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P Vaishnavi
Ph.D. Research Scholar,
Department of Agricultural
Extension Education, College of
Agriculture, University of
Agricultural Sciences, Dharwad,
Karnataka, India

G Manisankar
Ph.D. Research Scholar,
Department of Agronomy,
Palli Siksha Bhavana, Visva
Bharati University, Sriniketan,
West Bengal, India

Labour scarcity in agriculture: A review

P Vaishnavi and G Manisankar

Abstract

Labour is one of the most principal component in agricultural system. In any agricultural system, labour is an integral part to “seed to seed” development. In recent days, agricultural sector is facing huge problem of labour scarcity and it affects the farmers and agricultural scientists to meet out the food security programme. Higher earnings in other locally accessible jobs cum seasonal nature of agricultural work are the major reasons for labour scarcity. Meanwhile, non-agricultural jobs like electrician, plumber and masonry workers get more daily wages than agricultural labors. In India, 60% of the farmers are small to medium farmers and they are not affordable to buy a large machinery for overcome the labour shortage. In this context, many small farmers leave the agriculture and went to some other locally accessible jobs. Labour scarcity is the recent and major constraint to scientists to find an alternate viable option. Keeping these points in view, this review paper is addressed to evaluate the strategies to overcome the labour scarcity in agriculture. From this review it could be concluded that, hiring of agricultural machineries, cultivation of less labour requiring crops, efficient utilization of government subsidies, precision farming and intensive use of family laborers are the viable options to overcome the labour scarcity in agriculture.

Keywords: Agriculture, coping strategies, labour scarcity and labour-saving technologies

Introduction

Agriculture is the backbone of India and more than 70% population depends on agricultural sectors for their livelihood. In agricultural production, involvement of labour is most important for planting to harvesting. India like labour rich countries also now a days facing a problem of agricultural labour scarcity. However, the employed laborer in wages salary basis is increased from 45.6 per cent in 2001 to 54.9 per cent in 2011. This is mainly because, most of the agricultural laborers are migrated from agricultural sectors to other locally accessible jobs. Due to the unavailability of labour, all the agricultural operations are delayed and fail to meet out the potential productivity. In recent days, most of the small farmers get away from agricultural sector because of the scarcity of water and labour. Some other farmers are lease their land and went to urban areas for better livelihood. In some cases, farmers lease their lands to medium and big farmers who affordable to buy a large machineries for meet out the labour demand and working under their farm for daily wages. To find a viable solution for this potential problem is the new area of agricultural extension research. Keeping these points in view, this review paper is addressed to evaluate the mitigation strategies for overcome the labour scarcity in agriculture.

Reasons for labour shortage

- The seasonal nature of the agriculture sector. The laborers work only for few months in a year, so they start looking for permanent jobs and regular income.
- Non-agricultural industries provide some good wages compare to agricultural sector (Prabakar *et al.*, 2011) [5].
- People start move from rural to urban for sustainable life balance and education (Hazarika, 2015) [3].
- People may think working in agriculture or rural areas is also associated with low self-esteem.
- Especially after implementation of MNREGA (Mahatma Gandhi National Rural Employment Guarantee Act, 2005), peoples start leave from agricultural employment to social welfare programs because of its higher wages.
- All India annual average wage rate for male and female is Rs. 262 and Rs. 230, respectively. As a result, male workers were paid 26 per cent more than female workers. In terms of wages, there is also a gender discrepancy throughout the states.

Corresponding Author

P Vaishnavi
Ph.D. Research Scholar,
Department of Agricultural
Extension Education, College of
Agriculture, University of
Agricultural Sciences, Dharwad,
Karnataka, India

Table 1: State wise agricultural laborer daily wages (Rs. day⁻¹) in Rural India (RBI, 2022)

State/Union Territory	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20
Andhra Pradesh	216.9	213.3	249.1	269.5	282.0	301.3
Assam	200.6	215.7	229.3	237.5	248.5	252.2
Bihar	198.9	207.1	212.7	223.0	240.3	257.3
Gujarat	160.0	177.6	184.0	187.9	199.3	208.4
Haryana	340.1	352.7	359.3	361.4	391.9	391.8
Himachal Pradesh	308.9	317.3	339.8	368.3	388.6	418.4
Jammu & Kashmir	367.7	394.5	409.8	436.0	443.6	452.9
Karnataka	205.1	228.3	251.9	267.3	288.7	291.8
Kerala	575.1	608.8	644.0	659.8	682.4	700.7
Madhya Pradesh	150.5	160.4	173.1	191.3	196.3	198.1
Maharashtra	196.7	195.9	196.8	207.4	213.7	230.7
Meghalaya	174.7	212.4	221.4	225.0	229.5	231.3
Odisha	180.0	191.3	208.7	222.6	227.4	232.1
Punjab	284.1	305.3	319.3	324.6	337.7	348.7
Rajasthan	269.9	285.2	285.5	287.1	292.9	297.6
Tamil Nadu	334.3	357.0	378.7	385.9	398.7	410.0
Tripura	209.4	209.6	225.0	270.0	270.0	270.0
Uttar Pradesh	191.9	199.6	211.8	229.8	247.1	257.7
West Bengal	216.0	220.2	237.6	255.9	263.1	267.2
All India	224.6	236.9	252.6	267.1	277.4	286.6

Source: Labour Bureau, Government of India.

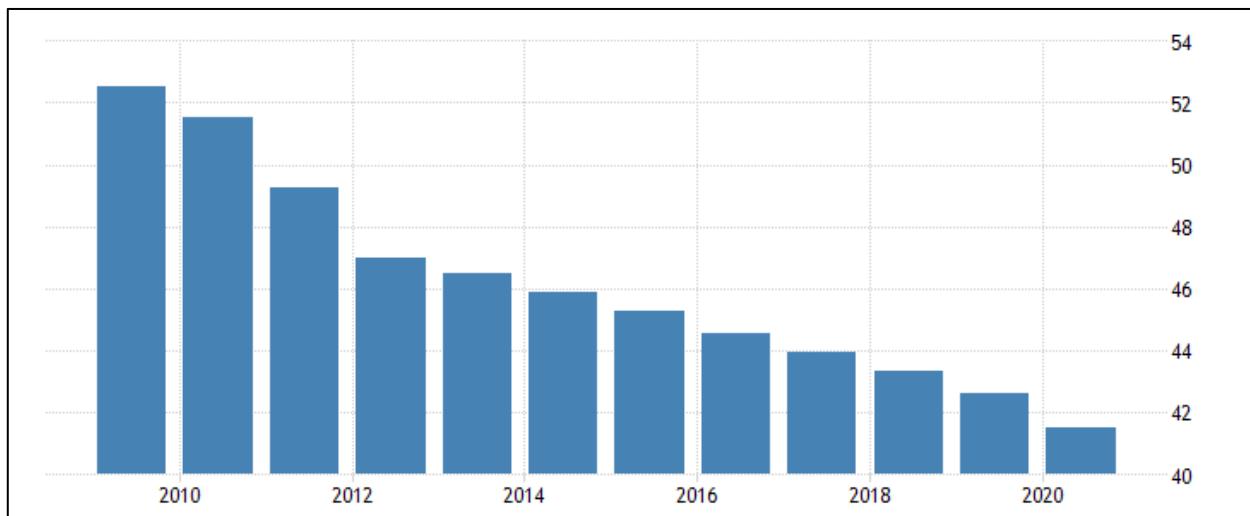


Fig 1: Total agricultural employment in India (World Bank, 2022)

Consequences of labour shortage

- Labour shortage cause delaying of farm operations lead to reduction in productivity and profitability finally fail to meet the future food security.
- Peak increment in laborer wages due to the supply demand.
- Delay in harvest makes difficult to take a subsequent crop
- Reduction in cropping intensity
- Huge changes in the recommended cropping system.

Mitigation strategies

The technologies used to overcome the labour shortage is described at here. Technologies like machine planting, cultivation of less labour requiring crops, mixed cropping, herbicidal weed management, fertigation and combined harvester are gain more popularity behalf of helping to overcome the labour scarcity. However, does small farmers benefited by these technologies is questionable. Many technologies are till not reached to the small and medium farmers might be due to lake of awareness. Some other technologies used to overcome the labour scarcity is detailly

addressed below.

(i) Farm mechanization

Farm operations that requires significant power input and low control are mechanized first. This might be due to the operation which need plenty of energy can be done by mechanically faster and efficiently. The developed countries with low share of employment in agriculture and high mechanization have gain much higher GDP from agriculture than developing nations like India, where employment in agriculture has a higher share while mechanization is much lower. Higher cost of mechanization, lack of knowledge to operate the farm machinery and smaller land holdings are the reasons suppressed India from the benefits of mechanization (Gunabhagya *et al.*, 2017)^[2]. To increase the mechanization, first convert the farming architecture into adoptable for mechanical operations. Planting architectures like plant height, spacing, soil type and moisture content are some important prerequisites for operating machineries. These things may differ with type of machinery used and type of farm operation.

It is extremely difficult for small farmers to afford the machineries. In recent days many private sectors developed a small tool and implements to enhance the productivity. Cooperative custom hiring is the next level of efficient farm machinery utilization, in that group of farmers hiring the machineries for the peak period of agricultural operation to save the hiring cost by pay per use basis. It reduces the capital requirement of farmers and at the same time giving them the opportunity to mechanized farming. Hence, most of the small and medium farmers are benefited by this kind of cooperative custom hiring. Several state governments are taken initiative to implement this cooperative custom hiring. In this method farmers can get all kind of machineries from near by agricultural engineering department on affordable cost with short term basis. A group of farmers belonging to adjacent small farms and those are individually not affordable for mechanization can make use of such models to mechanize the farm with affordable cost.

(ii) Enhance the seed production technology

Improved varieties of seeds having capacity to save the labour input in terms of energy. On other hand, development of seeds with some special features like deep rooted, drought resistant, non-lodging variety, branching type, pest and disease resistant can directly replace or reduce the labour intensity. Among the different kind of agricultural operations, weed management alone take 35% labour force. Introduction of mixed cropping or inter cropping helps to reduce the weed germination by smothering effect led to reduce the labour force and increase the net profit. Apart from that, recent days many improved herbicides available to manage the all kind of weed problems. These herbicidal weed management offers excellent weed control with easy application.

Rice is the staple food crop for more than 60% of world population. In rice cultivation, transplanting alone take 20% labour input than others. Hence, considering the present scenario of labour scarcity, conversion of direct seeding instead of transplanting is the viable option. Broadcasting of seeds directly to the main field reduce the nursery seedling management, puddling and transplanting. At the same time. It will save the labour input for nursery management and transplanting. Apart from the labour force, direct seeded rice reduces the soil hard pan formation by puddling, reduce the crop duration up to 20 days and decrease the 35% of water requirement.

(iii) Agrochemicals

In crop production, most of the laborer are involved in sowing, weed management, fertilizer application, pest management, disease management and harvesting. Among these the major operations are weed management, fertilizer application, pest management and disease management. Now a days, several agrochemicals available for sort out these issues. According to Manisankar *et al.* (2022)^[4], at present 37 herbicide combinations of two active ingredients are available in our country and all kind of weed problems are managed with this herbicide. Instead of band application, broadcasting of fertilizer saves time and energy. As per the pesticides regulation act 1968, many registered insecticides available for excellent management. Most of the developed countries are intensively using the agrochemicals to maximize the productivity and reduce the labour force. In the modernized farming, herbigation and fertigation are slowly replacing the manual herbicide and fertilizer application. Application of

herbicide or fertilizer along with irrigation water helps to enhance the operational efficiency and reduce the labour input.

(iv) Initiatives taken by the government

Minimum Wages Act

India introduced the Minimum Wages Act in 1948 in Central government and State government jurisdiction for fixing wages. It provides fixation and enforcement of minimum wages in respect of schedule employments to prevent exploitation of labour through payment of low wages. The objective of the act is to ensure a minimum subsistence wage for workers.

ATMA

Agricultural Technology Management Agency (ATMA) Scheme was launched during 2005-06, It aims at making extension system as farmer driven and farmer accountable by way of new institutional arrangements for technology dissemination at district level to operationalize the extension reforms. NGOs, Krishi Vigyan Kendra (KVK), Panchayat Raj Institutions and other stakeholders operating at district level and below. Release of funds under ATMA scheme is based on State Extension Work Plans (SEWPs) prepared by the State Governments. Allocation of resources for activities related to extension is linked to number of farm households and Blocks. At present, the Scheme is under implementation in 614 districts in 28 States and 3 UTs in the country.

Subsidies for Farmers in India

Agricultural subsidies are necessary and Indian economy is largely dependent on the farming sector. The government of India, as well as the state governments initiated several schemes that assist to diminish the plight of the farmers. Recently, the government provided 80% subsidy on machinery and equipment for farmers to maintain the stubble. Rashtriya Krishi Vikas Yojana (RKVY), National Food Security Mission (NFSM) and National Bank for Agriculture and Rural Development (NABARD) loans in India are especially helps to small and medium farmers for modernize their farming.

Eradication of bonded labour

Since Independence, several efforts have been made to eliminate the insidiousness of reinforced work because it is exploitative, barbaric and violation of all standards of social equity. The bonded labour system (Abolition) Act, 1976 was enacted to abolish the system of bonded labour to not only prevent physical exploitation of the people belonging to weaker sections but also to ensure equality and right to life as enshrined under the Indian Constitution.

Provision for accommodation

Laws have been implemented in many states for giving accommodations to the farm workers. The Bhoojan movement is also one of the methods by which those who have land they may voluntarily contribute to landless people. Another method is co-operative farming, in which landless people may only improve their situation by acquiring land (Ashfaque Alam, 2020)^[1].

Employment Guarantee Scheme

National Food for Work Program (NFFWP), Crash Scheme for Rural Employment (CSRE), National Rural Employment

Jawahar Gram Samridhi Yojana (JGSY) and Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) are some of the schemes under employment guarantee act. According to Sarda Prasad (2014)^[7], involvement of MGNREGA laborers in agriculture is the best strategy to overcome labour shortage.

Special organizations for development

Small Farmers Development Agency (SFDA), Marginal Farmers and Agricultural Laborer's Development Agency (MFAL) are formed in 1970-71 to take care of the issues of farm works of the nation.

Conclusion

Labour scarcity is the major problem at present in agricultural sectors. Scarcity of laborers during peak period of agricultural operations led to reduce the agricultural productivity drastically. Government taken several steps to overcome this problem. It is definitely a manageable problem by agricultural extension system to convert the farmers from conventional farming to modern farming by farmers training programs. From this review it could be concluded that, hiring of agricultural machineries, cultivation of less labour requiring crops, efficient utilization of government subsidies, precision farming, co-operative farming and intensive use of family laborers are the viable options to overcome the labour scarcity in agriculture.

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