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EXTENT OF PARTICIPATION OF RURAL WOMEN IN AGRO-BASED ENTERPRISES

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ABSTRACT

The research explored the extent of participation of rural women in agro-based enterprise training programs, viz., beekeeping, mushroom cultivation, guava jelly making, lemon squash, and tomato sauce, conducted by Krishi Vigyan Kendra Birauli, under Rajendra Agricultural University, Pusa, in Samastipur, Bihar. The only way to address the rising unemployment rates among young people in rural areas is to generate income. Rural women who pursue entrepreneurship are better able to make decisions for their families and society at large, as well as improve their capacities. The extent of participation of respondents in activities under agro-based training programs and responses were measured as regularly, occasionally, and never. Most respondents (56.66%) had a low level of participation; according to the extent of participation across all agro-based firms, 16.67% exhibited a high level of participation, and 26.67% had a medium level. Binary classification was formulated by combining medium and high (52 respondents), and in the low category, status quo was maintained (68 respondents). Binary logistic regression analysis revealed that organizational membership, mass media exposure, cosmopoliteness, age, and family size significantly influenced the extent of participation. Organizational membership was the strongest predictor, increasing the participation likelihood nearly ten times. The significant Omnibus model (.000) and non-significant Hosmer and Lemeshow (0.651) indicated the robustness of the model. The model exhibited a prediction accuracy of 77.5%, suggesting the logistic regression model effectively predicts participation based on selected variables, and a Nagelkerke R^2 of 0.479 denoted that the independent variable explained the variability of the extent of participation by 47.9%. The findings revealed that increasing mass media exposure, organizational membership, and cosmopoliteness would enhance the extent of participation in the training program. To further support women's involvement and positive contributions to agrobased entrepreneurship, extension groups should encourage women to form and join social organizations.

Keywords*: agro-based enterprises; binomial logistic regression; extent of participation; mushroom revolution; rural women*

INTRODUCTION

The issues of low living standards, hunger, and poverty are prevalent in rural areas and are caused by a lack of entrepreneurial activity, post-harvest losses, and a low degree of food management capacity after production (Helena & Confidence, 2020; Mallappa *et al.,* 2023). To put it simply, women in agrobased enterprises are women who work in agriculture, take on the risks associated with using human and material resources effectively in a unique way, and use the opportunity found in their immediate surroundings to produce goods and services (Emerhihi *et al.,* 2017; Patel *et al.,* 2022). In all agro-based enterprises, both men and women share equal responsibility for feeding the globe through farming. Women worldwide bear the major and only responsibility for the agricultural sector, and as active farmworkers, they contribute significantly to rural cultures. Nearly 47% of men work in the agricultural sector, either directly or indirectly, according to FAO figures for 2019. In India, women are the backbone of society and are vital to the rural economy and agriculture. International labour organisations rank our nation's female labour force participation rate (FLFPR) as being notably low. The FLFPR for women in India decreased from slightly over 37% in 2005 to 29% in 2010. India currently ranks second and has the fourth largest agricultural sector in the world in terms of agricultural production, yet in 2013, its female labour force participation rate was among the lowest in the world, at 121 out of 131 countries (Kumar & Sharma.,

2022). The contributions of women to agriculture are vital. Much of the people makes their living from agriculture. In India, agriculture is the main source of income for the rural population. even though agriculture's share of the national GDP has been steadily declining. The top agricultural states are West Bengal, Punjab, Madhya Pradesh, Andhra Pradesh, Haryana, and Bihar. In 2011, women made up 27.45% of the workforce, while men made up 72.55% (Kumar & Sharma., 2022). The foundation of both Bihar and the nation is agriculture. The average farm size in Bihar is around 0.39 hectares, and it is also very fragmented, leading to many tiny plots. Additionally, roughly 60% of rural households in the state lack land. The situation is particularly dire for female farmers, who own only 13.31% of the land, which is less than the 13.50% national average (Singh *et al.,* 2020). Through their involvement in domestic and agricultural tasks, women contribute in multiple ways to the nation's sustainable development (Singh *et al.,* 2012). They help with all aspects of agriculture, from crop harvesting to land preparation. In addition, they oversee related operations such as value addition, goat rearing, cattle, fodder gathering, beekeeping, mushroom cultivation, poultry, and dairy. To improve the well-being of farm women by increasing output, productivity, and profitability, the KVK, Samastipur has implemented several interventions, including training in beekeeping, mushroom cultivation, vermicomposting, and other capacity building programs. The main concerns during the year that drew in the younger generation were the cultivation of aromatic and medicinal plants, vermicomposting, mushroom cultivation, lemon squash, guava jelly, tomato sauce, beekeeping, organic farming, resource conservation technology, along with the Integrated Farming System, and fruit and vegetable preservation. Several rural women farmers were able to establish their agri-enterprises through self-employment. They directly contribute significantly to the generation of family income, which raises their family's social standing (Shahi *et al.,* 2018). Measures of income and its source are crucial for determining a household's living standard and how to raise it. Income provides an extra measure of inequality and reveals characteristics of income instability when combined with family expenses and belongings (Meena *et al.,* 2017; Meena *et al.,* 2018). From activities to agro-processing to housework, women are integral to traditional farming (Majumdar & Shahi, 2017). Women have demonstrated on multiple occasions that they can advance agricultural modernization using farm equipment; yet, their contributions are not as often acknowledged (Shahi *et al.,* 2018; Patel *et al.,* 2024; Konani *et al.,* 2024; Jatav *et al.,* 2023). The current study was conducted with the productive and hopeful involvement of rural women in agrobased businesses in mind.

OBJECTIVES

(1) To measure and analyze the socio-economic, psychological, and demographic characteristics of the KVK trainees

(2) To investigate the relationships between selected socio-economic, psychological, and demographic variables and the extent of participation using the Binomial Logistic Regression model

METHODOLOGY

The study was carried out in the Samastipur district of Bihar at Krishi Vigyan Kendra, Birauli. This study seeks to explore the dynamics of women's involvement in agro-based enterprises in Samastipur district, Bihar (Shukla *et al.,* 2025). Because there were sufficient women who had received training on the chosen businesses from Krishi Vigyan Kendra, ten villages were purposefully chosen from each of the chosen blocks. Ten villages in all—six from the Pusa block and four from the Kalyanpur block—were selected. Bihar is looking at the potential and opportunities of cultivating medicinal and aromatic plants, as well as cereals, pulses, fruits, and vegetables, in the alluvial-rich areas of Samastipur district. After thorough discussions with the women and based on their high level of participation in the training programs on agro-based enterprises conducted at Samastipur KVK, Birauli (under the administrative control of Rajendra Agricultural University, Pusa, Samastipur), the development departments and KVK scientists decided that it would be worthwhile to promote enterprises such as mushroom cultivation, sugarcane processing, lemon squash making, beekeeping, and tomato ketchup production.

For this study, an ex post facto research design was used (Mallick *et al.*, 2023). Because there were so many trainees participating, purposive sampling was selected (Samaddar, *et al.,* 2023). As a result, a total of 120 trainees were selected, 12 from each hamlet. For each of the chosen communities, a separate list of trainees was created for each of the six businesses. The degree to which respondents participate in the staged activities of beekeeping, mushroom cultivation, dairy farming, lemon squash, guava jelly, and tomato sauce production is referred to as the extent of engagement (Lal *et al.*, 2024). Three-point scoring was used to evaluate the responses.

Women's involvement in agro-based businesses was measured using a Likert-type rating technique, with Regularly=1, Occasionally=2, and Never=3. A pretested interview schedule created by the researcher herself was used to gather data from the chosen respondents. Using a survey method and an interview schedule, the data from the sample women was directly gathered. The status of women's operation-wise participation in agro-based firms

was analyzed using basic statistical techniques such as percentage, frequency, and range (Shukla *et al.,* 2024). To measure the extent of participation level, respondents were categorized into less extent of participation and high extent of participation. Additionally, a binary logistic regression model was employed to determine the influence of independent variables on the extent of participation. The dependent variable was the extent of participation, while independent variables included Age, Education, Size of family, Occupation, Annual income, Landholding, Type of house, Organizational membership, MME, and Cosmo politeness. Descriptive statistics, including mean scores, standard deviation, and frequency distribution, were used to interpret the data, while the Nagelkerke R^2 and Hosmer-Lemeshow tests were applied to assess model fit and prediction accuracy.

RESULTS AND DISCUSSIONS

The extent of participation of respondents in activities under agrobased training programmes was divided into three categories: Regularly, Occasionally, and Never. The sources of information about activities under the training programmes of the respondents are presented in Table 1.

Table 1: Distribution of respondents according to extent of participation in agrobased enterprises (n=120)

Sr. No.	Activities under agrobased training programme	Frequency of use		
		Regularly	Occasionally	Never
1	**Bee keeping**			
	Research on honey bees and other pollinators.	55(45.84%)	35(29.16%)	30(25%)
	Conserve and utilize for pollination of various crops. (litchi)	61(50.83%)	41(34.17%)	18(15.00%)
	Scientific research on stock improvement of honey bees and their diseases, enemies, and management	83(69.16%)	17(14.17%)	20(16.67%)
	Prepare base data on relative abundance of native insect pollinators on different crops.	76(63.33%)	18(15.00%)	26(21.67%)
	Research on carpenter bees	41(34.16%)	42(35.00%)	37(30.84%)
	Training on bee pollinators and scientific bee keeping	89(74.16%)	12(10.00%)	19(15.84%)
2	**Mushroom cultivation**			
	Production technology training of button mushroom, oyster mushroom, Shiitake mushroom	78(65.00%)	23(19.16%)	19(15.84%)
	Value addition training of mushroom.	67(55.84%)	39(32.50%)	14(11.66%)
	Visit the area of mushroom cultivation?	84(70.00%)	21(17.50%)	15(12.50%)
	Prepare pickles, mixture, biscuit, kheer.	87(72.50%)	17(14.16%)	16(13.34%)
3	**Guava jelly making**			
	Visit guava orchard for fresh guava	70(58.33%)	30(25%)	20(16.67%)
	Sorting of very ripe guavas	65(54.16%)	35(29.16%)	20(16.67%)
	Value addition of guava jelly	75(62.5%)	25(20.83%)	20(16.67%)
4	**Lemon squash making**			
	Visit of lemon nursery for fresh lemon	81(67.50%)	18(15.00%)	21(17.50%)
	Preparation of cookies, pudding, lemon candies.	76(63.33%)	28(28.33%)	16(13.34%)
	Removal of rotten and diseased lemon	94(78.33%)	24(20.00%)	2(1.67%)
5	**Tomato sauce making**			
	Visit of tomato nursery for fresh tomatoes.	79(65.83%)	31(25.83%)	10(8.34%)
	Making of flavoured tomato sauce with herb or spices	76(63.34%)	23(19.16%)	21(17.50%)
	Use of olive oil for sauce making	52(43.33%)	55(45.83%)	13(10.84%)

Extent of participation in beekeeping

Concerning statement no. 1, "Research on honey bees and other pollinators," it was evident from the table that 45.84 percent of respondents had high participation in beekeeping training programmes, 29.16 percent had medium participation, and 25 percent had low participation. Across the other activities and statements, participation varied. In statement no. 2, "Conserve and utilize pollinators for various crops," 50.83 percent of respondents participated regularly, 34.17 percent occasionally, and 18 percent never participated. In activity no. 3, "Scientific research on stock improvement of honey bees and their diseases, enemies, and management," 69.16 percent of respondents participated regularly, 14.17 percent occasionally, and 16.67 percent never participated. For statement no. 4, "Prepare baseline data on the relative

abundance of native insect pollinators on different crops," 63.33 percent of respondents participated regularly, 15 percent occasionally, and 30.84 percent never participated. In activity no. 5, "Research on carpenter bees," 34.16 percent of respondents participated regularly, 35 percent occasionally, and 30.84 percent never participated. Finally, in work no. 6, "Training on bee pollinators and scientific beekeeping," most respondents (74.16 per cent) participated regularly, 10 per cent occasionally, and 15.84 per cent never participated.

Extent of participation in relation to mushroom cultivation

In relation to activity no. 1, "Production technology training of button mushroom, oyster mushroom, and shiitake mushroom," it was observed from the table that 65 percent of respondents participated regularly, 19.16 percent participated occasionally, and 15.84 percent never participated in the training program. Participation levels varied across other related activities and statements as well. In statement no. 2, "Value addition training of mushrooms," 55.84 percent of respondents participated regularly, 32.50 percent occasionally, and 11.66 percent never participated in mushroom cultivation training programmes. In activity no. 3, "Visit to mushroom cultivation areas," 70 percent of respondents participated regularly, 17.50 percent occasionally, and 12.50 percent never participated. Lastly, in task no. 4, "Preparation of pickles, mixture, biscuits, and kheer," 72.5 percent of respondents participated regularly, 14.16 percent occasionally, and 13.34 percent never participated in mushroom cultivation training programs.

Extent of participation in relation to guava jelly making

Visit a guava orchard to purchase fresh guava as part of activity no. 1. The table makes it abundantly evident that 58.33% of respondents engaged in the guava jelly making training program regularly, 25% participated sporadically, and 16.67% never participated. Sorting extremely ripe guavas is activity number 2. It was shown that 54.16 percent of respondents engaged in the guava jelly making training program on a regular basis, 29.16 percent participated occasionally, and 16.67 percent never participated. Additionally, in activity no. 3, guava jelly is valued. The table showed that 62.5% of respondents engaged regularly, 20.83 percent participated occasionally, and 16.67 percent never participated. Furthermore, in task no. 4, guava jelly is valued. The data showed that 62.5% of respondents engaged in the guava jelly making training program regularly, 20.83% participated occasionally, and 16.67% never participated.

Extent of participation concerning lemon squash making

Regarding activity no. 1, visiting a lemon nursery to purchase fresh lemons. The table made it evident that 67.50 percent of respondents engaged in the lemon squash producing training program regularly, 15% participated occasionally, and 17.50 percent never participated. According to the table, 63.33 percent of respondents regularly participated in task no. 2, Preparation of cookies, custard, and lemon candies, 28.33 percent participated occasionally, and 13.34 percent never participated in the training program on making lemon squash. Additionally, in activity no. 3, rotting and diseased lemons are removed. It was shown that 78.33% of respondents engaged in the lemon squash manufacturing training program on a regular basis, 20% participated sporadically, and 1.67% never participated.

Extent of participation concerning tomato sauce making

Regarding statement no. 1, Visit of tomato nursery for fresh tomatoes, the table showed that 65.83 percent of respondents participated regularly, 25.83 percent participated occasionally, and 8.34 percent never participated in a training program on making tomato sauce. Making flavoured tomato sauce with herbs or spices is activity no. 2. According to the data, 63.34 percent of respondents engaged in tomato sauce manufacturing training programs on a regular basis, 19.16 percent participated occasionally, and 17.50 percent never participated. Also, the table for activity number three, "Use of olive oil for sauce making," showed that 43.33 percent of respondents participated regularly, 45.83 percent participated occasionally, and 10.84 percent never took part in a training program on making tomato sauce.

Table 2: Distribution of respondents based on participation of respondents in agrobased enterprises (n=120)

Sr. No.	Participation with score range	Frequency	Percentage
1	**Low** (19-26)	68	56.66
2	**Medium** (35-38)	32	26.67
3	**High** (39-57)	20	16.67

Perusal of Table 2 revealed that majority of respondents 56.66% were in the category of low participation with score range of 19 and 26; while 26.67% of respondents were in the category of medium with score range of 35 and 38 and only 16.67% of respondents were in the category of low adoption with score range of 39 and 57.

Table 3: Classification Table of extent of participation prediction model accuracy of binomial logistic regression model (the cut value is .500) (n=120)

	Observed		Predicted		
			Extent of Participation		Percentage Correct
			0	1	
Step 1	Extent of Participation	0	57	11	83.8
		1	16	36	69.2
	Overall Percentage				77.5%

None of the data was missing as per Case Processing Summary, which indicated the robustness of the data. The extent of participation of respondents was categorised as low, medium, and high (Table 2). In the low category, 68 respondents were falling, while medium and high were clubbed together to make it dichotomous response, i.e., less extent of participation, and high extent of participation (52 respondents). The overall model accuracy was 77.5%, suggesting that the binomial logistic regression model performs reasonably well in predicting the extent of participation based on the independent variables in the equation (Table 3).

Table 4: Variables in the equation apropos extent of participation in agrobased enterprises as dependent variable (n=120)

Sr. No.	Particulars	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
								Lower	Upper
1	**Age**	-.134	.073	3.417	1	.065*	.874	.758	1.008
2	**Education**	.000	.000	.276	1	.599	1.000	1.000	1.000
3	**Occupation**	.039	.091	.187	1	.666	1.040	.870	1.242
4	**Organizational membership**	2.302	.602	14.611	1	.000***	9.995	3.070	32.540
5	**Annual income**	.079	.174	.207	1	.649	1.083	.769	1.524
6	**Landholding**	-.027	.028	.964	1	.326	.973	.921	1.028
7	**Type of house**	.075	.144	.275	1	.600	1.078	.814	1.429
8	**Size of family**	-1.128	.607	3.455	1	.063*	.324	.099	1.063
9	**MME**	.166	.074	5.044	1	.025**	1.180	1.021	1.363
10	**Cosmopoliteness**	.325	.166	3.827	1	.050**	1.385	.999	1.918
11	**Constant**	-3.841	3.580	1.151	1	.283	.021		

a. Variable(s) entered from 0→1: Age, Education, Size of family, Occupation, Annual income, Landholding, Type of house, Organizational membership, Mass Media Exposure, Cosmopoliteness.

b. -2 Log likelihood= 111.187; Cox & Snell R Square=0 .357; Nagelkerke R Square= 0.479

c. *** Indicates significant at 1% level of significance, ** Indicates significant at 5% level of significance, * Indicates significant at 10% level of significance, in a two-tailed test

Among the variables included in the binomial logistic regression model, five were found to have a significant influence on the extent of participation: organizational membership, mass media exposure (MME), cosmopoliteness, age, and size of family (Table 4). Organizational membership was the most significant predictor (p <0.001), with an odds ratio of 9.995, indicating that individuals who belong to formal organizations are almost 10 times more likely to participate in agro-based enterprise activities. This may be due to increased information flow, peer influence, and group motivation. Mass media exposure showed a significant positive effect (p = 0.025; Exp(B) = 1.180), suggesting that greater exposure to media enhances awareness and interest in agro-based enterprise activities. Cosmopoliteness was also significant (p = 0.050; Exp(B) = 1.385), implying that individuals who are more outward-looking and connected to broader networks are more likely to engage in such activities. On the other hand, age showed a negative but significant relationship (p = 0.065; Exp (B) = 0.874), indicating that young people are more interested in participating in agro-based enterprise activities. The size of the family was negative but significant at 10% level with the extent of participation (p = 0.063; Exp(B) = 0.324), suggesting that for each unit increase in size of the family, their extent of participation in agro-based enterprise activities decreases by 67.6%. The significant Omnibus model (.000) and non-significant Hosmer and Lemeshow (0.651) indicated that the model test denoted high goodness-of-fit. Nagelkerke R Square on this model is 0.479. The value of 0.479 means that the independent variable explained the variability of the extent of participation by 47.9%. The result had been found

contrary to the exploration of Lal et al. (2018), who tested the professional resiliency level of the farmers, as the dependent variable, was found to be significant with education while applying binary logistic equations.

CONCLUSION

Rural women's aspirations for financial independence and contributing to family income motivated their involvement in agro-based businesses. A significant number (69.16%) regularly participated in research on improving honeybee stocks and their management, while 37% engaged in carpenter beekeeping training. Around 45.83% showed a high level of participation in honeybee and other pollinator research. High participation was also observed in training on mushroom production technologies (65%) and value addition (56%), with 70% actively involved in mushroom cultivation training site visits. Participation was also strong in guava orchard visits (58%) and guava value addition training (63%). Additionally, 68% and 73% regularly participated in training on making cookies, pudding, lemon candies, and handling diseased lemons. Overall, 56.66% of respondents had a low level of participation across all agro-based enterprises, while 26.67% had a medium level, and only 16.67% showed high participation. Factors such as organizational membership, mass media exposure, and cosmopoliteness significantly enhance participation, while age and family size were negatively associated with the extent of participation. Women's full participation is necessary to boost productivity, which can only be accomplished when women are seen as development subjects. To further support women's involvement and positive contributions to agrobased entrepreneurship, extension groups should encourage women to form and join social organizations.

POLICY IMPLICATIONS

The study revealed that 56.66% of women had low participation in agro-based training programs. To enhance this, policymakers should focus on enhancing mass media exposure, promoting organizational membership, and increasing cosmopoliteness through exposure visits. Formation and strengthening of women's groups like SHGs and FPOs should be encouraged.

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CONFLICT OF INTEREST

The author declares no conflicts of interest.

REFERENCES

Economic Times (2025). Homemakers to changemakers: Women entrepreneurs help empower rural Bihar against climate challenges. https://economictimes.indiatimes.com/news/india/homemakers-to-changemakers-women-entrepreneurs-help-empower-rural-bihar-against-climate-challenges/articleshow/118505931.cms

Emerhihi, E., Nnadi, F. N., Chikaire, J.U., Anyaoha, N. and Ejiogu- Okereke, N. (2017). Rural Women Agri-preneurship Opportunities for Poverty Reduction and Improved Likelihood in Imo State, Nigeria. *Journal of Dynamic Agricultural Resources*, 4(2): 16-23.

FAO (2019). The State of Food and Agriculture: Moving forward on food loss and waste reduction. Food and Agriculture Organization of the United Nations. https://www.fao.org/publications

Helena, E. A. and Confidence, I. A. (2020). Extent of rural women involvement in agrobased entrepreneurial activities in Imo State, Nigeria. *Journal of Agriculture and Food Sciences.* 18(1): 70-81. https://doi.org/10.4314/jafs.v18i1.7

International Labour Organization (2013). India: Female labour force participation trends https://www.ilo.org

Jatav, Dileep Kumar, Gupta, Shobhana and Jatav, Hansraj (2023) Awareness about agri-enterprise establishment by rural youth for enhancing income. *Gujarat Journal of Extension Education,* 35(1):64-70. https://doi.org/10.56572/gjoee.2023.35.1.0016.

Konani, Sonal, Jain, Simple and Dashora, Pragaya (2024) Satisfaction of trainees regarding training programmes organized by centre for training and empowerment of rural women. *Gujarat Journal of Extension Education,* 37(1):87-93. https://doi.org/10.56572/gjoee.2024.37.1.0014.

Krishi Vigyan Kendra, Samastipur. (2025). *Training programs.* Dr. Rajendra Prasad Central Agricultural University. Retrieved April 13, 2025. https://samastipur.kvk4.in/training.php

Kumar, N. and Sharma, R.K. (2022). Status of women's participation in agriculture in Bihar an analysis. *International Journal of Financial Management and Economics.* 5(2): 49-52.

Lal, S. P., Kumar. S. K. N. and Shukla, G. (2024). Knowledge

assessment of integrated pest management practices among hybrid tomato growers. *Gujarat Journal of Extension Education.* 38(2): 144-152. https://doi.org/10.56572/gjoee.2024.38.20023

Lal, S.P., Kadian, K.S. and Rai, C. K. (2018). Building Synergism Through Resilience Measuring and Predicting Instrument: Ground Zero Results from National Calamity Devastated Province of India. In Vinod Kumar Tripathi et al. (eds.), Integrated Natural Resource Management: The Way Forward Published by New Delhi Publishers, New Delhi, pp. 153-168. ISBN: 978-93-86453-08-2.

Majumdar, J. and Shah, P. (2017). Mapping the role of women in Indian Agriculture. *Annuals of Anthropological Practices* 4(2): 46- 54.

Mallappa, V.K.H., Panigrahy, S.R., Nayak, A.K.; Pundir, R. S.; Kumari, P. (2023) Factors Influencing the Knowledge Level of Fish Consumers: An Explanatory Analysis. Sustainability 2023, 15, 10183. https://doi.org/10.3390/su151310183

Mallick, B., Lal S. P., and Gaur, R. S. (2023). Utilization Pattern of Diverse ICT Tools by Coastal Farmers during farmers during the Warning Stages Cyclones. *Gujarat Journal of Extension. Education* 36(1): 90-96. https://doi.org/10.56572/gjoee.2023.36.1.007

Meena, M. S., Singh K. M., Singh R. K. P., Kumar, A, Kumar, A. and Chahal, V. P. (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., Singh, K. M. and Meena, H. M. (2018). Participation and Perception Towards Changing Farming Practices in Eastern India: Women Headed Households. *National Academy Science Letters.* 41 (4): 203- 205. https://doi.org/10.1007/s40009-018-0656-8

Patel, Maulika, Bhatt, M. R. and Bhati, Khushboo (2022) Participation pattern of rural women in household production system. *Gujarat Journal of Extension Education*, 34(1):129-132. https://doi.org/10.56572/gjoee.2022.34.1.0026.

Patel, R. A., Salunkhe, S. R. and Chauhan, Y. R. (2024) Relationship between profile and attitude of rural youth towards agri-preneurship. *Gujarat Journal of Extension Education,* 38(2):171-175. https://doi.org/10.56572/gjoee.2024.38.2.0027.

Samaddar, S., Pandey, S. P., and Lal, S. P. (2024). Utilization Pattern of ICT Tools among Potato Growers to Facilitate Appropriate Agricultural Practices. *Gujarat Journal of Extension Education.* 36(2): 26-29. https://doi.org/10.56572/gjoee.2024.37.1.0006

Shahi, V., Shahi, B., Kumar, V., & Singh, K. M. and Kumari, P. (2018). Performance evaluation and impact of small weeding tools drudgery reduction of farm women. *Journal of Pharmacognosy and physiochemistry*. SP-4. 01-04.

Shahi, V., Shahi, B., Singh, K. M. and Kumari, P. (2018). Impact study on mushroom cultivation for micro entrepreneurship development and women empowerment. *Journal of Pharmacognosy and physiochemistry*. SP-4. 05-07.

Shukla, G., Ansari, M. N., & Lal, S. P. (2024). Assessment of agricultural information needs of farmers: Triangulating reliability of standardized information need an index. *Gujarat Journal of Extension Education*, 36(2), 26-29. https://do.org/10.56572/gjoee.2024.37.2.0005

Shukla, P., Kumari, A., Lal, S. P., & Sushmita, K. (2025). Drivers of decision-making among farm women in varied agricultural activities: Forward-step logistic regression model technique. *Indian Research Journal of Extension Education,* 25(2&3), 18-23. https://seea.org.in/irjee/view-content/drivers-of-decision-making-among-farm-women-in-varied-agricultural-activities-forward-step-logistic-regression-model-technique

Singh, K., Kumari, P. and Ahmad, N. (2020). An analysis of women's participation in agriculture in Bihar. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3517153

Singh, R. K. P., Singh, K. M. and Jha, A.K. (2012). Effect of migration on agricultural productivity and women empowerment in Bihar. *International Political Economy ejournal*. 6(109). http://dx.doi.org/10.2139/ssrn.2111155

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