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Adoption of natural farming practices and constraints among farmers under Paramparagat Krishi Vikas Yojana (PKVY)

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Abstract

The present study entitled “Socio-Economic Characteristics, Adoption of Natural Farming Practices and Constraints among Farmers under Paramparagat Krishi Vikas Yojana (PKVY)” was conducted to assess the socio-economic characteristics, knowledge, adoption and constraints related to Natural Farming among farmers. A total of 120 farmers were selected and primary data were collected through a pre-tested interview schedule using personal interviews. The data were analyzed using frequency, percentage, mean, standard deviation, mean scale values and chi-square test. The findings revealed that the majority of farmers were middle-aged (55.83%), had high-school education (31.67%), belonged to the OBC category (55.83%) and had marginal landholdings (31.67%). Medium levels were predominant for awareness of PKVY (52.50%), innovativeness (55.83%), risk orientation (54.17%) and knowledge of PKVY and Natural Farming (56.67%). Regarding adoption, 57.50 per cent of farmers had a medium level, followed by 23.33 per cent with high and 19.17 per cent with low adoption. Major constraints were lack of market support (70.00%), non-availability of bio-inputs (67.50%), financial constraints (65.83%), lack of training (65.00%) and yield uncertainty during initial adoption (63.33%). The study concludes that strengthening training, extension support, demonstrations, availability of bio-inputs, financial assistance and market linkages is essential for enhancing the adoption of Natural Farming practices under PKVY.

Keywords: Natural Farming, PKVY, farmers, adoption, socio-economic characteristics, awareness, knowledge, constraints, extension support, Madhya Pradesh

Introduction

Agriculture is a major source of livelihood in rural India, with small and marginal farmers forming the majority of operational holdings. According to the Agriculture Census 2015–16, 68.45% of operational holdings were marginal and 17.62% were small holdings. These farmers face challenges such as rising input costs, climate variability, limited resources and uncertain farm returns. Natural Farming has emerged as a sustainable approach that promotes locally available resources, livestock-based inputs, mulching and reduced dependence on chemical inputs, thereby helping to reduce cultivation costs and improve soil health (NITI Aayog, 2020) [6].

The Government of India has promoted Natural Farming through Paramparagat Krishi Vikas Yojana (PKVY) and its Natural Farming components. Under BPKP, 4.09 lakh hectares were sanctioned for Natural Farming promotion, including 99,000 hectares in Madhya Pradesh (Government of India, 2024) [1]. The National Mission on Natural Farming, approved in 2024 with an outlay of ₹2,481 crore, further emphasizes training, demonstrations and farmer capacity building (PIB, 2024) [7].

Despite these initiatives, adoption of Natural Farming remains influenced by farmers’ education, landholding,

income, awareness, knowledge, innovativeness and risk orientation. Farmers may also face constraints such as inadequate technical knowledge, limited availability of natural inputs, insufficient training and weak market and extension support. Therefore, the present study entitled “Socio-Economic Characteristics, Adoption of Natural Farming Practices and Constraints among Farmers under Paramparagat Krishi Vikas Yojana (PKVY)” was undertaken to assess farmers’ socio-economic profile, extent of adoption and major constraints affecting Natural Farming adoption.

Materials and Methods

The study considered 15 independent variables, namely age, education, caste, family size, landholding, livestock holding, social participation, farming experience, occupation, annual family income, mass media exposure, awareness of PKVY provisions, innovativeness, risk orientation and knowledge about PKVY and Natural Farming. The adoption of Natural Farming practices was considered the dependent variable. These variables were selected to assess the socio-economic, communication and psychological factors associated with the adoption of Natural Farming practices under PKVY.

Primary data were collected through a well-structured and pre-tested interview schedule developed in accordance with

the objectives of the study. The schedule was pre-tested on a small group of respondents to ensure clarity, reliability and suitability of the questions. Data were collected through personal interviews with selected farmers after explaining the purpose of the study and establishing proper rapport. Secondary information was obtained from research papers, journals, government publications, official reports and other relevant documents related to PKVY and Natural Farming.

The collected data were systematically classified, tabulated and analyzed using frequency, percentage, mean, standard deviation, mean scale values and chi-square test. Frequency and percentage were used to describe the distribution of respondents, while mean and standard deviation were used to summarize the central tendency and variation of observations. Mean scale values were used to assess farmers' awareness, knowledge, innovativeness, risk orientation and adoption levels. The chi-square test was employed to determine the association between selected independent variables and adoption of Natural Farming practices, thereby facilitating meaningful interpretation and conclusions regarding farmers' adoption under PKVY.

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Results and Discussion

The study titled "Socio-Economic Characteristics, Adoption of Natural Farming Practices and Constraints among Farmers under Paramparagat Krishi Vikas Yojana (PKVY)" was conducted to assess the socio-economic characteristics, awareness and knowledge of PKVY and Natural Farming, extent of adoption of Natural Farming practices and constraints faced by farmers in the study area. Data were collected from 120 farmers through a structured and pre-tested interview schedule and analyzed using frequency, percentage, mean, standard deviation, mean scale values and chi-square test. The study also examined the influence of socio-economic, communication and psychological characteristics on the adoption of Natural Farming practices and identified the major constraints limiting their adoption under PKVY.

Profile of the Respondents

The data presented in Table 1 reveal that the majority of farmers were middle-aged (55.83%), followed by old (24.17%) and young (20.00%) farmers. Regarding education, the largest proportion had high-school education (31.67%), followed by middle education (24.17%) and graduate/postgraduate education (22.50%). More than half of the respondents belonged to the OBC category (55.83%), while 60.00 per cent lived in nuclear families. In terms of

landholding, 31.67 per cent were marginal farmers, followed by small farmers (30.00%) and semi-medium farmers (23.33%).

With respect to farm and socio-economic characteristics, 43.33 per cent of farmers had medium livestock holdings, while 48.33 per cent had medium farming experience. Agriculture was the main occupation of 43.33 per cent of respondents, followed by mixed occupation (21.67%). Half of the respondents (50.83%) belonged to the medium annual family-income category. Social participation was mainly limited to membership in one organization (35.00%), indicating moderate involvement in social and institutional activities.

Regarding communication and programme-related characteristics, internet/mobile platforms were the major source of mass media exposure (50.00%). Awareness of PKVY provisions was predominantly medium (52.50%), indicating that a considerable proportion of farmers had moderate awareness of the scheme. Similarly, innovativeness (55.83%) and risk orientation (54.17%) were mainly at the medium level. These findings suggest that farmers possessed a moderate orientation towards new agricultural technologies and were reasonably exposed to information related to PKVY and sustainable farming.

The data further indicate that 56.67 per cent of farmers had a medium level of knowledge regarding PKVY and Natural Farming, followed by 25.83 per cent with high knowledge and 17.50 per cent with low knowledge. The adoption of Natural Farming practices was also predominantly medium (57.50%), while 23.33 per cent had high and 19.17 per cent had low adoption.

These findings are supported by Sharma *et al.* (2016) ^[8], who reported medium levels of knowledge and adoption of organic farming practices and significant roles of education, extension participation and scientific orientation. Kumar *et al.* (2023) ^[2] identified knowledge, input availability, labour and institutional factors as important determinants and constraints of natural farming adoption. Kumar *et al.* (2026) ^[3] found that landholding, social participation, risk orientation and economic motivation significantly influenced farmers' attitudes towards natural farming. Similarly, Kumbhare and Khonde (2022) ^[4] reported that medium adoption was predominant and that education, landholding, social participation and socio-economic characteristics influenced adoption behaviour. Thus, the present findings indicate that strengthening farmers' knowledge, training, extension contact and institutional support can further improve the adoption of Natural Farming practices under PKVY.

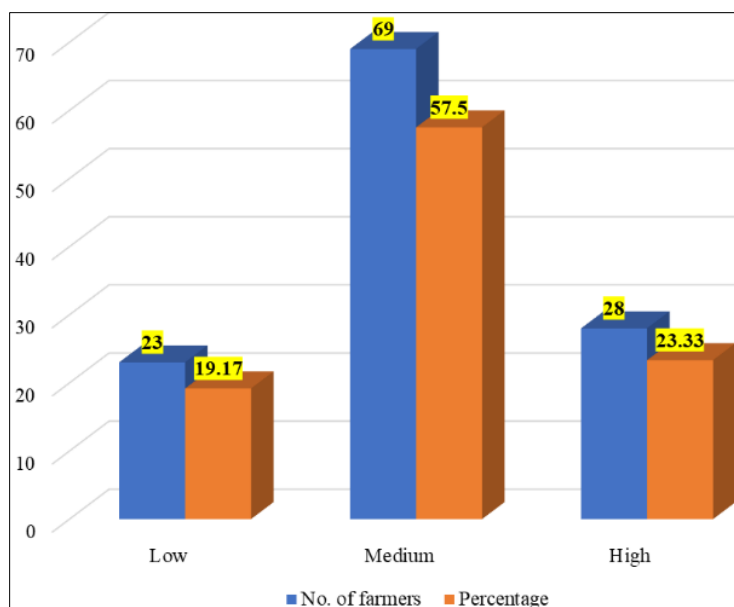
Adoption level of Natural Farming practices

The findings revealed that 57.50% of farmers had medium adoption of Natural Farming practices under PKVY, followed by 23.33% with high and 19.17% with low adoption, indicating that 80.83% had medium to high adoption. This suggests considerable acceptance of Natural Farming, while further improvement can be achieved through regular training, demonstrations, extension guidance and timely availability of natural farming inputs. The finding is supported by Mishra, who reported predominant medium adoption and emphasized the importance of training, extension contact and technical guidance in enhancing adoption.

Table 1: Distribution of Respondents According to Selected Socio-Personal, Socio-Economic, Communication and Psychological Characteristics (N = 120)

S. No.	Variable	Category	f	%	Category	f	%	Category	f	%
1	Age	Young (up to 35 yrs)	24	20.00	Middle (36–55 yrs)	67	55.83	Old (56+ yrs)	29	24.17
2	Education	Illiterate	8	6.67	Primary	18	15.00	Middle	29	24.17
		High school	38	31.67	Graduate/Postgraduate	27	22.50	—	—	—
3	Caste	SC	18	15.00	ST	12	10.00	OBC	67	55.83
		General	23	19.17	—	—	—	—	—	—
4	Family type	Nuclear	72	60.00	Joint	48	40.00	—	—	—
5	Landholding	Marginal (≤ 1 ha)	38	31.67	Small (1.01–2 ha)	36	30.00	Semi-medium (2.01–4 ha)	28	23.33
		Medium (4.01–10 ha)	15	12.50	Large (> 10 ha)	3	2.50	—	—	—
6	Livestock holding	Low (≤ 2 LSU)	47	39.17	Medium (2.1–5 LSU)	52	43.33	High (> 5 LSU)	21	17.50
7	Social participation	No membership	18	15.00	One organization	42	35.00	More than one	31	25.83
		Office bearer—one	21	17.50	Office bearer—more than one	8	6.67	—	—	—
8	Farming experience	Low (≤ 10 yrs)	28	23.33	Medium (11–20 yrs)	58	48.33	High (> 20 yrs)	34	28.34
9	Occupation	Agriculture	52	43.33	Allied activities	14	11.67	Agricultural labour	18	15.00
		Non-agricultural	10	8.33	Mixed occupation	26	21.67	—	—	—
10	Annual family income	Low ($\leq ₹1$ lakh)	29	24.17	Medium ($₹1$ – $₹3$ lakh)	61	50.83	High ($> ₹3$ lakh)	30	25.00
11	Mass media exposure	Radio	8	6.67	Television	27	22.50	Newspaper	18	15.00
		Magazine	7	5.83	Internet/mobile platforms	60	50.00	—	—	—
12	Awareness of PKVY provisions	Low	22	18.33	Medium	63	52.50	High	35	29.17
13	Innovativeness	Low	24	20.00	Medium	67	55.83	High	29	24.17
14	Risk orientation	Low	27	22.50	Medium	65	54.17	High	28	23.33
15	Knowledge of PKVY & Natural Farming	Low	21	17.50	Medium	68	56.67	High	31	25.83
16	Adoption of Natural Farming practices (Dependent variable)	Low	23	19.17	Medium	69	57.50	High	28	23.33

Note: = Frequency; % = Percentage; LSU = Livestock Standard Unit; PKVY = Paramparagat Krishi Vikas Yojana.

**Fig 1:** Classification of respondents according to their overall adoption level of Natural Farming practices (N = 120)

Constraints faced in adoption of Natural Farming under PKVY

The data presented in the table 2 revealed that lack of proper market support for Natural Farming produce was the most important constraint, reported by 70.00% of respondents. This was followed by non-availability of required bio-inputs (67.50%), financial constraints (65.83%), lack of training and skill development (65.00%) and yield uncertainty during the initial adoption period (63.33%). In addition, inadequate technical knowledge (61.67%), high initial effort required

(60.00%) and lack of village demonstration plots (59.17%) were also important constraints. These findings indicate that economic, technical, input-supply and market-related problems were major barriers to the adoption of Natural Farming under PKVY.

Further, labour shortage for preparing natural inputs (57.50%), poor follow-up by extension agencies (56.67%), lack of awareness (55.83%) and insufficient extension contact/support (52.50%) were reported by a considerable proportion of farmers. Overall, the findings suggest that

strengthening market linkages, timely availability of bio-inputs, farmer training, financial support, demonstrations and regular extension follow-up would help overcome major

constraints and encourage wider adoption of Natural Farming practices under PKVY.

Table 2: Distribution of respondents according to constraints faced in adoption of Natural Farming under PKVY (N = 120)

S. No.	Constraints	Yes f (%)	No f (%)
1	Lack of awareness about Natural Farming practices	67 (55.83)	53 (44.17)
2	Inadequate technical knowledge of farmers	74 (61.67)	46 (38.33)
3	Lack of training and skill development	78 (65.00)	42 (35.00)
4	Non-availability of required bio-inputs	81 (67.50)	39 (32.50)
5	Labour shortage for preparing natural inputs	69 (57.50)	51 (42.50)
6	High initial effort required in Natural Farming	72 (60.00)	48 (40.00)
7	Yield uncertainty during initial adoption period	76 (63.33)	44 (36.67)
8	Lack of proper market support for NF produce	84 (70.00)	36 (30.00)
9	Insufficient extension contact/support	63 (52.50)	57 (47.50)
10	Lack of demonstration plots in village	71 (59.17)	49 (40.83)
11	Poor follow-up by extension agencies	68 (56.67)	52 (43.33)
12	Financial constraints for adoption of practices	79 (65.83)	41 (34.17)

Conclusion

The study concluded that the majority of farmers under PKVY possessed medium levels of awareness, knowledge, innovativeness, risk orientation and adoption of Natural Farming practices. Overall, 57.50 per cent of farmers had a medium level of adoption, while 23.33 per cent had high adoption, indicating considerable acceptance of Natural Farming. However, adoption was constrained mainly by lack of market support, non-availability of bio-inputs, financial constraints, inadequate training and uncertainty of yield during the initial adoption period. Therefore, strengthening farmer training, demonstrations, extension services, timely availability of natural inputs, financial assistance and assured market linkages is essential for promoting wider and sustainable adoption of Natural Farming practices under PKVY.

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