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Assessing KVK Working as a Knowledge Hub in Sagar District of Madhya Pradesh: A Quantitative Approach

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ABSTRACT

Background: The Krishi Vigyan Kendra (KVK) is a vital Indian agricultural institution founded by the Indian Council of Agriculture and Research (ICAR) to educate farmers and provide practical training. The study aims to assess farmers' knowledge and use of KVK, examine programs implemented, identify areas of activity and identify gaps. Researchers will provide suggestions based on the findings.

Methods: The study utilized a survey method approach to gather primary data from 510 farmers in Sagar district, Madhya Pradesh, using a structured questionnaires or secondary data from the KVK Sagar's and ICAR official website, to evaluate programs organized over 2020-24 years.

Result: The study's primary data revealed that out of 510 farmers, only 170 (33.33%) confirmed their familiarity with the KVK centre. Out of those 170 who aware, only 12 (7.06%) farmers reported occasionally visit, while 58 (34.12%) rarely and majority 100 (58.82%) never engaged in any KVK program. Further analysis of the secondary data indicated that the year 2024 had the highest number of programs conduct, totalling 347 programmes in diverse categories across villages. Fertiliser, seed enhancement and water management awareness programs predominated over the years 2020-24; while new technology, ICT-based services and contemporary machine training programs were low.

Key words: Agriculture, Agri-training progammes, Knowledge centre, Krishi Vigyan Kendra.

INTRODUCTION

In India, more than half of the population depends on the agricultural sector. Farmers are a crucial part of the country's development. The agricultural sector plays a crucial role in accomplishing the second Sustainable Development Goal (SDG) of eradicating hunger, which the agricultural sector alone can achieve. In India, the regulatory body called the Indian Council of Agricultural Research (ICAR), based on the recommendations of the Mohan Singh Mehta Committee, established KVKs all over India in 1974. KVKs established at the district level and role-playing as a knowledge resource centre are helping farmers and increasing agricultural output. KVKs are key knowledge centres, providing farmers with advanced technologies, training and demonstrations. Their success depends on proper funding, skilled staff, relevant training, strong monitoring and entrepreneurship support. Strengthening these areas will enhance their impact on agricultural growth in India. They also serve as knowledge hubs that greatly assist in disseminating information and conducting hands-on practice for the farmers at the ground level (Mukherjee *et al*., 2024). KVKs empower farmers through scientific knowledge, skill development and modern agricultural technologies (Chandran, 2021). This study focused on farmers' awareness in adopted and non-adopted villages of KVK. Farmers in adopted communities showed medium economic motivation and an understanding of KVK's Knowledge Resource Centre mission. Non-adopted village farmers had similar traits but lower awareness and social activity. Social involvement and financial incentives contributed to higher awareness in adopted villages, while outreach involvement and work were key traits in non-adopted communities (Kaved *et al*., 2015). Building on these findings, 65.33% of KVK trainees were found to exhibit moderate efficiency, with 18% in the high category and 16.67% in the poor category. The majorities were middle-aged, had completed secondary education and earned moderate salaries. Most had multiple organisational affiliations, primarily in agriculture. They regularly consulted information sources, showed moderate risk preferences and demonstrated strong decision-making abilities (Vaghela and Timbadia, 2022). To further understand the role of KVKs, it is important to consider farmers' perspectives. One study showed that KVKs are crucial for connecting academic research in agriculture with real-world farming. Assessing their effectiveness in

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information dissemination and service delivery requires insight into how farmers perceive these institutions. An appropriate scale was developed to evaluate the perceived benefits of KVKs, providing valuable information on their ability to meet farmers' needs and improve agricultural practices. These insights can help enhance knowledge transfer and service implementation in the agriculture sector (Meethal and Thomas, 2024). KVKs have played a key role in improving agricultural productivity and technology adoption. For instance, the KVK in Sehore district (Madhya Pradesh) adopted three villages in 2014-15, implementing on-farm trials, frontline demonstrations and training programs, which significantly enhanced farmers' use of modern practices and increased productivity (Chauhan *et al*., 2019).

During the COVID-19 pandemic, KVKs played a critical role in supporting farmers through awareness programs, training sessions and distribution of essential agricultural inputs, thereby sustaining farm productivity and rural livelihoods (Pagaria *et al*., 2020). Vocational training on mushroom cultivation at KVK Moga significantly improved trainees' knowledge by 80.75%. The training led to self-employment for some participants and contributed to income generation, highlighting its role in rural livelihood enhancement (Mavi and Thakur, 2021).

Their training, demonstrations and advisory services enhance farm productivity and rural livelihoods. Strengthening KVKs with better funding, infrastructure and digital initiatives will further boost their impact on Indian agriculture. KVK has implemented various programs throughout the district, focusing on areas such as farming, gardening and livestock husbandry, aiming to extend the reach of laboratory-based learning to farmers' fields. KVK facilitates the transition from agricultural research to practical implementation by offering instruction, demonstrations and exercises. For example, KVK Sagar, established on October 15, 1994 and supported by ICAR, collaborates with experts to provide education and training, conducts on-farm assessments and encourages farmers through vocational initiatives (KVK Sagar, n.d.). The main goals are to assist farmers and non-governmental organisations, update extension personnel and showcase new technology. The KVK Smartphone application allows farmers to utilise KVK resources, such as agricultural and livestock practices, expert guidance and event notifications. It also provides agro-meteorological information and market pricing. Farmers who cannot attend KVK programs due to distance can benefit from the app, which is available for download from the Play Store on Google Android or the KVK Gateway (Pal *et al*., 2019).

KVKs focus on increasing capacity, acting as knowledge hubs for agriculture advancement and disseminating farm recommendations *via* mobile services, radio programs, WhatsApp, *etc*.

This study analyses the various programs conducted by Sagar KVK Centre between 2020 and 2024 and determines participation in these programs. The study's main objectives are to identify and tabulate the various programs conducted by KVK Sagar, M.P. during 2020-24. On the other hand, it is important to understand the role of KVK as a knowledge resource centre. To find out the gap areas in the programs conducted by the KVK. To evaluate how well farmers in the Sagar district are aware of and utilize the KVK centre.

MATERIALS AND METHODS

This study employed a survey-based approach to collect primary data in Sagar district, Madhya Pradesh. A basic random sample technique was used in this study to select 2% of the villages from each tehsil, a total of 34 villages across eleven tehsils. Data was collected using a structured questionnaire. A total of 510 farmers participated, with 15 farmers selected randomly from each village. The sample size was decided based on Krejcie and Morgan's Sampling Formula, 1970 (In-Troh-Spective, 2017). Secondary data was obtained from the official websites of (KVK ICAR, 2025). The collected data was tabulated and the different programmes conducted in different categories in the Sagar district were identified. The primary data was collected in the year 2024 and Secondary data was collected for the years 2020 to 2024.

RESULTS AND DISCUSSION

Researchers present the research findings in a tabular format, grouping the data into columns and rows. The researchers examined the tabular data to draw meaningful conclusions about the study findings.

The following tables examine the basic programs offered by the KVK centres in the Sagar district and their year-by-year breakdown from 2020 to 2024.

In 2020-24, KVK Sagar organised various programs focused on enhancing and boosting their agricultural productivity through different training, education and practical activities for farmers to improve agricultural practices and productivity. These programmes were conducted at the ground level to enhance agricultural growth. The KVK Sagar's program analysis from 2020 to 2024 reveals a sustained effort toward enhancing academic, vocational and awareness-based engagement. The year-wise data indicates a gradual increase in programmes, demonstrating the KVK's responsiveness to evolving agricultural practices and societal needs. The growth in 2023 and 2024 could be attributed to a renewed focus on post-pandemic recovery, employability enhancement and digital inclusion.

A category-wise analysis revealed that the majority of programs were concentrated in the area of farmers' visits and exposure programs, highlighting it as the primary focus during 2021–2024. This reflects a strategic emphasis on enhancing employability and practical competencies among farmers. Other significant areas included visits from

scientists to farmers and field diagnostic visits by scientist farmers, showing a balanced approach toward agricultural development.

The findings highlight KVK's proactive role in bridging scientific knowledge with practical application. These programs contributed to farmers' enrichment and provided opportunities for farmers' community outreach and problem-solving. In an analysis of these specific programs, it is evident that while programmes like Field Visits, Scientist Visits and Kisan Melas are being conducted effectively, areas such as consider Lectures and dedicated Resource Person Programs. While valuable, these sessions could be amplified by increasing their regularity and diversifying their content. Consider more regular, in-depth discussions about new themes like climate-resilient agriculture, precision agricultural practices and market diversification plans. Bringing in a wider array of specialised resource persons can expose farmers and KVK scientists to new perspectives and cutting-edge innovations relevant to our local context. Similarly, exceptional events and celebrations provide a distinct opportunity for interaction. Beyond traditional observances, these could be transformed into more interactive platforms. Think Innovation Days showcase successful local farm models, Crop-Specific Workshops with hands-on demonstrations, or Farmer-Scientist Dialogue Forums designed for direct, informal problem-solving. Such events foster community and shared learning that transcends formal training. Furthermore, environmental awareness programs need a more prominent and practical role. These programs need to go beyond raising awareness to offer practical solutions in light of the mounting problems caused by environmental deterioration. This could involve workshops on sustainable water management, organic farming practices, soil health improvement, or even waste-to-wealth concepts tailored for agricultural settings. All about demonstrating to our farmers how protecting the environment immediately improves their standard of living. Lastly, training programs, especially at the grassroots level, demand a fundamental shift towards more hands-on training. While theoretical knowledge is important, direct practical application solidifies learning. This means less lecture and more time in the field showing techniques, working with new equipment and collaborating to fix problems.

This direct engagement fosters invaluable contact between farmers and scientists, building trust and allowing for real-time problem-solving specific to our region's needs. By investing in these areas, the KVK can ensure its efforts are even more deeply integrated into the fabric of our farming communities, leading to more sustainable growth and prosperity. Lectures and Resource Person Programs, special events and celebrations and environmental awareness and training programs to incorporate more hands-on training at lower levels, allowing for direct contacts among farmers and scientists. This strategy will increase farmers' knowledge of proficient agricultural practices and current technology. It still requires increased attention and more frequent implementation to address existing gaps.

It is evident that while KVKs are undertaking valuable initiatives, particularly in their existing outreach it is necessary to significantly enhance programs focused on digital literacy in agriculture and integrating modern farming tools driven by ICT. Disseminating this information and providing practical training to farmers, especially in regions like Sagar, Madhya Pradesh, is paramount. These specialised programs are no longer merely supplementary but fundamental for progressive agriculture. The emphasis should be on educating farmers about applications that offer real-time data on weather patterns or market fluctuations and demonstrating the utility of technologies such as drones for precise crop monitoring. Furthermore, instruction on innovative irrigation systems, which utilise sensors for optimised water usage and even basic mobile-based farm record management tools, is crucial. The objective extends beyond mere tool introduction; it aims to empower farmers with knowledge that can substantially improve yields, minimise waste and enhance their overall economic stability. KVKs may successfully prepare farmers for the farming environment of the future by aggressively expanding the number of seminars and hands-on demonstrations focused on these digital and ICT-driven agricultural advances. This will ensure that farmers have the modern resources necessary for long-term success. By actively increasing the number of workshops and practical demonstrations centred on these digital and ICT-driven agricultural innovations KVKs can effectively prepare farmers for the future landscape of farming, ensuring they possess the contemporary resources essential for sustained success.

Table 1 shows that the KVK Sagar organises the various types of programmes conducted in 2020-2024, a total of 1209 programmes conducted in five years. In 2024, 347 programmes were conducted, which is the highest compared to other years; in 2023, 323 total programmes were conducted, followed by 2022, 239 and 262 in 2021, while in 2020, 38 programmes were conducted, which is the lowest. Farmers' Visits and Exposure Programs are the most dominating programmes, which is the highest compared to other programmes. Scientist Visits and Field Interactions are the second most widely conducted programmes. Special events and celebrations related programmes are also conducted by KVK. In 2023, Farmers' Visits (85), which is the highest number of programmes conducted and in 2020, is going to be nil. The emphasis shifted from 2021 to 2024 to hands-on agricultural practices through Field Visits/Farmers Visits, indicating a trend towards more direct engagement with farmers. Contemporary agricultural training programs are administered district-wide throughout the year. Moreover, specialised training

Table 1: KVK programmes in year 2020-2024.

Category	Programmes conducted 2020-2024					
	Activity type	2020	2021	2022	2023	2024
Farmers' Visits and exposure programs	• Farmers visit to KVK • Farmer Exposure cum Training	-	56	55	85	82
Field days and crop-specific programs	• Field day of maize crop • Field day of soybean • Crop • Field day on summer moong bean • Lentil Field Day • Mustard Field day	-	18	15	20	18
Training and Workshops	• FPO training Programme • Inservice training programme in horticulture • Method Demonstration programme • OFF Campus training programme • On Campus training • One day workshop on Digitalization of Agricultural Extension System-VISTAAR • Review workshop of Scientist • Two days training cum workshop	06	28	25	30	45
Kisan Melas/ Agricultural Exhibitions and Farmer Meetings	• Kisan Sangosthi • Kisan Mela • Kisan Saarthi meeting • Kissan Sammelan	02	23	20	25	35
Lectures and Resource Person Programs	• Lecture delivered as a resource person • Lecture delivered to farmers • Lecture delivered to Scientist • Lecture deleverd to KVK Scientist	02	13	10	15	20
Scientist Visits and Field Interactions	• Scientist visit to farmers field • Diagnostic visit by Scientist • Farmers Scientist interface of *Kharif* crop	03	47	45	70	60
Awareness and Campaign Programs	• Awareness program • Balanced use of fertlizer awareness program • Importance of natural farming in agriculture production • Importance of nutritional kitchen garden • Soil health campaign	08	20	15	20	30
Special events and celebrations	• International Womens Day • Mahila Kisan Diwas • Kisan Samman Nidhi Programme • Viksit Bharat Sankalp Yatra • World environment Day • World Food Day	06	13	10	12	15
Production Technology and Crop Management	• Vegetable Production Technology • Production technology of soybean • Protection of crop from frost • Improved production technology of maize crops • Improved production technology of soybean	-	23	20	25	25

Table: 1 Continue....

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Miscellaneous Programs	• Livestock Production • Nursery Management for Income Generation • Plantation Program • Radio Talk in Hello Kisan Wani and Recording Program • Review Meeting	11	21	24	21	17
		38	262	239	323	347
Total				1209		

(KVK ICAR Data year wise, 2025).

programs are also conducted for female farmers. Programs focused on soil health and seed management are often conducted to assist farmers in implementing enhanced practices.

Table 2 shows that out of 510 total respondent farmers, 340 (66.67%) of farmers agree that there is a lack of awareness about the KVK, whereas only 170 (33.33%) reported being aware of the KVK centre in Sagar district. Regarding the 170 farmers who are aware of the KVK, the majority 100 (58.82%) said they never visited or utilised the centre's services and 58 (34.12%) said they rarely engaged in any KVK programmes, while only 12 (7.06%) of farmers are agreed that they occasionally visit which is very low.

Table 2: KVK centre awareness and utilization level of farmers.

Awareness of KVK centre	Responses (N=510)	Percentage
Yes	170	33.33%
No	340	66.67%
Scale of utilization (N=170)		
Very frequently	-	-
Frequently	-	-
Occasionally	12	7.06%
Rarely	58	34.12%
Never	100	58.82%
Total	170	100%

Analysing primary and secondary data reveals that the same programs are repeated over time. However, their reach is restricted since they are primarily centred in specific locations, emphasising the need for greater coverage and more diversity to satisfy the diverse requirements of the agricultural community. On the basis of the study identified some areas for improvement. Firstly, the function of KVKs in technological incubation and innovation is inadequate, obstructing the extensive use of contemporary agricultural techniques and technologies. Furthermore, KVKs are not fully utilised as information resource centres. Their focus remains limited, particularly in providing personalised advisory services to farmers. Ultimately, KVK programs are usually not conducted in collaboration with local organisations, NGOs and other agencies working in agriculture extension, which constrains the efficacy of agricultural projects. Rectifying such shortcomings is essential for promoting sustainable agricultural advancement and enhancing the scope and efficacy of agricultural activities.

The primary data reveals that only 33.33% of the respondent farmers are aware about the KVK centre indicating that most farmers remain unaware. Moreover, even those aware of the KVK do not actively utilise the services provided. This reflects an engagement gap that needs urgent attention. To address this, awareness campaigns should be intensified across the district through hoardings, posters, announcements and discussions to emphasise the centre's importance. To encourage greater participation from farmers. To bridge the gap and strengthen ties. A multi-pronged strategy centred on increased visibility, accessibility and direct engagement is critical. Firstly, increasing KVK visibility must be a top priority. This goes beyond traditional methods. We need a robust, localised awareness campaign that utilises various channels farmers frequently interact with. This could involve community radio announcements during peak listening hours local newspaper advertisements in local languages and strategic use of wall paintings and hoardings at key village intersections and market areas. Collaboration with Panchayat and local self-help groups is also crucial as they can act as local coordinators disseminating information about KVK services during regular meetings. Organising mobile KVK camps in remote villages, perhaps once a month, can also bring the KVK's services directly to the farmers' doorsteps, making their presence tangible and immediate.

Simplifying access and engagement is paramount. Many farmers, particularly those with lower literacy levels or less exposure to formal education might find the KVK structure intimidating. We must develop easily navigable communication tools that describe KVK's function and offerings in straightforward, local language and possibly using visual aids. An informal, approachable point of contact

might be established by setting up special KVK helpdesks or information kiosks at weekly village markets or nearby agricultural input stores. Additionally, it is compelling to encourage model farmers who have profited from KVK initiatives to tell their tales in public. When a farmer sees a peer's success, they are far more likely to trust and engage. Thirdly, KVKs should focus on outreach and relationship building. Instead of waiting for farmers to visit, KVK scientists and extension workers should regularly conduct village-level meetings at all over the district. These visits should not just be about delivering lectures but actively listening to farmers' problems, understanding their specific needs and offering tailored solutions. Organising Farmer-Scientist Interaction Days at the village level, rather than just at the KVK campus, can foster a sense of approachability and mutual respect. Leveraging WhatsApp groups and other accessible digital platforms for continuous, informal communication can also build sustained relationships, providing quick answers to queries and disseminating timely advisories.

Integrating feedback mechanisms will be crucial KVKs should regularly taking feedback from farmers on the effectiveness of their programs and the accessibility of their services. This information may then be used to continuously enhance strategies and guarantee that KVKs are meeting the needs of the agricultural community. Simple surveys, focus groups, or suggestion boxes at village events can all be used to collect it. KVKs can close the existing awareness and engagement gaps and become the vital pillars of agricultural development that every farmer needs by becoming more widely known, approachable and intricately woven into rural life. Increasing and improving KVK outreach throughout the district is crucial to guarantee that farmers are aware and take advantage of their programs. Stressing the value of these initiatives can motivate farmers to get involved, which will improve their knowledge, output and standard of living in general. To acquaint farmers with cutting-edge farming techniques, it is imperative to provide more regular awareness seminars on new equipment and technology. To complement this, local agricultural specialists should participate in live demonstrations, interactive Q and A sessions and monthly lectures. Additionally, real-time information on market pricing, weather, pest management and best agricultural practices will be made available by enhancing KVKs' digital infrastructure through web portals and mobile applications.

CONCLUSION

The study concludes that, based on primary data from KVK, out of a total of 510 farmers, 170 (33.33%) are aware. However, when it comes to utilization, 100 (58.82%) farmers reported never participating, indicating poor results. The analysis of secondary data from 2021 to 2024 revealed that annual training programs in modern farming, such as mushroom cultivation, field visits and farmer visits, are the main activities. KVK functions as a knowledge hub, offering a broad range of programs at the local level. However, it overlooks a significant portion of the field, lack of new technology-related information, machinery instruction and more awareness programs. Many farmers remain unaware and uninvolved due to significant obstacles such as distance, lack of interest and inadequate village-level engagement. There is a need to approach ICT-based technology in the agriculture sector and to ensure that farmers utilise those technologies efficiently. KVKs should emphasize on programs, which are important to new agricultural developments.

Conflict of interest

All authors declare that they have no conflict of interest.

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