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Training Intensity and Extension Method Mix as Indicators of Capacity Building in Krishi Vigyan Kendras

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ABSTRACT: Agricultural extension effectiveness depends not only on outreach coverage but also on the intensity and diversity of capacity-building interventions. Krishi Vigyan Kendras (KVKs) implement multiple types of training programmes that differ in duration, target groups, and delivery methods. However, systematic assessments of training intensity and methodological mix remain limited, particularly at the section-wise level. This study analysed four years (2021–2024) of extension programme data from ICAR–KVK Baramulla, focusing on the Horticulture section. Data on short-term and long-term trainings, awareness programmes, lectures, and exposure visits were compiled from official records. The analysis revealed a clear predominance of short-duration trainings, mainly one- and two-day programmes, which supported frequent and wide farmer engagement. These were strategically complemented by select long-duration trainings of three and five days aimed at deeper skill development. Awareness programmes and lectures contributed substantially to mass outreach, while exposure visits served a specialised role by facilitating experiential and hands-on learning.The study faced certain challenges, including reliance on secondary institutional records and the absence of uniform indicators to measure learning outcomes across programme types. Despite these constraints, the analysis provides one of the few structured evaluations of training intensity and extension method diversity at the KVK level. The findings underline the importance of balancing programme duration with methodological diversity to enhance capacity building in horticulture-based farming systems. Such an approach can strengthen farmer preparedness, support technology adoption, and contribute to climate-resilient and sustainable horticultural development.

Keywords: Training duration, extension methods, capacity building, Krishi Vigyan Kendra, temperate horticulture.

INTRODUCTION

Capacity building is a core mandate of agricultural extension systems and a critical determinant of technology adoption and sustainability (Swanson and Rajalahti 2010; Anderson and Feder, 2007). Beyond outreach numbers, the intensity, duration and pedagogical diversity of extension interventions strongly influence learning outcomes and behavioural change among farmers (Rogers, 2003; Davis and Heemskerk 2012). Krishi Vigyan Kendras (KVKs) employ a wide range of extension methods, including short and long duration trainings, awareness programmes, lectures, demonstrations and exposure visits (ICAR, 2014). Short-duration trainings are often preferred for rapid dissemination and mass awareness, while long-duration programmes facilitate skill development and deeper learning (Oakley and Marsden 1984; Meena and Singh, 2014). In horticulture-dominated temperate regions such as Jammu & Kashmir, extension systems must balance mass outreach with intensive skill-building to address challenges related to orchard management, climate variability and pest dynamics (Morton, 2007; FAO, 2021). Despite routine documentation of extension activities, systematic analysis of training duration and extension method mix remains underexplored in Indian extension research (Kumar *et al.*, 2019; Meena *et al.*, 2022). Choudhary and Meena (2020) evaluate how formal extension methods contribute to strengthening farmers' practical skills and knowledge. The study emphasizes that extension approaches such as demonstrations, group trainings, and participatory learning play significant roles in improving farmers' competencies and awareness of agronomic practices. These methods help bridge the gap between research innovations and on-ground farmer capabilities by facilitating interactive learning and direct exposure to improved techniques. Effective extension strategies not only disseminate information but also foster farmers' confidence in adopting new practices—resulting in

enhanced skill development and overall awareness of improved agricultural technologies. Khan and Ahmad (2021) also discussed how blending traditional extension models with emerging technologies and innovative extension strategies can better support sustainable agricultural development. This integration involves coupling conventional methods—such as farmer meetings, field demonstrations, and extension visits—with modern approaches like digital advisory services, mobile-based information systems, and ICT-enabled early warning systems. The authors highlight that while traditional extension remains valuable for grassroots relationship-building and hands-on learning, emerging methods enhance reach, timeliness, and customization of information, especially for dynamic issues like pest outbreaks and climate impacts.

The present study analyses four years of KVK extension programming in horticulture section to evaluate training intensity and extension method diversity as indicators of institutional capacity-building strategy.

MATERIALS AND METHODS

Study area. The study utilised primary horticulture section data from ICAR–Krishi Vigyan Kendra, Baramulla, located in the temperate horticulture zone of Jammu & Kashmir, characterised by apple-based farming systems and increasing climatic risks.

Data source. The data for the period 2021–2024 were compiled from officially maintained APARs and extension records of the KVK, maintained as per ICAR guidelines (ICAR, 2020; ICAR, 2021–2024).

Classification of extension programmes. Extension activities were categorised into:

- **Training programmes by duration:**
  - ♦ One-day
  - ♦ Two-day
  - ♦ Three-day
  - ♦ Five-day
- **Extension methods:**
  - ♦ Awareness programmes
  - ♦ Lectures/talks
  - ♦ Exposure visits

Descriptive statistics were used to analyse frequency and participation patterns, following extension evaluation frameworks suggested by Birner *et al.* (2009); Singh and Meena (2020).

RESULTS

Distribution of trainings by duration. Short-duration trainings dominated extension programming across all four years (Table 1). One-day and two-day trainings together accounted for more than 65 per cent of total training programmes, reflecting emphasis on rapid outreach and flexibility.

Table 1: Distribution of training programmes by duration (2021–2024).

Training duration	Number of programmes	Percentage (%)
One-day	96	38.4
Two-day	72	28.8
Three-day	51	20.4
Five-day	31	12.4
Total	**250**	**100.0**

Farmer participation by training duration. Participation was highest in one-day trainings, followed by two-day programmes, while three- and five-day trainings recorded lower participation but higher intensity per participant (Table 2).

Table 2: Farmer participation by training duration.

Training duration	Total participants	Average participants per programme
One-day	4,380	45.6
Two-day	3,240	45.0
Three-day	2,040	40.0
Five-day	1,240	40.0

Extension method Mix. Awareness programmes and lectures constituted the largest share of extension activities, while exposure visits formed a smaller but strategically important component (Table 3).

Table 3: Extension method mix (2021–2024).

Extension method	Number of programmes	Participants
Awareness programmes	110	5,820
Lectures / talks	85	3,740
Exposure visits	22	660
Total	**217**	**10,220**

Conceptual Framework. The conceptual framework (Fig. 1) illustrates the linkage between training intensity and extension method mix with learning processes and technology adoption. Training duration and method diversity influence knowledge acquisition, skill development, attitude change and experiential learning, which ultimately determine adoption behaviour and farm-level impacts. This framework aligns with diffusion of innovations theory and capacity-building models in agricultural extension (Rogers, 2003; Oakley and Marsden 1984; Swanson, 2011; Davis *et al.*, 2018).

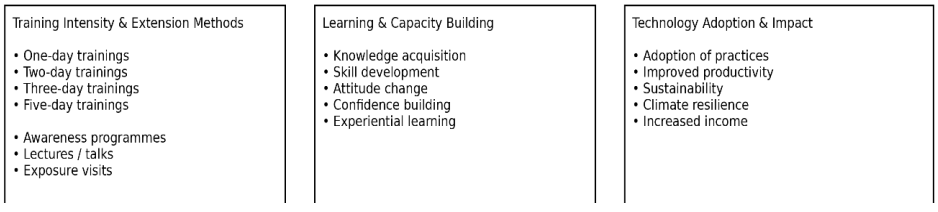

Fig. 1. Conceptual framework linking training intensity and extension method mix with learning outcomes and technology adoption in Krishi Vigyan Kendras.

DISCUSSION

The dominance of short-duration trainings reflects institutional emphasis on mass outreach and awareness generation, consistent with earlier extension studies across Indian KVKs (Meena *et al.,* 2016; Chauhan *et al.,* 2016; Singh *et al.,* 2021). Such trainings serve as entry points for sensitisation and rapid dissemination of information. However, the continued inclusion of three- and five-day trainings indicates strategic prioritisation of skill-intensive capacity building, particularly relevant for horticultural practices such as pruning, nutrient management and integrated pest management (Mittal and Mehar 2016; Chapke *et al*., 2019; Lal *et al.,* 2020). These longer programmes enable competency-based learning and confidence building among farmers (Swanson, 2011; Davis *et al.,* 2018). Awareness programmes and lectures remain effective tools for information dissemination, while exposure visits, though fewer in number, play a high-impact role in experiential learning, peer-to-peer interaction and social learning (Oakley and Marsden 1984; FAO, 2019). The observed extension method mix aligns with pluralistic extension frameworks advocated at national and international levels (Rivera and Sulaiman 2009; FAO, 2019).

CONCLUSION AND POLICY IMPLICATIONS

The study highlights that KVK capacity-building strategies are characterised by a balanced combination of short-duration mass trainings and targeted long-duration skill development programmes. Analysis of training intensity and extension method mix provides valuable insights beyond simple activity counts.

FUTURE SCOPE

Area	Future Research Direction
Training effectiveness	Linking training duration with post-training adoption, income enhancement and behavioural change
Method impact	Comparative impact assessment of awareness programmes, lectures and exposure visits
Digital extension	Integration of ICT-enabled and hybrid extension methods with conventional trainings
Longitudinal analysis	Tracking trainee cohorts to assess sustainability of learning outcomes
Climate resilience	Role of intensive trainings in adoption of climate-smart horticultural practices
Gender and youth	Disaggregated analysis of training intensity impacts among women and rural youth
Policy evaluation	Use of training intensity indicators for performance-based funding of KVKs

Policy implications include:

- Institutionalising training-duration analytics in KVK planning and evaluation frameworks
- Prioritising short-duration trainings for awareness and long-duration programmes for skill development
- Strengthening experiential learning through increased exposure visits
- Using the extension method mix as a performance indicator for capacity-building effectiveness (ICAR, 2020; Singh and Meena 2020)

Such evidence-based planning can enhance the effectiveness and accountability of public extension systems in horticulture-dominated regions.

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