

Trends and Patterns of Women Workforce Participation in Agriculture in India

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Abstract

The agricultural sector plays a strategic role in the process of economic development of a country. Today, this sector as a whole has developed and expanded immensely with the growth of science and technology, and there is a growing realisation and commitment among the global community that the agriculture sector has to undergo changes for a sustainable and broad-based expansion, after addressing gender-related issues through the initiation and partnerships of various national, regional, and global institutions. In developing countries like India, agriculture continues to absorb and employ the female workforce, but fails to recognise their role and importance as an employed labour force. In developing countries, women participation in the agricultural labour force is 38%. However, a large number of women have been treated as an insignificant part of the active agricultural labour force; there is also a growing gap between women's actual economic participation and public perception about their economic participation. At this juncture, there is a growing need for the agricultural research agenda to overcome the existing gaps and to tackle the emerging problems of sustainable development and livelihood of resource-poor women farmers. Several researchers have attempted to overcome this gap through empirical research studies on gender analysis and gender roles. The present study is an attempt to highlight the trend of female workforce participation in the agricultural sector across various Indian states. The secondary data is used to analyse the growth trend of the agricultural workers over the last decade. Suitable solutions have to be delivered to women farmers for raising their productivity, through which their overall empowerment may be targeted. Other practical solutions should also be taken up to help and support women farmers.

Keywords: Cultivator, Agricultural Labour, Compound Growth Rate

Introduction

The beginning of settled life coincides with the beginning of agriculture, when people began cultivating food for a living. Agriculture is the backbone of both developing and under developed countries. Agriculture provides a living for a large portion of the country's population. India has a large and very old agricultural setting that dates back to about 10,000 years ago. It is currently ranked second in the world in terms of agricultural production. In India, agricultural production encompasses field crops, fruit crops, plantation crops, livestock, forestry, fisheries, and so on. Overall, it is a massive industry that employs or recruits 52% of India's total labour force. The rural population of India is mostly reliant on agricultural activity. Despite a gradual drop in agriculture's contribution to the GDP, India's agriculture remains the country's most important industry, contributing significantly to the country's socioeconomic growth. The states like Punjab, Uttar Pradesh, Madhya Pradesh, Andhra Pradesh, Haryana, Bihar and West Bengal are contributing significantly high in the total agricultural output as compared to the rest of the states. Thus, agriculture is India's most important sector, and it has experienced a significant growth in recent years, as a result of government policies, non-governmental organisations, and private sector initiatives.

The agricultural landscape has changed dramatically over time, but one thing that has remained constant is the perception of women as key workers in this sector. With the amalgamation of science and technology, the agriculture sector as a whole has greatly expanded and emerged. However, this most recent development is

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incapable of eradicating the ignorance of women's labour as a vital component of the sector. In developing countries like India, agriculture continues to absorb and employ two-thirds of the female work force; however, they are not considered as employed labour. Women continue to face the oppressive situation of being primarily responsible for family and household maintenance. Furthermore, their contribution as agricultural labourers is suppressed due to the status of family labourers, who work on the farm in addition to their regular household chores. The difficulties faced by rural women are exacerbated by illiteracy, underdevelopment, unemployment, and poverty. Even though women are the most productive labour force in agriculture, their needs and problems are often overlooked by rural development initiatives. Female labourer's multitasking ability brought significant benefits to agricultural productivity, rural production, economic vitality, household food security, family health, family economic security, and welfare. There are many systematic studies that identify trends in female labour in agriculture. Gender roles and gender analysis were studied empirically and explained. This study will shed more light on the trend of female agricultural participation in various Indian states.

Literature Review

Singh and Vinay have provided an overview of the importance of female labour in agriculture and related activities in their working paper. They also stated that the role of women in agriculture is undervalued in India, because female labour is unrecognised. Despite their presence in activities such as sowing, transplanting, and post-harvesting, they are regarded as invisible workers.

Damisa et al. (2007) have found that despite various social, economic, and other constraints, women have a high level of participation in agriculture and are very committed to their agricultural activity. Overall, women's involvement in farm decision-making was found to be very moderate. The extent of involvement and decision-making in activities such as intercultural operations is 48%, crop harvesting is 45.33%, crop storage is 42.67%, crop sale is 42.00%, subsidiary occupations, such as animal husbandry and dairy business, is 38.67%, and financial management is 36% (Unati et al., 2011).

In his working paper, Bala (2010) has cited the engagement and participation of women workers in almost

all agricultural activities; however, there is wage discrimination even if they do the same type of work as male labourers. Furthermore, they are not regarded for farm decision-making, despite their extensive and active involvement in Indian agriculture. When women farmers actively participate in the agricultural sector, they are growing and enhancing their knowledge, as well as gaining access to new and required information to utilise in their farming activities, so that their contribution in agriculture will be recognised. Socioeconomic progress can be achieved by connecting the flow of knowledge and information among women (Dhaka et al., 2012).

Farid et al. (2009) have discussed that women have an important role in farming and non-farming activities, such as post-harvest operations, homestead gardening, livestock and poultry rearing, and selling labour, among other things. Women who work or seek labour in a variety of agricultural and non-agricultural industries have a major goal of providing basic needs for their families and increasing their household income.

Female labourer's multitasking ability brought significant benefits to agricultural productivity, rural production, economic vitality, household food security, family health, family economic security, and welfare (Ghosh & Ghosh, 2014). Due to its inherent relationship with female empowerment, the status of female employment in India has recently been the subject of much debate at the national level. According to the Economic Survey 2017-2018, an OECD analysis shows that the proportion working women have decreased over time, from 36% to 24% in a decade, signaling a decline of 33.3% in female labour force participation (FLEP) in 10 years. It is also revealed that the gender gap in the labour force participation rate (LFPR) in India is greater than 50% points. As the Survey Report notes, women workers often constitute the most vulnerable of the workforce, as they are "employed in the least secure, informal, unskilled jobs, engaged in low-productivity and low-paying work".

Women play a multifaceted role in the economy's long-term development by contributing to household and agricultural activities (Singh et al., 2012). They help in every aspect of agriculture, from land preparation to crop harvesting. Aside from this, they manage ancillary activities such as dairy cattle, fodder collection, bee-keeping, mushroom production, goat rearing, and poultry,

among others. They directly contribute significantly to family income generation, thereby helping to improve their families' social status (Shahi et al., 2018). Income and its sources are important measures for understanding the level of living standards in households and how the level can be achieved. Income, along with expenditure and possessions of households, reveals aspects of income volatility and provides an additional measure of inequality (Meena et al., 2017, 2018). Women play an important role in traditional farming, from manual farm work to agro-processing and homemaking (Majumdar & Shah, 2017). Women have demonstrated on numerous occasions that they can accelerate farm modernisation by using modern farm implements; however, their contributions are underappreciated (Shahi et al., 2018).

The present study has been undertaken the considerations of the productive and optimistic participation of women in agriculture. Many of the systematic studies identify the trends of working female labourers in agriculture. Empirical studies were conducted, explaining gender roles and gender analysis. The current study is examining the trend of women participation in agriculture sector in Indian states as cultivators and agricultural labourers.

Data and Methodology

Indian District Database differentiates and defines the meaning of 'cultivators' and 'agricultural labourers'. According to them, a person is considered a cultivator if he or she is engaged either as employer, single worker, or family worker in the cultivation of land owned or held from government or held from private persons or institutions for payment in money, kind, or share of crop. The farming included supervision or direction of cultivation. Whereas, a person who works in another person's land for wages in cash, kind, or share is regarded as an agricultural labourer. Such a person has no risk in cultivation, but merely works on another person's land for wages. An agricultural labourer has no right of lease or contract on land on which they work.

In this study, secondary data on women cultivators and agricultural labourers has been collected separately to

meet the requirements of the present study. The first step is to collect data from the Census of India in 1991 and the agricultural statistics at a glance in 2010 and 2019. The following method has been used to calculate the compound growth rate (CGR).

The compound growth rates of cultivators and agricultural labourers were estimated using the exponential growth function of the following form:

$$Y_t = a * e^{bt}$$

Where,

Y_t = cultivator and agricultural labour variable.

a = Constant

t = time; 1, 2, ..., n ; where n is number of years

b = Parameter to be estimated

Annual compound growth rate (ACGR) = $e^b - 1$

Results and Discussion

Table 1 depicts the scenario of female workers across the Indian states between 2001 and 2011. Further, it shows the percentage of women labourers engaged in agriculture as the primary occupation; the rest shows the percentage of women participating in non-agriculture activities.

The percentage of women in agriculture labour has decreased by 1-3% in states like Uttar Pradesh, Bihar, Manipur, Mizoram, Meghalaya, Tripura, Maharashtra, Karnataka, Goa, and Tamil Nadu between 2001 and 2011. Kerala witnessed the highest fall (6.86%) in the percentage of women in agriculture labour from 2001 to 2011. Madhya Pradesh has the highest increase (11.03%), followed by Chhattisgarh (10.46%), Rajasthan (8.03%), Gujarat (8.01%), Jammu & Kashmir (6.61%), and Jharkhand (5.21%), from 2001 to 2011. The remaining states have witnessed a marginal increment of 1-3%. Similarly, women participating in non-agricultural activities has increased in those states which witnessed a fall in the percentage of participation of women in agriculture labour, and vice-versa.

Table 1: State-Wise Percentage of Women Participation in Agricultural Activity and Non-Agricultural Activities

<i>States</i>	<i>Female Working Population (2001)</i>	<i>Percent of Female Workers in Agriculture (2001)</i>	<i>Percent of Female Workers in Non-Agricultural Activities (2001)</i>	<i>Female Working Population (2011)</i>	<i>Percent of Female Workers in Agriculture (2011)</i>	<i>Percent of Female Workers in Non-Agricultural Activities (2011)</i>
Jammu & Kashmir	1073874	5.22	94.78	1127623	11.83	88.17
Himachal Pradesh	1305803	2.95	97.05	1516049	4.75	95.25
Punjab	2167261	17.80	82.20	1823205	19.14	80.86
Uttarakhand	1137859	6.08	93.92	1320354	8.84	91.16
Haryana	2661940	21.10	78.90	2109872	23.08	76.92
Rajasthan	9070853	16.19	83.81	11589179	24.22	75.78
Uttar Pradesh	13002266	39.65	60.35	15967953	38.43	61.57
Bihar	7491603	62.57	37.43	9502798	60.77	39.23
Sikkim	97327	8.46	91.54	113780	11.52	88.48
Arunachal Pradesh	189290	4.50	95.50	237384	7.50	92.50
Nagaland	358828	4.16	95.84	426765	7.29	92.71
Manipur	417997	15.24	84.76	565202	12.19	87.81
Mizoram	204151	6.86	93.14	195965	9.85	90.15
Tripura	328215	34.58	65.42	424195	32.89	67.11
Meghalaya	401655	20.12	79.88	481910	19.10	80.90
Assam	2667631	16.16	83.84	3428130	20.89	79.11
West Bengal	7093646	32.18	67.82	8040308	34.03	65.97
Jharkhand	3449174	39.60	60.40	4673505	44.81	55.19
Odisha	4474482	53.90	46.10	5638934	57.78	42.22
Chhattisgarh	4148012	44.09	55.91	5046359	54.44	45.56
Madhya Pradesh	9599151	40.44	59.56	11427163	51.47	48.53
Gujarat	6778235	39.13	60.87	6766833	47.14	52.86
Maharashtra	14321256	41.14	58.86	16811003	39.92	60.08
Andhra Pradesh	13231667	55.76	44.24	15237311	58.00	42.00
Karnataka	8299436	43.45	56.55	9602481	40.33	59.67
Goa	147637	13.44	86.56	157712	7.57	92.43
Kerala	2518242	21.54	78.46	3167494	14.68	85.32
Tamil Nadu	9777885	44.81	55.19	11449703	41.61	58.39

Author's Calculation.

Tables 2 and 3 present the compound growth rate (CGR) of male and female engaged as cultivators and agricultural labourers in agriculture. The CGR is calculated for the years 1991-2001, 2001-2011, and 1991-2011.

The CGR of the male cultivator for the period 1991-2011 is highest in states like Nagaland, Mizoram, Manipur, Arunachal Pradesh, and Himachal Pradesh, and it is negative in states like Goa, Kerala, Tamil Nadu, Bihar,

Uttar Pradesh, Odisha, and West Bengal. On the other hand, in the case of women cultivators, the highest CGR is reported in Punjab, followed by Rajasthan, Haryana, Bihar, and Uttar Pradesh. The lowest growth of female cultivators is in Madhya Pradesh, Goa, Tamil Nadu, Mizoram, and Kerala. The CGR of male and female cultivators in the remaining states is almost uniform, showing the very slightest difference among them.

Most of the states witnessed a fall in the CGR of male cultivators during 1991-2001 to 2001-2011. In the case of female cultivators, all the states have reported a fall in CGR in 2001-2011, compared to 1991-2001. Among a few states, like Punjab,

Haryana, Rajasthan, Gujarat, Bihar, Uttar Pradesh, West Bengal, and Tamil Nadu, there is a drastic decrease in CGR in 2001-2011, compared to 1991-2001. Almost all the Indian states have a negative CGR in 2001-2011.

Table 2: Compound Growth Rate (CGR) of Cultivators in India

States	Male Cultivators			Female Cultivators		
	CGR 1991-2011	CGR 1991-2001	CGR 2001-2011	CGR 1991-2011	CGR 1991-2001	CGR 2001-2011
Andhra Pradesh	-1.33	-0.84	-1.67	-0.12	1.50	-2.06
Arunachal Pradesh	1.32	1.47	1.09	1.10	1.75	0.45
Assam	0.45	-0.81	1.56	1.50	4.52	-1.24
Bihar	-1.00	-1.02	-0.93	3.90	9.03	-0.75
Goa	-3.03	-2.94	-2.91	-2.81	1.40	-6.26
Gujarat	0.48	0.10	0.79	1.46	8.07	-4.23
Haryana	0.46	1.33	-0.35	5.33	17.45	-4.81
Himachal Pradesh	1.29	1.74	0.79	4.74	9.54	0.30
Karnataka	0.12	0.41	-0.16	1.58	4.52	-1.09
Kerala	-2.40	-3.86	-0.91	0.74	1.41	0.10
Madhya Pradesh	-0.11	0.16	-0.35	-11.61	4.67	-2.03
Maharashtra	0.99	0.66	1.22	1.08	2.54	-0.29
Manipur	1.62	-1.20	4.10	1.34	-1.51	3.88
Meghalaya	0.96	1.06	0.80	1.23	2.26	0.24
Mizoram	1.46	3.08	-0.07	0.74	4.01	-2.15
Nagaland	1.72	4.02	-0.41	1.73	3.55	0.01
Odisha	-0.91	-1.93	0.08	1.78	6.00	-1.99
Punjab	-0.36	-0.68	-0.05	9.77	27.66	-4.75
Rajasthan	0.87	1.11	0.60	5.61	11.71	0.04
Sikkim	0.52	2.15	-0.96	1.47	4.36	-1.16
Tamil Nadu	-2.09	-2.41	-1.67	0.10	2.37	-1.89
Tripura	-0.48	-1.34	0.33	1.12	5.81	-2.99
Uttar Pradesh	-0.95	-0.77	-1.05	2.86	8.61	-2.24
West Bengal	-0.89	-1.44	-0.32	1.54	8.57	-4.48

Author's Calculation.

As shown in Table 3, the CGR of agricultural male labour during 1991-2011 is highest in Nagaland, followed by Mizoram, Madhya Pradesh, Rajasthan, Uttar Pradesh, Manipur, Himachal Pradesh, and Bihar. It is lowest and negative in Kerala, Punjab, and Goa. Almost all the states with the highest male agriculture labour have a higher growth in female agriculture labour, except Punjab, Sikkim, Odisha, Arunachal Pradesh, and West Bengal. These states having a higher CGR of female agricultural labour compared to their male counterpart.

The CGR of male agricultural labour has increased in most of the states in 2001-2011, compared to 1991-2001, except for states in the northeast, like Mizoram, Manipur, Nagaland, and Meghalaya. The opposite scenario is observed in the case of CGR of female agricultural labour. All the states have reported a decrease in CGR in 2001-2011 compared to 1991-2001, except Arunachal Pradesh. Most of the states have witnessed a drastic fall in CGR during the period 2001-2011 compared to 1991-2001.

Table 3: Compound Growth Rate (CGR) of Agricultural Labour in India

State	Male Agriculture Labour			Female Agriculture Labour		
	CGR 1991-2011	CGR 1991-2001	CGR 2001-2011	CGR 1991-2011	CGR 1991-2001	CGR 2001-2011
Andhra Pradesh	1.81	1.22	2.22	1.96	2.08	1.73
Arunachal Pradesh	2.02	-2.00	5.63	4.67	1.50	7.26
Assam	2.54	1.91	2.94	7.45	9.72	4.94
Bihar	3.74	3.55	3.66	5.77	9.04	2.52
Goa	-1.23	-1.72	-0.71	-1.65	1.99	-4.71
Gujarat	3.06	2.21	3.62	4.62	7.53	1.77
Haryana	1.55	-0.82	3.61	-6.57	16.28	-1.35
Himachal Pradesh	3.88	1.24	6.03	10.12	13.92	6.12
Karnataka	1.38	0.40	2.16	2.12	3.59	0.68
Kerala	-2.49	-2.69	-2.15	-1.87	-2.18	-1.46
Madhya Pradesh	5.19	4.10	5.80	5.74	7.26	4.00
Maharashtra	2.78	2.23	3.08	2.05	2.80	1.25
Manipur	4.13	9.53	-0.77	4.30	8.05	0.75
Meghalaya	3.46	5.42	1.50	4.37	7.62	1.24
Mizoram	6.53	7.14	5.52	8.70	14.58	3.09
Nagaland	9.31	11.45	6.77	13.78	20.36	7.23
Odisha	2.93	2.78	2.86	5.64	8.34	2.90
Punjab	-0.47	-2.15	1.10	8.12	18.50	-0.95
Rajasthan	4.53	1.60	6.91	8.77	10.82	6.35
Sikkim	1.98	-0.08	3.73	5.94	7.08	4.51
Tamil Nadu	0.77	0.19	1.23	1.20	1.55	0.80
Tripura	1.95	1.03	2.65	5.94	10.04	1.98
Uttar Pradesh	4.27	3.14	5.00	6.26	11.03	1.72
West Bengal	3.07	2.12	3.71	5.00	8.35	1.74

Author's Calculation.

Conclusion

The sole purpose of the study is to women's participation in agriculture and analyse the trends in women's participation. The study depicts that women's participation in agricultural labour has increased in all states except Kerala in 2011, compared to 2001. Some states, like Madhya Pradesh, Chhattisgarh, Rajasthan, and Gujarat have a phenomenal increase in the percentage of women agricultural labour in 2011 compared to 2001. The growth rate trend illustrates how much the population grew on average per year, over the multiple year periods. The CGR (1991-2011) of female cultivators is almost uniform in all the states except a few, like Punjab, Rajasthan, Haryana, and Himachal Pradesh, which have shown remarkable growth. The participation of women in agricultural labour has been more than their male counterparts in almost all the states. Only states like Haryana, Kerala, and Goa

have shown a negative CGR (1991-2011). Although, comparative results of CGR have shown that the growth of female agricultural labour has decreased in 2001-2011 compared to 1991-2001. To increase women's involvement in agriculture and related industries, as well as their access to property, credit, and government benefits, under the National Policy for Farmers, the Ministry of Agriculture and Farmers Welfare has to formulate and implement necessary policy initiatives such as easy access to credit at lower interest rate and joint leasing for both domestic and agricultural land. The government has framed a policy for issuing Kisan Credit Cards to women for creating livelihood through livestock practises and agricultural processing under credit facility provisions. Furthermore, a Subject Matter Specialist (SMS) of Home Science is given in each KVK to educate and raise awareness among women farmers about their role in improving society's socio-economic conditions.

Despite all efforts, the country still has a large gender gap that needs to be addressed, for the overall development of women and the enhancement of the rural landscape of each state in particular, and the country as a whole. Men and women are 2 halves of the same coin. Only when both sides are treated equally will society achieve balance. As a result, ignoring the role of women, especially in a developing country like India, will have detrimental effects on economic growth.

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