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Women's Participation in Bihar Agriculture: Evidences from Cost of Cultivation Data

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ABSTRACT

Understanding the nature of rural landscape change during the urbanization process is vital to formulate more elaborate rural landscape management plans for sustainable development. However, there is a few information depicting how rural landscapes change at a local level and limited evidence addressing how to improve the practicability of these management approaches. According to the 2011 Socio-Economic Caste Census (SECC), there were 244.9 million households in India of which 179.7 million households or 833 million people were in rural areas. The SECC numbers show that 87.2 million rural households reported one of more criteria of deprivation. And 92 million households are engaged in casual manual labour and agricultural activities. In agriculture, the role of women cannot be denied. They contribute in every operation of agricultural activities and are also active in allied sectors like cattle management, dairying, beekeeping, goat rearing mushroom production and poultry farming etc. Women participation in total workforce was assessed 27.44 per cent as against 72.56 per cent by male workforce in 2011. Share of women agricultural workforce in total workforce was computed to be 16.57 per cent in 2001 which declined to 6.23 per cent in 2011. Causes of decline may be their participation other sectors with improvement in their literacy rate which rose to 51.50 per cent in 2011 as compared to 33.57 per cent in 2001. The male-female sex ratio has registered a decline of 0.11 per cent as compared to 2001 census. Women holding land account for only 13.31 per cent as against 87.27 per cent by men in Bihar. Share of women agricultural workforce in total agricultural workforce was estimated to be 19.32 per cent as per census 2011. Analysis of CACP unit level data of Bihar for the year 2013-14, revealed that the contribution of women in agricultural activities was assessed to be 35.94 per cent. Women's contribution in agriculture is significant and plays diverse role, still their wages were found 7.04 per cent less than their male counterparts during 2015-16. To strengthen women's participation in agriculture and allied sectors and to improve their access to land, loan and other facilities, Ministry of Agriculture and Farmers Welfare has policy provisions like joint leasing for both domestic and agricultural land under National policy for farmers. Under credit facility provisions government has framed policy for issuing Kisan Credit Cards to women for creating livelihood through livestock practices and agricultural processing. Beside all efforts, there is still a wide gender gap in the state which may be addressed properly for overall development of women and enhancing the rural landscape of the state in particular and nation in general. The paper tries to analyze the role women in agricultural development of Bihar and the issues confronting them.

Keywords: Gender studies, Women in Agriculture, Bihar, Agricultural development, Kisan credit cards, Socio-economic caste census

INTRODUCTION

Recently we have marked 150th birth anniversary of father of nation, M.K. Gandhi, it is perhaps fitting to revisit the Gandhian approach to rural development. During the struggle for independence Gandhi ji had thought that the development of India could be made possible only when

the villages would develop as India is a country of villages. Even after 73 years of Indian independence, 66.46 per cent of people are living in rural areas and 58 per cent people are depending on the agricultural sector for their livelihood. According to the Indian Fiscal commission, "Agriculture is not merely an occupation; it is a way of life

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which for centuries has shaped the thought and outlook of many millions of people.”

Agriculture is the first culture that man learnt to practice as a means of living and a way of life. It is the primary sector of any economy either it is developed or developing. Agriculture is considered as the backbone of the Indian rural economy and is a family enterprise. It is an important engine of growth and poverty reduction. India's economic security is heavily dependent on agriculture. In terms of employment, it is the most important source of income, especially for rural women. According to Economic Survey of India only, 17-18 per cent of India's Gross Domestic Product (GDP) is accounted for by agricultural production. Based on 2012 data, India is home to the fourth largest agricultural sector in the world. It has an estimated 180 million hectares of farmland with 140 million of which are planted and continuously cultivated.

Women in India are the backbone of the society and important resource in agriculture and rural economy. They make essential contributions to the agricultural development and allied and household activities and pursue multiple livelihood strategies. These activities include producing agricultural crop, cleaning animals, preparing food, working in rural enterprises, engaging in trade and marketing, caring family members and maintaining their homes. About 63 per cent of all economically active men are engaged in agriculture as compared to 78 per cent of women. Traditionally, women have always played an important role in agriculture- as farmers, co-farmers, wage labours and managers of farms. They have conventionally been producers of food from seed to kitchen. They carry the heavier work burden in food production and because of gender discrimination, get lower returns for their work. The multiple role of women leads to a significant contribution in real terms to the productive system. But it is unfortunate that her role is not adequately recognized and properly her contribution not qualified in the male-dominated society. They have been underrepresented in the development process. Despite their dominance of the labour force, women in India still face extreme disadvantage in terms of pay, land rights and representation in local farmers' organizations. Apart from this, women face many challenges due to limited access to productive resources in agricultural production which prevent them in enhancing their productivity (Slathia, 2015).

The scenario of agriculture has completely changed with change in time but from centuries one thing that didn't

change is the visualization of women as key labour in this sector. Agriculture sector as a whole has developed and emerged immensely with the infusion of science and technology. But this latest emergence is not capable of plummeting the ignorance of women labour as an integral part of this sector. In developing countries like India, agriculture continues to absorb and employ 2/3rd of the female work force but fails to give them recognition of employed labour. The female labour force in developing nations still faces the oppressive status of being majorly responsible for family and household maintenance. In addition to that their contribution of being an agriculture labour is suppressed under the status of family labour who works in farm in addition to her regular household chores. These problems of the rural women are further accentuated by the tribulations of illiteracy, underdevelopment, unemployment and poverty. Despite of the major productive women labor force in agriculture their needs and problems are somewhat ignored by the rural development initiatives. The multitasking potentiality of female labour bought significant propositions for agricultural productivity, rural production, economic vitality, household food security, family health, family economic security and welfare (Ghosh and Ghosh, 2014).

The status of female employment in India has been the subject of much debate of late in the national fora, due to its intrinsic relationship with female empowerment. The Economic Survey 2017-18 mentions an Organisation of Economic Cooperation and Development (OECD) analysis that indicates that the proportion of women who work has steadily reduced over time, from 36 per cent to 24 percent in a decade, (when examined in 2015-16) signalling a decline of 33.3 percent in Female Labour Force Participation (FLFP) in ten years. It also showed that the gender gap in Labour Force Participation Rate (LFPR) is more than 50 percentage points in India. 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*”. Among peers, India performs the worst compared to Brazil, Mexico and Indonesia, according to both indicators analysed by OECD. This is also corroborated by the estimates released by the International Labour Organisation (ILO) and World Bank. They have defined FLFP as percentage of working female population in the 15 years and above demographic.

Agriculture is the backbone of economy of not only Bihar but of country as a whole. In Bihar the average

farm size is approximately 0.39 ha, that too is highly fragmented, resulting in many miniscule plots. Further about 60 percent rural households are landless in the state. This situation is more critical in case of women farmers who hold only 13.31 per cent land which is lower than the national average of 13.50 per cent.

Women play multidimensional role in sustainable development of economy through their contribution in household and agricultural activities (Singh *et al.*, 2012). They contribute in every field of agriculture- from land preparation to harvesting of crops. Apart from this, they also manage allied activities like dairy cattle, fodder collection, beekeeping, mushroom production, goat rearing and poultry etc. They contribute substantially in family income generation directly thus help enhancing social status of their families (Shahi *et al.*, 2018). Income and its source are important measures to understand the level of households' living standard and ways to achieve that level. Income along with households' expenditure and possessions reveal aspects of income volatility and provides an additional measure of inequality (Meena *et al.*, 2017; Meena *et al.*, 2018). Women play prime role in traditional farming from manual farm activities to agro-processing to homemaking (Majumdar and Shah, 2017). On various occasions, women have proved that they can step up farm modernization using modern farm implements, however contribution are less recognized (Shahi *et al.*, 2018). In the era of gender equality and emphasizing women empowerment in all round development of the society can't be denied. Women sacrifices for the family are incomparable.

Taking into consideration the productive and optimistic participation of women in agriculture the present study "Women Participation in Changing Rural Landscape: Evidences from Cost of Cultivation Data of Bihar has been undertaken. Many of the systematic studies identify the trends of working female labour in agriculture. Empirical studies were conducted and explained on gender roles and gender analysis. This piece of research will further highlight agricultural operations wise female participation in agriculture with reference to the state of Bihar. Efforts were also put to highlight the wage discrimination to women.

MATERIALS AND METHODS

The simple statistical methods like averages and percentage were used to analyze the status of women, gender wise

population, literacy, share in total and agricultural workforce, and share in landholdings, wage rate and operation-wise participation. The data were taken from Census 2001 and 2011, different Wages Report, Govt. of India, and for operation wise participation of women in agriculture, unit level data was taken from Cost of Cultivation Scheme, Ministry of Agriculture and Farmer's Welfare running in the state of Bihar.

RESULTS AND DISCUSSION

Table 1 presents the population of women, their literacy rate and sex ratio in the state. It can be seen from the table that population of women has increased by 25.13 per cent from 2001 to 2011 as compared to national increase of only 17.6 per cent. The faster population increase in population of women is a positive sign of growth of the state. Female literacy rate is still low (51.50%) as compared to male literacy. It is also much below with respect to national female literacy of 65.5 per cent as per census 2011. Sex ratio has declined by 0.11 per cent from 2001 to 2011. But at nation level it has registered increase of 0.75 per cent. Increase in female literacy and population share is good sign of socio-economic growth of the society.

Table 1: Population and literacy rate of women in Bihar

Particulars	2001	2011	% change from 2001 to 2011
Total population (lakh)	830	1041	25.42
Female population (lakh)	398	498	25.13
Male population (lakh)	432	543	25.69
Female literacy rate (%)	33.57	51.50	-
Male literacy rate (%)	59.70	71.20	-
Sex ratio (female per 1000 male)	919	918	-0.11

Source: Census data for Bihar

The share of agricultural workers in total workforce is presented in Table 2. The table revealed that share of agricultural work force in total workforce has declined from 47.98 per cent in 2001 to 27.46 per cent in 2011. Women's share has also come down from 16.57 to 6.23 per cent in as per census of 2011. The decline could be due to increase in literacy rate among women, as literate women are getting engaged in other vocations like SHG's, government and private jobs. Work participation in public and private sector has improved the status of women and

Table 2: Share of agricultural workers in total workforce

Year	Particulars	Work force (lakh)	Agricultural work force (Lakh)	Gender wise participation in total work force (%)	Participation of agricultural work force to total work force (%)
2001	Total	279.74	134.22	100.00	47.98
	Female	74.91	46.87	26.78	16.57
	Male	204.83	128.16	73.22	45.81
2011	Total	347.25	95.37	100.00	27.46
	Female	95.28	21.64	27.44	6.23
	Male	252.22	73.73	72.56	21.23

Source: Census data for Bihar

Table 3: Total workers in agriculture in Bihar

Particulars		2011 (lakh)		
		Total	Rural	Urban
Cultivators	Total	54.13	52.61	1.52
	Female	7.24	7.09	0.14
	Male	46.89	45.51	1.37
Agricultural labour	Total	95.37	92.26	3.12
	Female	21.64	21.13	0.51
	Male	73.73	71.13	2.60
Total Agricultural workers	Total	149.50	144.87	4.64
	Female	28.88	28.22	0.65
	Male	120.62	116.64	3.97
Total Work force	Total	347.25	313.60	33.65
	Female	95.03	89.23	5.79
	Male	252.22	224.37	27.85
% of female/male in total agricultural work force	Female	19.32	19.48	14.01
	Male	80.68	80.51	85.56

Source: Census 2011 data for Bihar

socio-economic background of family has also improved (Meena *et al.*, 2015).

The increase in farm land holdings a consistent trend since the 1970s, has been slowing down in the past 20 years but there is a rise in the number of female land holders, a possible indicator of higher involvement in farm activities, the provisional agriculture census 2015-16, has revealed.

The trend may reflect migration of men to cities for non-agricultural activities and also explain slowing down of land division as rural people seek alternate livelihoods. The figures show landholdings have doubled in past 45 years (from 71 million in 1970-71 to 146 million in 2015-

16), resulting in decline in average size of farms by more than 50 per cent, a real worry for policy-makers as this makes agriculture un-remunerative for farmers.

The gender wise worker participation in agriculture in rural and urban Bihar is presented in Table 3. The table reflected that as per census 2011, out of total 54.13 lakh cultivators in the state women cultivators were only 7.24 lakh with majority 7.09 lakhs living in rural area of the state. The share of female agricultural workforce in total agricultural workforce was estimated to be 19.32 per cent in the state. Female agricultural workers in total agricultural worker were computed to be 19.48 and 14.01 per cent, for rural and urban areas, respectively.

Participation of women in different agricultural operations:

Participation of women in different activities of agricultural operation was estimated using plot level data of Cost of Cultivation Scheme for the year 2013-14 for the state of Bihar and the findings thus obtained are shown in Table 4. The findings pointed out that major participation of women labour was observed in harvesting of crops (14.56%) followed by sowing of crops (11.36%). Overall participation in all the farming operations was assessed to be 35.94 per cent.

Ownership of land resources is another issue confronting the women farmers in Bihar. Female land holdings accounted for 8.50 lakh ha in the state (Table 5) which constituted only 13.31 per cent of the total land holdings 66.88 lakh ha of the state. Out of total marginal land holding accounted 14.55 per cent followed by small 12.82 per cent. Total share of male in landholdings in the state was recorded 86.27 per cent which reflected dominancy of male in the society.

Table 4: Percentage participation of female in different agricultural activities in Bihar (%)

Operations	Male	Female
Land preparation	2.79	0.01
Sowing	14.34	11.36
Plant protection	0.25	0.00
Manuring	6.32	0.07
Inter-culture operations	3.10	5.00
Irrigation	10.34	0.06
Harvesting	16.46	14.56
Threshing /Winnowing	9.68	4.85
Transport on farm	0.78	0.01
Total	64.06	35.94

Source: Computed from plot level data of Cost of Cultivation Scheme for Bihar of 2013-14.

Meena *et al.* (2018) reported that in Madhubani district of Bihar despite low resources at their disposal women headed households performed all the agricultural operations including taking crucial managerial decisions.

Gender wage gap: Women agricultural worker represent sizeable proportions continue to receive lower wages than men. The ministry of labour puts the difference at 60 per cent of women wages, while the Indian Labour Journal showed that women are paid 75 per cent of men wages (Yadav, 2014). Low wage rates of female labour are due to the seasonal and informal nature of employment, wrong pre-assumption that female do less work than their men counterpart (Sakamma and Umesh, 2018). Table 6 revealed that the gap between wages of male and female decreased. It was 14.35 per cent in TE-2008 and a wide gap of 17.33 per cent was computed during TE-2011 thereafter, this gap between male wage rate and female wage rate was decreased to 7.04 per cent during TE-2016.

Table 7 show the ratio of female to male wage rates for sowing /transplanting /weeding, harvesting /threshing / winnowing, and unskilled labour for three time periods: 1998-99 to 2000-1, 2006-7 to 2008-9, and 2013-14 to 2016-2017, at real prices. We use a three-year average to compare the beginning and end of the sub-periods under study.

Table 6: Gender wise wage rate (Rs/day) in Bihar for different period

Period	Male (Rs/day)	Female (Rs/day)	Percentage difference
TE-2008	67.33	57.67	14.35
TE-2011	100.00	82.67	17.33
TE-2014	172.00	150.67	12.40
TE-2016	203.67	189.33	7.04

Source: Wages Report, GoI

Table 5: Gender wise distribution area (lakh ha) in different classes in Bihar

Particulars	Marginal	Small	Semi-medium	Medium	Large	Total
Female Land holdings	5.34	1.52	1.23	0.38	0.035	8.50
Male Land holdings	31.28	10.29	9.45	3.73	0.36	55.11
Total land holdings	36.69	11.86	10.73	4.15	0.45	63.88
% of female land holding in total land holding	14.55	12.82	11.46	9.16	7.78	13.31
% of male land holding in total land holding	85.25	86.76	88.07	89.88	80.00	86.27

Source: Agricultural census 2010-11

Table 7: Changes in female-male ratio of wage rates for different operations in Bihar

Particulars	1998-99 to 2000-01	2006-07 to 2008-09	2014-15 to 2016-17
Sowing/transplanting/weeding	0.90	0.91	0.85
Harvesting/threshing/winnowing	0.85	0.92	0.91
Wage rate of unskilled labour	0.87	0.89	0.85

Source: Computed from Wage Rates in Rural India, various issues.

Table 8: Real wage rates for different agricultural operation in Bihar, 1998–2017 (Rupees)

Year	Operation wise wage rate					
	Ploughing		Sowing/transplanting/ weeding		Harvesting/threshing/ winnowing	
	Male	Female	Male	Female	Male	Female
1998-99	71.56	-	67.1	59.80	65.60	55.26
1999-2000	75.73	-	67.80	60.16	65.36	55.28
2000-01	85.18	-	76.45	69.62	73.13	62.30
2001-02	91.14	-	79.47	72.29	78.70	69.63
2002-03	92.40	-	84.84	76.74	87.50	76.36
2003-04	93.67	-	83.94	75.54	85.97	74.01
2004-05	92.41	-	81.26	73.55	83.96	72.08
2005-06	91.56	-	78.35	71.03	85.59	76.65
2006-07	91.69	-	72.78	66.65	77.25	69.32
2007-08	93.34	-	73.46	66.06	72.90	67.09
2008-09	96.17	-	76.82	69.66	77.88	72.29
2009-10	107.09	-	83.28	79.92	82.38	75.05
2010-11	114.40	-	89.10	86.16	84.36	77.02
2011-12	126.44	-	105.25	100.30	101.24	90.60
2012-13	144.85	-	122.06	109.19	111.53	98.19
2014-15	151.88	-	135.70	113.89	126.63	113.78
2013-14	162.79	-	153.49	128.77	149.85	136.81
2015-16	178.00	-	167.47	141.81	160.54	147.50
2016-17	181.24	-	173.3	146.45	159.21	145.27

Note: CPI-RL (2009–10=100) is used as a deflator. *Source:* Das and Usami, 2017

For major agricultural operations the male-female wage rate disparity at the state level is not very large (above 0.80). The disparity in wage rates has either been stagnant or declined at the State level

Women are paid most unequally in India, compared to men, when it comes to hourly wages for labour as evident from the Table 8, below. A perusal of Table 8 shows that on average, women are paid 34 per cent less than men. A recent report by the International Labour Organization (ILO) has found that this gap in wages,

known as the gender wage gap, is the highest among 73 countries studied in the report. The trend holds true globally as well, but with lower levels of inequality among the sexes, where on average, hourly wages of women are 16 per cent less than those of men. Inequality is higher in monthly wages, with a gap of 22 per cent. Overall, real wages grew just 1.8 per cent globally (136 countries) in 2017. With empirical evidences pointing towards gender wage gap there is a need to give more emphasis on ensuring equal pay for women and men.

CONCLUSION

In Bihar about 30.39 per cent of the total female agricultural workforce of total female work force is engaged in farming occupation (Singh *et al.*, 2018). The share of female agricultural workforce in total agricultural workforce was estimated to be 19.32 per cent in the state. Female agricultural workers in total agricultural worker were computed to be 19.48 and 14.01 per cent, for rural and urban areas, respectively. Major participation of women labour was observed in harvesting of crops (14.56%) followed by sowing of crops (11.36%). Overall participation in all the farming operations was assessed to be 35.94 per cent. Thus, women play a key role in the agricultural activities of the state. In spite of these, women have share of only 13.32 per cent in total landholdings of the state and there is a gap of 7.04 per cent between wage rate of men and women during TE-2016. Disparities in wages are narrowing i.e. likely to be equal in coming days. It was also tried to analyze the role women in agricultural development of Bihar and the issues confronting them.

To strengthen women's participation in agriculture and allied sectors and to improve their access to land, credit and benefit of different Govt. programs, Ministry of Agriculture and Farmers Welfare has policy provisions like joint leasing for both domestic and agricultural land under National policy for farmers. Under credit facility provisions government has framed policy for issuing Kisan Credit Cards to women for creating livelihood through livestock practices and agricultural processing. Further, in each KVK there provision of Subject Matter Specialist (SMS) of Home Science is provided to educate and create awareness among women farmers about their role in upliftment of socio-economic conditions of the society (Meena *et al.*, 2010). Beside all efforts, there is still a wide gender gap in the state which may be addressed properly for overall development of women and enhancing the rural landscape of the state in particular and nation in general. Men and women are like two sides of a balance. Balance in society can be achieved only when both the sides are considered equal. Hence, ignoring the role of women especially in a developing state like Bihar cannot bring development in real senses.

REFERENCES

All India report number and area of operational holdings: Agricultural Census Report 2010-11.
Census Reports 2001 and 2011, Government of India.

- Das, A. and Y. Usami. 2017. Wage Rates in Rural India, *Review of Agrarian Studies*, 7(2): 105-109.
- Ghosh, M.M. and A. Ghosh. 2014. Analysis of Women Participation in Indian Agriculture. *IOSR Journal of Humanities and Social Science*, 19(5): 1-6.
- Majumdar, J. and P. Shah. 2017. Mapping the role of women in Indian Agriculture. *Annals of Anthropological Practices*, 4(2): 46-54.
- Meena, M.S.; K.M. Singh and M.A. Khan. 2010. Evaluation of training on effective water management: A case of capacity building of extension personnel in Bihar. *Journal of Community Mobilization and Sustainable Development*, 5(1): 50-53.
- Meena, M.S., K.M. Singh and H.M. Meena. 2015. Gendered approach to climate resilient agriculture: technology and policy-led options. *Journal of Agri Search*, 2(3): 206-211.
- Meena, M.S., K.M. Singh; R.K.P. Singh; Anjani Kumar; Abhay Kumar and V.P. Chahal. 2017. Inequality and determinants of income among rural households in tribal dominated areas of Jharkhand. *Indian Journal of Agricultural Sciences*, 87(1): 92-96.
- Meena, M.S.; K.M. Singh and H.M. Meena. 2018, Participation and perception towards changing farming practices in eastern India: A study of women headed households. *National Academy Science Letters*, 41(4): 203-205. <https://doi.org/10.1007/s40009-018-0656-8>
- Reports on Agricultural wages in India, Directorate of Economics and Statistics, Department of Agriculture and Co-operation, Ministry of Agriculture and Farmers Welfare, Government of India, New Delhi.
- Role of women in agriculture. <http://agropedia.iitk.ac.in/content/role-Indian-women-agriculture> accessed: 28.08.2019.
- Sakamma, S. and K.B. Umesh. 2018. Gender issues in Indian agriculture: An overview. *Indian Journal of Economic Development*, 6: 1-6.
- Shahi, V.; B. Shahi; V. Kumar and K.M. Singh. 2018. Performance evaluation and impact of small weeding tools for drudgery reduction of farm Women. *Journal of Pharmacognosy and Phytochemistry*, SP-4: 5-7.
- Shahi, V.; B. Shahi; K.M. Singh and P. Kumari. 2018. Impact study on mushroom cultivation for micro entrepreneurship development and women Empowerment. *Journal of Pharmacognosy and Phytochemistry*, SP-4: 1-4.
- Singh, K.M.; M.S. Meena; Abhay Kumar and R.K.P. Singh. 2013. An Overview of Gender Issues in Agriculture. *SSRN Electronic Journal*, 5(34): <http://dx.doi.org/10.2139/ssrn.2237993>
- Singh, R.K.P.; Abhay Kumar; K.M. Singh; N. Chandra; R.C. Bharati; U. Kumar and P. Kumar. 2018. Farm size and

- productivity relationship in smallholder farms: Some empirical evidences from Bihar, India. *Journal of Community Mobilization and Sustainable Development*, 13(1): 61-67.
- Singh, R.K.P.; K.M. Singh and A.K. Jha. 2012. Effect of migration on agricultural productivity and women empowerment in Bihar. *Political Economy: International Political Economy eJournal*, 6(109) <http://doi.org/10.2139/ssrn.2111155>.
- Slathia, N. 2015. Participation of women in agricultural production. *Agriculture: Towards a New Paradigm of Sustainability* ISBN: 978-93-83083-64-0
- Yadav, M. 2014. Inequality between male and female in agriculture sector in Maharashtra (pre and post reform) *Research Front*, 2(1): 49-56.
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