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Labour Scarcity – Its enormity and Influence on Agriculture

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ABSTRACT

Today agriculture labour has become the most important component in Indian agriculture. little less than half of the total cost of production of field crop is of labour. The proportion of agricultural workers to the total workers has been declining over the years, while the corresponding ratio in the secondary and tertiary sectors is on the rise. Pursuant to this, following impacts have been predominantly noticed in agriculture in recent years: reduction in crop yield, reduction in cropping intensity and changes in traditional cropping pattern. This study throws a light on the effect of labour scarcity on physical and economic labour scarcity and effect of labour scarcity on productivity of selected crops of the district. The study revealed that, extent of raising one hectare of paddy crop in Koppal district, a total of 126 person days of labour service was required, of which only 73 mandays was available and a shortage of 53 mandays (42.06%) was observed. It was further observed that raising one hectare of cotton in Raichur district required 140 mandays of labour service of which, only 73 mandays was available and a shortage of 67 mandays (47.85%) and in Kalaburagi district, raising one hectare of redgram required 90 mandays but there existed only 26 mandays and 64 mandays was observed to be in shortage. The economic scarcity was observed in all the crops. The productivity difference was more pronounced in paddy (850kg/ha), cotton (319kg/ha) and (224kg/ha) mechanisation should be encouraged to reduce the gap.

Key words: *Agricultural labours, Productivity gap, Physical and economic Scarcity, Garret's ranking.*

INTRODUCTION

Agricultural workers constitute the most neglected class in Indian rural structure. Even though India has the second largest man power in the world, all sectors of the economy have been affected by the scarcity of labour, and the impact being felt more in the agricultural sector. Labourers constitute a vital input in agricultural production, but they are migrating to different parts of the country for earning a better livelihood, adding to the existing imbalance between labour demand and supply of labourers[2].

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The phenomenon of underemployment is manifested in daily lives as a large proportion of labour demand is met by wage labour, due to the skewed land distribution and seasonality of demand in agriculture. They usually get low wages, undertake laborious jobs and have highly irregular employment[4]. Agricultural labourers are at severe risk of poverty that permits routes out of agricultural labour, particularly across generations; however, agricultural labourers are not generally well placed to take advantage of them and mobility out of agricultural labour remains low[3].

According to Census of India there are about 402.5 million rural workers of which 127.6 million are cultivators and 107.5 million are agricultural labourers. In other words, pure agricultural workers constitute nearly 58.4 per cent of the total rural workers, of which 31.7 per cent are owner cultivators and 26.7 per cent are mainly agricultural wage earners.

The latest available Agricultural Census data[1] also reveals that about 78 per cent of operational holdings in the country are marginal and small, having less than two hectares. About 13 per cent holdings have two to four hectares and 7.1 per cent have four to ten hectares of land. The relatively large holdings above ten hectares' number only about 1.6 per cent of the total operational holdings. However, this 1.6 per cent of the large holdings occupies about 17.3 per cent of the total area, while 78 per cent of holdings which are less than two hectares, and operate only about 32.4 per cent of the total area. This reveals of inequality in the distribution of operational holdings. Also there is inequality of income between agricultural workers, which is evident from the fact that percentage share of agriculture in current total GDP is only 13.2 per cent, while the percentage share of agricultural work force to total work force comes to about 60 per cent[5].

Nearly 600 million individuals are engaged in farming and over 80 per cent of them belong to the small and marginal farmer category. Due to imperfect adaptation to local environments, insufficient provision of nutrients and water, and incomplete control of pests, diseases and weeds, the present average yields of major farming systems in India is just 40 per cent of what can be achieved even with the technologies currently on the shelf.

Agriculture labour- Definition

Agricultural labour means any person employed in agricultural crop production as a wage earner, whether in cash or kind, for his livelihood and includes a person engaged through a contractor or engaged as a self employed person.

Status of Agriculture labour in India

Today agriculture labour has become the most important component in Indian agriculture. A little less than half of the total cost of production of field crop is of labour.

Agriculture labour scarcity in India

There is an acute shortage of labour in every sector in India. However, in the name of welfare measures, government of India and the state governments are taking away a lot of people from workforce, thereby enhancing shortage of labour and curtailing growth in GDP. In India, particularly in the southern states, there is an acute shortage of skilled and unskilled manpower in every sector of the economy. Labourers constitute a vital input in agricultural production, but they are Migrating from one place to another, implementation of MGNREGA program during peak agricultural season and urbanization are the major problems which leads to shortage of agricultural labours[2].

Taking into consideration this pressing problems existing in agricultural economy and unmanageable situations, it was perceived to undertake a study. The causes of labour scarcity and alternative solutions being region-specific, the study would be restricted to North Karnataka, where labour scarcity is being felt as a persistent disturbance by most of the farmers.

Keeping the above said facts in view, present study aims at analyzing following objectives,

1. To find out the extent of physical and economic scarcity of agricultural labour
2. To assess the productivity gap due to labour scarcity in agriculture

MATERIALS AND METHODS

For evaluating the specific objectives of the study, required primary data were collected from the sample respondents for the agricultural year 2015-16.

Analytical Tools:

To fulfil the specific objectives of the study, based on the nature and extent of data, Descriptive analysis and Student t test techniques were employed.

Descriptive analysis:

Tabular presentation technique was adopted for analysing the physical, economic scarcity of the agricultural labours and reasons for non-adoption of labour saving technology. The data were compared and contrasted with the aid of averages; percentage to obtain meaningful results.

Student's t-Test:

A t-test is any statistical hypothesis test in which the test statistic follows a Student's t distribution if the null hypothesis is supported. It can be used to determine if two sets of data are significantly different from each other and is most commonly applied when the test statistic would follow normal distribution.

The unpaired t-test was employed to assess the statistical significance of the difference in the mean productivity levels of labour-saving technology-adopted and non-adopted farms.

The following assumptions were made for classifying the labour saving technology adopted and non adopted farms.

The farms wherein at least one of the labour saving- technologies / implements listed in Appendix-I, if adopted, were categorized as labour saving technology-adopted farms.

Independent samples:

The independent samples t-test is used when two separate sets of independent and identically distributed samples are obtained, one from each of two populations being compared. In this case, we have two independent samples and would use the unpaired form of the t-test.

Assumptions:

In the t-test comparing the means of two independent samples, the following assumptions should be met:

1. Each of the two populations being compared should follow a normal distribution.
2. The two populations being compared should have the same variance
3. The data used to carry out the test should be sampled independently from the two populations being compared.

Independent two-sample t-test:

This test is used when both:

The two sample sizes (that is, the number, n, of participants of each group) are equal:

It can be assumed that the two distributions have the same variance.

Violates of these assumptions are discussed below.

The t statistic to test whether the means are different can be calculated as follows:

$$t = \frac{\bar{X}1 - \bar{X}2}{S_{X1X2} \cdot \sqrt{2/n}}$$

Where,

$$S_{X1X2} = \sqrt{\frac{1}{2}(S^2\ X1 + S^2\ X2)}$$

Here Sx_{1X2} is the grand standard deviation (or pooled standard), 1= group one, 2=group two.

The denominator of t is standard error of the difference between two means.

For significance testing, the degrees of freedom for this test is 2n-2 where n is the number of participants in each group.

RESULT AND DISCUSSION

Physical and economic scarcity of agricultural labour

The extent of physical labours scarcity as observed in the study region is given in Table 1 and figure 1. Only three types of labours were seen at the farms in the study area: (i) family labour, (ii) hired labour from within the village or outside the village and (iii) different combination of both hired and family labour. To find the extent of physical labour scarcity, farmers' responses regarding labour scarcity

were obtained for major crops grown in the study region separately. It was observed that in raising one hectare of paddy crop in Koppal district, a total of 126 person days of labour service was required, of which only 73 mandays was available and a shortage of 53 mandays (42.06%) was observed. Similarly, the productive labour service required for raising one hectare of cotton in Raichur district and redgram in Kalaburagi district along with the perceived shortage has been depicted in the same table.

It was further observed that raising one hectare of cotton in Raichur district required 140 mandays of labour service of which, only 73 mandays was available and a shortage of 67 mandays (47.85%) and in Kalaburagi district, raising one hectare of redgram required 90 mandays but there existed only 26 mandays and 64 mandays was observed to be in shortage.

In order to identify the economic scarcity, technical efficiency was employed, which is expressed as the ratio of the technically maximum possible output at the firm's level of resources to output obtained at optimum level of resources. A farmer is said to be more technically efficient than another if he consistently produces larger quantities of output from the same quantities of measurable inputs. It can be seen from the table-2 and in figure-2, around 46.67 per cent of the paddy cultivators in the study regions were medium efficient followed by less (35%) and more efficient (18.33%). Further, 51.67 per cent of cotton cultivators were medium efficient followed by less (26.67%) and more efficient (21.67%). In the case of redgram cultivation 40 per cent of the farmers were less efficient than medium (31.67%) and more efficient (28.33%). The economic scarcity was observed in all the crops. Less efficient farmers were considered as economically scare.

Productivity levels of labour saving technology adopted and non-adopted farms

Table 3 gives the productivity levels of major crop grown in the selected districts by labour saving technology adopters and non adopters. It can be seen that cotton, paddy and redgram the predominantly grown crops in Raichur, Koppal and Kalaburagi district respectively are selected for the analysis. A comparison of average productivity levels of major crop in labour saving technology adopted and non adopted farms, revealed a reduction in yield invariably in selected crops in labour saving technology non adopted farms. The productivity difference was more pronounced in paddy (850kg/ha), cotton (319kg/ha) and (224kg/ha). The percentage change over the technology adopted farms was more in case of redgram followed by cotton and paddy. The diagrammatic representation is given in Figure 3.

The average productivity levels of the labour saving technology adopted farmers and non-adopted farmers were tested for significant difference using student t-test analysis and the results revealed that the productivity levels of labour saving technology adopted and non adopted farms for the crop like cotton and redgram showed significant difference at 1 per cent level of probability and paddy showed significant difference at 5 per cent of level of probability (table 4).

Reasons for non adoption of labour saving technologies

The reasons identified for non-adoption of labour saving technologies were analyzed using Garrett Ranking technique and the result obtained is presented in the table 5. Among the various reasons listed by the respondents, the higher cost involved in the adoption of technology was ranked first, followed by illiteracy, lack of skills, smaller holdings, fear of failure, complacent attitude and lack of awareness in that order for non-adoption of labour saving technologies.

CONCLUSION

The study has publicized a severe labour-scarcity in the North Eastern Karnataka for the agricultural works, distressing subsequently the productivity levels of almost all the crops grown in the district.

The analyses have further shown that the available labour-saving implements and technologies might have a positive impact on the productivity levels of crops, if adopted. The reasons recognized for their non-adoption include higher cost, lack of skill and small size of holdings. The study has made following suggestions for improving the labour supply to the agricultural sector:

Since farming is laborious and seasonal activity, during peak seasons labour demand exceeds the labours supply in order to overcome labour shortage, mechanization must be encouraged.

Custom hiring is to be encouraged among farmers for adoption of the highly expensive labour saving technologies/ implements.

Table 1: Extent of physical labour scarcity in the study region

(n=180)

SN	District	Labour requirement (mandays/season) *	Availability **	% of total requirement	Labour shortage (Mandays/season)	% of shortage
1	Koppal	126	72.61	57.63	53.39	42.37
2	Raichur	140	73.07	52.20	66.93	47.80
3	Kalaburagi	90	26.42	29.36	63.58	70.64

** Source: survey data*

*** Data drawn from secondary source (2011 census)*

Table 2: Extent of Economic labour scarcity in the study region

(n=180)

(Numbers)

SN	Technical efficiency	Paddy	Cotton	Redgram	Total
1	More Efficient	11 (18.33)	13 (21.67)	17 (28.33)	41 (100.00)
2	Medium Efficient	28 (46.67)	31 (51.67)	19 (31.67)	78 (100.00)
3	Less Efficient	21 (35.00)	16 (26.67)	24 (40.00)	61 (100.00)
4	Total	60	60	60	180

Note: Figures in the parentheses indicates percentages to total

Table 3: Effect of Labour saving technology on productivity levels in adopted and non adopted farms

(n=180)

SN	Crop	Productivity		Productivity difference (Kg/ha)
		Technology adopted farms (Kg/ha)	Technology non- adopted farms (Kg/ha)	
1.	Cotton	1500	1181	319 (21.26)
2.	Paddy	7100	6250	850 (11.97)
3.	Redgram	1050	826	224 (21.33)

Note: Figures in the parentheses indicate percentage change over the technology adopted farms.

Table 4: Productivity levels in labour saving technology adopted and non adopted farms

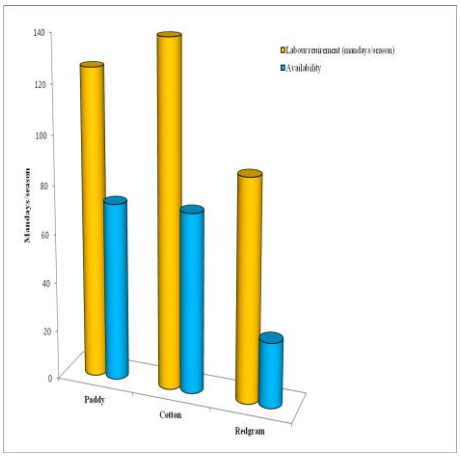
(n=180)

SN	Crop	Productivity		t-values
		Technology adopted farms	Technology non- adopted farms	
1.	Cotton	14.5	8	5.81**
2.	Paddy	68	53	3.26*
3.	Redgram	10	5	8.6**

***Significant @ 1% level of probability. * Significant @ 5% level of probability.*

Table 5: Reasons for non adoption of labour saving implements

SN	Reasons	Mean score	Rank
1	High cost of technology	54.62	I
2	Illiteracy	53.25	II
3	Lack of skill	48.14	III
4	Smaller land holdings	46.52	IV
5	Fear of failure of new technology	40.78	V
6	Complacent attitude	39.2	VI
7	Lack of awareness of new technology	37.2	VII



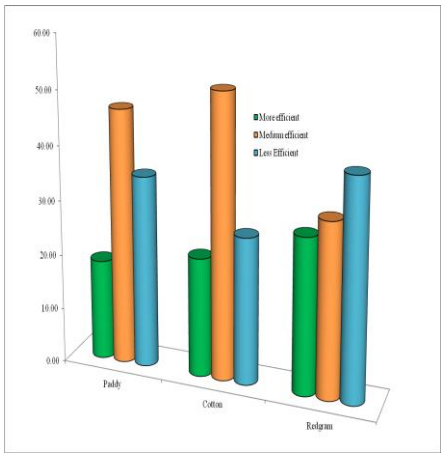


Fig.1: Extent of physical labour scarcity

Fig.2: Extent of Economic labour scarcity

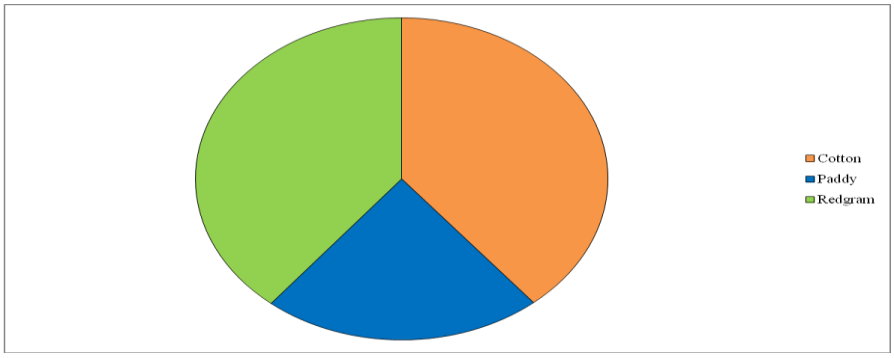


Fig. 3: Productivity levels of labour saving technology adopted and non adopted farms

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