

Review Article

Change in Cropping Pattern In Nalanda District

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Cropping pattern is a dynamic concept because it changes over space and time. The adoption of crops in any area can be understood by the physical characteristics and the socio-economic conditions of the people in the concerned area. Cropping pattern can be defined as the proportion of area under various crops at a point of time. In other words, it is a yearly sequence and spatial arrangement of sowing and fallow on a given area. In India, the cropping is determined by rainfall, climate, temperature, soil type and technology and so does in Nalanda District of Bihar.

Keywords: Cropping-pattern, Socio-Economic Conditions, Concerned Area, Yearly-Sequences, Spatial Arrangement etc

In order to analyze the cropping pattern in Nalanda district, it would be useful to give some preliminary ideas about the crops with sowing and harvesting seasons etc. As it is well known, that in India, there are three seasons e.g., kharif or the season of summer crops, Rabi or the season of winter crops and zaid crops. June to November is the period of kharif crops. November to April is the period for Rabi crops and April to June is the period for zaid crops.

The crops of kharif season are rice, maize, arhar (pigeon pea), Moong (green gram), urd (black gram) which needs high temperature and plentiful water supply. The crops of Rabi season are Wheat, gram, masoor (lentil), peas and Potato which require cool weather and moderate supply of water. Water melon, musk melon, cucumber, jackfruit etc., are included in zaid crops. Regulated markets of the study area deal different agricultural commodities according to the rhythm of the seasons. Table shows that in the total cropped area of the district 46.47 per cent is accounted by Rabi crops, 46.11 per cent by kharif crops and 7.42 per cent by zaid crops. Ranking at the level of the development blocks shows that Rajgir (19487 hectares), Rajgir (22770 hectares) and Asthawan (2835 hectares) are the blocks having largest areas under Rabi, kharif and zaid crops.

Ranking of different agricultural commodities in the district on the basis of area under each crop in 2013-2014

shows that Paddy, Gram, Khesari, Wheat, Masoor, Maize, Vegetables and Potato are the leading crops in descending order. The crops of Barley, Arhar, Sugercane and Fruits are having less than one per cent of the total cropped area of the district.

Changing Pattern of Crop Combination understanding of crop combination in an area makes it possible to analyse the development of agricultural practices and crop preferences. These changes have a direct relationship with the commercial aspects of agricultural activities. Crop combination is of great significance to assess the impact of marketing on agricultural development. The present study focus upon the analysis of crop combination in the Nalanda district, using the available data at block level for year of 2003-04 and 2013-2014 to understand the changes, taken place during this period. Weaver's method (1954) has been used to find out the crop combination region in the district Aligarh. In his work Weaver calculated deviation from the real percentage of crops for all possible combination in the component aerial units against a theoretical standard. The theoretical curve for the standard measurement was employed as given below:

Monoculture: 100 per cent of the total harvested crop land in one crop.

Table I

Area under Kharif, Rabi and Zaid Crops in Nalanda District (2013-2014)				
Blocks	Kharif	Rabi	Zaid	Total Cropped Area
Biharsharif	7373.25	8169.41	2227.57	17770.23
Giriak	11214.67	8935.29	2539.34	22689.31
Rajgir	22770.72	19487.44	1407.48	43665.65
Noorsarai	7262.12	7573.72	2218.53	17054.37
Islampur	8035.04	7772.28	1140.90	16948.22
Harnaut	11808.26	14622.67	2435.42	28866.35
Asthawan	14116.99	13005.81	2835.30	29958.10
Sarmera	6398.05	8665.81	1215.45	16279.31
Hilsa	10014.41	14750.32	1357.78	26122.51
Chandi	20383.31	15558.75	2568.71	38510.77
Ekangarsari	8803.83	11261.30	1046.01	21111.14
Islampur	12550.41	12027.18	1649.22	26226.81
District Total	140731.07	141830.00	22641.70	305202.77
Percent	46.11	46.47	7.42	100.00

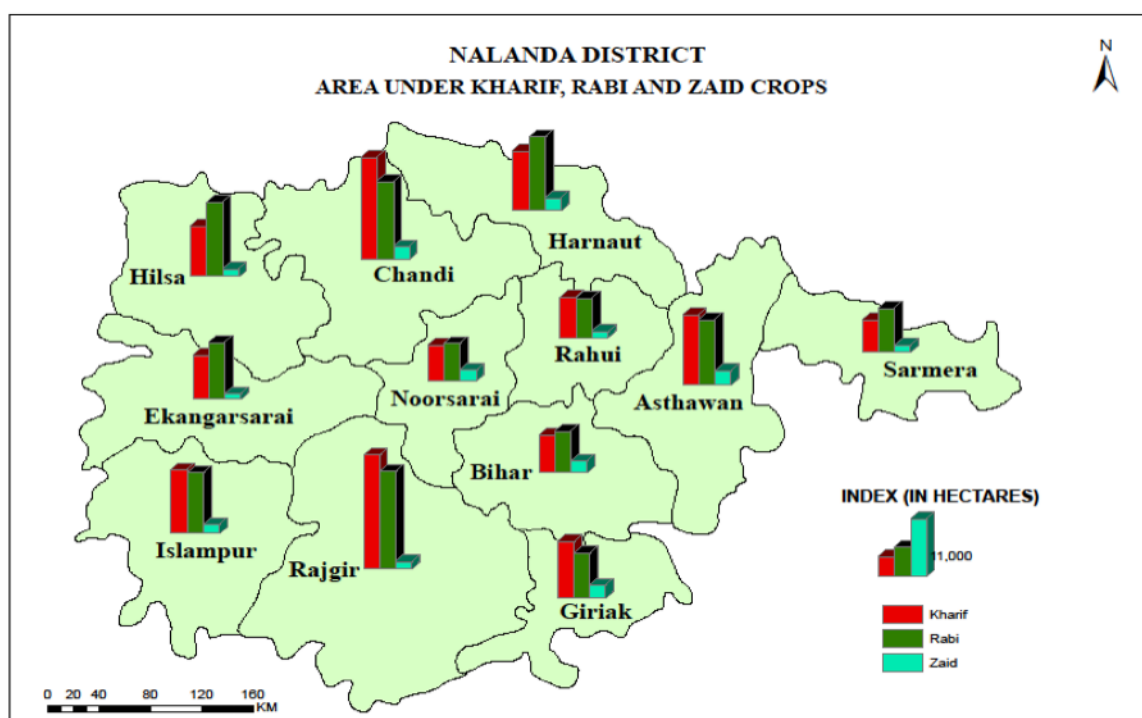


Figure I

Table 2

Rank of Main Crop in Nalanda District (2013-2014)			
Crop	Rank	Area (Hectare)	Percentage of Total Crop-per Area
Paddy	I	127828.74	33.13
Gram	II	89989.07	23.32
Khesari	III	53993.12	13.99
Wheat	IV	41978.54	10.88
Masoor	V	26948.18	6.98
Maize	VI	16782.59	4.35
Vegetables	VII	14667.21	3.80
Potato	VIII	10023.89	2.60
Barley	IX	1385.83	0.36
Arhar	X	957.89	0.25
Sugercane	XI	714.17	0.19
Fruits	XII	570.45	0.15

Source: District Statistical Book

Table 3

Crop-Combination zones of Nalanda District				
Blocks	2003-04	2013-14	Zaid	Total Cropped Area
	Number of zones	Crop Combination	Number of zones	Crop Combination
Biharsharif	6	P, W, Po, M, L, O	6	P, W, Po, M, O, V
Giriak	5	P, W, O, Po, M	3	P, W, Po
Rajgir	5	P, W, M, L, O	3	P, W, Po
Noorsarai	4	P, W, Po, M	6	P, W, Po, M, O, V
Islampur	6	P, W, Po, M, L, O	6	P, W, Po, M, O, V
Harnaut	5	P, W, G, L, V	3	P, W, M
Asthawan	4	P, W, L, V	5	P, W, M, O, V
Sarmera	5	P, W, G, L, O	4	P, W, M, G
Hilsa	5	P, W, G, L, V	5	P, W, M, O, V
Chandi	5	P, W, G, L, O	4	P, W, V, M
Ekangarsari	3	P, W, L	3	P, W, M
Islampur	4	P, W, L, O	3	P, W, M

Source: District Statistical Book

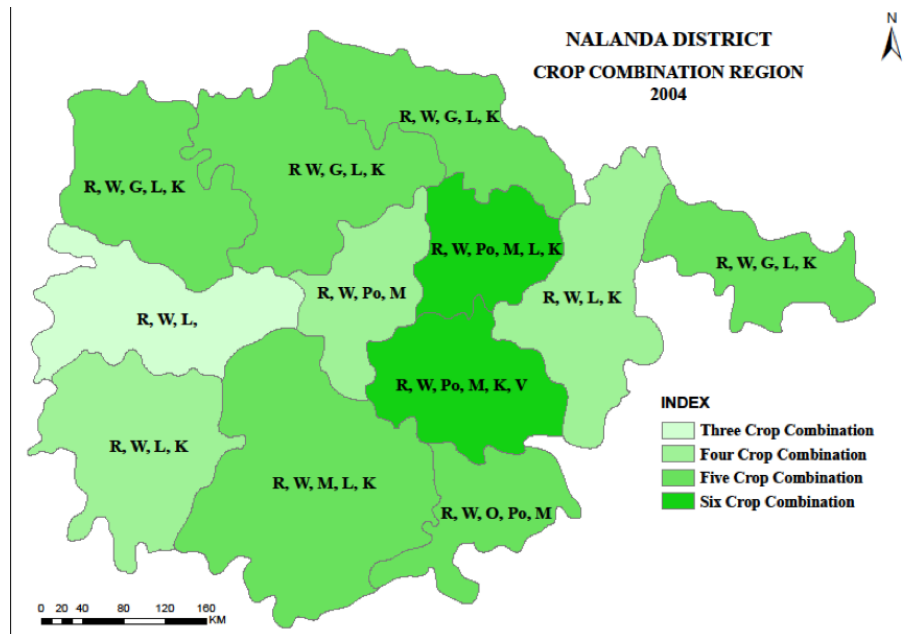


Figure 2

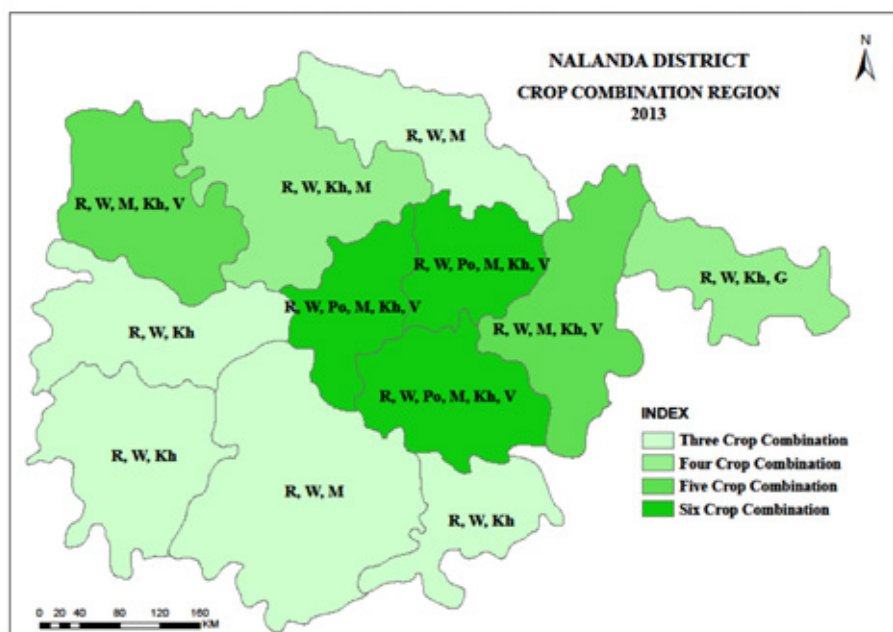


Figure 3

Two crop combination: 50 per cent in each of two crops
Three crop combination: 33.33 per cent in each of three crops and so on down the scale.

For the determination of the minimum deviation the standard deviation method was used

$$SD = \sqrt{\frac{\sum d^2}{n}}$$

Where 'd' is the difference between the actual crop percentages in a given areas unit and appropriate

percentage in theoretical curve and 'n' is the number of crops in a given combination.

$$d = d^2/n$$

Growth in Area, Production and Yield of Crops

Since the period of 2003-04, a considerable change has been taken place in terms of net sown area, total cropped area and yield per hectare of land. From the beginning of the period of 2003-04, cropping pattern of the study area has started to react more vigorously due to the development of new markets and enhanced socio-economic level of

Table 4

Net Sown Area, Area Sown More than Once and Total Cropped Area			
	2005	2014	Percentage increase
Net Sown Area	181203.2	218002.5	16.88
Area Sown More than Once	69900.5	87200.3	19.84
Total Cropper Area	251103.7	305202.8	17.73

Source: District Statistical Book

Table 5

Production of Agriculture Commodities In Nalanda District			
Crops	2003-04	2014-15	Growth
Rice	2328300	3251040	28.38
Wheat	3049130	3536470	13.78
Potato	5380000	5635350	4.53
Onion	598500	786300	23.88
Vegetables	155725	177936	12.48
Matar(Peas)	5325	3455	-54.12
Arhar	36976	38145	3.06
Peanut	7070	7032	-0.54
Til	558	680	17.94
Moong	2320	1740	-33.33
Tissi	7146	6482	-10.24
Sunflower	1343	2200	38.95
Mustard	37620	32560	-15.54
Gram	83034	93195	10.90
Masoor(Lentil)	133263	167150	20.27

Source: District Statistical Book

Table 6

Yield per Hectare of Principle Crops in Nalanda District			
Crops	2003-04	2013-14	Growth
Rice	30	41.88	39.60
Wheat	35	38	8.57
Potato	200	210	5.00
Onion	300	320	6.67
Vegetables	75.1	76.1	1.33
Matar(Peas)	15	14.3	-4.67
Arhar	15	14.6	-2.67
Peanut	12	14.1	17.50
Til	5	6	20.00

Moong	10	10.6	6.00
Tissi	9	6.5	-27.78
Sunflower	12	8.7	-27.50
Mustard	12	11	-8.33
Gram	14	15	7.14
Masoor(Lentil)	9	10	11.11

Source: District Statistical Book

the farmers and their interaction with the urban centres and increased demand and supply of different agricultural commodities. Changes in the cropping pattern at the block-level has already been analysed but it is rewarding and important to sum up these changes under growth in area put to agricultural use, changes in the quantity of production and improvements in the yield per hectare of land under different crops. Therefore, an attempt has been made to examine the changes in area, production and yield per hectare of agro-commodities at district level, over a period of twelve years in between 2003-04 and 2013-14. These changes at district level have been discussed under the following headings.

Growth of Area under Different Crops

Table shows net sown area, total cropped area and area sown more than once. This table reflects the changes during 10 years interval from the period of 2003-04 to 2013-14. Data shows frequent fluctuations in terms of net sown area, total cropped area and the area sown more than once. Continuous increase or decrease has not been observed. Taking into consideration of entire period of 10 years from 2003-04 to 2013-14 the net sown area has increased by 16.88 per cent, area sown more than once by 19.84 per cent and the total cropped area by 17.73 per cent. Good percentage of increase in area has sown more than once reflects an increase in the cropping intensity of that region. Annual fluctuations represent the variable nature of the climatic conditions, increase in population and fluctuating increase in net sown area, area sown more than once and ever-increasing demand for the total cropped area will be helpful in fulfilling the agricultural commodities especially food grains.

Growth in the Production and Yield of Agricultural Commodities

Table shows the production of principle crops in the study area. All the cereal crops like Rice, Wheat, Potato, Onion except Vegetables and Matar have recorded increased production. The increased production of Rice and Wheat vary from 8.57 per cent for Wheat, 39.60 per cent for Rice.

In pulses crops Gram and masoor recorded increased production of 10.90 and 20.27 percent while Matar and

Moong recorded decreased production between the period of 2003-04 and 2013-2014. Mustard recorded decline in production by 15.54 per cent. Besides, other Vegetables crops recorded the considerable increase in production.

The production of pulses declined due to low returns in the markets. The increased production of cereals are the reflection of farmers attitude towards the market oriented crops because Wheat and Paddy are considered as commercial crops due to increasing price in the market. The government is also encouraging the production of Wheat and rice through Minimum Support Price (MSP) for increasing stock of food in reserves. Simultaneously Potato also registered fast growth to a magnitude of 4.53 per cent during the same period because of increasing facilities of storage as well as markets.

It is not sufficient to give only data regarding the production of principle crops because it may gives some misleading information about the reality, therefore it is necessary to give the data about the yield of the principle crops too. Table give an account of the changes in the yield per hectare of the principle crops during 10 years from the period 2003-04 to 2013-14. It can be understood by the table that not only the yield per hectare of Matar has declined but its total production has got negative growth in the study area. Contrary to this the yield of Moong has improved by 6 per cent while its production decreased during the same period. The massive increase in the yield has been recorded for Rice (39.60 per cent), followed by Til (20 percent), Peanut (17.50 per cent), Wheat (8.57), Gram (7.14 per cent), Onion (6.67 per cent) and Moong (6 per cent).

References

1. Abbott JC. Marketing An Accelerator of Economic Growth in Proceedings, Agricultural Marketing Conference (MFA); Document No.16, Ministry of Food & Agriculture, Government of Nepal, June 1972; 15-28.
2. Acharya SS, Agarwal NL. Efficiency in Millet Marketing: A Case Study of Rajasthan. *Indian Journal of Agricultural Economics* 1984; 39(2): 233-38.
3. Agarwal NL. Agricultural Prices and Marketing in India: An Analytical Case Study of Rajasthan, Mittal Pub. Delhi.
4. Bhalla GS. Some Issues in Agricultural Marketing in Indian Presidential Address delivered at the 5th National

- Conference of ISAM; *Indian Journal of Agricultural Marketing* 1991; 5(3) :128-137.
5. Bhargava PT, Rastogi Vs. Study of Marketable Surplus of Paddy in Burdwan District, *Indian Journal of Agricultural Economics* 1972; 28(3): 63-68.
 6. Bhattacharje JP. Changing Characteristics of the Flow of Food grains Supplies from the Farmer, *Agricultural Situations in India* 1960; 14(10): 1079-86.
 7. Chakraborty RM. Marketable Surplus of Foodgrains in Developing Economy, *Arthaniti* 1968; 11(1&2): 22-39.
 8. Chatterjee DR, Bhattacharya K. A Note on Marketing of Rice in Burdwan District of West Bengal: An Enquiry of its Spatial and Seasonal Pricing Efficiency; *Indian Journal of Economics* 1986; 46(2): 125-135.
 9. Chattopadhyay, Manabendu, Sen, Ispita, Marketable Surplus and Size Class of Holdings; *Economic and Political Weekly*, December 24-31; 1988; 151-156.
 10. Chauhan KKS, Singh RV, Rajasthan, University of Agricultural Campus.(1971); *Marketing of Wheat in Udaipur*, S.K.N. College of Chinn.