.

Female Labour Absorption in Indian Agriculture

A Study based on Farm-Enterprise Data

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Objective

This paper examines the gendered implications of the fall in total labour absorption in agriculture in rural India. Based on evidence from field study, in four villages of rural Haryana, the use of female labour in different tasks in agriculture per unit of area is measured. The study reveals that the process of defeminization of rural agricultural labour force is continuing since the 2000s. It is alarming in states such as Haryana where the defeminization in agriculture is coupled with a process of concentration of women in marginal tasks in agriculture. The factors behind this phenomenon are discussed. Also, an empirical assessment of women's work in rural Haryana shows dismal opportunities in the non-agriculture sector and heavy use of women for unpaid care work.

Introduction

Deployment of women in agriculture varies across countries and crops significantly. Participation of women in total labour in rice cultivation varied from 19 per cent in Philippines to 48 per cent in India and 55 per cent in Sri Lanka during the early 1980s (Unnevehr and Stanford, 1985). Moreover, the literature on women's participation in rice cultivation has established that gendered division of agricultural tasks is a common practice in Asian countries. The female labour use was highest in transplanting, weeding and harvesting operations in all countries studied by (Unnevehr and Stanford, 1985). India was no exception.

A process of feminization of rural labour force was observed in India in the early 1970s with introduction of the High Yielding Variety (HYV) technology. Agarwal (1984) argued, in the early 1980s, on the basis of cost of cultivation data and primary survey data, that the introduction of HYV technology led to an increase in absorption of casual hired women labour in agriculture in the states of Odisha, Andhra Pradesh and Tamil Nadu. The expansion in women's labour hours per hectare was attributed by the author to the lack of mechanization in tasks in which women were deployed in rice cultivation. The author noted that though the total

women labour use had risen in these states, it was distinctly confined to certain operations. Male labour, on the other hand, was more uniformly distributed across operations. This character of the female labour force was also observed in the studies that followed. Subrahmanyam (1999) surveyed 44 villages in the Godavari delta area of Andhra Pradesh during 1997-98 and compared the results with ten villages of the same region that were surveyed by Agro Economic Research Centre in 1971-72. The author arrived at the conclusion that the share of female labour force in rice cultivation increased from 30 per cent to 47 per cent due to introduction of HYV seeds. A similar conclusion that the rise was primarily for hired women was drawn by this study. This study also computed overall labour use for all crops grown in the region. It was found that the total female labour has risen by 85 per cent. The crops such as chillies and cotton recorded high labour use of women for harvesting operations. In the early 2000s, higher use of women in agriculture was attributed to distress migration, unprofitable cultivation and employment in non-agricultural work for men.

Process of Defeminization in Indian Agriculture

The present study uses data from employment unemployment surveys and periodic labour force surveys to show an alarming trend of defeminization in Indian agriculture since the 2000s. The share of women workers in total agricultural workers fell from 40 per cent in the year 1999-00 to 33 per cent in 2018-19 in rural India. The fall was much sharper in rural Haryana, from 38 per cent to 24 per cent during the last 20 years. The process of defeminization has been explained away in the literature as a consequence of mechanization in agriculture, reverse migration of men or as a result of voluntary withdrawl of women from the labour force. Studies have measured the gendered impact of technological change using recent data and concluded that women's employment has been severely hit by the penetration of mechanization (Afridi, Bishnu, and Mahajan, 2020).

This paper argues that a key reason behind the defeminization of agriculture is the fall in total labour absorption in agriculture. Using cost of cultivation data

Table 1: Trend in average labour use, hours per acre of cropland, 1970-71 to 2018-19

Crop	1990-93	1993-96	1996-99	1999-02	2002-05	2005-08	2008-11	2011-14	2014-17	2017-19
Sugarcane	548	600	596	640	617	696	645	594	518	482
Onion	668	758	552	585	615	603	456	501	510	436
Potato	537	713	590	518	510	461	434	376	345	323
Cotton	336	325	322	302	343	345	380	368	357	319
Jute	638	670	533	540	688	597	622	591	518	529
Paddy	354	354	371	372	361	349	337	306	293	259
Wheat	168	223	184	184	161	163	156	145	138	131
Maize	260	239	253	259	247	242	229	233	218	194
Jowar	161	192	190	213	174	195	184	187	173	183
Bajra	125	131	147	147	161	150	147	145	160	155
Gram	130	123	111	124	116	119	115	119	115	120
Arhar	237	228	201	218	218	276	238	242	231	209
Urad	154	145	147	158	140	130	136	143	123	113
Moong	132	139	154	180	124	143	125	136	120	111
R&M	129	145	146	155	153	143	146	146	147	139
Groundnut	251	234	281	259	245	240	265	268	237	208
Soybean	161	147	170	159	153	158	154	130	134	116
Sunflower	136	156	151	146	155	146	145	126	128	132
Sesamum	168	146	146	147	146	163	169	157	142	177

Source: Based on author's calculation using data from cost of cultivation surveys, Directorate of Economics and Statistics, Ministry of Agriculture and Farmer's Welfare.

available from the Ministry of Agriculture in India, this paper presents supporting evidence for the declining labour use in agriculture. Table 1 shows the decline in labour use per acre of cropland for different crops at the all-India level. This table shows that labour absorption has either declined or has remained stagnant for most crops. A minor increase in labour use is observed only for cotton and groundnut for a few years.

Consequently it is noted that this fall in labour absorption has severe gender implications. Based on primary data from four villages of rural Haryana, this paper measures the labour absorption of women in the different tasks in agriculture.

An important reason to study defeminization is to explain the implications of technical change (chemical and mechanical) in agriculture and reversal of migration of men from villages due to crippling employment in the non-farm sector.

Evidence from Rural Haryana

Haryana was at the forefront of Green Revolution, and has had significant technological advancement in agriculture. Although, it is a small state in terms of geographical area, agriculture in Haryana is diverse in terms of cropping pattern, land relations and forms of labour use. Rural villages of Haryana have been a location of a large number of village studies, by the Agro-Economic Research Centres as well as research scholars and activists, in which dynamics of change in the labour market were discussed. Several studies have discussed the continued relevance of long-term workers in agriculture, the increasing casualisation of agricultural labour, and high growth of non-agricultural sector of Haryana (Bhalla, 1976; Jodhka, 1994; Lerche, Byres, and Kapadia, 1999; Rawal, 2006).

- Modernity in terms of the use of tractors, threshers, combine harvestors, use of chemical fertilizers, high reliance on use of migratory labour from states of Uttar Pradesh and Bihar and high use of herbicides characterise Haryana's agriculture as one which is aptly modern.

- In this modern capitalist agriculture, there are still remnants of pre-capitalist relations of production as is evident by the prevalence of long-term attached workers, landlords, existence of khap panchayats (quasi judicial bodies pronouncing harsh punishments based on age-old traditions), and other relations.

This study is based on a primary survey in four villages of rural Haryana that were studied in 2018-19 as part of a research project on "Agrarian relations in rural Haryana" by the Society for Social and Economic Research, New Delhi.

Rawal and Bansal (2019) show that work participation rates (WPR) declined from 82 per cent in 2011-12 to 75.2 per cent in 2017-18 for rural men in India and

from 37.2 per cent in 2011-12 to 25.5 per cent in 2017-18 for rural women. At the all-India level, only a quarter of women found employment. The corresponding figures of WPR were even lower for rural Haryana. 71.4 per cent of rural men and only 14.8 per cent of rural women were employed in the year 2017-18.

Table 2 shows the WPR's for men and women of age 15-59 in the study villages. About 80 per cent of working age men and 49 per cent of working age women were employed in the study villages. The proportion of employed men varied from 72.3 per cent in Cheher Kalan village to 82.4 per cent in Khandrai village. The proportion of employed women varied from 43 per cent in Khandrai village to 53.8 per cent in Jamalpur Shekhan village.[1]

The WPRs for both rural Haryana and all-India, estimated from Periodic Labour Force Survey (PLFS) data, are low compared to the WPR's computed from the survey data. This discrepancy can be due ti multiple reasons. First, the WPRs calculated using PLFS data are based on the a "major time criterion" under which workers employed for less than 30 days are not included. In the survey data, by contrast, the work done by members even for a single day is counted. These numbers can thus be made comparable by setting the limit of at least 30 days of work in a year in the survey data. Nevertheless, the exclusion of work that is less than 30 days in a year brings to attention an important point. The agriculture labour absorption of both men and women was very low in the study villages and thus a lot of workers who were self-employed in agriculture may have been left out of the employed labour force from the PLFS data. Based on a study of rural villages of West Benga, Swaminathan, Ramachandran, and Nagbhushan (2020) argued that the exclusion of self-employed work of less than 30 days in agriculture is one of the important reasons that results in the discrepancy between the NSS estimates of WPR and the survey estimates. Another reason could be exclusion of other subsidiary work in which people are employed for less than 30 days in a year. This also points to the nature of underemployment that rural Haryana faces. Third the discrepancy can be due to better capturing of the precarious forms of

[1] A detailed description of study villages is avoided for this short abstract but would be included in the paper.

employment in the survey data. The underestimation of WPRs is more for women than men in rural Haryana. In the work by Swaminathan, Ramachandran, and Nagbhushan (2020) a similar discrepancy between WPRs of women using official and survey data has been observed. This could mean that a lot of work that women are engaged in is not captured by the official data. This may include home-based work of women as tailors, operators of petty businesses, or other such work that may not be active throughout the year.

Table 2: Work Participation Rates, Men and Women, Survey data, 2018-19

Village	Women	Men
Birdhana	48.91	82.22
Cheher Kalan	44.85	72.37
Jamalpur Shekhan	53.85	80.85
Khandrai	43.02	82.4
All villages	49.36	80.68
Rural Haryana (2017-18)	14.8	71.4
Rural India (2017-18)	25.5	75.2

A noteworthy finding of the study is defeminization of rural labour force along with a process of concentration of women as marginal tasks in agriculture. The study measured the employment of women in non-agriculture sector and concludes that women in Haryana are primarily engaged in unpaid care work. The total labour absorption in agriculture in the study villages was abysmally low. The survey collected data on different contracts on which the labour was hired: daily wage, piece-rated, monthly and yearly. Data on labour used in each operation in crop cultivation by gender was also collected.

Average days of labour deployment were 24 days per acre for men and 13 days per acre for women for total crops in all villages (Table 3). The deployment of women, measured in days per acre, was lower than men across all the four villages. The use of women in family labour was considerably lower than use of men in family labour. In all villages, 80 per cent of total family labour was provided by

Table 3: Average labour days used per acre, in agriculture, by men and women, survey data, 2018-19

Village	Men	Women	Total
Khandrai	26	15	40
Cheher Kalan	21	12	32
Birdhana	23	15	39
Jamalpur Shekhan	21	9	30
All	23	13	36

men and 20 per cent was provided by women. However, the use of women in hired labour was substantial. Of the total hired labour days, 47 per cent were provided by women and 52 per cent by men.

This study indicates that there is higher use of men than women in agriculture and women are used primarily in the form of hired labour than family labour. The latter observation implies that there is preference to use women in hired labour as they provide a source of cheaper labour than their male counterparts. However, while using family labour, where both men and women are in effect free, the work is undertaken by men. There is thus both a reversal of the process of feminization and more concentration of women as marginal casual workers.

In other words, given the high level of mechanization in agriculture and low use of total labour in rural Haryana, the use of male labour was much higher than female labour, and the form of female labour used was primarily hired labour. These women were hired generally on piece-rated contracts and were deployed in particular tasks in cultivation. The proposed paper shall present a detailed analysis of labour used in each operation in different contracts.[2]

[2]Labour use based on different operations and contracts is not shown in this abstract. These results would be included in the paper.

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