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Empirical research on the participatory approach of agricultural extension: R & D Model

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Context and importance

Nepal's agricultural growth has been very slow, primarily due to inadequate research and extension linkage, coordination among public and private partners, as well as to technology generation, transfer, and services to farmers. Constitution of Nepal, 2015 explicitly mentioned that agriculture research would be the primary responsibility of the federal and provincial governments, while extension would be the responsibility of provincial and local governments. As per Schedule 8 of the Constitution, local governments are authorized to provide effective public services to the local communities and carry out social and economic development activities to uplift the living standards of local people. However, the working mechanism of the existing agricultural extension system in Nepal seems to be inadequate in dissemination of improved agricultural technology among the farmers. The new varieties, breeds and production technologies have not reached the targeted clients; yield gaps are still high between research and farmers' fields. This situation calls for a more proactive mechanism for institutional innovation targeting communication and cooperation in effective technology generation and transfer for the transformation of agriculture. There is a need for a participatory approach to agricultural extension where the innovations of improved technologies such as promising varieties derived from agricultural research could be well disseminated among the farmers. This collaboration will bridge the gap of inadequate skilled and trained manpower, technical knowledge and technologies as the present local government units have several challenges from skillful technicians to disciplinary experts hindering the effective implementation of agricultural programs and projects.

Policy issue

Local governments of Nepal are authorized to provide effective agricultural extension services to the local communities. After federalization, the knowledge sharing between technical experts and farmers has further worsened. Therefore, to increase the agricultural technology adoption, access to market information, agricultural extension system need to be strengthened through capacity building of the farmers & the extension workers. Establishing a functional platform of researcher, extension workers and farmers using Agricultural Information Communication Technology (AICT) for providing agricultural advisory services would be an important strategy. Furthermore, the establishment of a participatory monitoring & consulting mechanism is inevitable to enhance the agricultural technology adoption among the farmers.

Recommendations

- The ratio of extension worker to farmers is very high which should be addressed soon by recruitment of additional human resources and necessary amendments in existing agricultural extension system which would assure the access to quality agricultural advisory services to the farmers.
- Implementation of R&D model of agricultural extension at the local government level would highly contribute to increasing technology adoption and agricultural productivity.
- Disciplinary expert consultation through ICT (interaction of the agricultural specialists, farmers and the extension workers through WhatsApp) would create a scientific platform to provide agricultural advisory services to the extension workers and the farmers.
- Access to updated publications on improved farming practices should be made available to the farmers and the extension workers to enhance their technical knowledge.
- Collaboration and cooperation with the private sector organizations: input service providers such as seed companies, agro vets and advisory service providers would be synergistic to the participatory approach of agricultural extension.
- Further research is needed to identify sustainable modalities that can motivate both the supplier and receiver of the information and technologies.

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Further Information

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Experiment

The experiment on the participatory approach of the agricultural extension model was conducted in the Kavre and Nuwakot districts of Nepal. Two municipalities, Panauti and Dhulikhel from Kavre district, Belkotgadhi and Bidur from Nuwakot district were selected as the study sites. The baseline and end line survey was conducted among the 160 farm households (40 from each site) for the experiment.

Table 1: Experiment details

T0 (Dhulikhel & Bidur)-Control	T1 (Panauti & Belkotgadhi)-Treatment
Training only	Training + AICT + Participatory field monitoring

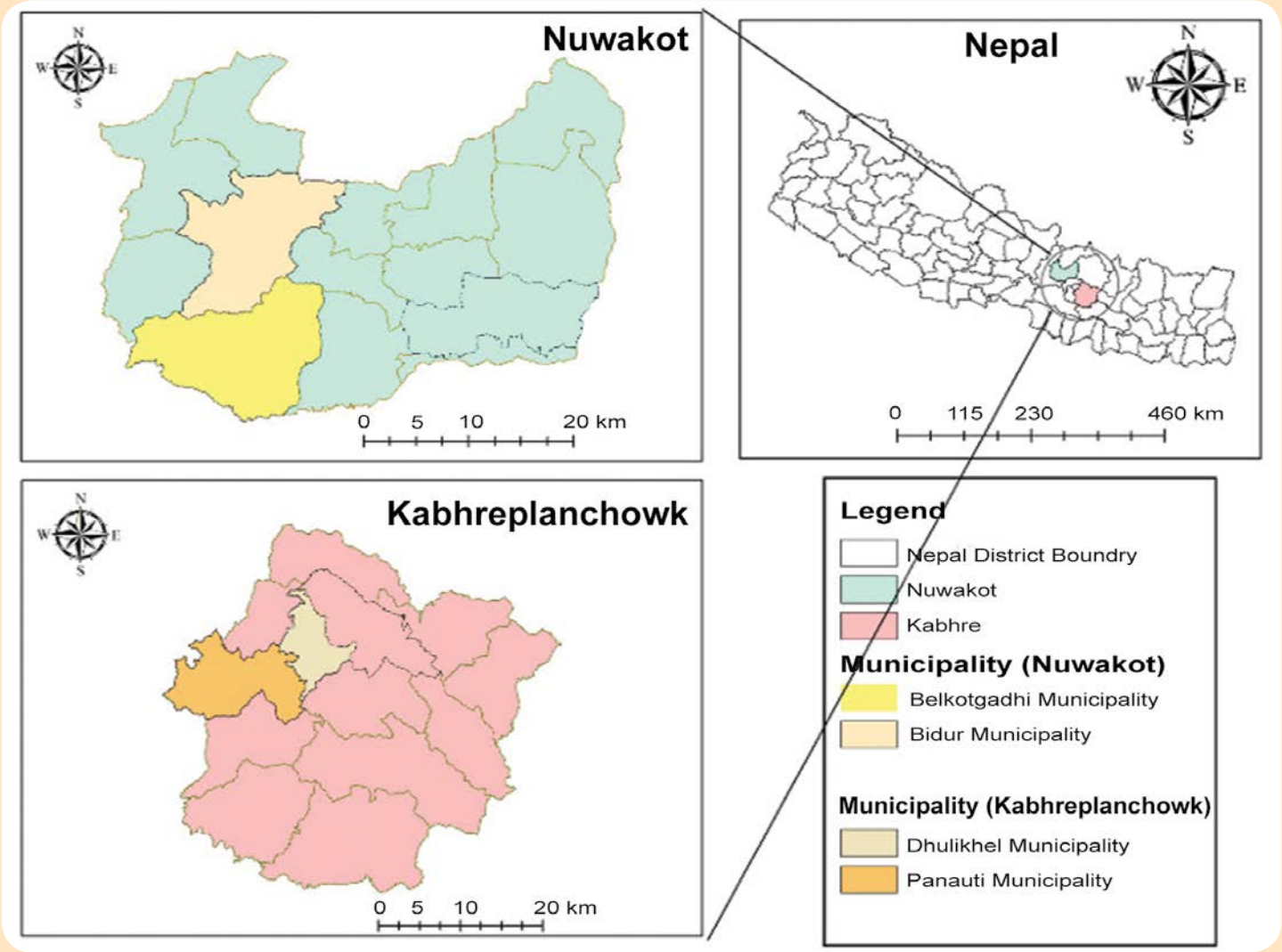

Figure 1. Map showing the study area

Major activities accomplished

- Baseline secondary data collection on existing agricultural extension system in Nepal
- Baseline and end-line survey to assess the impact of project intervention
- Capacity building training (for farmers and agricultural technicians of local government)
- Specialist consultative meeting
- Participatory field monitoring and consulting
- Method and result demonstration of the NARC-released varieties and other improved agricultural technologies
- Use of ICT for interaction among the disciplinary scientists, farmers and extension workers
- Data management and analysis
- Publications

Outputs

Outputs	Achievement description
Baseline data on existing agricultural extension system assessed	Major conclusions relating to budget allocation, technical manpower, and proportion of agricultural extension service providers to farmer were drawn (Refer to published article in NARC journal: DOI: https://doi.org/10.3126/jnarc.v9i1.61513)
Participatory field visit monitoring mechanism established.	Established a platform for interaction among farmers-researchers-extension workers which enhanced the knowledge level of farmers on the use of improved agricultural technologies, pest management, financial record keeping, and access to market information.
Commercial vegetable cultivating farmers and extension workers trained	Capacity building of a total 275 commercial tomato/vegetable growing farmers and 24 extension workers in 7 different municipalities.
Farmer-researcher-extension worker consultation through ICT (WhatsApp) mechanism established	An active interaction forum of 90 farmers, 12 extension workers and 11 disciplinary specialists has been established which ultimately contributed to increase farm productivity and income
Increased access to high-yielding varieties, agricultural technologies and publications on pest management and improved farming practices.	Distributed NARC-released varieties of tomato (Khumal hybrid- 2, Srijana), pest traps, and booklets on improved farming practices of tomato and other vegetables to the farmers & the extension workers

Key findings

- The method and result demonstration of the agricultural technologies such as planting high yielding varieties, using pest traps encouraged and motivated farmers towards improved farming practices.
- Increased tomato productivity- yield per tomato plant increased by 42 % in the project intervention sites ($p<0.5$ in Belkotgadhi and $p<0.01$ in Panauti).
- Increased harvesting period- The harvesting period was extended in Belkotgadi (23 days) and Panauti (28 days) after the project intervention. Increased knowledge of pest management among the farmers and extension workers was worthy of this change.
- The extension worker (federal, provincial and local gov. total) to agri. population ratio has been estimated as 1: 1764. While direct extension worker (provincial plus local govt.) to agri. population ratio has been estimated as 1:2345
- The Likert scale rating revealed that the knowledge level of the farmers on pest management in tomatoes has been upgraded a point ahead in the treatment sites after project intervention.
- Use of ICT tools for agricultural advisory services (WhatsApp, viber, phone call) by the farmers have been increased by nearly 20% in the treatment sites after project intervention.