

MIND THE GAP “Improving Dissemination Strategies to Increase Technology Adoption by Smallholders”

Project Lessons Learned, Political Recommendations, and Strategic Actions

Project Background

Proven agricultural technologies that can improve living conditions often have low adoption rates because of the lack of effective extension systems and an enabling policy environment. However, little is known about which extension approaches are the most effective with smallholder farmers. The project "Mind the Gap" provides an analytical view and offers an effective option on the opportunities and challenges facing initiatives to increase the impact of rural and agricultural extension services in Tunisia's drylands.

Objectives of the Project

The project “Mind the Gap” aims to (i) improve the technologies transfer strategies to increase technology adoption by smallholders’ farmers in the Tunisian semi-arid areas and (ii) to understand which extension approaches the greatest success rate have, leading to help improving future agricultural technology dissemination efforts.

Methodological Research Approach of the Project

This project compared different extension approaches and evaluated their impacts on the adoption rates of two promising technologies (*Kounouz* barley variety and feed blocks) using the Randomized Controlled Trials (RCT) approach. The RCT approach compares randomly selected groups that receive (“treatment”) with those that do not receive (“control”) the extension approaches that are being tested. Different treatment groups receive different types of extension approaches (Table 1). These groups are compared with each other and against the control group receiving no treatment. The RCT approach assesses the extent to which the expected impacts are achieved.

Table 1: Distribution of project households (HH) according to the selected treatment groups in 2018

T1 (N=140)	T2 (N=140)	T3 (N=140)	T4 (N=140)	Control (N=140)
Technical training	Technical training Economic/organizational training	Technical training Economic/organizational training Female empowerment	Technical training Female empowerment	None

Source: Own elaboration from project data (2019).

Results and Lessons Learned from the Project: The role of technology transfer approaches based on the cost of adoption

- The participation rate of farmers involved in the project in the various trainings has a direct impact on the adoption rate of *Kounouz* variety in the studied areas.
- The RCT method proposed by the project allows the Government to choose, according to its budgetary resources and according to the type of the implemented training, the adoption degree of the desired technology. In this sense, the project offers four (4) potential options for the adoption of the *Kounouz* barley variety:
 - An adoption rate of *Kounouz* for T3 in 2018 of 35% with a total training cost estimated at 918.1 TND per person,
 - An adoption rate of *Kounouz* for T4 in 2018 of 24.5% with a total training cost estimated at 540.6 TND per person.
 - An adoption rate of *Kounouz* for T1 in 2018 of 22.6% with a total training cost estimated at 229.3 TND per person.
 - An adoption rate of *Kounouz* for T2 in 2018 of 13.9% with a total training cost estimated at 607.0 TND per person.
- Treatment groups that have received training in empowering women have the highest *Kounouz* variety adoption rates in 2018.

- The involvement of women in the project has a positive influence on the adoption of innovative technologies, in particular in areas where men are generally absent (working outside the area).
- The project revealed that field visit both farmer to farmers and to research station where *Kounouz* was grown under the full technological package (with an average moderate cost), conducted in similar production areas, is more preferable than training (with a considered high cost) and text message (very low cost). However, these extension methods are complementary and encourage farmers participants to adopt the innovative technologies implemented by the project.
- The project revealed a lack of financial and human resources relating to the public agricultural extension system.
- The project revealed financial and administrative constraints on the creation of an SMSA although the high interest demonstrated by the farmers participating in the economic and organizational trainings.
- For food block technology, the effect of training on adoption rates was very low (1.45% for T4 to 4.37% for T1).
- The project has shown that adoption of technology is a non-linear process, complex and influenced by several socio-cultural, economic, institutional, and environmental factors.
- The project shows that effectiveness of a training program depends not only on the number of farmers who received information, but also on the success of this approach and / or methods used to influence farmers' decision to adopt a specified technology.
- Women participating in T4 treatment contributes more to decisions related to the expenditure of income generated by livestock activities, potentially due to increased knowledge (more confident in their contributions).
- The highest adoption rate observed concerned extension modules involving training for women.
- The project has shown the importance of the participatory approach of the different partners in the technology transfer strategy.

Recommendations: Re-emphasize the effectiveness of the technology transfer methods

Improving the participation of farmers in the project in training (selection of the adequate training period and strengthen the material and human resources of extension agents to facilitate invitation methods of farmers)

- Defining clearly the needs of target farmers for training before proposing the technology and then selecting the best extension method according to the adoption / costs ration. A pre-project survey should be carried out for the selection of appropriate technologies.
- Re-orienting priorities towards an extension policy that takes gender into account and, particularly, rural women, especially for projects that are targeting smallholders' farmers.
- Targeting farmers (and women farmers) who have land titles to their land.
- Involving financial institutions (banks, ENDA, etc.) in phase of the project dealing with the adoption of technologies by small-holder's farmers.
- Investing more in new technologies such as SMS, which presented low costs and wide dissemination of information.
- Strengthening local extension and partial privatization of agricultural extension services by involving other types of service providers in the technology transfer process.

Strategic Actions: Considerations for policy makers

- Choosing the most relevant extension method in terms of training category offered and its respective cost.
- Adopting the most relevant invitation method in terms of adaptability to the environment (geographic, cultural and institutional) and its cost.
- Supporting the target farmers in the implementation of their projects (Microcredit, SMSA, small projects, etc.).
- Considering the gender dimension in the developed extension strategies.
- Involving the potential actors in the innovation transfer process (service providers, industries, etc.).
- Understanding farmers' knowledge, perceptions and attitudes towards the new technology before its diffusion.
- Speed up the process to change social attitudes by promoting gender equality through awareness-raising activities (for men and women).
- Studying the socio-demographic and economic characteristics of the beneficiaries (farmers), the characteristics of innovation and the characteristics of the external environment before initiating the transfer of the technology.
- Including the most cost-effective and new approaches in the technology transfer strategy, particularly SMS, which was well appreciated by the different participants in the project.
- Involving of farmers in the upstream innovation development processes.