

Coping with Water Scarcity in Private Irrigated Perimeters: Farmers' Adjustments in Southeastern Tunisia

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Abstract: Groundwater scarcity is a growing problem in Tunisia. Irrigation water is becoming an increasingly scarce resource for the agricultural sector in many regions. A common ground in past policy schemes was the development of adequate irrigation infrastructure to guarantee the supply of irrigation water as the demand for agricultural products was increasing. However, these expansionary policies have resulted in a massive use of irrigation water at a heavily subsidized cost and led to aquifer overexploitation. Groundwater scarcity has become an increasing social and economic concern for policy makers and private irrigated perimeters in south-eastern Tunisia. This research study analyzes the different methods adopted by farmers to cope with the groundwater crisis, social and economic factors that affect their choice of methods and the barriers to adaptation. For this research, a household survey and group discussions were undertaken. A total of 100 households were interviewed in Zeuss-Koutine region (South eastern Tunisia) and a logit model is used to analyse the determinants of farmers' choice of adaptation strategies. Two strategies were identified. First, strategies may be based on 'chasing' groundwater by deepening existing wells or by drilling other wells, so as to maintain a water-intensive farming system. Second, strategies that may be designated as adaptive, i.e., adapting the farming system to the water available on-farm given existing hydraulic infrastructures. Results from the discrete choice model employed indicate that the level of education, age, wealth of the head of household and social capital all influence farmers' choices. The major barriers include lack of information on adaptation methods and financial constraints.

Key words: Adaptation • Farm strategy • Groundwater • Scarcity • Tunisia

INTRODUCTION

Scarcity of natural resources and risks of climate change have made management of water resources a major concern worldwide, putting it at the forefront of policy-makers' agenda. In the Mediterranean area, Tunisia is a case in point, ranking in the category of countries least endowed with water resources. The latter are relatively low and their mobilization is quite advanced (90% in 2013) [1]. However, though these resources appeared sufficient not long time ago, or even abundant for agricultural development in arid areas, the current situation is not so reassuring. The profound changes occurred in the last forty years have resulted in marked and rapid developments, production systems and methods of operation and management of natural resources. Hence, we are witnessing the beginning of

increased groundwater exploitation, development of irrigated crops and the rapid extension of arboriculture at the expense of pastoral areas, including the coastal zone related to transfers of land ownership. In this context, the spatial complementarity of agricultural systems has disappeared to make room for interconnected production systems whose dynamic is mainly expressed by a competition for access to natural resources, including groundwater resources in the southeast of Tunisia.

The rapid development of the use of groundwater for irrigation has enabled a significant agricultural growth. Nonetheless, such development has become unsustainable in many parts of the country, due to overexploitation of aquifers and inadequacy of instruments implemented and being considered to be used for unsustainable use of groundwater resources in irrigated areas.