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Employment pattern of cropping sequences in Pune district of Maharashtra

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Abstract

Agricultural production constitutes the single largest economic activity in India. In view, it was decided to undertake a study viz., "Employment pattern of cropping sequences in Pune district of Maharashtra" objectives to identify different cropping sequences, to estimate the employment pattern of sample farmers adopting major cropping sequences were studied.

The present study was based on the primary data of 90 cultivators for the year 2013-14 spread over the six randomly selected villages of three tahsils. From each selected village, 15 cultivators, 5 from each size group viz., small, medium and large were randomly selected. Thus, total sample consisted of 30 farmers each of small, medium and large size groups.

Out of existing sixteen cropping sequences three major cropping sequences viz., Pearl millet-Coriander-Rabi Onion cropping sequence (CS-I) is the dominant cropping sequence which is adopted by 21 farmers followed by Pearl millet-Rabi Sorghum (CS-II) by 20 farmers and Cauliflower-Rabi Potato-Fenugreek (CS-III) by 18 farmers, were selected for present study.

Total employment generated was 390.93, 351.72 and 325.10 man days in cropping sequence I, II and III, respectively. Employment generated through crop production 28.19 per cent in cropping sequence I followed by cropping sequence III i.e. 20.25 per cent. The employments generated were more in cropping sequence I, includes crop such as Pearl millet, Coriander and Rabi Onion required more labours.

The results of employment function of three cropping sequences indicate that the variables included in the model were number of earner, number of milch animal, area under vegetable, area under cash crop, gross irrigated area and gross cropped area. In all, six variables included in employment function have jointly explained 78.00 per cent, 70.00 per cent and 69.00 per cent variation for cropping sequence I, II and III, respectively. The highest contribution came from number of milch animal (X2) for cropping sequence I and II and earners (X1) for cropping sequence II and III.

Keywords: Employment pattern, cropping sequences, sequences, cultivators

Introduction

The agricultural sector occupies the place, prime importance in the Indian economy. This is because 61 per cent Indian population still depends on agriculture for its livelihood. Agriculture is the main occupation and backbone in developing country like India and is a bottleneck in the economic development of the country. Over the period of time, population dependent on agriculture is increasing. This has resulted into continuous decrease in average size of holding with more and more fragmentation of land and unemployment. Land being the most limiting factor, dependence on it has touched its climax.

Cropping Sequence can be defined as growing of two or more crops in sequence on the same piece of land in an Agricultural year (Reddy, 2000) [5]. Depending on the number of crops grown in the year, it is called as double, triple and quadruple cropping involves two, three and four crops, respectively.

Methodology

For the completion of present study both types of data i.e. primary as well as secondary were required. Macro level data were obtained from the records of Government office such as Agriculture, Animal's husbandry, Co-operatives, etc. The micro level data were obtained by personal interview from the selected 90 sample families for the year 2013-14.

The primary unit of sample was tahsil and the record of revenue as well as department of agriculture was referred for the same. The village, being the secondary unit of sample, randomly two villages were selected from each tahsil by listing them in ascending order, having

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maximum cropped area. The tertiary and ultimate unit of sample was the farmer. The list of the farmers having the cropped area were prepared from revenue record of villages and were categorized into three size groups on the basis of the operational holdings viz., holding size below 1.00 ha., 1.01 ha. to 2.00 ha. and above 2.01 ha. Were designated as small, medium and large size groups, respectively. Then, thirty cultivators were selected randomly from each size groups. Thus, the total sample consisted of 90 farms.

Estimation of employment function

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + e_u$$

Where,

Y = Annual total family employment (man-days)

a = Intercept

X₁ = Number of Earners (Number per family.)

X₂ = Number of Mulch animal (Number per family.)

X₃ = Area under Vegetables

X₄ = Area under cash crops

X₅ = GIA (Gross Irrigated Area) in hectare

X₆ = GCA (Gross Cropped Area) in hectare

b_i's = Regression coefficient

e_u = Error term

Results and Discussion

Table 1: Existing cropping sequences observed on farm of sample farmers

Sr. No.	Cropping Sequences	Group			Total N=90	Per cent
		Small	Medium	Large		
1	Pearl millet-Coriander-Rabi Onion	8	6	7	21	23.33
2	Green gram-Rabi Sorghum	4	6	3	13	14.44
3	Pearl millet-Wheat-Summer Groundnut	1	2	5	8	8.88
4	Green gram-Rabi Onion	-	2	5	7	7.77
5	Black gram-Gram	4	1	6	11	12.22
6	Groundnut-Rabi Potato-Fodder Jowar	3	5	5	13	14.44
7	Pearl millet-Rabi Sorghum	6	7	7	20	22.22
8	Maize-Wheat- Summer Pearl millet	-	4	5	9	10.00
9	Maize-Rabi Sorghum-Chili	5	4	3	12	13.33
10	Onion-Wheat-Watermelon	3	2	3	8	8.88
11	Tomato-Coriander- Fenugreek-Cluster bean	1	1	6	8	8.88
12	Tomato-Fodder Jowar	2	2	2	6	6.66
13	Tomato-Wheat-Cabbage	2	5	2	9	10.00
14	Capsicum-Marigold-Tomato	2	2	3	7	7.77
15	Cauliflower-Rabi Potato -Fenugreek	4	6	8	18	20.00
16	Onion-Coriander-Fenugreek-Summer Groundnut	3	1	4	8	8.88

The information given in above table, existing sixteen cropping sequences three were select as major cropping sequences viz., Pearl millet-Coriander-Rabi Onion cropping sequence (CS-I) is the dominant cropping sequence which is adopted by 21 farmers (23.33 per cent) followed by Pearl

millet-Rabi Sorghum (CS-II) by 20 farmers (22.22 per cent), Cauliflower-Rabi Potato-Fenugreek (CS-III) by 18 farmers (20.00 per cent). These cropping sequences were selected on the bases of per cent to the total number of sample cultivar.

Table 2: Average per farm annual Employment of farm Families.

Sr. No.	Particulars	Cropping Sequence		
		I	II	III
I	Own farm employment			
1	Crop Production	110.22 (28.19)	57.35 (16.31)	65.82 (20.25)
2	Livestock activity	149.38 (38.21)	154.00 (43.78)	137.34 (42.25)
	Total own farm employment	259.60 (66.41)	211.35 (60.09)	203.16 (62.49)
II	Off-farm Employment			
3	Wage earning	45.14 (11.55)	45.00 (12.79)	44.86 (13.80)
4	Services/Business	86.19 (22.05)	95.37 (27.12)	77.08 (23.71)
	Total off farm employment	131.33 (33.59)	140.37 (39.91)	121.94 (37.51)
III	Total employment	390.93 (100.00)	351.72 (100.00)	325.10 (100.00)

(Figures in parentheses indicate percentage to the total employment)

Above table show that, total employment generated was 390.93, 351.72 and 325.10 man days in cropping sequence I, II and III, respectively. Of the total employment generated in

cropping sequence III, 20.25 per cent employment was generated through crop production activity and 42.25 per cent through livestock



Fig 1: Annual employment pattern of farm families.

activity, but in cropping sequence II, 16.31 per cent employment generated through crop production activity and 43.78 per cent through livestock activity. While employment

generated through crop production 28.19 per cent followed by livestock activity 38.21 per cent, in cropping sequence I.

Table 3: Regression analysis of employment function

Sr. No.	Particular	Cropping Sequence		
		I	II	III
1.	Sample size	21	20	18
2.	Constant (a)	301.54	243.81	417.41
3.	No. of Earners (X1)	15.1391 (30.62)	117.346*** (32.4994)	148.919*** (45.4847)
4.	No. of Mulch animal (X2)	69.6251*** (17.0992)	97.3483*** (27.7087)	92.6335** (31.4137)
5.	Area under Vegetable (X3)	6.5712 (95.7655)	160.8511 (108.162)	1.1497 (148.349)
6.	Area under Cash Crop (X4)	93.7999** (32.0639)	108.090*** (30.1520)	261.526*** (113.754)
7.	Gross Irrigated Area (X5)	86.2571*** (22.4795)	98.8993** (41.1393)	317.3894 (188.944)
8.	Gross Cropped Area (X6)	28.6734 (43.9283)	2.3199 (16.4010)	210.0580 (141.053)
	R ²	0.78	0.70	0.69

(Figures in the parentheses are the standard errors of the respective regression coefficient) (*, ** and *** indicate significance at 10, 5 and 1 per cent level).

The results of employment function of three cropping sequences indicate that the variables included in the model were a number of earner, number of milch animal, area under vegetable, area under cash crop, gross irrigated area and gross cropped area. In all, six variables included in employment function have jointly explained 78.00 per cent, 70.00 per cent and 69.00 per cent variation for cropping sequence I, II and III, respectively. The highest contribution came from number of milch animal (X₂) for cropping sequence I and II and earners (X₁) for cropping sequence II and III.

Conclusions

1. In Pune district out of sixteen cropping sequences, three major cropping sequences selected.
2. Highest Annual employment generated by cropping sequences I than remaining other cropping sequences.
3. The analysis of employment pattern which indicate that there existed a scope to increase the total annual employment with increase in number of milch animal
4. Area under cash crop in all cropping sequences. The number of mulch animal, number of earner, area under cash crop and gross irrigated area has significant influence on the annual employment.

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