimately taking the final sample size to 240.

Results and Discussions

Table 1 depicts that during Kharif season, Maize both as a pure as well as mixed crop with Cowpea was grown. The other crops grown in this season were Bajra, Mash and Moong. During the Rabi season Wheat both as a pure as well as a mixed crop with Mustard was cultivated by the respondents. In addition to these crops Toria and Lentils were also grown in Rabi season. In the relatively short duration Zaid season Mash was also grown which is locally called as 'Aadhu mash'.

Table 1. Existing cropping pattern of area selected for study

Kharif	Rabi	Zaid
Maize	Wheat	Mash
Maize + Cowpea	Wheat + Toria	-
Bajra	Mustard	-
Til, Til + Mash	Lentil	-
Moong	-	-

A perusal of the data in the table reveals that maize was grown as a pure crop by 90.41% of the respondents whereas maize with cowpea as a

mix crop was grown by 9.59% of the respondents. Similarly in Rabi, Wheat as a pure crop was grown by 83.33% of the respondents whereas it was grown as a mix crop with Mustard by 9.17% of the respondents respectively. Toria was grown by 9.58% of the respondents, Til by 7.08%, mash by 8.75% and Til and Mash as mixed crop by 10% of the respondents. Moong was grown by 13.33% whereas Lentil was grown by just 6.25% of the respondents

Table 2. Distribution of respondents according to the crops grown in different districts

(n=240)

Crops grown	No. of respondents					Overall Percentage
	Jammu (n=60)	Kathua (n=60)	Udhampur (n=60)	Rajouri (n=60)	Total (n=240)	
Maize	56	55	51	55	217	90.41
Maize + Cowpea	4	5	9	5	23	09.59
Wheat	47	47	48	49	200	83.33
Wheat + Toria	6	5	4	7	22	09.17
Bajra	60	60	60	60	240	100.00
Mustard	6	7	6	4	23	09.58
Til	4	5	4	4	17	07.08
Mash	5	6	5	6	21	08.75
Til + Mash	7	6	6	5	24	10.00
Moong	7	11	6	8	32	13.33
Lentil	4	5	3	3	15	06.25

*Multiple responses

Table 3. Productivity (q/ha) of different crops in the selected area

Crop	Productivity (q/ha)
Maize	17.50
Wheat	17.00
Cowpea	4.50
Bajra	4.80
Mustard	4.30
Toria	4.60
Mash	4.20
Til	4.40
Moong	4.25
Lentil	4.50

Table 4. Net Cultivable Area (NCA) and the Total Cropped Area (TCA) under different crops in the selected districts

District	Net Cultivable Area (in ha)	Area under different crops (in ha)											Total Cropped Area (in ha)	
		Kharif					Rabi							Zaid
		Maize	Bajra	Cowpea	Mash	Moong	Wheat	Toria	Mustard	Til	Lentil	Mash		
Jammu	59.50	37.50	2.45	0.75	0.25	0.55	53.75	0.95	0.60	0.30	0.25	0.00	97.35	
Kathua	57.25	31.75	2.55	2.50	1.05	1.00	51.50	1.50	1.65	0.40	0.20	0.10	95.20	
Udhampur	58.90	37.50	2.15	0.15	0.85	1.55	51.75	0.75	0.95	1.90	1.15	0.00	98.70	
Rajouri	55.15	32.50	3.45	0.75	0.45	0.65	49.90	1.10	0.90	0.85	0.15	0.50	91.20	
Total	230.80	139.25	10.60	4.15	2.60	3.75	206.90	4.30	4.10	3.45	1.75	0.60	382.45	

Table 3 shows that the average productivity (q/ha) of maize was 17.50 and Wheat (17.00). In case of Oilseed crops the yield (q/ha) was Mustard (4.30), Toria (4.60), Til (5.00). Similarly in case of Pulse crops, the yield (q/ha) of Mash was (5.50), Moong (4.25) and Lentil (4.50)

The data in the table 4 shows the Net Cultivable Area (NCA) and the Total Cropped Area (TCA) in the selected districts. The Net Cultivable Area was the highest in Jammu district (59.50 ha) followed by Udhampur (58.90 ha), Kathua (57.25 ha) and Rajouri (55.15 ha). However if we see the Total Cropped Area it was highest in district Udhampur (98.70 ha), followed by Jammu (97.35 ha), Kathua (95.20 ha) and Rajouri (91.20 ha). The total Net Cultivable Area of the selected districts was 230.80 ha with a Total Cropped Area of the 382.45 ha.

Table 5: Average Cropping Intensity (%) in the selected area

Name of the district	Net cultivable area (in ha)	Total cropped area (in ha)	Cropping Intensity (%)
Jammu	59.50	97.35	163.61
Kathua	57.25	95.20	166.28
Udhampur	58.90	98.70	167.57
Rajouri	55.15	91.20	165.36
Average	57.70	95.61	165.70

The data in the Table 5 shows the average cropping intensity (%) in the selected area. The overall cropping intensity was 165.70. If we look at the district wise scenario we find that district Kathua had the highest cropping intensity (166.28) followed by Udhampur

(166.28), Rajouri (165.36) and least in district Jammu (163.61)

Conclusion

The findings of the study revealed that yields of different crops in the selected area is low than the national average and needs to be further improved by providing suitable technological packages to the farming community. As the area falls in the subtropical Kandi belt which is rain fed and drought prone, suitable drought resistant varieties of crops like wheat and maize should be provided to the farmers. The number of crops grown per season can also be increased by creating suitable infrastructure for irrigation. Water harvesting structures like ponds and wells can be of great use in bringing additional area under irrigation in this water deficit zone. Water harvesting techniques like capturing run off from rooftops and local catchments can also be used to collect excess and then used for productive purposes. This in turn will increase the cropping intensity of the area ultimately leading to more output from the same area. At the same time there is a need to educate the farmers about moisture conservation techniques like mulching and suitable cropping systems and promising technologies developed by various dry land research stations in the country. Also the wheat maize dominated cropping system needs to be changed to make farming in these areas more sustainable. A long-term strategy to avoid a socio-economic crisis in rain fed Kandi areas of Jammu region should be formulated. Farmers should be encouraged to diversify from wheat and rice to vegetables, horticulture, fruits, dairying, apiary, sericulture and other suitable enterprises.

References

- Anonymous. Digest of Statistics, Directorate of Economics and Statistics. Government of Jammu and Kashmir ; 2008
- Bhatt, GM and Poddar, SA. Agriculture in Jammu and Kashmir: Challenges and opportunities. *Agri Situa India*. 2008; 65: p71-74.
- Kumar, M. Marginalized and small farmers in J&K, *Daily Excelsior*, February 12, 2012.
- National Institute of Open Schooling (NIOS). Cropping systems; 2012 :Cited at oer.nios.ac.in/wiki/index.php/Cropping_Systems
- Prasad, GR. India's Food Production: Review and Paradigm Shifts Desired. *Ind J Fert.*2009; 5(12): p55-56 &59-61.
- Sharma, N., Singh, M., Kumar, A., and Sharma, BC. *Manual of Rain fed Agriculture*, SAMETI publications; 2012