Original Research Article

Analyzing Gender Disparities in Land Ownership and Wage Rates in Indian Agriculture: An Empirical Study

Abstract

The Indian economy relies heavily on agriculture, employing approximately 48 percent of the workforce, including men, women, and children. Women contribute significantly as agricultural workers, and their role is gradually gaining recognition, although certain obstacles persist. This study aims to analyze the trend of women's operational land holdings and average land holding sizes from 1995 to 2016, using secondary data. The findings reveal a negative growth rate in the number of land holdings and average holding sizes for women. This indicates a substantial gap between men and women in terms of land ownership, which hampers women's potential as farmers. It also suggests that women may have limited knowledge about their land rights. Additionally, the study examines wage disparities between male and female laborers across different agricultural tasks. In the realm of sowing, gender inequality was observed, with the highest wage gap occurring in 2005-06 when female earnings were 31 percent lower than those of male laborers. By 2019-20, the disparity had decreased to 17.97 percent. In the case of threshing, the wage gap ranged from 20 percent to 15 percent, indicating a relatively smaller disparity. Overall, women tend to receive lower wages compared to men in various agricultural activities. However, the study reveals a positive trend of increasing wages for female laborers, growing at a faster rate than wages for male laborers over time. Hence, it is crucial to acknowledge and appreciate women's roles in agriculture while addressing the existing gender-based wage gap. Efforts should be made to promote gender equality and empower women in the agricultural sector. This involves tackling disparities in land ownership and improving women's understanding of their land rights. Additionally, it is essential to work towards ensuring fair wage rates for women and implementing equal pay for equal work. By recognizing and addressing these challenges, the agricultural sector can foster gender equality and create a more inclusive and equitable environment for women engaged in farming.

Keywords- Operational Holding, Land Rights, Rural Women, Gender Discrimination Agriculture Wages.

1. INTRODUCTION

Globally, women's labor force participation has remained relatively stable in the two decades from 1990 to 2010, at about 52% (ILO, 2014). The set-up of agriculture has changed fully with the shift of time in India, but the conception of women as the primary labor force in India has not changed for centuries. Universally, women are paid less than men. The gender pay gap is assessed to be 23 per cent. This means that women receive 77 percent of what men earn (ILO, 2015). Sustainable development goal 5 of Gender equality and women's rights emphasizes women's empowerment, yet in some cases gender inequality is found. Even after performing the same function, the female laborers are often unaware of their constitutional rights and unorganized. As a result, more than 90% of rural women are treated as cheap and secondary laborers (Javeed & Manuhaar, 2013). Women's unpaid work along with field work raises women's labour burden as opposed to men in agriculture (FAO 2011), which affects their wellbeing (Pattnaik *et. al* 2018). This impacts not just their economic status but also their nutritional level leaving them undernourished (FAO 2011). The participation of women in agriculture is growing, on the one hand, and discrimination is being observed, on the other. Apart from wage discrimination, it can be seen that women do not have an equal access to land when compared with their male counterparts. (Landesa 2019). A study conducted by Chatterjee et al.'s highlights a significant gender disparity in the acquisition of agricultural land in India. The findings reveal that male family members account for the acquisition of 83% of the country's agricultural land, while female counterparts acquire less than 2%. This stark contrast emphasizes the unequal distribution of land based on gender. (Chatterjee *et al* 2018) Empowering women through land ownership rights has the potential to increase overall agricultural output in developing countries by 2.5 to 4 per cent and to reduce hunger worldwide by 12-17% (FAO, 2011). There is a need to close the gender gap and acknowledge the role of women in agriculture. Economic independence of women increases their access to new opportunities and better health (Gupta *et al* 2019). Thus, overcoming twin burden of gender disparity and malnutrition. Thus, this urges a need to study the trend in wages and its growth in both genders. This research paper highlights the changing status of women in agriculture on account of operational holdings what they possess and trends in wages of men and women in agricultural operations like sowing and threshing.

2. MATERIAL AND METHODS

2.1 Nature of data: This study is mainly based on secondary data. Quinquennial all India secondary data on number of operation holdings and average size holdings possessed by women were obtained from Indian Agricultural census reports of the last five censuses from 1995 to 2015-16 obtained from the Department of Agriculture, Cooperation and Farmers Welfare, Ministry of Agriculture and Famers Welfare, Government of India. The data were collected gender-wise and size-class wise. To study the differences in wages paid to male and female agricultural laborers, the data was collected for male and female laborers and the period of study was from 1999 to 2019 (indiastats.com) Field operations for which wage rates were studied were sowing, and threshing.

2.2 Statistical tools: Various growth rates like average growth rate and compound annual growth rate were used to study the trends.

Average growth rate -To calculate the mean variable X growth rate over n-periods in time, say X0, X1, …, Xn. Where variable X can be any interest variable, and the n-periods can be defined as any discrete-time measure, such as days, months, or years. This method only takes into consideration the first and last time-series observations, not the intermediate values. The average growth rate has been calculated using the following formula in MS Excel (ESCAP, U. 2015).

$$r_{AVG} = \left(\frac{X_n}{X_0} - 1 \right) / n$$

Compound Annual Growth Rate (CAGR).Growth rate are worked out to examine the tendency of variable to increase, decrease or stagnant over a period of time. The rate of change of "Yt" per unit of time to express as a function of the magnitude of "Yt" itself is usually termed as the compound annual growth rate (CAGR) which can be expressed mathematically as (Gujarati, D. N. (2022):

$Y_t = Y_0 (1 + r)^t$

Where, "Y_0" be the value of variable under study in the base period.

"Y_t" = value of a variable in time "t".

“r” = value of Compound Growth Rate (CAGR)

The expression above if multiplied by 100, in percentage form, gives the compound growth rate of "Yt."

$$\text{Percentage difference} = \frac{\text{wage of male labor - wage of female labor}}{\text{Wage of male labor}} \times 100$$

CAGR was calculated using statistical package for the social sciences software (SPSS).

3. Results and Discussion

3.1 Gender wise composition of Cultivators and agricultural laborers in Agriculture over the decade

Agricultural workers have been listed by the Indian Census as cultivators and agricultural labourers. An individual shall be classified as a farmer if he or she is engaged in farming land owned or owned by the organization or held by individual persons or organizations for repayment of income, kind or share. On the other hand, an individual who serves on another person's land for earnings in cash or kind or stake is called an agricultural worker.

Table-1 Gender-wise Distribution of workers and percentage of Cultivators, Agricultural Labourers, Household industry(HHI) workers and Other workers (All India) 2001-2011

	Percentage to Total Workers					
	2001			**2011**		
	Male	**Female**	**Total**	**Male**	**Female**	**Total**
Cultivators (%)	31.06	32.93	31.65	24.92	24.01	24.64
Agricultural labourers (%)	20.85	38.87	26.55	18.56	55.21	29.96
HHI workers (%)	3.18	6.46	4.22	2.95	5.71	3.81
Other workers (%)	44.92	21.75	37.59	47.2	29.18	41.60
Total workers (in nos.)	275014476	127220248	402234724	331865930	149877381	481743311

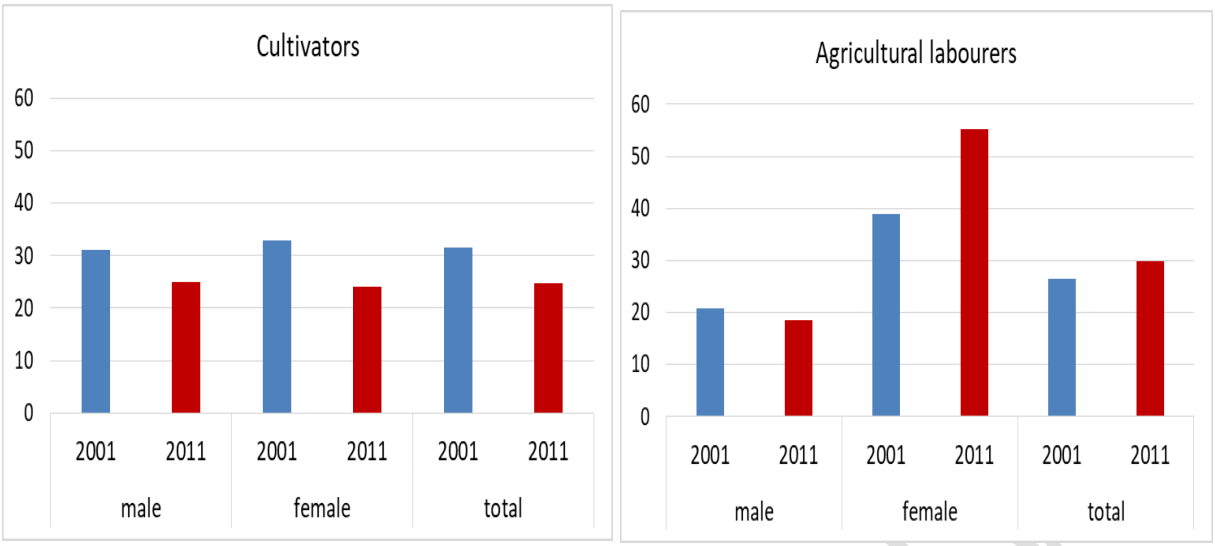

Fig.1. Gender wise percentage of Cultivators and agricultural laborers in Agriculture (2001-11) (*Source: Census of India)*

If we compare the percentages of male and female agricultural workers (either as cultivators or agricultural labourers), out of total workers in India, we can see that females have been stimulated away more abruptly than their male counterparts from being cultivators, while they have been drawn to becoming agricultural labourers, this shows a deterioration in the level of work. The status of women in agriculture is also questionable on this note. We can see that their percentage has dropped from 32.93% in 2001 to 24.01% in 2011, while there is a stark contrast in the increased percentage of female agricultural labourers from 38.87% to 55.21% during the decade 2001–11(Fig.1) This shows that there are constantly growing tendencies in agriculture labour in India and particularly for women. This is troubling the development of India. For the first time since independence, agricultural labourers have outstripped cultivators. One of the explanations, which has been cited by the Economic Survey 2017–18 and supported by Das et al 2021, claims that there is a "feminization" of the agriculture sector as a result of increasing male rural-to-urban migration, with more women playing an increasing number of roles as farmers, entrepreneurs, and laborers.

3.2: Trend in the number of landholdings and average holdings of women in Agriculture

Operational Holding refers to land that is used in whole or in part for agricultural production and that is managed as one technical unit by one person alone or with others irrespective of title, legal type, size or place. According to the 2011 Census, 55% of the total female workers were agricultural labourers and 24% were cultivators (Table- 1). However,

only 12.8% of the operating holdings were held by women, reflecting the gender imbalance in land tenure ownership in agriculture. Study of trend of operational holding of women reflects the status of women as farmers, and at the same time, it tells how much women are aware of their land rights.

Table-2 Growth rate of no. of operational holding (in 1000) possessed by women in India between1995-96 and 2015-16

Growth rate of no. of operational holding (in 1000) possessed by women in India				
	Average growth rate			
Size class	**1995-96 to 2000-01**	**2000-01 to 2005-06**	**2005-06 to 2010-11**	**2010-11 to 2015-16**
Marginal	-0.76	-0.76	-0.75	-0.76
Small	-0.75	-0.77	-0.77	-0.76
Semi-medium	-0.76	-0.77	-0.78	-0.77
Medium	-0.78	-0.78	-0.79	-0.78
Large	-0.8	-0.79	-0.8	-0.8

Source: Agricultural Census of India

The growth rate of the number of women in the operational holdings has decreased since 1995 and in all land classes (Table 2). The growth rate is similar over the years i.e. (-0.76) showing that not much improvement has been made in women's holdings and although this number is not large, there is still negative growth. It reveals that women are way behind than men in occupancy of land holdings in agriculture that can establish them as sole farm operators on farm.

Table-3 Growth rate of Average land holding size (in 1000) of women in India between 1995-96 and 2015-16

Growth rate of Average land holding size (in 1000) possessed by women in India				
Size class	Average growth rate			
	1995-96 to 2000-01	2000-01 to 2005-06	2005-06 to 2010-11	2010-11 to 2015-16
Marginal	-0.79	-0.8	-0.78	-0.80
Small	-0.79	-0.80	-0.79	-0.80
Semi-medium	-0.80	-0.80	-0.79	-0.80

Medium	-0.80	-0.80	-0.79	-0.80
Large	-0.81	-0.80	-0.77	-0.80

Source: Agricultural Census of India

When coming to the average holding size possessed by women that can reflect the exact status of women in agriculture like what she has as a farmer, on what scale she can operate but it has been found in the that the growth rate of the size of the average holding of women has decreased over time in all land classes (Table 3). The growth rate is nearly similar over the years i.e. (- 0.79), showing that there has been little significant improvement in women's holdings. The interesting thing is that there has been found also a slight increase in the size of women's average holding in the second half of the decade (2005-2010), that may reflect some policies envisaged for women during that period but, after that, it again shows a negative trend in the years that followed.

3.3 **Trends in the wages of women workers in different farm operations**

Sowing refers to the placing of seeds in the soil. There is the requirement of laborers for sowing and transplanting operations, while threshing work involves the use of threshers, manual separation of crop products through sticks, hand-operated machines, etc. In general, all field crops require threshers, and males and females are equally involved in the task.

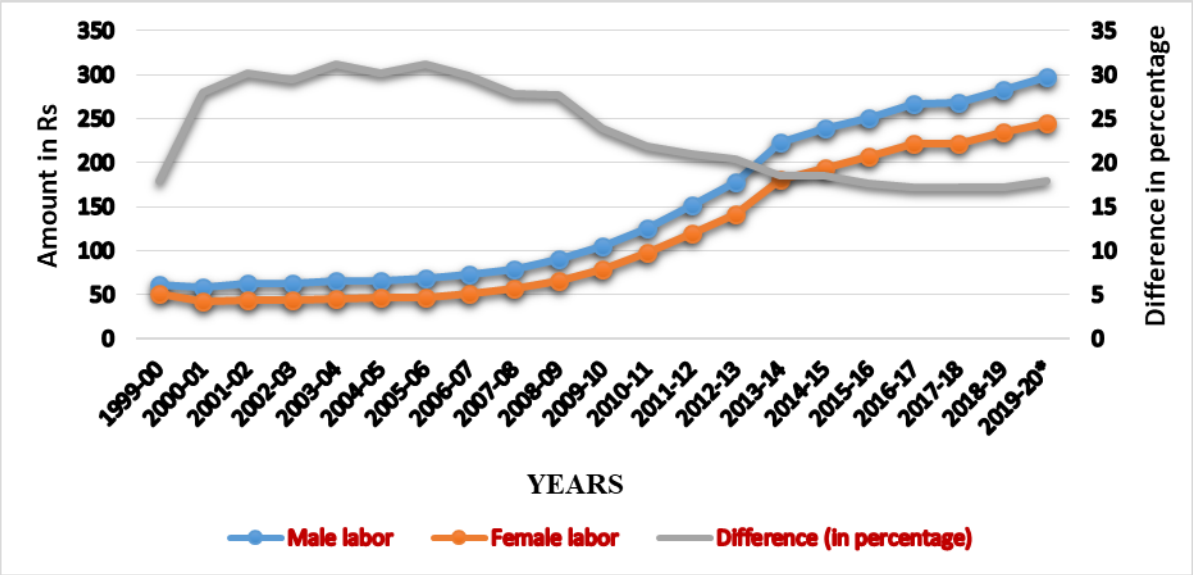

Fig.2. Gender wise wage rate of agricultural labors for sowing at all India level from 1999-2000 to 2019-20. *(Source- indiastats.com)*

The female laborers received 17 percent fewer wages than male laborers in the year 1999-00 (Fig 2). There was a significant decrease in wages received, and women received 28 percent less than men's labor in 2000-01. In 2010-11, female labor received about 22 percent less than male labor. The gap further narrowed, falling to 17 percent in 2019-20. Salaries in sowing have shown an increase from 2000-01 to 2006-07. This shows that there is discrimination in wages in sowing operations and that female labor receives lower wages compared to male labor.

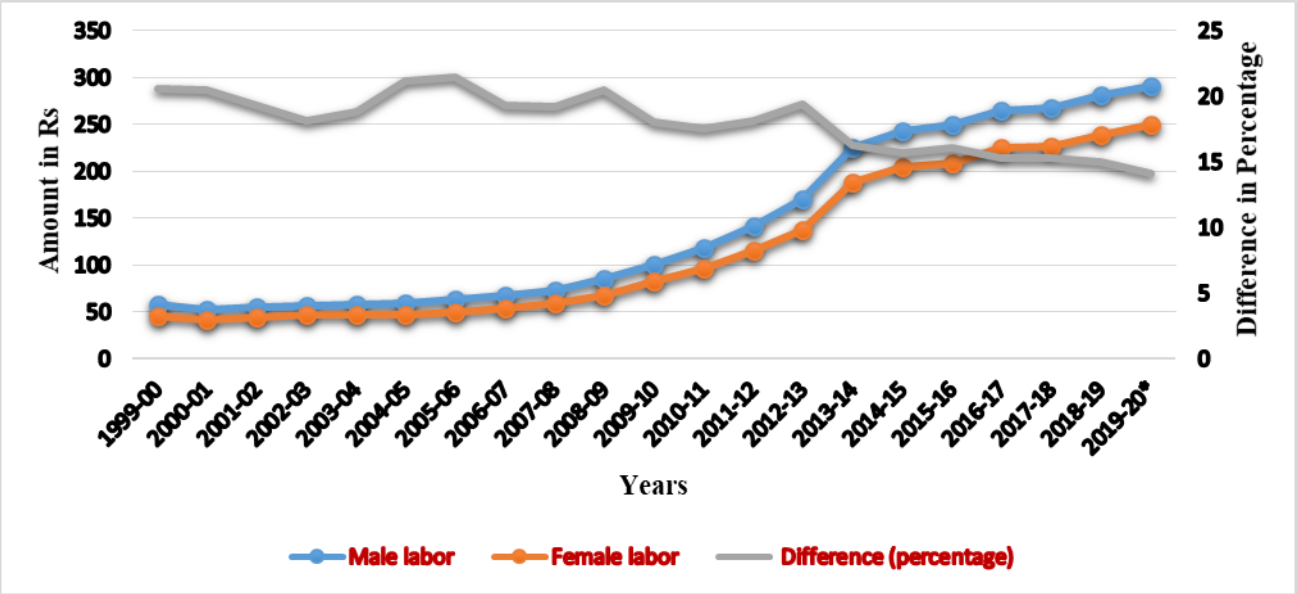

Fig 3. Gender wise wage rate of agricultural labors for threshing at all India level from 1999-2000 to 2019-20. *(Source- indiastats.com)*

In 1999-00, female labor received 20% fewer wages compared to male labor in case of threshing. This difference decreased in the succession of two years, but again an increase was seen in the next year 2004 where the difference was 21 percent. (Fig 3) The data also reveals that although the wage rate increased in the year 2017-18, the difference remained the same until 2018-19, it means that in the last three years, female labor received 15 percent fewer wages compared to male labor in the same period for the same work of threshing. In the year 2019-20, it further gets reduced to 14 percent that is a good indication but this concludes a remark that wage discrimination still exists in threshing operation and female laborers receive fewer wages as compared to male laborers. The gender wage gap in the agricultural sector persists despite women making significant contributions to agricultural labor, as noted by Deere and Doss (2006), Their research reveals that women in agriculture typically earn only 70-80% of what men earn on average. This disparity can be attributed to

factors such as limited access to education and training, cultural norms, lack of land ownership and property rights (Pattnaik *et. al* 2022).

3.4 **The growth rate of wages of male and female agricultural laborers**

In order to find out the growth rate of wages gender wise, the whole period is divided into three sub-periods i.e., 1999-2005, 2006-2012, and 2013-2019. The compound annual growth rate (CAGR) of the wage rate for male and female laborers was calculated first for each period and was also calculated altogether separately for the complete period of 1999-00 to 2019-20.

Table -4 Gender-wise CAGR of wage rate of Agricultural Laborers for field operations from 1999-2019

Field operations	Period I (1999-2005)		Period II (2006-2012)		Period -III (2013-2019)		Total Period (1999-2019)	
	Male	Female	Male	Female	Male	Female	Male	Female
Sowing	2.2	0	16	19	4	4	10.3	11.3
Threshing	2	1.8	17.1	17.4	4.1	4.5	10.9	11.4

Calculated by author

If we look period wise, then in the second period that is from 2006 to 2012, the growth in wages of female labor was much more than men as compared to other two periods concerning every operation, and in case of sowing it is highest, i.e.,19 percent increase in case of female labors. It refers to some conceptions that some policies had been implemented and revised that helped in increasing wages growth during that period. One such scheme is MGNREGA i.e., Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), Government of India flagship programmed, implemented by the Ministry of Rural Development (MORD) since 2005 to improve the security of the rural livelihoods, sustainable development mainly aimed at ensuring wage jobs for at least 100 days a year, per household. The average daily wage rates of male farmworkers have grown sharply after MGNREGA in various regions in the country as compared to almost a negative growth rate before MGNREGA. Both the farm and non-farm wages have increased by almost three times during the period of MGNREGA implementation in some areas (Nagaraj *et. al*, 2014).

The growth in wages of female labor was more as compared to males from 1999 to 2019-20. In the case of sowing the difference was not significant but still, the CAGR for females was

11.3 which was higher than male i.e., 10.3. In the case of threshing, the growth was almost similar to the male average wage rate at 10.9 percent CAGR and female labor wage growth rate at 11.4 percent showing that both the wages have increased almost parallel. This concludes that the compounded annual growth of average growth from1999 to 2019 was higher for female laborers as compared to male laborers. Showing that the disparity in wages has abridged over time, but still persists. Such a trend should be continued so that wage discrimination is brought down significantly. The causes and consequences of the disparity of land holdings and wages between males and females in agriculture can be attributed to several factors. Here are some of the key causes and consequences:

- Gender Inequality and Discrimination: Deep-rooted gender inequalities and discriminatory practices result in unequal access to land ownership and control for women in agriculture.
- Legal and Policy Frameworks: Inadequate legal and policy frameworks often fail to protect women's land rights and address gender disparities in agricultural land ownership (Agarwal,2010).
- Cultural Norms and Traditional Practices: Cultural norms and traditional practices can reinforce the perception that land ownership and control are male-dominated, limiting women's opportunities for land ownership.
- Lack of Access to Credit and Resources: Limited access to credit, financial services, and resources further hinders women's ability to acquire and invest in agricultural land (Quisumbing,2010).

Consequences:

- Economic Inequality: The disparity in land holdings and wages perpetuates economic inequalities between men and women in agriculture, limiting women's income potential and economic empowerment.
- Food Security and Productivity: Unequal access to land can negatively impact women's ability to engage in agricultural production, limiting food security and overall agricultural productivity (Meinzen *et al* 2014).
- Gender-based Violence: Land-related disputes and conflicts can lead to an increase in gender-based violence, as women often face threats, intimidation, and forced eviction due to their limited land rights.

- Social Inequality: The unequal distribution of land ownership reinforces gender-based social inequalities, contributing to the marginalization and disempowerment of women in agricultural communities.

Policy and Programmes:

1. Government policies to reduce gender inequality in land ownership and wages in agriculture in India include:The Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA): This scheme guarantees at least 100 days of wage employment in a financial year to rural households. It aims to provide equal wages for men and women in agricultural and rural labor, promoting gender equality in income generation.

2. The National Policy for Farmers (2007): This policy recognizes the importance of women farmers and emphasizes the need to ensure their equal access to resources, including land. It encourages the issuance of joint titles for land ownership, where both spouses' names are included, to promote gender equality in land rights (pib.gov.in).

3. The National Rural Livelihoods Mission (NRLM): This program focuses on empowering rural women through self-help groups (SHGs) and providing them with access to credit, resources, and training. It aims to enhance women's economic participation and improve their bargaining power in agriculture (Singh & Kundu,2021).

4. The National Policy for Skill Development and Entrepreneurship (2015): This policy emphasizes skill development and entrepreneurship opportunities for women in agriculture. It promotes training programs and initiatives that equip women with the necessary skills to enhance their productivity and income in the agricultural sector. (Sangi & Srija, 2015).

5. The Beti Bachao, Beti Padhao (Save the daughter, Educate the daughter) campaign: This initiative focuses on promoting the education and welfare of girls. By emphasizing education, it aims to empower women, increase their awareness of land rights, and enhance their participation in decision-making processes related to land ownership. (Parmar & Sharma,2020).

These policies and initiatives, among others, are aimed at reducing gender inequality in land ownership and wages in agriculture in India. They seek to address the barriers women face and promote their equal participation and rights in the agricultural sector.

4. Conclusion

Women are active widely in food production but the acquaintance and maintenance of land by them are rather limited because they rarely own the land they farm, both legal and patriarchal gender standards may prohibit or make it difficult for women to do so. Therefore, women need to be conscious of their rights and challenge social norms that restrict women's land rights. As it was found in this study that there is a negative rate of growth in the number of operating holdings and an average holding size for women, which means that women are far behind men in the occupation of land holdings in agriculture that can develop them as farmers, It can also be anticipated that women's understanding of their land rights is insufficient. Also, there is an urgent need to change the inheritance practices and give land rights to women as well.

The study of wage trends shows that gender inequality was observed in sowing with the highest gap in 2005-06, where female earnings were 31% lower than male labor, the disparity in 2019-20 was 17.97 per cent. The threshing gap was found to range from 20 per cent to 15 per cent. In the threshing case, this indicates that wage disparity was lower. It was concluded that in various agricultural activities women's labor gets lower wage rates compared to men, but over time wages paid to female labor have risen, and at a rate of growth that is more compared to male labor. Women's positions in agriculture need to be recognized, and those patterns need to be maintained in order to further reduce the gender-based wage gap. Wage rates should be equal for both male and female workers in agriculture

There should also be a mechanism for scrutinizing that women workers are paid equal salaries, or not. Gender-specific approaches are also important in empowering women workers who in return help us leverage the diverse demographic dividend in our country. An 'inclusive progressive agricultural strategy' would call for gender-specific action to boost small-scale farms' productivity, including women as active supporters of the rural change.

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