**Evaluating the Performance of Krishi Vigyan Kendras through Farmers’ Perceptions**

**Abstract**

The study was carried out in Bundelkhand, focusing on two purposively selected Krishi Vigyan Kendras (KVKs): Hamirpur, under the authority of BUAT, Banda (U.P.) and Datia, under the authority of RVSKVV, Gwalier (M.P.). A simple random sampling was used to reach 120 farmers in 12 villages which were served by both of the KVKs. The results showed that most beneficiaries belonged to the middle-age group, had education up to higher secondary, medium-sized families, marginal landholdings, and displayed moderate levels of media exposure, extension contact, and social participation. In terms of effectiveness, the respondents expressed favourable perceptions regarding various aspects. Education, gender, annual income, training and risk orientation were some of the important factors which positively affect the perception of farmers towards KVK’s performance. Overall, the perception of KVK effectiveness was moderate, with 41.67% of farmers falling in the medium category.

**Keywords:** Perception, Effectiveness, KVK, Socio-economic

**INTRODUCTION**

Agriculture is the main driving force on economic competence in India since more than half of the populations of the country rely on it. The agriculture industry has the potential of poverty alleviation and food security and they are charged with the responsibility of providing sustained livelihoods to the farming society (Arfan et al., 2015). Major sources of concern by the rural society are poverty and unemployment. Knowledge of precision agriculture is therefore considered to have powerful significance in enhancing the economic condition of farmer to become more stable as poverty is concern. At each level of the agriculture production and at each situation, the farmer does make a set of specific decisions (Mittal et al., 2010). Farmers need continuous education to stay abreast of the rapidly changing developments in agriculture so that they can use technology and new tools to modernize their operations and increase their income (Bamne et al., 2023). The governments as well as non-government agencies have initiated a number of programmes of motivation and training of farmers, farm women and the rural youth to improve their knowledge and skills regarding precision agriculture.

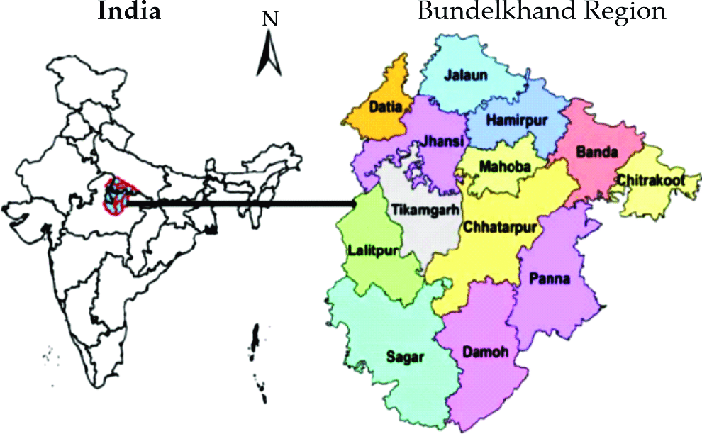
Krishi Vigyan Kendras (KVKs) are grass root vocational training centre of Indian Council of Agricultural Research (ICAR) and it has taken the centre-stage of technology dissemination through various activities such as OFT (On farm trail), FLD (Front line demonstration), capacity building, equipping knowledge and skills of extension personnel as also farmers. The first KVK was set up in 1974 at Pondicherry and since then the KVKs have increased upto 731 plus. Indian Parliamentary Standing Committee on Agriculture (1995) has reported that no realistic, technical and economic analysis was ever made to determine the adoption and implementation of technology transferred by the KVKs. Before launching its programmes and activities, a Bench mark survey of the selected villages was done to make a Socio economic appraisal and to understand the existing practices of the farmers. This enabled the KVK to identify the technological gaps and critical needs and requirements of the farmers (Anonymous, 2002). This formed the basis for farming operational modalities like training, demonstration and on farm trials by the KVK. Simultaneously the farm development work was also started as an important requirement for the strengthening of training cum demonstration infrastructure of the KVK. Now days the role of IoT is more important for any type of demonstration as well as enhancing the productivity of the crop.

Apart from conducting these demonstrations various innovative approaches were undertaken for providing the environment friendly packages to meet the farmer’s problem. An overwhelming response of the farmers to these eco-friendly practices later paved the way for forming various farmers’ interest groups and self help groups. These informal groups of self experimenting farmers that provides an opportunity for sharing their innovations and practices among themselves. Further the KVK started the Innovative Farm Women's Club for involvement of farm women in the dissemination of various technological interventions at faster rate (Rathor and Sidana, 2023).

Small and marginal farmers who are largely deficient of access to climate resistant variety of seeds, modern inputs and timely extension are particularly susceptible. Various socioeconomic factors including lack of adaptive capacity, insufficient knowledge, and inadequate institutional support further compound the vulnerability of agriculture in the region like Bundelkhand (Pathak et.al, 2024). The effects of climate change becoming a challenge to the farmers in the Bundelkhand region as it went a long way in influencing the productivity and profitability of the crop (Kumar et. al, 2022). Hence the role of KVK’s become more important to provide training, demonstration and knowledge of new technologies for the farmers in such regions to enhance the productivity and profitability of the crop. Hence, the present study was planned to assess the perception of the farmers in the Bundelkhand region regarding the performance of KVK’s and to identify the key socio-economic factors that influence this perception. The study would be helpful to enhance the capacity of KVK that promote sustainable, climate-resilient agriculture for farmers in the regions like Bundelkhand (Pathak et al., 2024).

**MATERIALS AND METHODS**

The research was conducted in Bundelkhand region that comprises 13 districts with 13 Krishi Vigyan Kendras (KVKs) located at one particular district. Six KVK’s are affiliated to BUAT, Banda, one is under RVSKVV, Gwalier, one is under NGO and the rest are under JNKVV, Javalpur. The purposeful selection of two KVKs was achieved as both KVK Hamirpur of state Uttar Pradesh and KVK Datia of Madhya Pradesh were selected. All the KVKs selected were given six villages with three villages inside the range of 10 km and three outside 10 km. Thus 12 villages were considered in the study. In each village 10 farmers were randomly chosen through the simple random sampling method and thus the sample size was 120 respondents. The inquiry to determine the perception of farmers towards KVK effectiveness followed a Likert-type of scale. Respondents were allotted to a scale of agreement with different statements of a five-point continuum (Strongly Agree, Agree, Undecided, Disagree and strongly disagree), where 5 to 1 were scores of positive statements, and reverse scoring were taken on negative statements. Mean and standard deviation were calculated by using the collected scores and farmers were classified into three levels of perceptions according to these values. Primary data was gathered via systematic and pre-tested interview schedule, being done both face to face. The data was analyzed using appropriate statistical methods including **frequency,** **percentage, t-test,** and **multiple regression analysis** to draw meaningful interpretations and conclusions.



**Fig. 1: Study Area indicating the Map of the Bundelkhand Region, India**

**RESULTS AND DISCUSSION**

**Socio-Economic Status**

The socio-economic and personal characteristics of the respondents (Table-1) revealed a diverse profile. Most of the respondents (49.17%) were fell in the middle age group (36-50 yrs) followed by old age (>50 years) 27.50% and youth category (<35 years) 23.33% which shows that, a large percentage of the respondents fall within the productive working age and they have the capacity to embrace new agricultural and livelihood activities. There was a very large proportion of male respondent (74.17), whereas female respondent were only 25.83. Male dominance in the sample could be as a result of the common patterns in the agricultural rural world where men are more participant in the decision making process and they are the household representatives in surveys. The respondents had a diversity of educational levels. A significant amount of them had finished junior high school (25.83%), high school (18.33%). The illiteracy was around 17.50% and only 8.33% were educated till graduation or more. It shows that there was moderate literacy level that could still be improved, especially at a tertiary level. Majority of the families (43.33%) were medium sized (5-8 members) followed by large families (30%). Small families (<4 member) witnessed only 26.67%. This distribution is consistent with typical rural household structures in India, where joint and extended families are common. A large percentage (70%) of the respondents came as nuclear families as opposed to 30% who came as joint families. This pattern is an indication of the transformation of the traditional joint families into nuclear families, which is likely to be as a result of either migration for work, or alteration of social-cultural dynamics. Most of the respondents belonged predominantly to OBC (39.17%) and UR (35.83%). The population of respondents under (SC) category was 21.67%, whereas ST was 3.33% only. The social heterogeneity of the region is depicted in caste composition, which may affect access to available resources and extension services.

The majority of respondents (56.67%) had a medium income (Rs.1,00,000--3, 00,000) followed by low (23.33%) and high (20%) income. This implies that they are mostly economically in the middle and have low amount of disposable income that might not impact on their ability to make an investment on agriculture and allied industries. The largest number of respondents (50.83%) were small landholders (2.5 5 acre), followed by medium and marginal farmers (24.17 and 19.17 percent respectively). Some did not have land (2.5 %), others had big acreage (over 10 acres, 3.33%). It has shown the dominance of the small-scale farming practice, which is the particularity of the Indian agriculture system and is associated with difficulties in mechanization and productiveness. Most of the respondents were involved in caste based jobs (30%), followed by agricultural farming (26.67%) and labour work (18.33%) respectively. Occupations of business and services were less frequent. This occupational structure indicates that there is still reliance on conservation livelihood and farming.

53.33% respondents indicated that they had semi-medium (10-20) contact with extension agencies and 29.17% answered low contect whereas 17.5% was characterized by high or medium levels of contact. This is an indication of outreach lapse and the necessity to enhance extension services in order to advance knowledge and practices. The participation in training was found also very low (34%) The low rate of training participation implies the necessity of a higher capacity-building (organized programs of skills development). Furthermore, more than half (51.67%) of the respondents exhibited low risk orientation, highlighting a general reluctance to adopt new or innovative practices. Exposure to mass media was moderate, with 44.17% having medium-level exposure. Social participation was low for 55% of respondents, indicating limited involvement in community activities.

**Table-1: Socio Economic Status of the Farmers**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S. No.** | **Characteristics** | **Classification** | **Frequency** | **Percentage** |
| **1.** | **Age (years)** | Young (<35) | 28 | 23.33 |
| Middle (36-50) | 59 | 49.17 |
| Old (>50) | 33 | 27.50 |
| **2.** | **Gender** | Male | 89 | 74.17 |
| Female | 31 | 25.83 |
| **3.** | **Education** | Illiterate | 21 | 17.50 |
| Primary School | 18 | 15.00 |
| Junior High School | 31 | 25.83 |
| High School | 22 | 18.33 |
| Intermediate | 18 | 15.00 |
| Graduation & Above | 10 | 8.33 |
| **4.** | **Family Size (Numbers)** | Small (< 4 ) | 32 | 26.67 |
| Medium (5-8) | 52 | 43.33 |
| Large (> 8) | 36 | 30.00 |
| **5.** | **Family Type** | Nuclear | 84 | 70.00 |
| Joint | 36 | 30.00 |
| **6.** | **Caste** | UR | 43 | 35.83 |
| OBC | 47 | 39.17 |
| SC | 26 | 21.67 |
| ST | 4 | 3.33 |
| **7.** | **Annual Income**  **(Rs.)** | Low (< 100000) | 28 | 23.33 |
| Medium (100000-300000) | 68 | 56.67 |
| High (> 300000) | 24 | 20.00 |
| **8.** | **Land Holding**  **(Acre)** | Land less (0) | 3 | 2.50 |
| Marginal (< 2.5) | 23 | 19.17 |
| Small (2.5-5.0) | 61 | 50.83 |
| Medium (5.0-10.0) | 29 | 24.17 |
| Large (> 10.0) | 4 | 3.33 |
| **9.** | **Occupation** | Labour | 22 | 18.33 |
| Cast Occupation | 36 | 30.00 |
| Business | 12 | 10.00 |
| Farming | 32 | 26.67 |
| Service | 18 | 15.00 |
| **10.** | **Mass Media Expoxure**  **(Numbers)** | Low (<8) | 37 | 30.83 |
| Medium (8-12) | 53 | 44.17 |
| High (>12) | 30 | 25.00 |
| **11.** | **Social Participation**  **(Numbers)** | Low (<3.0) | 66 | 55.00 |
| Medium (3.0-4.5) | 32 | 26.67 |
| High (>4.5) | 22 | 18.33 |
| **12.** | **Extension Agency Contact** | Small (0-10) | 35 | 29.17 |
| Semi Medium(10-20) | 64 | 53.33 |
| Medium (20-25) | 12 | 10.00 |
| Large (>25) | 9 | 7.50 |
| **13.** | **Training** | Attended | 52 | 43.33 |
| Not Attended | 68 | 56.67 |
| **14.** | **Risk Orientation** | Low | 62 | 51.67 |
| Medium | 47 | 39.17 |
| High | 11 | 9.17 |

**Farmer’s Perception towards KVK**

The results in Table-2 indicated that, majority of the KVK beneficiaries had high favourable perceptions towards the training programmes (47.5% medium and 31.67% high) and low favourable perception was only 20.83% of the respondents. 55.83% of respondents appraised front line demonstrations as medium as against 20.83% who discovered them as highly effective. It is an indication of the necessity of the demonstration to be more effective and farmer-oriented. On-farm trials received relatively balanced feedback, with 36.67% each in medium and high perception categories, showing moderate satisfaction. This suggests that participatory research activities are gaining traction among farmers, but still require increased effectiveness and visibility to reach their full potential. Concerning physical arrangements, 42.50 % of the respondents scores as middle and 31.67% scores as high, indicating there is good infrastructure, but there could be something to be improved in terms of accessibility and cleanliness and accessibility of facilities. In the same manner, advisory services and input supply also got good ratings with 47.50% of the respondents indicating that it is of medium satisfaction and 30.83% of the respondents indicated high satisfaction with these advisory services and input supply implying that there is decent degree of trust and utility of these advisory services and supply of inputs. But the view of other supporting activities was not that good with 35% responding that they were dissatisfied and only 24.17% giving it a high rating. This implies that the non-core services such as field visits, follow-ups, or secondary services are not viewed as substantial, and they require reinforcement ( Ranjan et al., 2017, Goswami and Das, 2022).

Regarding the overall performance of the respondents, 41.67% gave a medium perception and 31.67% stated that performative high and this signifies that the respondents were generally contented with the support they got especially in an institutional. However, the fact that the low ratings are identified to occur in 26.67% indicates that the service delivery should be more responsive and involve the farmers. Briefly, the importance of training, advising and science is well acknowledged by most farmers but the following has to be improved; front line demonstrations, physical facilities and supportive activities. Emphasis on these dimensions would greatly contribute to boosting the yield of farmers and increased use of the agricultural extension schemes (Verma et. al, .2016).

**Table 2: Farmer’s Perception towards KVK (N=120)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S. No.** | **Characteristics** | **Classification** | **Frequency** | **Percentage** |
| **1.** | Farmer’s perceptions towards training programmes | Low (< 40) | 25 | 20.83 |
| Medium (41-54) | 57 | 47.5 |
| High ( >54) | 38 | 31.67 |
| **2.** | Farmer’s perceptions towards front line demonstration | Low (<6) | 28 | 23.33 |
| Medium (7-13) | 67 | 55.83 |
| High (>13) | 25 | 20.83 |
| **3.** | Farmer’s perceptions towards on-farm trials | Low (<6) | 32 | 26.67 |
| Medium (7-14) | 44 | 36.67 |
| High (>14) | 44 | 36.67 |
| **4.** | Farmer’s perceptions towards teaching and subject matter/ quality of scientist | Low (<15) | 35 | 29.17 |
| Medium (16-22) | 43 | 35.83 |
| High (>22) | 42 | 35.00 |
| **5.** | Farmer’s perceptions towards physical facilities | Low (<23) | 31 | 25.83 |
| Medium (24-32) | 51 | 42.50 |
| High (>32) | 38 | 31.67 |
| **6.** | Farmer’s perceptions towards advisory services and supplies | Low (<18) | 26 | 21.67 |
| Medium (19-26) | 57 | 47.50 |
| High (>26) | 37 | 30.83 |
| **7.** | Farmer’s perceptions towards other supporting activities | Low (<10) | 42 | 35.00 |
| Medium (11-19) | 49 | 40.83 |
| High (>19) | 29 | 24.17 |
| **8.** | Overall Performance | Low (<128) | 32 | 26.67 |
| Medium (129-174) | 50 | 41.67 |
| High (>174) | 38 | 31.67 |

**Multiple regression analysis**

In the multiple regression analysis we used overall performance as a dependent variable and socio economic characters as independent variables and the results in Table-3 showed that there were some socio-economic and psychological factors impacting heavily on the dependent variable. It was notable that education, gender, annual income, and training emerged as significant positive contributors; this implies that people with high education levels, better-paid incomes, and who have attended training tend to exhibit better outcomes. The positive impact with risk orientation also indicated that the risk-takers would perform better when they are given a better opportunity, which was only slightly significant. On the other hand, mass media exposure and social participation showed significant negative impact with the outcome which means that too much or unfruitful media consumption and some forms of social involvement can become the obstacles to improvement. The remaining variables included age, caste, family type, family size, landholding, occupation and contact with extension agency were statistically non-significant implying that they had limited or no effect at all. The R2 value induced by this model is 0.59, that is, 59 percent of the division in dependent variable is grasped by incorporating independent variables in the model. Moreover, the value of F-test is 7.12 which were above the tabulated value of 1.76, proving the overall significance of the regression model. These results prove the necessity to pay attention to education and training as well as to income-increasing efforts but, at the same time, they are important to critically examine the contribution of media and social interactions to the process of attainments of desirable developmental consequences.

**Table.3 Multiple regression analysis of selected characteristics on overall performance**

|  |  |  |  |
| --- | --- | --- | --- |
| **Variable** | **Regression Coefficient** | **Standard Error** | **t value** |
| Age | 0.212 | 0.124 | 1.709 |
| Gender | 12.035 | 3.489 | 3.449\*\* |
| Education | 0.725 | 0.137 | 5.291\*\* |
| Caste | -1.217 | 1.008 | -1.207 |
| Family Type | 3.652 | 2.129 | 1.715 |
| Family Size | 0.021 | 0.121 | 0.173 |
| Annual Income | 0.126 | 0.026 | 4.846\*\* |
| Land Holding | 0.351 | 0.625 | 0.561 |
| Mass Media Exposure | -0.984 | 0.368 | -2.673\* |
| Occupation | -0.215 | 0.856 | -0.251 |
| Training | 1.265 | 0.521 | 2.428\* |
| Social Participation | -1.856 | 0.367 | -5.057\*\* |
| Risk | 0.539 | 0.298 | 1.808 |
| Extension Agency Contact | 0.483 | 0.381 | 1.267 |
| Constant = 122.15, R2 =0.59, F = 7.12\*, F tab =1.76 | | | |

**CONCLUSION**

The results of the current study revealed that majority of the respondents were male, middle age, medium family size, joint family, depended on farming or caste business as their source of income, marginally educated, medium level of media exposure, semi medium contact with an extension agency, and participation in society as well as risk orientation was low. Generally, there was high level of positive attitude of farmers towards the training programmes, frontline demonstrations and on-farm trials organized by the KVKs. Through the training programmes, they became more knowledgeable, more skilled and learned some innovative and scientific ways of farming. Frontline demonstrations offered practical experience in the field which instilled trust in the use of new technologies. The on-farm trials also enabled the farmers to compare and contrast new methods with the existing ones in real farm fields, which made the learning process similar and effective. Education, gender, annual income, training and risk orientation were some of the important factors which positively affect the perception of farmers towards KVK’s performance. Since the perception was given by various people depending on their level of education, access to information, whether they had been exposed to KVK activities previously and how their farming needs were met by the programmes.

The conclusions give an idea that by improving educational opportunities and offering appropriate training programs, increasing income levels, and inviting to take reasonable risks, it is possible to achieve better results. As another measure, to enhance their effectiveness even further, KVKs ought to be devoted to the need-based, location-specific actions and additional distribution of information through proper and efficient communication channel. The increase of the follow up and feedback systems would also facilitate the improvement of trust and interaction between farmers and KVKs and eventually lead to augmented agricultural productivity and societal improvement.

**Disclaimer (Artificial intelligence)**

Option 1:

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

Option 2:

Author(s) hereby declare that generative AI technologies such as Large Language Models, etc. have been used during the writing or editing of manuscripts. This explanation will include the name, version, model, and source of the generative AI technology and as well as all input prompts provided to the generative AI technology

Details of the AI usage are given below:

1.

2.

3.

**REFERENCES**

1. Anonymous. 2002. Report of the committee on streamlining the functioning of KrishiVigyanKendras in the Country. Division of Agricultural Extension, Indian Council of Agricultural Research, New Delhi, India.
2. Arfan, M., Ali S., Safdar, U. and Khan, M.A.J. (2015). Study of Association between Demographic Characteristics and Increase in Knowledge of Farmers through Punjab Agricultural Helpline. Journal of Agricultural Research, 53:287-294.
3. Bamne, L. L., Badodiya, S. K. and Bihare, G. (2023). Impact of Krishi Vigyan Kendra in Changing the Annual Income of the Farmers in Barwani District of Madhya Pradesh, India. AJAEES, 41: 41-46.
4. Goswami, B. and Das, I. (2022). A study on the impact of KVK training on farmers' adoption behaviour and acquiring knowledge in selected villages of Dakshin Dinajpur district of West Bengal. Journal of the Inland Fisheries Society of India, 54(1): 82-86.
5. Kumar, A., Kalia, A., Gupta, B.K., Mishra, D., Shukla, G., Mishra, B.P. and Ojha, P.K. (2022). An Economic Analysis of Mustard Production in Bundelkhand region of U.P., AMM, 53(1):5039-5048.
6. Mishra, G., Suryavanshi, A., Tripathi, S., Raj Bardhan, Pandey, A., Karnwal, R., Thampi, R. and Chandra. N. (2025). Dairy farmer’s perception towards climate variability in Bundelkhand region. Int J Agric Extension Social Dev, 8(5):136-140.
7. Mittal, S., Gandhi, S. and Tripathi, G. (2010) Socio-economic Impact of Mobile Phones on Indian Agriculture. ICRIER Working Paper 246. New Delhi, International Council for Research on International Economic Relations.
8. Pathak, D.K., Gupta, B.K., Verma, A.P., Shukla, G., Kalia, A., Mishra, D., Ojha, P.K. and Mishra, B.P.(2024).Assessing Farmers’ Awareness of Climate Change Impact: A Case of the Bundelkhand Region, India, Indian Journal of Extension Education, 60(4): 77-82
9. Pathak, D.K., Gupta, B.K., Verma, A.P., Shukla, G., Kalia, A., Patel, R.R, Maurya, N. and Mishra, B.P. (2024). Constraints Perceived by Farmers towards Climate Change in Bundelkhand Region, India, International journal of environment and climate change, 14 (10): 129-134.
10. Rai, B., Pradhan, K., Mondal, S., Sanjay, V.C. and Anand, B.(2024). Assessing farmers’ perceptions towards efficacy of KVK in accelerating income in Kalimpong district of West Bengal. Int J Agric Extension Social Dev, 7(7):509-511.
11. Ranjan, R. Ansari, M.A., Verma, A.P., Shekhar, S. and Rashit, S. (2017). Farmers’ Perception towards Effectiveness of Krishi Vigyan Kendra (KVKs): A Study in Uttarakhand. Int. J. Curr. Microbiol. App. Sci. 6(3): 878-890.
12. Rathore, B. and Sidana, S. (2023). Role of krishi vigyan kendra for the sustainable development of agricultural and rural areas. Academy of Marketing Studies Journal, 27(6): 1-4.
13. Verma A.P., Ansari, M.A., Ranjan R., Bhatt, A., Raghuvanshi, R. and Patel, D. (2016). Farmers’ Attitude towards E-Choupal: A Critical Investigation in Gonda district of Uttar Pradesh. International Journal of Agriculture Sciences, 8(49):2076-2078.