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Economic Analysis of Agriculture Diversification in Western Plain Zone of Uttar Pradesh

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ABSTRACT: *Agriculture diversification generally viewed as a shift from traditionally less remunerative cropping pattern to more remunerative cropping pattern. Future of diversification is enormous subject to the policy support and investment priorities.*

Western plain zone of Uttar Pradesh, comprising Meerut and Saharanpur division is characterized as food and sugar basket. In case of west part of U.P, agriculture is highly mechanized and multi-cropping technique adopted in a big way. Although in the field of agriculture some alarming issues received attention of policy maker and farmer, which is like--Decreasing size of agriculture land holding-Declining land-man ratio-Decreasing underground water level-Degradation of land fertility-Decreasing returns from agriculture etc.

With rapid urbanization and growing land degradation, future agricultural growth would be depend on intensification and diversification of agriculture. Expansion of area in favour of agriculture is a remote possibility in Western Zone of U.P. Therefore agriculture diversification is the alternatives to accelerate agriculture growth and farm income. No doubt to develop a realistic and sound farm policy, consistent with the resources of farmers, it is imperative to have basic information regarding pattern of land utilization, investment in fixed capital, crop combination, level of production and productivity, and income and other related information.

In the light of above facts, the present study was conducted in Buland Shahr district in Western Plain Zone of U.P.

Key Words- *Agriculture Devesification, cropping pattern, productivity, farm income*

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I. INTRODUCTION

India has got predominantly an agrarian economy since the beginning of the planning process; its growth has occupied the center stage. However in post reform period, the country has experienced a visible structural shift from agriculture to service sector even by passing the industrial sector.

.Like industry and business, in agriculture, too, the optimization of the use of scare resources, such as labour, irrigation, seeds, livestock, fertilizer implements and machines etc. is inevitable, and managerial techniques are paramount importance. Therefore, in an agricultural economy, farm management assumes a great significance, particularly in an economy, like India, where approximately 70 percent people derive their livelihood from agriculture and 69 percent of cultivated area is entirely dependent upon an erratic monsoon, frequent draughts and floods remains a constant threat to the agriculture. The average holding is 1.82 hect, and that, too, unevenly distributed which being diverted rapidly to residential, industrial and other non-agricultural uses every year thereby mounting pressure on the agricultural land.

All is however not well at the agricultural front. The pattern of growth of agriculture has, bought in its wake, uneven development across regions and crops as also across different sections of farming community and is characterized by low levels of productivity and degradation of resources. Capital inadequacy, lack of infrastructural support and demand side constraints such as controls on movement, storage and sale of agricultural products etc. have continued to affect the economic viability of agriculture sector. Agriculture has also become a relatively unrewarding profession due to unfavorable input-output pattern and low value addition, causing abandoning of farming and increasing migration from rural areas to urban areas.

Agriculture in Uttar Pradesh

The economic development of Uttar Pradesh depends upon agricultural development of the state. A great majority of population in the state are living in rural area, where main occupation of people is agriculture. The state of Uttar Pradesh has played a significant role in national agricultural development.

Being the Fourth largest state of the country according to area and highest population(19.95 crore 2011) with the total area of 2.36 lakh sq.km, which is 7.2 percent of the total area of the country. There is 167.50 lakh

hect.land, comes under cultivation in Uttar Pradesh, which is accounted 8.4 percent of the India. It is contributing about one fifth of the total national food grains production, 40 percent of the potato production and sugarcane.Similarly,around 35.39 percent of all wheat produced in the country comes from Uttar Pradesh.

Table-1
Region Wise Selected Indicators of Agriculture in UP

S.N	Indicator	Year	Western	Central	Eastern	Bundelkhand	U P
	I. Agriculture and Allied						
1.	Area under marginal holdings less than one (hect.)	2000-01	1906.98	1374.24	3003.52	362.93	6647.66
3.	Cropping Intensity	2008-09	162.43	153.36	154.76	124.99	153.79
5.	Percentage of Net irrigated area to net area sown	2008-09	91.7	84.5	76.4	56.4	81.1
	I1 Productivity of Major Crops (qtls/hect)						
6.	Average yield of food-grain	2008-09	27.83	23.62	22.58	14.52	23.63
7.	Wheat	2008-09	34.04	30.26	26.91	23.82	29.97
8.	Rice	2008-09	22.46	20.51	22.09	13.19	21.09
9.	Potato	2008-09	223.80	184.17	157.32	205.46	205.46
10	Pulses	2008-09	8.59	9.22	8.99	8.99	8.99
11.	Oilseeds	2008-09	12.57	7.80	6.89	4.52	8.87
12.	Sugarcane	2008-09	564.46	477.35	444.20	369.86	524.67

Source: Statistical Abstract of Uttar Pradesh 2010 and Raman,Rakesh et.al " Performance of Agriculture in Uttar Pradesh-A district level Analysis"

Land and water resources plays important role in agricultural development. In the state of Uttar Pradesh, there is abundance of marginal and uneconomic land holdings and share of land holdings below 1hectare to the total number of land holding is 76.9 percent. There are well developed irrigation facilities available in the state. The net irrigated area as percentage of total cultivable land was 79.7 in 2007-08.

Western plain zone of Uttar Pradesh, comprising Meerut and Saharanpur division is characterized as food and sugar basket. The main occupation in rural areas of west U.P is also agriculture. In case of west part of U.P, agriculture is highly mechanized and multi-cropping technique adopted in a big way. The population of western region has grown up because of easy availability of food and water due to intensive agriculture, but growing population is the cause of so many socio-economic problems. Therefore in the field of agriculture some alarming issues received attention of policy maker and farmer, which is like--Decreasing size of agriculture land holding-Declining land-man ratio-Decreasing underground water level-Degradation of land fertility-Decreasing returns from agriculture etc.

With rapid urbanization and growing land degradation,future agricultural growth would be depend on intensification and diversification of agriculture. Expansion of area in favour of agriculture is a remote possibility in Western Zone of U.P. Therefore agriculture diversification is the alternatives to accelerate agriculture growth and farm income. No doubt to develop a realistic and sound farm policy, consistent with the resources of farmers, it is imperative to have basic information regarding pattern of land utilization, investment in fixed capital, crop combination, level of production and productivity, and income and other related information.

In the light of above facts, the present study was conducted in Buland Shahr district in Western Plain Zone of U.P.

II. ANALYSIS OF DIVERSIFICATION AND CROPPING PATTERN

Agriculture diversification generally viewed as a shift from traditionally less remunerative cropping pattern to more remunerative cropping pattern. Future of diversification is enormous subject to the policy support and investment priorities in this region.

Pattern of raising crops in individual plots of a farmers based on agro-economic conditions of the area is termed as cropping pattern. It is one of the important factors for deterring the income level and profitability on a farm. The change in cropping pattern has been associated with increasing transformation of farming from subsistence to commercial agriculture. It is mainly influenced by the size of land holdings, availability of labour, sources of irrigation, marketing facilities, farm mechanization and the level of investment etc.

The distribution of cultivated area under different crops viz. cash crops, cereals, fodder crops, oil seeds and vegetables crops etc. and cropping intensity on the different size of farms have been discussed in study area.

Cropping Pattern In Kharif

The distribution of total cropped area under different crops in Kharif season according to farm size category wise has been given in table- 2

Table -2
Distribution of cropped area under different crops in Kharif.

Sl. No.	Farm size Crops	Marginal		Small		Medium		Large		All Farm	
		Area	%	Area	%	Area	%	Area	%	Area	%
1.	Sugarcane	15.62	26.06	23.84	32.10	24.52	40.46	16.77	37.92	80.75	33.78
2.	Paddy	8.81	14.70	9.64	12.98	4.32	7.13	4.23	9.56	27.00	11.29
3.	Maize	2.39	3.99	1.72	2.32	1.14	1.88	0.48	1.08	5.73	2.40
4.	Fodder	5.79	9.66	5.85	7.89	2.61	4.31	1.25	2.83	15.5	6.48
5.	Arhar	1.72	2.87	1.35	1.82	0.85	1.40	0.57	1.29	4.49	1.88
6.	Urad	0.87	1.45	0.95	1.28	0.60	0.98	0.63	1.42	3.05	1.28
7.	Other	----	----	0.33	0.44	1.00	1.65	0.37	0.84	1.70	0.71
	Total cropped area	59.95		74.25		60.62		44.23		239.05	

The analysis of table 2 reveals that on an average sugarcane accounted for the highest coverage 33.78 percent to the total cropped area followed by paddy 11.29, fodder 6.48 and maize 2.40 percent. The cultivation of sugarcane was commonly followed by the all farm size groups in the study area.

It is evident from the table 2 that sugarcane cultivation was given top priority in order of preference followed by paddy, fodder and maize next in order of priorities. The data given in table shows that as farm size increased the area under sugarcane increased i.e. marginal 26.06, small 32.10, medium 40.46 and large 37.92 percent. It indicated that cultivators of all size of farms were more interested to grow sugarcane in the study area because it is less risky crops as compared to other crops and other reason to give priority of sugarcane cultivation is that state government provides price support for this crop, sugar mills provide better service to cane growers in different ways and market for sugarcane is well developed with 4 sugar mill in the district.

As regards marginal and small size group of farms.,it was observed that there had been a shift in cropping pattern in Kharif seasons in favour of paddy and fodder as compared to medium and large farms. The percentage area under less remunerative crops like Jwar + Bajra for fodder and pulses (Arhar + Urad) was lower on large farm size as compared to marginal and small size of farms.

Cropping Pattern in Rabi:

The distribution of total cropped area in Rabi crop season under different farm size group has given in table- 3

Table -3
Distribution of total cropped area under different crops in Rabi

Sl. No.	Farm size Crops	Marginal		Small		Medium		Large		All Farm	
		Area	%	Area	%	Area	%	Area	%	Area	%
1.	Wheat	21.36	35.63	20.45	27.54	17.72	29.23	10.95	24.76	70.48	29.48
2.	Potato	1.35	2.25	4.25	5.72	3.35	5.53	4.48	10.13	13.43	5.62
3.	Mustard	1.15	1.92	2.35	3.16	2.25	3.71	1.42	3.21	7.17	2.99
4.	Vegetable	0.25	0.41	2.05	2.76	0.65	1.07	1.70	3.84	4.65	1.95
5.	Barley	0.56	0.93	1.35	1.82	1.45	2.39	1.13	2.55	4.49	1.88
6.	Barseem	0.08	0.13	0.12	0.16	0.16	0.26	0.25	0.57	0.61	2.50
	Total cropped area	59.95		74.25		60.62		46.23		239.05	

A critical examination of the table -3 reveals that the main crops grown on the sample farms in Rabi season was wheat followed by potato, mustard, Barley. It indicated that on an average 29.48 percent area of the total cropped area was under the wheat crop. The analysis of data on cropping pattern shows that wheat crop grown on all size of farms which is accounted 1/3rd area of total cropped area on sample farm because it is being a food crop. Next crop in order of priorities is potato on all farm categories and it occupied on an average 5.61 percent of total cropped area.

The size group wise analysis of the cropping pattern shows that marginal and small farmers were more dependent on the wheat crop for their food requirement. Wheat crop accounted 35.63 percent of total cropped area on marginal farms and 27.54 percent on small farm which is higher as compared to medium and large farm size group. Taking an overall view, it may be inferred that cropping pattern has directly influenced by land holding size. The large and medium size farm gives order of preference for cash crops as compared to pulses and vegetables. This may be due to the fact that larger farms to be more specialized when there are scales of economies.

Cropping Intensity of Different farm size :-

The intensity cropping is an important measure to analysis the efficiency of a farm. It has been worked out by dividing the total cropped area with net cultivated area and then multiplying it by 100. The cropping intensity under different categories of farm has been calculated in table -4

Table- 4
Cropping Intensity

Sl. No.	Particular	Farm size				All
		Marginal	Small	Medium	Large	
1	Net cultivated area (in hect.)	35.20	43.68	35.04	24.30	138.22
2	Total cropped area (in hect.)	59.95	74.25	60.62	44.23	239.05
3	Cropping intensity (percentage)	170.31	170.00	173.00	182.01	172.95

The table 4 displays that on an overall basis, the intensity of cropping came to 172.95 percent on sample farms. It was lowest on marginal and small farms size as compared to large farm size. Cropping intensity increased with the increased in farm size because of the fact that the big farmers had sufficient resources to follow more intensive agriculture. While in case of marginal and small farmers, there was a paucity of funds to purchase more inputs, moreover, their inadequate possession and small size of land holding, led them to search other alternative for earnings.

Major Constraints in Crop Diversification

The perception of the farmers about crop diversification and major constraints which is facing by farmers in the study area is presented in table -5.

Table-5

S.NO.	Constraints	Percentage of Respondents
1	Subdivision of Land holding	72
2	Scarcity of Farm Labour	63
3	Non-availability of Good Quality Seed	70
4	Scarcity of own Fund	61
5	Increasing Cost of Irrigation	71
6	Poor Availability of Fertilizers	74
7	Lack of Transport and Marketing Facilities	52
8	Lack of Suitable Technical Support	59
9	Increasing Cost of Pest Management	65
10	Lack of Remunerative Crops Price	82

The major constraints in crop diversification as perceived by farmers in study area are presented in table-5. The analysis of data showed in table reveals that 82% farmers reported lack of remunerative price major constraints of crop diversification. Subdivision of land 72%, Non-availability of good quality seed 70%, timely

poor availability of fertilizer 74% and increasing cost of irrigation and disease management have been identified as the constraints for low return from crop. Furthermore scarcity of labour, owned capital, lack of technical support and marketing facility found other constraints for diversification towards vegetables and high value crop cultivation.

III. CONCLUSION:

This may be concluded from the above discussion that the efficient use of existing resources of the study area should be shifted from the less return crops to the high return crops to increase profitability of the farmers. In case of crop production as whole, resources should be shifted from human labour to high quality seed, manure and organic fertilizer and disease pest management to increase the crop production.

To exploit the cultivator's resources up to optimum level, cropping scheme must be advised and guided by agricultural development authorities according to region specific farmer's interest and market demand. To increase the farmers earning, resources should be diverted to more remunerative and commercial crops in such a manner that cultivators face less difficulties to grow these crops. On the other hand alternative occupation related to the agriculture should be developed under the existing resources such as milk production, bee keeping and fisheries on the farm.

During the study it was observed that there were certain other factors, except modern farm practices, which do affect the earnings and profitability of the farmer directly or indirectly. These factors which are related to the farmers are, education of farming, experience, training, marketing facilities, quality of seed, supply of fertilizer and govt.price policy.

Besides all this a long term & transparent policy on the price front and input prices would provide more assured income for farmers and thus encourage their response to diversification.

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