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Rupesh Kothari
M.Sc. Student, Department of Agricultural Extension Education, College of Agriculture, Latur, Maharashtra, India

Dr. Jyoti Deshmukh
Professor, Department of Agricultural Extension Education, College of Agriculture, Latur, Maharashtra, India

Dr. KS Thorat
Assistant Professor, Department of Agricultural Extension Education, College of Agriculture, Dharashiv, Maharashtra, India

Revananath Kokate
M.Sc. Student, Department of Agricultural Extension Education, College of Agriculture, Latur, Maharashtra, India

Corresponding Author:
Rupesh Kothari
M.Sc. Student, Department of Agricultural Extension Education, College of Agriculture, Latur, Maharashtra, India

Knowledge and awareness of beneficiary farmers regarding Mukhyamantri Saur Krushi Pump Yojana in Latur district of Maharashtra

Rupesh Kothari[1], Jyoti Deshmukh[2], KS Thorat[3], Revananath Kokate[4]

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Abstract
The Mukhyamantri Saur Krushi Pump Yojana (MSKPY) was introduced by the Government of Maharashtra to promote solar-powered irrigation and reduce farmers' dependence on conventional electricity and diesel. The effective utilization of the scheme requires beneficiaries to possess adequate information about its objectives, eligibility conditions, financial provisions, technical options and maintenance responsibilities. The present study assessed the knowledge and awareness of beneficiary farmers regarding MSKPY in Latur district of Maharashtra. The investigation was conducted in Ausa, Latur and Renapur tehsils using an ex-post-facto research design. A total of 120 beneficiary farmers were selected, and data were collected through a structured interview schedule. A teacher-made knowledge test comprising 12 statements was used. Responses were recorded as 'yes' and 'no' and assigned scores of 2 and 1, respectively. Frequency and percentage were used for analysis. The findings indicated that 58.34 per cent of the respondents had a medium level of knowledge, while 20.83 per cent each had low and high levels of knowledge. Awareness was high regarding the scheme's general benefits: 95.83 per cent had heard of MSKPY, 92.50 per cent knew that solar pumps reduce irrigation costs, and 91.67 per cent were aware that the scheme reduces dependence on conventional electricity. However, important gaps were observed in knowledge of the approximate installation cost (16.67%), subsidy pattern (23.33%), available pump capacity options (28.33%) and eligibility and application procedures (36.67%). The findings suggest that farmers were comparatively familiar with the general benefits of the scheme but had inadequate information about its financial, technical and procedural aspects. Need-based extension education, practical demonstrations and simplified information materials are therefore required to strengthen farmers' knowledge and improve informed utilization of MSKPY.

Keywords: MSKPY, Knowledge, Awareness, Beneficiary farmers, Solar irrigation pump, Extension education

Introduction

Reliable energy is essential for irrigation and other agricultural operations. In many parts of India, farmers depend on grid electricity and diesel-operated pumps, but irregular electricity supply and recurring fuel expenditure can affect the timely irrigation of crops. Solar-powered irrigation pumps provide an alternative by converting solar radiation into electrical energy and enabling daytime irrigation. Their effective use, however, depends not only on the availability of the technology but also on farmers' knowledge of its operation, scheme provisions and support mechanisms.

The Government of Maharashtra introduced the Mukhyamantri Saur Krushi Pump Yojana (MSKPY) in January 2019 to promote off-grid solar agricultural pumps. The scheme seeks to provide daytime irrigation facilities, reduce dependence on conventional electricity and diesel, and encourage renewable energy use in agriculture. For beneficiary farmers, information about eligibility, required documents, application procedures, subsidy provisions, pump capacity, beneficiary contribution and maintenance responsibilities is important for making informed decisions and utilizing the scheme effectively.

Knowledge is an important prerequisite for the effective use of agricultural innovations and government programmes. General awareness that a scheme exists may not necessarily mean that farmers understand its technical and financial provisions. Choudhary *et al.* (2023) [1], in their study of farmers' knowledge about solar pumps in Jodhpur district, examined the association of knowledge with farmers' socio-economic and communication characteristics. Similarly, Pramod *et al.* (2022) [2] reported differences in knowledge among solar-pump beneficiary and non-beneficiary farmers regarding vegetable production technologies. These studies indicate the importance of examining knowledge in the context of solar irrigation and agricultural extension.

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In drought-prone areas of the Marathwada region, dependable irrigation is particularly important. Latur district was selected for the present investigation because of the comparatively higher number of MSKPY beneficiaries reported in the study records and the importance of solar irrigation under conditions of water scarcity. Against this background, the present paper focuses specifically on the knowledge and awareness of beneficiary farmers regarding MSKPY, with emphasis on identifying areas where information and extension support need strengthening.

Objectives

1. To assess the level of knowledge of beneficiary farmers regarding Mukhyamantri Saur Krushi Pump Yojana.
2. To identify the specific areas of information in which beneficiary farmers have knowledge gaps regarding MSKPY.

Materials and Methods

Locale of the study

The study was conducted in Latur district of the Marathwada region of Maharashtra. Three tehsils, namely Ausa, Latur and Renapur, were selected purposively. The district is characterized by semi-arid climatic conditions and variable rainfall, making irrigation an important requirement for agricultural production.

Sampling procedure and sample size

A multistage sampling procedure was followed. Latur district and the three tehsils were selected purposively on the basis described in the thesis methodology. Four villages from each selected tehsil were selected purposively, and ten beneficiary farmers from each village were selected randomly. Thus, the sample consisted of 120 beneficiary farmers from 12 villages.

Research design and data collection

An ex-post-facto research design was used. Data were collected through personal interviews using a structured interview schedule prepared in accordance with the objectives of the study. The schedule was initially prepared in English and translated into Marathi for field data collection. The knowledge component was measured using a teacher-made knowledge test comprising 12 statements, which was validated by the advisory committee.

Measurement of knowledge

The 12 knowledge statements covered awareness of the scheme, its objectives, eligibility and application procedure, subsidy pattern, pump capacity options, reduction in dependence on conventional electricity, irrigation-cost benefits, maintenance responsibilities, implementing agency, renewable-energy promotion, approximate installation cost and beneficiary contribution. Responses were recorded as 'yes' and 'no', with scores of 2 and 1, respectively. The total score for each respondent was obtained by summing the scores for all 12 statements. Respondents were classified as having low knowledge (up to 17), medium knowledge (18–21) and high knowledge (above 21), following the categorization used in the study.

Statistical analysis

Frequency and percentage were used to describe responses to individual knowledge statements and the overall knowledge categories. The findings are presented in tabular form.

Results and Discussion

Item-wise knowledge and awareness of farmers regarding MSKPY

The item-wise distribution of respondents according to their knowledge of MSKPY is presented in Table 1. The findings show variation in awareness across the different dimensions of the scheme.

Sr. No.	Knowledge statement / area	Yes (%)	No (%)
1	Heard about MSKPY	115 (95.83)	5 (4.17)
2	Knowledge of the main objectives of MSKPY	53 (44.17)	67 (55.83)
3	Awareness of eligibility, required documents, application procedure and online portal/helpline	44 (36.67)	76 (63.33)
4	Knowledge of the subsidy pattern under MSKPY	28 (23.33)	92 (76.67)
5	Knowledge of available pump capacity (HP) options	34 (28.33)	86 (71.67)
6	Awareness that MSKPY reduces dependence on conventional electricity	110 (91.67)	10 (8.33)
7	Knowledge that solar pumps help reduce irrigation cost	111 (92.50)	9 (7.50)
8	Awareness of beneficiary maintenance responsibilities	72 (60.00)	48 (40.00)
9	Knowledge of the department/agency implementing MSKPY	74 (61.67)	46 (38.33)
10	Awareness that MSKPY promotes renewable energy in agriculture	101 (84.17)	19 (15.83)
11	Knowledge of approximate solar-pump installation cost under MSKPY	20 (16.67)	100 (83.33)
12	Knowledge that a beneficiary contribution is required	76 (63.33)	44 (36.67)

Note: $N = 120$. Percentages are based on the total number of respondents.

The data in Table 1 reveal that almost all respondents (95.83%) had heard about MSKPY. A high proportion were aware that solar pumps reduce irrigation costs (92.50%) and that the scheme reduces dependence on conventional electricity supply (91.67%). Further, 84.17 per cent knew that the scheme promotes renewable energy in agriculture. These results indicate that the broad purpose and perceived benefits of solar irrigation were familiar to most beneficiary farmers.

In contrast, knowledge was comparatively limited regarding the financial and procedural provisions of the scheme. Only 16.67 per cent of respondents knew the approximate installation cost, while 23.33 per cent were aware of the subsidy pattern and 28.33 per cent knew the available pump-capacity options. Awareness of eligibility criteria, required documents, application procedures and online portal or helpline information was reported by 36.67 per cent. Similarly, fewer than half of the respondents (44.17%) knew the main objectives of the scheme. These findings indicate a distinction between general awareness of the scheme's benefits and detailed knowledge needed to understand its provisions.

With regard to implementation and use, 61.67 per cent of respondents knew the implementing department or agency, 60.00 per cent were aware of beneficiary maintenance responsibilities, and 63.33 per cent knew that a beneficiary contribution was required. However, the remaining respondents lacked information in these areas. Such gaps may affect farmers' ability to understand their responsibilities and seek appropriate support during the use of the solar pump. The findings support the need for extension communication that explains not only the benefits of MSKPY but also its practical, financial and technical provisions.

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Overall level of knowledge of farmers regarding MSKPY

The distribution of respondents according to their overall knowledge scores is presented in Table 2.

Sr. No.	Knowledge category	Frequency	Percentage
1	Low (up to 17)	25	20.83
2	Medium (18–21)	70	58.34
3	High (above 21)	25	20.83
	Total	**120**	**100.00**

Note: Knowledge score categories were adopted from the study's measurement procedure.

Table 2 shows that the majority of respondents (58.34%) had a medium level of knowledge regarding MSKPY. An equal proportion of respondents (20.83% each) belonged to the low and high knowledge categories. Thus, although most beneficiaries possessed a moderate level of knowledge, a considerable proportion had low knowledge and required additional information and support.

The predominance of the medium knowledge category may be associated with farmers' exposure to basic information through scheme participation and their practical experience as beneficiaries. Nevertheless, the item-wise findings show that detailed information about subsidy provisions, pump capacity, installation cost and application procedures was not adequately known to many respondents. This suggests that general familiarity with solar-pump benefits should not be treated as complete understanding of the scheme.

The findings may be viewed alongside Choudhary *et al.* (2023) [1], who examined the knowledge level of farmers about solar pumps in Jodhpur district and reported associations between knowledge and several socio-economic and communication variables. Pramod *et al.* (2022) [2] also examined knowledge among solar-pump users in relation to vegetable production technology. While the subject matter and measurement approaches differ, these studies underline the importance of knowledge assessment among farmers using solar irrigation technology.

Extension implications

1. The Agriculture Department, MEDA, implementing agencies and extension personnel should organize village-level information sessions explaining the scheme's objectives, eligibility criteria, documents and application process.
2. Simple Marathi information materials should clearly present the beneficiary contribution, subsidy provisions, approximate pump cost and available HP options, with details checked against the applicable scheme guidelines for the relevant year.
3. Practical demonstrations and hands-on training should explain pump operation, routine maintenance, safety precautions and the process for obtaining technical assistance.
4. Farmers should be provided with a clear contact point or helpdesk for resolving queries related to application status, installation, warranty, repair and maintenance.
5. Information should be communicated through multiple channels, including farmer meetings, extension workers, KVK programmes, printed leaflets and verified digital platforms.

Conclusion

The study revealed that beneficiary farmers in the selected tehsils of Latur district generally possessed a medium level of knowledge regarding MSKPY. Awareness was high regarding the scheme's broad benefits, particularly reduction in irrigation costs, reduced dependence on conventional electricity and promotion of renewable energy. However, knowledge was limited regarding installation cost, subsidy pattern, pump-capacity options, eligibility conditions and application procedures. The findings indicate that awareness of the existence and benefits of a scheme does not necessarily ensure adequate understanding of its operational provisions. Focused extension education, practical demonstrations and easily accessible information on financial, technical and procedural aspects are essential to strengthen farmers' knowledge and support effective utilization of MSKPY.

Limitations

The study was confined to 120 beneficiary farmers selected from three tehsils of Latur district. The findings are therefore specific to the selected study area and should not be generalized to all MSKPY beneficiaries in Maharashtra. Knowledge was measured through a 12-item schedule using the response and scoring procedure adopted in the original investigation. The study reports descriptive results and does not establish causal relationships.

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