E-ISSN: 2618-0618
P-ISSN: 2618-060X

NAAS Rating (2026): 5.20
www.agronomyjournals.com
2026; SP-9(1): 94-98
Received: 26-10-2025
Accepted: 29-11-2025

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Women's participation in farm decision-making activities in Jammu and Kashmir: An analysis using participation decision index

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DOI: https://www.doi.org/10.33545/2618060X.2026.v9.i1Sb.4630

Abstract
Women play a crucial role in agricultural production; however, their involvement in farm-level decision-making remains uneven across regions and activities. The present study examines the extent and determinants of women's participation in farm decision-making activities in Jammu and Kashmir using the Participation Decision Index (PDI). Primary data were collected from 240 farm women across six districts representing different agro-climatic zones. Women's participation was assessed across fifteen farm decision-making activities using weighted mean scores, while overall participation levels were categorized using the PDI. Multiple linear regression analysis was employed to identify factors influencing participation.

The results indicate that women participated in all farm decision-making activities, with relatively higher involvement in livestock-related and operational decisions, particularly purchase and sale of animals, sowing practices, irrigation, and harvesting. Lower participation was observed in financial decisions, especially farm credit. The overall PDI value was 88.47, reflecting a high level of participation, with 91.67 per cent of respondents falling in the high participation category. District-wise analysis revealed consistently high mean PDI values across all districts, indicating minimal spatial variation. Regression analysis identified education as the only variable exerting a statistically significant positive influence on women's participation in farm decision-making.

The study highlights the importance of educational empowerment in strengthening women's role in agricultural decision-making and underscores the need for policies that enhance women's capacity in financial and institutional domains.

Keywords: Women participation, farm decision-making, participation decision index, agriculture, Jammu and Kashmir

1. Introduction

Agriculture continues to be a primary source of livelihood for a large proportion of the rural population in developing regions, where farm households depend heavily on family labour for agricultural operations. Within this context, women constitute a significant workforce and contribute substantially to crop production, livestock management, and allied agricultural activities. Despite their extensive involvement in agricultural operations, women's role in farm-level decision-making has traditionally remained under-recognized and inadequately documented, particularly in patriarchal rural societies.

Farm decision-making is a critical component of agricultural management, encompassing decisions related to crop selection, input use, irrigation, harvesting, storage, marketing, asset management, and financial transactions. Participation in such decisions not only reflects women's empowerment but also influences farm productivity, resource use efficiency, and household welfare. Increasing attention has therefore been directed towards understanding the extent to which women participate in agricultural decision-making and the factors that shape their involvement.

In India, women's participation in agriculture is characterized by regional, socio-economic, and institutional variations. While several studies have highlighted women's active involvement in

farm operations, evidence suggests that their participation in strategic and financial decisions—such as land transactions, credit utilization, and marketing—remains relatively limited. These disparities underscore the need for region-specific empirical studies that capture both the level and pattern of women's participation in farm decision-making.

The Union Territory of Jammu and Kashmir presents a unique socio-economic and agro-ecological setting, where agriculture and allied activities form the backbone of rural livelihoods. The region exhibits diverse cropping systems, varying landholding patterns, and differential access to education, infrastructure, and institutional support. In such a setting, understanding women's participation in farm decision-making assumes particular significance, as it has implications for agricultural sustainability, gender equity, and rural development.

Although some studies have examined women's role in agriculture in the region, systematic assessments quantifying their participation across multiple farm decision-making activities and identifying key determinants remain limited. Moreover, there is a lack of comprehensive indices-based evaluations that capture overall participation levels in a measurable and comparable manner.

Against this backdrop, the present study attempts to analyze women's participation in farm decision-making activities in Jammu and Kashmir using the Participation Decision Index (PDI). The study further examines district-wise variations in participation and identifies the socio-personal, socio-economic, and institutional factors influencing women's involvement in farm decision-making through regression analysis.

1.1 Objectives of the Study

The specific objectives of the study are:

1. To assess the extent of women's participation in different farm decision-making activities.
2. To measure the overall level of participation using the Participation Decision Index (PDI).
3. To examine district-wise variations in women's participation in farm decision-making.
4. To identify the determinants influencing women's participation in farm decision-making activities.

2. Materials and Methods

2.1 Study Area

The present study was conducted in the Union Territory of Jammu and Kashmir, which represents diverse agro-climatic, socio-economic, and institutional settings. Six districts—Jammu, Doda, Rajouri, Anantnag, Srinagar, and Baramulla—were selected to capture spatial variations across different geographical zones of the region. Agriculture and allied activities constitute a major source of livelihood in these districts, with women playing an important role in farm operations and household-based agricultural activities.

2.2 Sampling Design and Sample Size

A **multistage sampling technique** was adopted for the selection of respondents. In the first stage, six districts were purposively selected to ensure representation of different agro-climatic zones. In the subsequent stages, blocks, villages, and respondents were selected using appropriate sampling procedures. A total of 240 farm women actively engaged in agricultural activities were selected as respondents for the study.

2.3 Data Collection

Primary data were collected through a pre-tested structured interview schedule designed to elicit information on women's participation in farm decision-making activities and their socio-personal, socio-economic, and institutional characteristics. The schedule included questions related to demographic attributes, educational status, landholding size, income, access to resources, and institutional support, along with participation in farm decision-making.

2.4 Measurement of Women's Participation in Farm Decision-Making

Women's participation in farm decision-making was assessed across fifteen major farm-related activities, including crop selection, land preparation, sowing practices, irrigation, use of inputs, harvesting, storage, marketing, livestock management, asset transactions, and farm credit.

Responses were recorded on a three-point continuum, namely:

- Always
- Sometimes
- Never

Scores of 3, 2, and 1 were assigned to these responses, respectively. Weighted mean scores were computed for each decision-making activity to determine the extent of participation and to rank the activities accordingly.

2.5 Participation Decision Index (PDI)

The overall level of women's participation in farm decision-making was measured using the Participation Decision Index (PDI). The index was calculated by dividing the actual score obtained by a respondent by the maximum possible score and multiplying the result by 100.

Participation Decision Index (PDI) = (Actual score obtained / Maximum possible score) × 100

Based on equal-interval classification, respondents were categorized into three levels of participation:

- **Low participation**: PDI less than 50
- **Medium participation**: PDI ranging from 50 to 74.99
- **High participation**: PDI equal to or greater than 75

2.6 Regression Analysis

To identify the factors influencing women's participation in farm decision-making, multiple linear regression analysis was employed. The Participation Decision Index (PDI) was considered as the dependent variable, while selected socio-personal, socio-economic, and institutional characteristics of the respondents were included as independent variables.

The regression relationship was expressed in the following functional form:

$$PDI = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \ldots + \beta_{10} X_{10} + \varepsilon$$

where,

β_0 = constant (intercept),

β_1 to β_{10} = regression coefficients,

X_1 to X_{10} = independent variables, and

ε = random error term.

Statistical significance of the coefficients was tested at appropriate probability levels, and the overall model fit was assessed using R^2, adjusted R^2, and F-statistics.

2.7 Statistical Analysis

The collected data were coded, tabulated, and analyzed using appropriate statistical tools. Descriptive statistics such as frequencies, percentages, weighted mean scores, and indices were used to analyze participation patterns, while inferential statistics were applied to examine determinants of participation.

3. Results and Discussion

3.1 Women's Participation in Farm Decision-Making Activities

The extent of women's participation in various farm decision-making activities is presented in Table 1. The results reveal that women participated in all fifteen farm-related decision-making activities considered in the study, although the degree of participation varied across different decisions.

Table 1: Women's participation in farm decision-making activities in Jammu and Kashmir (n = 240)

S. No.	Decision-making activities	Always (%)	Sometimes (%)	Never (%)	Total score	Weighted mean score	Rank
1	Crops to be selected	67	22	12	257	2.57	6
2	Preparation of land	63	23	16	251	2.51	10
3	Proper time and method of sowing	73	17	11	264	2.64	2
4	Means of irrigation	69	19	17	262	2.62	3
5	Manures and fertilizers to be used	67	23	10	257	2.57	6
6	Harvesting of crops	69	22	9	260	2.60	4
7	Storage of farm produce	73	14	12	259	2.59	5
8	Marketing of farm produce	68	17	14	252	2.52	9
9	Construction of farm building	69	19	12	257	2.57	6
10	Purchase and sale of animals	75	19	7	270	2.70	1
11	Purchase and sale of land	71	17	12	259	2.59	5
12	Sale, purchase and repair of equipment	64	25	11	253	2.53	8
13	Arranging farm inputs/feed	65	23	13	254	2.54	7
14	Hiring of labour	69	19	12	257	2.57	6
15	Farm credit (taking/repaying of loan)	63	24	12	249	2.49	11

Among the activities, purchase and sale of animals emerged as the most prominent decision-making domain, securing the highest weighted mean score (2.70). A substantial proportion of respondents (75 per cent) reported *always* participating in this activity, indicating women's strong involvement in livestock-related decisions. This reflects the traditionally important role of women in livestock management and allied activities in rural households.

Decisions related to proper time and method of sowing ranked second (weighted mean score = 2.64), followed by means of irrigation (2.62), indicating women's active involvement in crucial operational decisions that directly influence crop productivity. Harvesting of crops also recorded a high level of participation (weighted mean score = 2.60), highlighting women's significant role during labour-intensive stages of agricultural production.

Moderate to high participation was observed in storage of farm produce and purchase and sale of land, both recording a weighted mean score of 2.59. This suggests that women are increasingly involved in post-harvest management and certain asset-related decisions. Decisions regarding selection of crops, use of manures and fertilizers, construction of farm buildings, and hiring of labour showed consistent participation, each recording identical weighted mean scores (2.57), reflecting women's engagement in routine farm management activities.

Relatively lower participation was observed in marketing of farm produce (weighted mean score = 2.52) and preparation of land (2.51). The lowest level of participation was recorded for farm credit decisions, including taking and repaying loans (weighted mean score = 2.49), indicating limited involvement of women in financial and credit-related decision-making. This may be attributed to institutional constraints, limited access to formal financial systems, and prevailing socio-cultural norms.

Overall, the findings indicate that women's participation is relatively higher in livestock-related and operational decisions and comparatively lower in financial and capital-intensive decisions, a pattern commonly observed in agrarian settings.

3.2 Level of Women's Participation Based on Participation Decision Index (PDI)

The overall level of women's participation in farm decision-making was assessed using the Participation Decision Index (PDI). The computed PDI value of 88.47 indicates a high level of participation among the respondents. The distribution of respondents across different participation categories is presented in Table 2.

Table 2: Distribution of respondents according to Participation Decision Index (PDI) categories (n = 240)

Participation level	PDI range	Frequency	Percentage
Low	< 50	0	0.00
Medium	50 - 74.99	20	8.33
High	≥ 75	220	91.67
Total	—	240	100.00

The results show that none of the respondents fell under the low participation category. A small proportion of respondents (8.33 per cent) belonged to the medium participation category, whereas an overwhelming majority (91.67 per cent) were classified under the high participation category. The predominance of the high participation group suggests that women in the study area are actively and consistently involved in farm-level decision-making processes.

3.3 District-wise Variation in Participation Decision Index (PDI)

District-wise mean PDI values are presented in Table 3. The results reveal that women's participation in farm decision-making was consistently high across all selected districts, with mean PDI values ranging from 84.72 to 100.00.

Table 3: District-wise mean Participation Decision Index (PDI) of farm women in Jammu and Kashmir (n = 240)

S. No.	District	Zone	Mean PDI
1	Jammu	Central Zone	85.83
2	Doda	Northern Zone	85.28
3	Rajouri	Southern Zone	84.72
4	Anantnag	Southern Zone	87.01
5	Srinagar	Central Zone	100.00
6	Baramulla	Northern Zone	87.99

Among the districts, Srinagar recorded the highest mean PDI value (100.00), followed by Baramulla (87.99) and Anantnag (87.01). The districts of Jammu, Doda, and Rajouri also exhibited high mean PDI values, indicating strong participation across different geographical zones of Jammu and Kashmir. The relatively narrow range of mean PDI values suggests that women's participation in farm decision-making does not vary substantially across districts.

3.4 Determinants of Women's Participation in Farm Decision-Making

To identify the factors influencing women's participation in farm decision-making, a multiple linear regression analysis was conducted, with the Participation Decision Index (PDI) as the dependent variable. The model summary presented in Table 4 indicates that the regression model was statistically significant ($F = 2.051$; $p = 0.030$), confirming its suitability for explaining variations in participation.

Table 4: Model summary of multiple linear regression analysis for Participation Decision Index (PDI)

Model statistics	Value
R	0.292
R^2	0.085
Adjusted R^2	0.044
Standard error of estimate	8.46
F-value	2.051
Degrees of freedom	(10, 220)
p-value	0.030*

Table 5: Factors influencing women's participation in farm decision-making activities (Multiple linear regression analysis)

S. No.	Independent variables	Unstandardized coefficient (B)	Standardized coefficient (Beta)	t-value	p-value
1	Constant	91.615	—	15.360	0.000
2	Education	1.428	0.207	3.031	0.003**
3	Age	−0.080	−0.102	−1.526	0.129
4	Family size	−0.126	−0.021	−0.300	0.764
5	Landholding	1.649	0.068	0.950	0.343
6	Women's income	−0.000009	−0.106	−1.567	0.119
7	Access to credit	−2.036	−0.043	−0.649	0.517
8	SHG membership	−0.677	−0.024	−0.350	0.727
9	Training contact	1.706	0.087	1.260	0.209
10	Access to irrigation	−2.188	−0.052	−0.766	0.445
11	Access to technology	1.366	0.073	1.079	0.282

The regression coefficients presented in Table 5 reveal that education emerged as the only variable exerting a statistically significant positive influence on women's participation in farm decision-making. The positive and significant regression coefficient indicates that higher levels of education enhance women's participation by improving awareness, confidence, and decision-making capacity.

Other variables, including age, family size, landholding size, women's income, access to credit, SHG membership, training contact, access to irrigation, and access to technology, did not exhibit statistically significant independent effects on the Participation Decision Index. This suggests that while these factors may influence participation indirectly, education remains the most critical determinant shaping women's involvement in farm decision-making activities.

4. Conclusion and Policy Implications

The present study examined women's participation in farm decision-making activities in Jammu and Kashmir using the Participation Decision Index (PDI). The findings clearly indicate that women are actively involved in a wide range of farm-level decisions, with participation observed across all fifteen decision-making activities considered in the study. The overall PDI value of 88.47 reflects a high level of participation, with the majority of respondents falling under the high participation category, indicating women's substantial role in agricultural decision-making.

The study further revealed that women's participation was relatively higher in livestock-related and operational decisions, such as purchase and sale of animals, sowing practices, irrigation, and harvesting, while comparatively lower participation was observed in financial and capital-intensive decisions, particularly those related to farm credit. District-wise analysis showed consistently high levels of participation across all selected districts, suggesting that women's involvement in farm decision-making is spatially uniform within the study area.

Regression analysis identified education as the most significant determinant influencing women's participation in farm decision-making. The positive and statistically significant relationship between education and participation underscores the importance of educational attainment in enhancing women's decision-making capacity, confidence, and autonomy within the agricultural domain.

Policy Implications

Based on the findings of the study, the following policy implications are suggested:

- Strengthening educational opportunities for rural women, particularly through adult education and functional literacy programmes, can significantly enhance their participation in farm decision-making.
- Agricultural extension and capacity-building programmes should adopt a gender-sensitive approach, ensuring active inclusion of women in training, advisory services, and institutional platforms.
- Efforts should be made to improve women's access to financial services, including farm credit and formal banking systems, to enhance their role in financial decision-making.
- Institutional support mechanisms, such as women-focused self-help groups and cooperative structures, should be

strengthened to promote collective decision-making and leadership among farm women.

Overall, the study highlights the need for integrated policy interventions aimed at empowering women through education and institutional support to enhance their effective participation in agricultural decision-making and promote sustainable rural development in Jammu and Kashmir.

5. Acknowledgement
The authors sincerely acknowledge Sher-e-Kashmir University of Agricultural Sciences and Technology of Jammu (SKUAST-J) for providing institutional support and necessary facilities for the successful conduct of this study. The cooperation of the farm women respondents across the selected districts is gratefully appreciated, as their participation and valuable insights enabled the completion of this research. The authors also thank the field staff and enumerators for their assistance during data collection.

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