



Available Online at ESci Journals

International Journal of Agricultural Extension

ISSN: 2311-6110 (Online), 2311-8547 (Print)

<http://www.escijournals.net/IJAE>

GOOD INTENSIONS AND HARD REALITIES: ACHIEVEMENTS AND CHALLENGES IN AGRICULTURAL EXTENSION SYSTEMS IN TUNISIA

^aBoubaker Thabet, ^bBoubaker Dhehibi*, ^bShinan Kassam, ^bAden Aw-Hassan

^a Centre University of Tunis, Tunisia.

^b Social, Economics and Policy Research Program (SEPRP), International Center for Agricultural Research in the Dry Areas (ICARDA), Jordan.

ABSTRACT

The purpose set for this study was to assess the proficiency of the agricultural extension in Tunisia based on secondary information and interactions with key stakeholders involved in the extension information chain. These discussions and interactions indicates that organizational structure the agricultural extension system of Tunisia (AEST) has been in existence for decades and is quite elaborate. It is impressive in its coverage of functions, regions and activities. It is also commendable for the quantity of extension material, both written and audio-visual, that it uses to convey messages to farmers. While elaborate in its administrative structure, the AEST is however elementary in its conceptual nature and suffers from a number of limitations and constraints that are inherent to the nature of the agricultural activity itself, namely rainfall dependence, marketing channels functioning and power, the scattered nature of farms and their limited size; all negatively affecting its expected profitability and therefore its economic viability. Consequently, the derived demand for extension service is limited, localized, restrained and mostly public incentive induced. The objectives to privatize the AEST and induce private participation and partnership in it have been set for decades, to date the supply of extension messages are typically of the top-down nature and based mostly on technical recipes; i.e., public administration set and lacking information on socioeconomic considerations that could provide farmers with viable alternative options and help reduce the risk and uncertainty they are constantly facing. They also lack flexibility regarding the diversity of farmers and farming conditions. Improving the performance of extension services in Tunisia is essential if policy makers would be successful in designing ways, using modern tools, measures and instruments for relaxing the constraints that limit the profitability and overall attractiveness of the agricultural work and investment. This dialectic nature rests on many technical, institutional and social considerations and constraints that do not change rapidly over time.

Keywords: Agricultural extension, Top down approach, Economic viability of agriculture.

INTRODUCTION

With the increasing recognition of the indispensable role of the private sector in inducing agricultural growth that started about four decades ago¹, the Agricultural Extension Systems of Tunisia (AEST) became a central component of the public vision for introducing technical progress in agriculture in order to improve the productivity of agricultural resources. Over the years and decades the AEST mobilized important communication

tools and means with which policy makers sought to introduce "modernization" in the ways farmers had been accustomed to conducting agricultural activities and consequently enhance agricultural production and farm incomes; thereby promoting growth, attenuating poverty in rural areas and slowing down rural exodus.

Agricultural resource productivities in Tunisia are low in comparison with international standards or regional ones; even in irrigated areas. To take cereals as examples which are considered strategic for the food security of the country, yields per hectare are among the lowest. Hence

¹ Following the experience of forced farm collectivization movement by the State that took place in the country during the sixties, implying public management and strong administrative control of the agricultural sector.

* Corresponding Author:

Email: b.dhehibi@cgiar.org

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the aim has been all along to push for intensification of crops through significant increases in input utilization (mechanization, fertilizers, chemical treatments, etc.) which implied publicly subsidizing most of these inputs below their acquisition costs ever since the beginning. A parallel endeavour has all along been the focus on public investment in ground and surface water mobilization and the subsequent promotion of irrigation infrastructure which has led to the rapid development of irrigated perimeters over an area of about 450000 hectares but still corresponding to only about 8% of the total arable land of the country. This involved, among other things, relying on extension specialists and their knowhow to inform and guide farmers as to the agricultural techniques to follow. Moreover, they advise them on the commodities to produce or not to produce, the varieties to choose from, leaving aside for the most part marketing, on the assumption that the country needed more urgently to increase domestic production at practically any cost, particularly of the staple food commodities such as cereals. Hence high expectations were placed in the role of these extension agents could play as vectors of knowledge and information transmission to better inform farmers and adequately guide them as to how to bring about better performances in the agricultural work and generate higher returns to investment in farm activities. Actual performances as materialized by average grain yields, milk production per cow or even cash commodity yields such as in tomatoes or potatoes were not that spectacular either. At the same time public expenditures on farm inputs kept rising, along with other expenditures, to the point that the Tunisian economy had to go through on a number of occasions an economic stabilization program along the International Monetary Fund (IMF) and World Bank (WB) lines².

Simultaneously the agricultural sector was the subject matter of an Agricultural Structural Adjustment Program (ASAP) implying gradual disengagement of the State from intervening and supporting the use of inputs and gradually relying on market mechanisms and forces in allocating inputs and resources. Hence the role of extension agents in communicating with farmers and advising them in terms of input usage as well as general attitudes concerning the market had to evolve. The economic situation of the country went through different

stages but toughened again seriously since the political change known as the "Arab spring" that Tunisia initiated and experienced during the last four years. Among the signs of difficulties that the country experienced was again the rapid increase in budget outlays that continued to be allocated to the agricultural sector and to the consumption of imported food commodities³ which led the WB experts to qualifying the "Arab Spring" movement in Tunisia as "unfinished revolution" (World Bank, 2014). This means that more challenges are lying ahead and Tunisia is going to have to seriously reform its economy and its public intervention modalities in particular in terms "showing the way" to farmers to bring about real growth as well as sustainable improvement in livelihoods by providing among other things adequate extension work. This expected extension role in promoting growth in the agricultural sector continues to be crucial because agriculture remains vital for the country for food security considerations, employment issues, even though its relative contribution to the overall growth of the economy has declined over the years and decades from about 30% during the sixties to about 10% presently, as other sectors have grown over time particularly those of services.

Methodological framework: This work makes use of the existing documentation available on the subject in the country (Sioud, 2014; ACC, 2014) and draws parallels with international standards and findings pertaining to agricultural extension systems and their performances (Judge *et al.*, 1986; Aker, 2011). The accumulated secondary information was subsequently discussed and debated with typical stakeholders involved in the extension information elaboration and delivery the list of which is attached. This includes mostly public partners as extension work is still primarily managed by the public sector in spite of all the good intentions and ambitious plans put forth to rely on the private sector. The interactions went however beyond the representatives of the public sector to include typical representatives of the extension information chain such as farmer unions, private counselors, input providers, researchers and a sample of farmers themselves. With each group issues pertaining to the modalities of extension information elaboration and delivery were raised, constraints were raised and solutions were suggested and debated.

² Calling for a better rationalization of public support measures to agriculture

³ Such as bread wheat and vegetable oil

The nature of the debates was very similar to the Delphi type where a brainstorming of ideas of the various stakeholders involved was performed and analyzed (Chia and Stanford, 2007).

The results of these discussions are structures a long a market framework of supply of and demand for extensions services. In each case a narrative discussion is provided on the situation, its potential and

Table 1. Distribution of extension specialists.

Intervening institutions	Public sector		Private sector	
	Support institutions	Regional offices (CRDA's)	Professional institutions	Counselors
Share (%)	36	43	16	5
Total (#)	79		21	

Source: Sioud (2014).

The public institutional apparatus (system): This subsystem is made up on one hand of purely public institutions such as the Agency for agricultural extension and training (AVFA) in lieu of which is orchestrating most of the extension work at the central level but also regionally through its local extension units known as CTVs whose work is also supervised by the regional offices of the Agriculture Development of the Ministry of Agriculture (CRDAs) as part of their regional coordination work of agricultural activities in general.

The AVFA is in particular in charge of (i) coordinating the extension activities conducted by all institutions involved (public, professional and private), (ii) the training of extension specialists working for these institutions and (iii) the monitoring and evaluation of such extension activities. Apart from its administrative and financial structure, the AVFA is composed of 5 main divisions managing respectively (i) pedagogical and technical matters, (ii) actual extension activities, (iii) the professional training needed to support the extension work, (iv) the special training and extension activities targeted to the fisheries sector and (v) the advising and tutoring of the extension work conducted by private and professional stakeholders. Its director general is furthermore assisted by an advisory committee which plays a consultative role.

On the field, the AVFA is in a systematic interaction with the regional agricultural development offices as extension activities constitute one of the three main activities and divisions of the regional public development structure (CRDA) acting on behalf of the Ministry of Agriculture (2014). The CRDAs operate at the level of Governorates into which the country is administratively subdivided and whose number is 24. In this category of public extension work provision there

limitations. The paper concludes with a synthesis of the main ideas drawn from the study and a set of recommendations.

The Extension system organization in Tunisia: The extension work in Tunisia is performed by approximately 500 extension workers and different institutions which are classified in two categories public and private. The breakdown between the two is as follows (Table 1).

are technicians affiliated with regional offices (CRDAs) who are carrying out the extension work. These make up about 43% of the total. At the same time, there are technicians affiliated with semi-public or para-statal institutions in charge of managing big sectors such as cereals, livestock or olives who are providing technical support. These technicians represent about 36% of the total. In this category we also find technicians from what is known in the country as Technical Centers who provide technical support and advice on the basis of their technical and limited experimental work on the products they are mandated for.

These Technical Centres exist for cereals, citrus, potatoes, dates and organic agriculture. A recently created institute known as National Institute of Field Crops (INGC) whose mandate is also to provide technical advice and support to farmers directly or indirectly through extension agents in the area of field crops. To these public or semi-public institutions one should add the National Agronomic Education and Research Institution (IRESA) network operating throughout the country and providing research results INRAT (National Research Agronomic Institute in Tunisia) and INAT (National Agronomy Institute in Tunisia) which are regularly feeding extension work with research findings and innovations as well. Other para-statal institutions qualified as inter-professional groupings using primarily public funds and administered by public officials are to be classified in this category too. They do feed extension workers with useful information on diverse aspects of the agricultural activities, primarily technical though. These institutions (groupings) exist for fruits, vegetables, milk, red meats and poultry.

Presently, the whole extension system uses about 500 full time equivalent extension agents corresponding to about

1300 agents who are actually involved in extension work but on variable part time bases. This gives an arithmetic extension ratio of one agent for about 1040 farmers (ACC, 2014) which are often used to indicate the amount of extension service farmers are benefiting from. In Tunisia this ratio is considered quite low in comparison with developing countries where such ratio would not exceed 500 according to WB.

In terms of agricultural institutions that are providing training in the extension field, the system is made up of 31 training institutions⁴ which are involved in the basic and on-the-job (continuous) training programs for extension specialists⁵. One typical characteristic of those programs is that they are followed only unsuccessful students in regular primary or high school programs. There is also the INPFCA-Sidi Thabet College which offers higher training levels for engineers who are specialized in training and communication and provides "training of trainers" programs in general.

In terms of agricultural training curricula there are two types of training programs that are given to extension agents. There is on one hand the basic training system⁶ covering 23 specialties and delivering empowerment (CC), proficiency (CAP) and technical certificates (BTP). In terms of diplomas, this basic training program delivers 2, 5 and 2 diplomas, respectively for the CC, CAP and BTP levels. The number of graduates for the year 2012 was 391. On the other hand there is the on-the-job (continuous) training program which is available for distant learners. Such program was targeted to more than 15.000 potential beneficiaries in 2012 and involved close to 85.000 training days (ACC).

In so far as the fisheries sector is concerned, the extension system is composed of 8 centers (7 multi-disciplinary and one specialized). As for the continuous training program in this subsector, the number of beneficiaries reached 211 in 2012, for 3991 training days (ACC). Hence both basic and on-the-job training activities are quite active, particularly quantity wise.

The professional system: The way the word profession is used in the agricultural context in Tunisia is when it refers to farmers themselves or those operators that are acting on their behalf such as farmer organizations. In this

case of extension work professional organizations include organized groups of farmers for agricultural development (GDAs) or associations for mutual work (SMSAs) or agricultural regional chambers which were operative up to a recent past but more generally the profession; i.e., the professional organizations such as farmers unions or associations. Up to 2013 only the *Tunisian Union of Agriculture and Fisheries* (UTAP) farmers union used to be active in extension work in view of the fact that it is the oldest one and because of its closeness to, or manipulation⁷ by, the previous political regime Tunisia had. These structures, but particularly UTAP, have regional representations and are supposed to provide extension service to farmers. Reality is however somewhat different as it has been publicly criticized for doing mostly political work and not so much defending farmers interests. This is why new farm organizations surfaced out since the uprisings of 2011. The new Syndicate of farmers (SYNAGRI) which was created in 2012 is one example. Generally speaking, and on paper, most institutions concerned by, or related to, agricultural activity outcomes, are involved one way or another directly or indirectly in extension work in the sense of potentially offering advice to farmers irrespective of how relevant or irrelevant that advice might be.

The private sub-system, the advisors, the input and service providers: While the system is quite old, particularly in terms of inputs and service providing, its role in extension service is quite recent particularly through the corps of Agricultural Counselors (advisors). Information delivering has always accompanied service providing in the country. Be it in agricultural machinery, irrigation equipment, fertilizers, chemicals, seeds or other agricultural inputs, information delivery to farmers has always accompanied input sales. Furthermore, service and input providing has in many cases been done on credit. Hence service and input providers have substituted to a large extent for financial institutions in the provision of credit as the ratio of farmers eligible for institutional credit does not exceed 7-8% in the country. How neutral that information provision has been is a question that is difficult to answer. Is the information delivered by service providers synonymous to extension service, is an issue in-and-of itself. Concerning the role of agricultural counselors doubt is to be cast upon the relevance of their extension service. On one hand,

⁴ Similar to agricultural vocational schools in the English speaking world.

⁵ Referred to as continuous

⁶ Referred to as initial.

⁷ Some would say.

counselors are mostly former Ministry of Agriculture employees and therefore retirees in most cases. With the exception of the few who made their experience and expertise doing extension work, the majority of those presently listed counselors-advisors (over 200) had gained their respective in other domains of agriculture. To what extent they qualify for being "extensionists", is being presently debated.

This is not to minimize the importance of their skills which could be very valuable in other advisory work. In the requests for financing to set up agricultural projects that go through the Agency for Agricultural investment (APIA) an emphasis is put on associating project "accompaniers" to attend project promoters with technical advice and expertise so as to guarantee the success of their projects. Special training programs as well as financial incentives are provided to project promoters to encourage the use the services of the project accompaniers. In principle the role of such project accompaniers differs from that of the counselor but a great deal of interference characterizes the perception of their role as vectors of overall farm activity growth.

The supply of extension messages

Content and diversity of situations: Extension work as it is presently practiced in Tunisia uses for the most part technical agricultural recommendations regarding input use based on research findings that often lack updating. The themes covered include all agricultural and livestock activities (fertilization of crops, treatment modalities of common diseases, feeding animals sources and modalities, etc.). Brochures and pamphlets are available on all of these themes. One characteristic of the used extension messages is that they are not region or climate specific. They do not distinguish between irrigated conditions from rain-fed ones. Another limitation is that they hardly ever mention marketing prospects or opportunities which farmers might be interested in.

Elaboration of extension messages: The information used for extension work is prepared on the basis of interactions with experts from different agronomic fields. It reflects individual researcher interests not necessarily specific responses to particular problems encountered in specific areas for given crops.

Extension messages are often limited to technical aspects such as input usage or normative crop or animal responses. Hardly do they complete that information by guiding farmers as to optimal usage of inputs and production responses

Implementation mechanisms: To convey extension messages, the Tunisian system uses different techniques through:

Mass extension work: These television and radio programs are scheduled around different themes and a variety of commodities as the crop season advances and the urgency of the moment. Technical experts are usually invited to provide insights into the issues of the moment. Through these techniques, the implied messages are destined to all potential viewers and listeners among which there are farmers but not exclusively. Written material is usually prepared for distribution in the form of brochures and pamphlets. The AVFA web site (www.avfa.agrinet.tn) which quite diversified and frequently updated is a very powerful source of information not only for farmers potentially but all other users interested in knowing about agricultural extension work in Tunisia.

Specific extension events: These involve a variety of activities going from the organization of field days to disseminate information to farmers directly through meetings and workshops usually at regional levels to debate specific issues and try to identify relevant solutions by involving all stakeholders particularly the CRDAs to designing specific programs of extension activities. At these events information and other supporting material are provided by all concerned institutions.

The monitoring of the extension work: The implementation of extension activities includes also the monitoring and evaluation of extension activities carried out by professional organizations (Agency for agricultural extension and training - AVFA) and the private sector. The purpose of this monitoring is not so much to control the information delivery process as much as it is to learn from it and try to contribute to it so as future extension messages can better respond to farmers concerns and needs. Apart from these events, direct contacts with farmers and question/answer sessions are organized during events. In addition to showing significant research findings or technological innovations and advances most of the communication is based on argumentation of ideas and demonstrations through posters on results registered in specific places. Farmer participation in extension events has improved during recent years thanks to easier contacts and communication means with most farmers. While the situation of Tunisia is still far from setting up systematic direct lines to get answers to questions they

might have as Aker (2011) suggests information is usually accessible. With its infrastructural ramifications, the Tunisian system ought to be sufficiently responsive to farmers' demands and inquiries in view of its large representation throughout the country. Often this requires means such as transportation which are not always available though.

Policy instruments to improve the quality of the extension service: Apart from increasing public budgets that most institutions are requesting to extend, the spectrum of their extension activities over new areas or agricultural activities, the emphasis is presently put on activating the role of the private sector, namely the counselors (advisory agents), to play a more significant role in extension work. Presently, the extension work is still dominated by public and semi-public institutions. The strictly private sector's role (counselors) does not exceed 5% (Sioud, 2014). While no specific policy measures are earmarked for extension work, helping counselors play a bigger role has been envisaged at least in three different ways. First there is the legalization of the profession through appropriate legislation (Law N° 9834 of 23 May 1998). Then there is the recent organization of a special training program for agricultural counselors interested in setting up consulting enterprises. Third there is a special stipulation introduced by the APIA agricultural investment agency to condition the financing of investment projects by the involvement of agricultural counselors as advisors during the implementation of agricultural projects.

The demand for extension messages: Like the demand for most inputs, the derived demand for extension agricultural services is hypothesized to be a reflection of the profitability of the agricultural activity itself. Such profitability combined with other factors like farmers education, awareness and perception about value of formal knowledge, attitudes towards change, farmers experience is quite variable and in itself constitutes a major constraint for the enhancement of that demand. The reasons are as follows:

Diversity of farmers and farm activities: Farmers in Tunisia are quite heterogeneous. The land tenure system is quite unevenly distributed. The majority of farms (over 75%) operate farms that are less than 10 hectares in size and cultivate about 30% of the arable land; whereas only 3% of farmers operate farms that are larger than 50 hectares but cultivate more the 25% of the area (Ministry of Agriculture, 2004). With the tightness of farm size,

returns on investments to modernize agricultural activity are in general low and farmers' incentives to seek extension service are usually quite restrained. Besides, most farming in Tunisia is carried out under rain-fed conditions which are highly variable. The risk element gets added to the disincentive to seek extension work caused by the land tenure constraint. Furthermore extension work has been traditionally targeted towards promoting intensification through increased input use. Such has to some degree taken place but primarily in irrigated areas which do not cover more than 8% of the national arable land. Hence adequate extension programs are needed for the less irrigated areas as well. Traditionally also extension programs have been designed by public institutions and then proposed to and discussed with farmers. This in itself limits the demand for such programs. Increasing awareness is however taking place that through increased interactions and contacts with farmers more relevant extension information can be identified that would better correspond to farmers needs and as a result induce higher endogenous demand for such service.

Likely determinants of demand for extension services:

On the assumption that farmers are economically rational meaning that they would seek additional extension service only if they feel that it is in their own interest, the likely determinants of the demand would lie around the perceived skills of the extension agent him (her) self and the expected profitability of the agricultural activity for which the extension service is sought. Extension skills depend on the quality of the training and the experience of the extension agent. Expected profitability on the other hand is a function of two major constraining factors: land tenure difficulties and the risk element. Land tenure difficulties do not lie only in the limited farm sizes. They also involve the lack of registration of land holdings. Agrarian title registrations, while they have improved over recent years, they are still below 20%. This means that large numbers of farmers, particularly the smaller ones, would find difficulties in presenting collaterals to financial institutions in order to acquire agricultural credit to finance agricultural activities and investments. This in turn jeopardizes the profitability of agricultural work and is in turn counterproductive for enhancing the demand for extensions services. The risk element in agriculture is also high. Often risk is presented in public discussions as originating mostly from climatic variability.

Market risk, national and international, is also increasingly discouraging farmers from undertaking or sustaining their agricultural activities. There are many forms of market risk that are faced by farmers but often it results in, or from, market power which in turn negatively affects their share of the value of their produce.

Policy instruments to induce a higher demand for extension services: Apart from the policy measures set up to activate the role of private counselors in inducing a stronger demand for agricultural extension services, other policy measures are needed to help cope with the two main constraints limiting the returns to agricultural investment in general. The land tenure issue was tackled in previous years with a relatively high degree of success through the compulsory and free-of-charge registration of farm titles. This program was implemented in several areas of the country and it helped elevate the titling ratio from about 5% about twenty years ago to about 20% now. Such program needs to be resumed and accelerated. Such measure should help many small farmers regain interest in agricultural activities, improve their livelihood and activate, and among other things promote the demand for extension services, as a result. The risk dimension has two main elements. On one hand there the classical source which is climate related. In that regard, one emphasis should be put on insurance programs. The ratios of insured farmers in Tunisia do not exceed 7%. Furthermore those who acquire insurance programs do it because it is required by financial institutions for the requested credit. Often this is the case of large farmers which leaves out the large numbers of small farmers from the agricultural credit facility, the insurance programs and the extension service consequently. To mitigate climatic risk, support to research aimed at additional water mobilization and harvesting in non-irrigated areas is needed. Techniques like conservation agriculture practices whose main purpose is to preserve water and soil resources through changing tilling practices are almost completely left out of the extension work. As for the market power creating additional risks for farmers, public intervention is needed to enable small farmers in particular to get more and better integration in markets and promote competition. Credit facilities to those farmers can offer at least a partial solution. Incentivizing farmers for collective work can also offer alternative solutions for the credit and insurance issues but also for a number of marketing questions at the same time (both inputs and outputs). Such measures should help improve

the returns to agricultural activities, or at least reduce their variability, and induce extension demand as a result.

CONCLUDING AND RECOMMENDATIONS

Agricultural extension work in Tunisia has been in existence for many years and decades. There is a significant institutional network already established and in which public investment was made in the past that could be made more operational today. This network is globally managed by the AVFA public agency with the help of the regional CRDAs. The accumulated experience can be beneficial for private promoters who want to setup extension projects which could be diversified and extended to include other services. For the most part extension message elaboration and implementation has been exogenous to the targeted farmers. It is only now with the pressure to liberalize the economy that there is an increased awareness that the private sector should play a more significant role. Farm organizations have had so far a reserved attitude towards promoting extension messages and often mixed them with political rhetoric in the past. With the emphasis presently put by the recently elaborated Tunisian constitution on the role of the civil society in the development process of the country through decentralization and the general democratization of the political system, new opportunities for endogenous management of development issues should be expected. To be captured in the agricultural sector, these opportunities will require sound communication and extension techniques.

Private extension service provided by service and input providers has been biased towards publicizing commercial products and equipment, not so much bringing about pertinent technical change in the agricultural sector. The profile of extension agents needs to be revised and upgraded to become more attractive to the scholarly performing youth. Senior extension management training and qualifications need to be leveled off with researcher and university staff as is the case in other countries and systems. Teaching, research and extension functions need to carry the same weight as they are of equal importance for the agricultural development promotion.

The way forward: Extension ratio and extension demand are generally low and limited in Tunisia. This is a direct consequence of the nature of the agricultural activity which admits also low and variable returns. Hence the recommendations are aimed at relaxing the constraints limiting those returns which are related to the restrictive

nature of the land tenure system and the various forms of risks related to climate and markets that are confronted by farmers.

On the land tenure front a return and acceleration of the public titling program initiated in recent years needs to be resumed and accelerated. Such initiatives has already improved the livelihoods of many small farmers and it has the potential of improving that of many more. Doing so would enhance the search for quality extension service. Coping with the risk dimension on the other hand should involve alternative ways of sustaining and stabilizing farm incomes. Ways of incentivizing farmers to contract insurance policies and programs should help reduce the impact of variability on farm incomes. Also credit facilitation can help many farmers acquire means that could help them better resist to, and compete with, market power in agricultural markets and therefore acquire more interest in agricultural work and consequently seek more quality advice from extension specialists.

Given the large proportion of small size farming in Tunisia, stressing the need for and incentivizing farmers' spontaneous and free motivation for alternative forms of collective work can be a justified public investment. Government exclusive and unilateral initiative to resolve the multitude of small farming issues has often failed in many countries as it did in Tunisia during the sixties. Only reliance of those farmers on themselves with perhaps relevant guidance from the public sector can bring about durable solutions including making agricultural extension work more relevant and effective.

Acknowledgment: The authors are grateful for support from the 'Agricultural Productivity with an Emphasis on Water Constraints in the Middle East and North Africa (MENA)' project sponsored by the Economic Research Service (ERS) – United States Department of Agriculture (USDA) and the Food and Agriculture Organization (FAO) of the UN, under the FAO RNE Water Scarcity Initiative of the NENA region, and in collaboration with the

International Centre for Agricultural Research in the Dry Areas (ICARDA) for funding this research.

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