

# Factors Influencing Adoption of Rangeland Rehabilitation Technologies by Agro-pastoralists in the Arabian Peninsula: Evidence from Analysis in Saudi Arabia and Qatar

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## INTRODUCTION

In the Arabian Peninsula (AP), rangeland ecosystems, which cover about 50% of the total area, are severely degraded due to the combined effects of overgrazing and harsh environmental conditions (Ouled Belgacem et al., 2013). The limited arable land and water scarcity constitute the main challenges of growth of AP agriculture. With the limited potential for agriculture sector, optimizing use of these limited resources for technology transfer in agricultural development while sustainably managing natural resources is one of the biggest challenges facing any decision-maker including the end users and growers. It is within this framework that ICARDA in collaboration with the National Agricultural Research Systems (NARS) has developed and introduced different technologies on rangelands rehabilitation including resting, planting native range species and water harvesting in different countries of the AP such as Kuwait, Qatar, Saudi Arabia (KSA) and Yemen. These technologies have increased the rangeland productivity, rainwater use efficiency and the resilience of the livelihood of some pilot livestock owners. However, the dissemination at larger scale and the adoption of these technologies by end users was not evaluated

## RESEARCH OBJECTIVES

In line with the knowledge gaps above justified, this research study has been conducted in Saudi Arabia and Qatar with the purpose to enhance the adoption and accelerate its process and scaling up of these promising technologies. This includes:

- Estimation of the expected rate of adoption of rangeland rehabilitation technological package (planting native range species and water harvesting) in KSA and Qatar,
- Understanding the perceptions of AP research and extension system on the impact of ICARDA-APRP technologies characteristics on adoption levels, and consequently to identify main adoption barriers and constraints, and
- Draw recommendations to promote adoption, ensure scaling-up and widespread use of these technological packages.

## METHODOLOGICAL FRAMEWORK

The study used an adoption and diffusion outcome prediction tool (ADOPT) to evaluate and predict the likely level of adoption and diffusion of these technological innovations' packages. The tool has been implemented through a focus group discussion (FGD) with group of agro pastoralists in the two considered countries. They were asked to think about their problems related to implementing the rangeland rehabilitation technological package and its adoption drivers in their respective countries. We streamlined 22 discussion questions around four categories of influences on adoption such as (i) characteristics of the innovation; (ii) characteristics of the target population; (iii) relative advantage of using the innovation, and (iv) learning of the relative advantage of the innovation. Furthermore, this study used a Likert-type scale (LS) analysis to explore KSA and Qatar's researchers and extension agents' perception and agreement with the evaluated package characteristics and for identifying the critical constraints to the adoption of such package in both countries through a survey response using scale categories.

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## RESULTS AND DISCUSSION

### Predicted adoption levels and factors affecting the adoption of rangeland rehabilitation technological packages

- A large difference on the predicted level and time to peak adoption between KSA and Qatar regarding this technological package (planting native range species and water harvesting) has been examined.
- There is a willingness from agro-pastoralists in KSA to adopt the rangeland rehabilitation technological package.
- The predicted years to peak such adoption are around 18 years, and the peak of adoption is expected to be 92% for KSA and 11% for Qatar. This predicted peak remains very low even during the first 5 and 10 years for the case of Qatar.
- The characteristics of the technological package is a determinant on its level to peak adoption and on the time to peak the corresponding adoption level.

### Basic criteria and assessment of rangeland rehabilitation technological package: Technological package characteristics, R&E perceptions and adoption decisions

- Rangeland rehabilitation technologies were perceived as complex innovation
- Technical assistance, substantial new skills and knowledge, up-front cost of investment, financial resources and effective extension advisory services are considered the main factors enhancing the adoption of these technologies.
- Rangeland resource management technologies are suitable, relevant and could offer the means to improve agro-pastoral livelihoods.

## POLICY IMPLICATIONS

To accelerate the adoption process of these technologies, this study suggests the following:

- Create favorable conditions (i.e., creation of micro catchments, develop appropriate policy and strategies for rehabilitation, etc.) so that a greater number of agro pastoralists can take advantage from the benefits of such technologies.
- A concerted effort to heighten awareness about the rangeland resource management technologies over practical demonstrations.
- A need for the end users to develop substantial new skills and knowledge to use these technologies.
- Creation of national supporting financial policy program through smallholder credits that could be an important adoption driver to overcome financial constraints to investment in this innovation.

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