

Labour Input Behaviour of Cotton in Akola District

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Abstract—In India, it is well known that labour is the backbone of rural economy. Also, it is one of the primary factors of production which considered to be important not only because it is productive but also because it activates other factors and makes them useful for production purposes. In this backdrop, the present study was undertaken to workout labour input behaviour of Cotton crop in Akola district of Vidarbha region by using compound growth rate and simple tabular analysis. The present study based on the time series data for the period 1991-92 to 2011-2012, collected from Agricultural price and cost scheme which held under the Department of Economics and Statistics Dr. P.D.K.V.Akola. The study has revealed that the highest growth rate of labour utilization was found in harvesting and sowing whereas the lowest growth rate of labour utilization was found in irrigation, raising and plant protection operation. The percentage share of labour charges in cost A and cost C for 2010 observed in cotton. The highest share in cost A and cost C was used for manuring, harvesting, threshing whereas the lowest percentage share of labour charges in cost A and cost C was used for raising, interculturing and plant protection. In the growth rate of labour wages highest growth rate was found in harvesting and sowing whereas the lowest growth rate of labour wages was found in irrigation and raising and plant protection operation.

1. INTRODUCTION

Agriculture being the important sector of economy, in India it is well known that labour is the backbone of rural economy. The labour in agricultural field is mainly located in the rural area a private farms with a meagre possibility of continuous employment and assured wages. They are mostly employed and seasonal basis and paid at the mercy of land owner. Labour is one of the primary factors of production. It is considered to be important not only because it is productive but also because it activates other factors and makes them useful for production purposes. The concept of labour input is measurable in real time units.

Unlike industrial labour, agricultural labour is difficult to define. The reason is that unless capitalism develops fully in agriculture, a separate class of workers depending wholly on wages does not come up. According to National Commission on Labour defined as "An Agricultural labourer is one who is

basically unskilled and unorganised and has little for his livelihood, other than personal labour.

Agricultural labour in India is being widely scattered over 6.38 lakh villages of which half have population of less than 500 each and therefore, any question of building an effective organization, like that of industrial workers, poses insurmountable difficulties. The labour in agriculture engages in farming operation either as cultivators or as an agricultural labourer. The labour has been considered best for sowing, transplanting, harvesting, threshing, cleaning, storing and so on because they work hard with full dedication. In India, the labour force is largely masculine, with only one out of every four workers—as agriculture labour, as farmers or co-farmers, as family labour or as managers of farms and farm entrepreneur. In this backdrop, the following objectives were selected for study.

2. OBJECTIVES

1. To study the growth of labour input in Cotton.
2. To study the share of labour changes in output price.
3. To study the wage behaviour.
4. To assess the changes in labour input.

3. METHODOLOGY

The present study was based on the time series data from the period 1991-92 to 2011-12. The data was collected on the basis of labour input, output price and wage rate from the Agricultural price and cost scheme which held under the Department of Economics and Statistics Dr. P.D.K.V. Akola. The cotton crop is the major crop in Akola district because larger percentage of area is covered under this crop.

The study of labour input behaviour as proposed was carried out by compound growth rate. Operation wise growth rate of labour input, wage rate was calculated, percentage share of labour charges on the basis of cost A and cost C of the year 2012 was also calculated. The data thus calculated was

analysed for simple Arithmetic averages, Standard deviation, Coefficient of variation.

The analytical tools used for study were,

a. Compound growth rate

Analysis of compound growth rate of operation wise labour input and wage rate of Cotton was estimated by using the exponential growth function.

$$Y = ab^t$$

Where,

Y = labour input year wise 1, 2, 3.....

a = intercept.

b = regression coefficient.

t = time period

The above equation was reduces to the following linear equation by taking logarithm of both sides.

$$\text{Log } Y = \text{log } a + (\text{log } b) \times t$$

The compound growth rate (CGR%) was estimated as

$$\text{CGR} = [\text{analog } (\text{log } b) - 1] \times 100$$

b. Analysis of share of labour charges

Operation wise percentage share of labour charges was worked out on the basis of cost A and cost C for 2012 by the simple tabulated form.

c. Analysis of Coefficient of Variation

Coefficient of variation of operation wise labour input of Cottton was calculated by using the following formula

$$\text{C.V } (\%) = \frac{\text{SD}}{\text{A.M}} \times 100$$

Where,

C.V = Coefficient of variation

SD = standard deviation

AM = Arithmetic mean

4. RESULTS AND DISCUSSION

The statistical comparisons of operation wise labour input, wage rates were studied with the help of compound growth rate. Arithmetic mean, coefficient of variation of labour input was calculated.

Operation wise growth rate of labour input for Cotton cultivation

Results of the operation wise compound growth rate of labour input in Akola district for Cotton cultivation has been presented in the table 1.

Table 1: Growth rate of labour input for Cotton in Akola District

Particulars	Period I (1992-2001)	Period II (2002-2011)	Overall (1992-2012)
Primary Tillage	2.7*	0.76***	2.07*
Manuring	1.9*	1.5	1.6*
Fertilizer application	2.6*	0.4	1.2
Sowing	3.4*	1.76	2.73*
Raising	-0.5	0.3*	-0.1
Interculturing	1.5	-0.8NS	0.5
Plant Protection	1.2	2.7*	2.4***
Irrigation	0.2*	-0.1NS	0.2*
Harvesting	5.2***	4.1*	4.3*

*, **, ***, Significant at 1%, 5% and 10% level of significance;

The table 1 revealed that in Akola district during the overall period the highest growth rate of labour utilization was found in harvesting operation i.e; 4.3 percent increase per annum followed by sowing 2.73 percent, plant protection 2.4 percent, primary tillage 2.07 percent, manuring 1.6 percent increase per annum whereas in case of irrigation operation lowest growth rate of labour utilization 0.2 percent increase per annum and other operation like fertilizer application, raising, interculturing operation were non significant was observed.

During the Period I was observed that in case of harvesting 5.2 percent, sowing 3.4 percent, primary tillage 2.7 percent, fertilizer application 2.6 percent, manuring 1.9 percent, increase per annum whereas raising, interculturing and plant protection were shows non significant.

During the Period II was observed that in case of harvesting 4.1 percent, plant protection 2.7percent, primary tillage 0.76 percent, raising 0.3 percent increase per annum was whereas manuring, fertilizer application, sowing, interculturing, irrigation operation were shows non significant.

To study the share of labour changes in output price

Here, results of the operation wise work percentage share of labour charges in cost A and cost C for the cultivation of Cotton of year 2012 in Akola district has been presented in the table 2.

Operation wise Percentage share of labour charges in cost A and cost C for Cotton cultivation

Results of the operation wise compound growth rate of labour input in Akola district for Cotton cultivation has been presented in the table 2.

Table 2: Percentage share of labour charges in cost A and cost C for Cotton in Akola District

Particulars	% share of labour charges in cost A	% share of labour charges in cost C
Primary Tillage	0.9	0.3
Manuring	4.5	3.1
Fertilizer Application	0.09	1.7
Sowing	0.31	0.04

Raising	2.1	1.4
Interculturing	2.6	1.8
Plant Protection	1.5	0.3
Irrigation	0.04	0.2
Harvesting	1.6	1.3
Value of cost A & cost C	Cost A= 20852.74	Cost C= 30679.69

The table 2 revealed that the percentage share of labour charges in cost A and cost C for Cotton cultivation. In case of cost A observed that the highest percentage share of labour charges was used for manuring operation i.e, 4.5 per cent followed by interculturing operation 2.6 per cent, raising 2.1 percent, harvesting 1.6 percent used whereas the lowest percentage share of labour charges 0.04percent was used for the irrigation. In case of cost C observed that the highest percentage share of labour charge was used for manuring operation i.e, 3.1 percent followed by interculturing operation 1.8 per cent, raising 1.4 percent, harvesting 1.3 percent used whereas the lowest percentage of labour charge 1.04 per cent was used for the sowing.

To study the wage behaviour

Results of the operation wise compound growth rate of labour wage rates in Akola district for Cotton cultivation has been presented in the table.3

Operation wise growth rate of labour input for Cotton cultivation

Results of the operation wise compound growth rate of labour wage rates in Akola district for Cotton cultivation has been presented in the table 3.

Table 3: Growth rate of labour wage rates for cotton in Akola District

Particulars	Period I (1992-2001)	Period II (2002-2011)	Overall (1992-2012)
Primary Tillage	5.31***	3.86	4.26
Manuring	3.46***	2.41***	2.87*
Fertilizer Application	3.52*	2.64	3.1*
Sowing	6.78	5.29***	5.74***
Raising	3.1*	1.23	2.13
Interculturing	2.77*	1.3	1.87*
Plant Protection	3.73	2.34***	2.86
Irrigation	2.82*	0.82***	1.6*
Harvesting	8.50	6.53*	6.87*

*, **, ***, Significant at 1%, 5% and 10% level of significance

The table 3 revealed that in Akola District during the overall period observed that the highest growth rate of labour wages was found in harvesting operation i.e, 6.87 percent increase per annum followed by sowing 5.74 percent, fertilizer application 3.1percent, manuring 2.87 percent, interculturing 1.87 percent increase per annum whereas in case of irrigation lowest growth rate of labour wages 1.6 percent increase per annum and other operation like primary tillage, raising, plant protection were shows non significant.

During the Period I observed that in case of harvesting 6.53percent, primary tillage 5.31percent, sowing 5.29percent, fertilizer application 3.52percent, manuring 3.46percent, raising 3.1percent, irrigation 2.82percent and interculturing 2.77percent increase per annum whereas sowing, plant protection and harvesting were shows non significant.

During the Period II observed that in case of harvesting 6.53percent, sowing 5.29 percent, manuring 2.41 percent, plant protection 2.34 percent, irrigation 0.82 percent increase per annum whereas primary tillage, fertilizer application, raising, interculturing were shows non significant.

To assess the changes in labour input

The results of the compound growth rate of changes in labour input of Cotton cultivation in Akola district has been presented in the table 4. In this case randomly identified 3-4 operation of labour utilization and study the performance of labour input over time.

Table 4: Operation wise growth rate of changes in labour input in Akola District

Particulars For Cotton	Period I (1992-2001)	Period II (2002-2011)	Overall (1992-2012)
Primary Tillage	2.7*	0.76***	2.07*
Manuring	1.9*	1.5	1.6
Sowing	3.4*	1.76	2.73*
Harvesting	5.2***	4.1*	4.3*

The table 4 revealed that in Akola District the growth rate of changes in labour input for Cotton. During the overall period the highest growth rate of labour utilization was found in harvesting operation i.e; 4.3 percent in case of Cotton increase per annum followed by sowing primary tillage and other operation.

During the Period I observed that in case of Cotton were harvesting 5.2 percent, sowing 3.4 percent increase per annum whereas in case of Soybean harvesting 7.13 percent, sowing 6.1 percent increase per annum.

During the Period II was observed that in case of Cotton harvesting 4.1 percent increase per annum whereas in case of Soybean harvesting 5.23 percent increase per annum.

Coefficient of variation

Coefficient of variation indicated the variation of particular operation over a period of time. The table 5 revealed that coefficient of variation in cotton cultivation for the period 1992-2012 presented below.

Table 5: Operation wise coefficient of variation for cotton cultivation

Operation	Akola	
	Mean	CV
Primary Tillage	942.61	39.67
Manuring	422.72	49.82
Fertilizer Application	341.12	44.11
Sowing	517.85	50.89
Raising	521.89	32.06
Interculturing	435.83	81.06
Plant Protection	220.16	43.18
Irrigation	230.75	41.64
Harvesting	1300.7	39.28

As seen from Table 5 that the operation wise coefficient of variation of cotton cultivation for overall period in Akola district observed highest i.e. 81.06 percent in intercultural operation followed by sowing 50.89 percent, manuring 49.82 percent whereas lowest Coefficient of variation 39.28 percent in case of harvesting was observed.

5. CONCLUSIONS

The findings of the study led to conclusion that

1. The highest growth rate of labour utilization was found in harvesting and sowing whereas the lowest growth rate of labour utilization was found in irrigation and raising operation.
2. The highest share in cost A and cost C was used for manuring, harvesting, threshing whereas the lowest percentage share of labour charges in cost A and cost C was used for raising, interculturing, plant protection.
3. The highest growth rate of labour wages was found in harvesting and sowing whereas the lowest growth rate of labour wages was found in irrigation, raising and plant protection operation.

6. POLICY IMPLICATIONS

The labourers are found to be involved in only specific crops and specific activities in agriculture. They are not involved in any mechanical operations due to their lack of skill and as a result they are not getting work for more number of days. So efforts should be made to impart training for labourers to handle agricultural implement and machineries. For this there is a need to organise the agricultural labourers and form a labour pool or labour bank at the village level. The farmers in the area the local authorities and the labourers together should work for this.

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