Original Article

Climatic Change and Changing Structure of Labour Force in Indian Agriculture

L. Devi, Dr. R. Rajendran

Research Scholar, PG and research Department of Economics,
Thanthai Periyar Government Arts and Science College (Autonomous), Tiruchirappalli- 620 023.

Associate Professor of Economics &PG and research Department of Economics, Thanthai Periyar Government Arts and Science College (Autonomous), (Affiliated by Bharathidasan University), *Tiruchirappalli- 620023*

Abstract

A number of structural, technological and climatic changes in Indian agriculture involve a large variation in labour force distribution. The proportion of the agricultural labor force to the total labor force in India has declined for the past two decades and migration in the agricultural labor force has increased. It is viewed from various studies that since Indian agriculture depends mainly on climate conditions for its irrigation, unfavourable changes in climate led lower agricultural productivity and made the poor agriculture labour force poorer.

Keywords: Labor Force Participation, Land Holding, Labour Force.

Introduction

According to FICCI, migrating agricultural labour force to non-agricultural labour has increased significantly even in the states like Kerala, Punjab, Tamil Nadu which have a higher agricultural wage rates. It is seen that the proportion of increasing agricultural labour force to the total labour force is very low and lowers the per capita income of the farm workers. Introduction of mechanization, improved seeds which needs less manpower, incapability of small farmers to follow high technology, existing poverty, and industrial extension and with all these irregular rainfall and increasing temperature led the migration of agricultural labour force. The unbalanced agricultural labour market would do nothing in the contribution otherwise increase shortage of food production. Concentrating more on attracting the migrated labour force into the agriculture again will give the right way to attain sustainable food production. Based on a report of the International Labour Organization, the total labour force participation rate has been increased from 63.7 percent in 2004-05 to 55.6 percent in 2013-14.

The rural migration to construction sector has increased from 14.4 percent to 30 percent in the year 2003 and 2011 respectively. Migration due to climate change fallen the share of agriculture in nation's GDP from 18.4 percent in 2011-12 to 15.4 percent in 2015-16 while the share of secondary sector is 31.1 percent which is still more or less stagnant since 2011.

This paper tries to explore the conditions of the agricultural labour market and to analyse the changes in

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Address for correspondence:
L. Devi, Ph.D., Research Scholar, PG and research Department of Economics, Periyar E.V.R. College (Autonomous), Tiruchirappalli- 620023.
E Mail: devilakshmievr@gmail.com

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agricultural labour supply with various issues. It also tries to find valuable remedies to balance the agricultural labour market towards attain agricultural sustainability in the backdrop of climatic change.

Main objectives of the present research paper are as follows;

- To review the impact of climatic change in India;
- To study the changes in composition of labour force in India in general and agriculture in specific during the past three decades;
- To relate the changes in the structure of agriculture labour force with climatic change; and
- To provide suggestions to withhold a pertinent composition of labour force for Indian agriculture and its sustainability.

The study used secondary data collected from print and electronic sources of Ministry of Agriculture and Cooperation, National Sample Survey, International Labour Organization, and other relevant organizations. Data area analysed with appropriate statistical techniques.

Shift in Agriculture's Labor Force

The 55th Round (1999-2000), 61st Round (2004-05), 66 Round (2009-10), and 68th Round (2011-12) National Sample Survey Organization (NSSO) Rounds on jobs and unemployment include agricultural labour force results. Data shows that India's overall growth in jobs has been very low since 2004-05. On average, only about 2 million workers have been added to the workforce since 2004-05. Compared with about 12 million people added to the workforce since 2004-2005.

Table 1: Labour Force Participation (NSS Data)

NSS Round /Year	Rural			Urban		
	Male	Fe-male	Per-sons	Male	Fe-male	Per-sons
50th Round /1993-94	56.1	33.1	44.6	54.3	16.5	35.4
55th Round /1999-2k	54.0	30.2	42.1	54.2	14.7	34.45
61st Round / 2004-05	55.5	33.3	44.1	57.1	17.8	37.45
64th Round / 2007-08	55.9	29.2	42.55	57.6	14.6	36.10
66th Round / 2009-10	55.6	26.5	41.05	55.6	14.6	35.25

Source: The NSS information of 50th to 66th round

Table 2: Land Holding Data

Size of Holdings (in ha.)	Total Holdings		Total Holdings	
	Number	Area	Number	Area
Marginal	7,54,07,769 (62.88)	2,98,14,473 (18.70)	9,28,25,979 (67.10)	3,59,08,264 (22.50)
Small	2,26,94,772 (18.92)	3,21,39,489 (20.16)	2,47,79,150 (17.91)	3,52,44,061 (22.08)
Semi-Medium	1,40,20,972 (11.96)	3,81,93,252 (23.96)	1,38,95,552 (10.04)	3,77,04,789 (23.63)
Medium	65,77,018 (5.48)	3,82,16,692 (23.97)	58,75,017 (4.25)	1,69,06,832 (10.59)
Large	12,30,486 (1.03)	2,10,71,607 (13.22)	9,72,763 (0.70)	1,69,06,832 (10.59)
All Classes	11,99,31,017 (100.00)	15,94,35,519 (100.00)	1,38,34,48,461 (100.00)	15,95,91,855 (100.00)

Source: NSSO report.

In reality, since 2004-05, the addition of non-agricultural workers has been about 6 million people per year, as the workforce working in agriculture has begun to decline in absolute numbers and consistently. Since then, the size of the agricultural workforce has decreased by approximately 30.57 million between 2004-05 and 2011-12, while the size of the total workforce has increased. This is the first time of this kind where a decrease in absolute numbers in agriculture has been recorded. India, has seen a gradual decline in the number of people working in agriculture, from about 60% in 1999-00 to 49% in 2011-12. This decrease is a cumulative effect across all major states with identical reductions. The five states alone – Uttar Pradesh, Karnataka, west Bengal, Bihar and Rajasthan, while the remaining states make up the remaining 21% contributed almost 79% of this decrease. Data gathered from Census Reports show the severity of Indian agriculture's labour problem.

Workforce Change –Main Staff to marginal Employees

The 2011 census also highlights the rising workforce marginalization. The workforce share of marginal employees has risen from 22.2% in 2001 to 24.8% in 2011. In other words, one in four employees has worked for fewer than six months a year in the Indian economy. This share was much smaller in the earlier 1991 census. At nine per cent, this share was much less, in 2011, about one fifth of growers are marginal workers, compared to 11 percent in 1991. The relative value of agricultural labour is as high as 40 per cent, up from 13 per cent in 1991. Among other jobs, the proportion of marginal employees has also risen to 16 per cent in 2011. One in five farmers who have been employed for less than six months reflects the crisis in the agricultural sector, forcing them to look elsewhere for jobs. The same applies to agricultural labour, where the proportion of marginal workers in much higher.

Table 3: Growth (%) of Workforce by occupation in India

YEAR	TOTAL				MAIN				MARGINAL			
	Cultiv	AL	HHI	Others	Cultiv	AL	HHI	Others	Cultiv	AL	HHI	Others
						PERSONS						
1981-91	1.9	2.9	-1.3	3.4	1.8	3.0	-1.2	3.5	3.1	2.5	-1.3	0.3
1991-01	0.2	2.3	8.1	4.6	-0.7	-1.6	6.0	3.6	5.7	14.5	18.8	23.9
2001-11	-0.7	3.0	1.1	2.9	-0.7	3.1	0.1	2.3	-0.7	2.8	3.6	6.2
						MALE						
1981-91	1.3	2.7	-2.1	3.2	1.3	2.9	-2.1	3.3	-3.1	-2.9	-2.9	-2.4
1991-01	-0.4	2.0	6.0	4.0	-1.3	-1.2	5.1	3.2	21.8	34.1	26.7	32.8
2001-11	-0.4	3.7	1.6	2.4	-0.7	3.0	0.1	2.0	1.5	5.4	10.7	6.4
						FEMALE						
1981-91	4.0	3.2	0.4	4.3	4.1	3.2	0.9	4.7	3.8	3.2	-1.1	1.8
1991-01	1.7	2.5	10.7	7.9	1.3	-2.4	7.6	6.0	2.3	10.2	17.5	17.3
2001-11	-1.4	2.1	0.6	4.7	-1.0	3.3	0.2	4.2	-2.0	1.0	1.1	6.0

Source: Census report 1981 to 2011

Table 4: Marginal as a percentage of total labour force by occupation in India

Year	Agriculture			Non-Agriculture		
	Cultivators	AL	Both	HHI	Others	Both
Personal						
1981	10.0	13.8	11.5	10.0	2.9	3.7
1991	11.2	13.3	12.0	9.9	2.2	2.7
2001	19.1	41.0	29.1	25.6	11.7	13.1
2011	19.3	40.3	30.8	32.7	16.1	17.5
Males						
1981	1.9	3.3	2.3	1.8	1.3	1.3
1991	1.3	1.8	1.5	1.6	0.7	0.8
2001	9.6	28.4	17.1	9.8	8.4	8.5
2011	11.7	33.2	22.5	22.9	12.3	12.9
Female						
1981	37.2	27.1	31.7	26.8	14.5	17.6
1991	36.6	27.0	31.6	23.1	11.4	13.6
2001	39.0	55.4	48.0	42.0	26.2	29.8
2011	36.6	49.8	44.9	44.0	29.7	32.0

Source: Census of India

Table 5: Annual growth rates of different categories of labour force.

AGR	1981 - 1991	1991 -2001	2001 -20011	AVR AGR (1981-2001)
Total Population	2.3	2.0	1.6	2.0
Main Workers	2.5	0.9	1.5	1.6
Marginal Workers	2.4	11.5	2.9	5.6
Non-Workers	2.2	1.8	1.5	1.8
Total CL	1.7	0.4	-0.7	0.5
Total AL	1.5	3.5	3.0	2.7
Total HH	-0.2	8.1	0.8	2.9
Total OT	3.6	4.6	2.8	3.7

Source : Census documents from 1981 to 2011; Registrar General, Government of India. Note: CL; Cultivators; AL; Agricultural Labourers; HH; House Workers; OT; Other Workers; as defined in 2011 census.

Table: 6 Percentage of Female primary employees in wide categories of the total female population from 1981 to 2011

Census Year	Percentage to total Female population				
	Female	Cultivators	Labourers Agricultural	Household Industry	Other workers
1	2	3	4	5	6
1981	13.99	4.65	6.46	0.64	2.24
1991	15.93	5.51	7.05	0.55	2.82
2001	14.68	5.11	4.51	0.95	4.11
2011	25.5	24.0	41.1	5.7	29.2

Source : Office of the Registrar General India

Conclusion

Explanation for change in the composition of the agricultural labour force in India that include: Lower agricultural wage rate, seasonal jobs. Attractive salaries in competing markets, inadequate services, etc. However, climate change. Farmers have reduced their crops area, many farmers have followed crop holidays, and the number of crops has been reduced. The crop pattern has been changed from seasonal crops to perennial tree crops by many farmers. These bring about improvements in the status of farm employees, from the key workers to the neglected workers. Decrease the margin ratio. Reducing the proportion of marginal jobs in agriculture would decrease the agricultural sector's contribution to the nation's total GDP. Efforts should also be made to monitor the undesirable change in the labour force from primary to marginal staff.

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There are no conflicts of interest.

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