

## RESEARCH ARTICLE

## Agricultural Extension and Advisory System in Algeria Analysis and Recommended Reforms

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### ABSTRACT

*In Algeria, dairy cattle breeders are faced with weak support from technical institutions and state extension services, difficult access to financing and a milk sector that does not contribute to reducing the level of risk. Breeders find it very difficult to predict the future and to project themselves into the future. They have little room for maneuver due to a lack of agricultural land, labor force and financing. This paper aims to analyze the current agricultural extension and advisory system in Algeria, advocating its reform with a new technical advisor. We postulate the hypothesis that development agents are poorly equipped to deal with the different types of production systems and the establishment of effective technical support. They still do not conform to the expectations of breeders. To answer our hypothesis, we took the example of the milk sector in Algeria. We focused on the technical advisor and his relationship with farmers in two potential dairy basins. The latter is a civil servant at the level of state services, chosen in view of the preponderance of his role in extension and agricultural advice for the benefit of stockbreeders. It appears that the advice is a component of a system involving various stakeholders, with a renunciation of the actors. Implementing the advisory requires significant adjustments to the current agricultural extension and advisory system. The conclusions drawn from this study and the proposals made are valid for all of Algeria.*

**Key words:** Milk sector; Family farm; Extension and agricultural advice; Technical Adviser; Agricultural extension and advisory system.

The cessation of financing of training and visit (T&V) programs by the World Bank led to a massive withdrawal of States from extension activities towards the end of the 1990s. In Algeria, the activities of the agricultural extension program in favor of farmers-breeders were supported by the Ministry of Agriculture and Rural Development. On the other hand, advice to family farms has not been developed. This one strengthens the management capacity of stakeholders through the implementation of participatory methods and the use of decision support tools.

### METHODOLOGY

Surveys of 140 family farms and interviews with development agents from state services were carried out, on the offer of advice. These were conducted between 2017 and 2018 in two potential dairy basins. They are located in the North-East of Algeria, with

a semi-arid climate, which represents the major part of the dairy cattle breeding territory of the country. The questionnaire is structured in two sections. The first section intended for farmers-breeders on the use, appreciation and origin of agricultural advice in formal and informal popularization on the innovations retained concerning the technical fields of farmers-breeders. The second section is assigned to agricultural extension and advisory services. This is made up of six major areas: 1) Identification of advisors; 2) General information about the advisors and the services offered; 3) Sources of information and tools used; 4) Intervention strategies; 5) Role of the advisor and farm management; 6) Advisor-breeder relationship.

### RESULTS AND DISCUSSION

*Characterization of technical advisers:* The advisers are 50 per cent agricultural engineers and veterinarians

and 50 per cent agricultural technicians. Only 41 per cent received additional training in extension methodology as part of the permanent course provided at the level of specialized agricultural institutes in Algeria. They believe that the training acquired did not meet their expectations.

The majority of advisers, i.e. 75 per cent, are not from rural areas, 23 per cent lack knowledge of the extension process and 18 per cent are unfamiliar with livestock techniques. They admit to 14 per cent a lack of confidence of breeders towards them. 68 per cent believe that the profession of adviser is not valued by the hierarchy, farmers and society. The adviser's ability to analyze situations is the tangible proof for gaining the esteem of farmers. 9 per cent lack administrative and legislative knowledge. The human resource of less than 20 years, and which constitutes 64 per cent of the advisers, is to be developed by the formation and the improvement for a local development.

All the advisers intervene once or twice a month with dairy cattle breeders and 82 per cent contribute once or twice a month for the benefit of cereal farmers. According to demand, 96 per cent help with fodder crops and 18 per cent accompany poultry farmers twice a month. For market gardening, 5 per cent devote one visit per month. It appears that 73 per cent of the advisers devote 30 per cent of their time to technical advice with breeders. The intervention of advisers is based on a random choice, 81 per cent have no intervention strategy and 55 per cent believe that the administrative tasks performed often serve as a gateway to farmers.

In terms of operational management, no programming is recommended by the advisers. This is due to the low level of training, the vagueness of the objectives and the uncertainty about the future of the breeders, according to the comments of the advisers. They admit that 77 per cent of breeders are autonomous in the management of farms, also in making tactical and strategic decisions.

The distribution of advisers in the two dairy basins does not follow rational measures, nor training standards specific to agricultural services. This is an assignment to support extension activities and administrative tasks. The number of farms supervised does not reflect the actual level of supervision: it is the potential number of farms that the technical adviser is supposed to supervise.

The appointment of the councillor is based on

the municipal territorial limits. The number of farmers and the useful agricultural area are not taken into consideration. It is therefore incorrect to speak of training standards. Also, in the past, the level of training was not considered a main criterion for practicing as a technical adviser.

*Family farm management:* An absence noted in the public extension system in terms of farm management advice, thus exposing breeders who are alone and sometimes uncertain in the face of economic hazards. The public system only provides advices on the technical package, when it exists, to which breeders are less and less receptive due to the multiplicity of providers of this type of advice. On the other hand, private consulting takes care of the technical, economic and management aspects of a production project. Apart from the administered prices, the advisers are unable to take into account the fluctuation of the prices of agricultural inputs and products in the development of the program and extension activities. An uncertainty that constrains the evolution towards an economic dimension of management in agricultural advice.

*A human resource to be valued:* Often, the adviser's specialty does not constitute a criterion for assignment to the position of the latter. The sectors or the agricultural vocation of the district are not considered by the agricultural services when recruiting for the employment of an adviser. We find specialists in plant production in an area dedicated to breeding. They must adapt to the needs of the region with a progression in skills through training, information and acquired experience. However, the lack of training and its inadequacy when it exists, constitute other reasons explaining the low competence. As a result, this leads to a faulty upgrade. In addition, the break with research institutes. Sometimes, researchers approach the advisor for data collection, without, however, returning research results. Rather, they are in contact with technical institutes. This encourages motivated technicians to seek information on the internet. Several private actors are identified, among design offices and input suppliers (phytosanitary products, livestock feed, livestock equipment, seeds, etc.). The listed constraints led breeders to consult private advisers.

The knowledge, skills and relational qualities of advisers play an essential role in the performance of an advisory system. The knowledge acquired during the initial training and then in the context of the exercise of the profession of adviser, forms the basis

of the acquisition of knowledge and skills. However, the conditions of implementation of the trainings are determining to make them evolve. These skills establish the professional identity of counsellors, but it also depends on the professional recognition of counselors by other actors. It is on these aspects that the debate around the training and construction of the identity of the adviser is organized.

The question of means arises when it comes to agricultural advice. With the current methods of advice, one can already wonder about the real possibility of the advisers to provide advice to all the farms under their responsibility. Across the world the need for training advisors has been identified and confirmed. And beyond the acquisition of new knowledge, improving the reflexive capacities of the adviser is essential in the development of advice adapted to the situations of the farmer. In Algeria, the lack of training and its inadequacy when it exists, is one of the reasons explaining the low competence of the adviser (*Himeur et al., 2022*).

*Strengthening learning processes involves adapting methods:* The public system uses collective advice methods, given the lack of resources and targets a large audience, sometimes even when it comes to an individual need expressed by the farmer. Private counseling, on the other hand, is based on an individual approach.

Information, awareness, demonstration and training days; demonstration plot; collective visit; on-farm intervention constitute the intervention methods of the adviser. A new method is emerging, that of the use of mobile phones, in individual counselling. Also, an increasingly apparent trend is that a moving from the farmer to the extension service, regarding individual advice. As far as interventions on the farm are concerned, this foreshadows paired outings between extension activities and those which are part of the tasks assigned to the adviser (statistical surveys, visit for an observation following a request for a subsidy, construction of a building for livestock, wells or boreholes, etc.). The advice is not developed jointly with the participation of the farmer. The state system provides a deficient technical framework without innovative practices and without support in terms of decision support for breeders. It is inapt to develop decision support tools with the collaboration of the beneficiaries. Regarding mass methods, such as posters and banners; television agricultural campaigns;

documentaries: radio broadcasts; intensive campaign, which reach a wide audience are supported by state development institutions.

*Revision of support procedures for farmers:* Improving farm performance is strongly linked to advice. For the sustainability of family farms, it is essential to assist farmers in decision-making. Nevertheless, according to *Rebuffel and al. (2015)* only certain categories of farms have access to advice, whether in the countries of the South or in those of the North where family farms dominate. In Africa, for *Djamen (2011)*, the top-down approach to agricultural advice, much used in the past, is ineffective in meeting the challenge of sustainable farming. Very current reflections at the world level relate to the widening of the field of agricultural advice which increasingly integrates all the dimensions relating to rural development, and to the evolution of the methods of advice which are diversifying to respond to varied demands and to better take into account peasant innovations (*Faure et al., 2018*). Consequently, a particular interest is marked in advisory approaches, which advocate the active participation of farmers in the production of advice in international. As well as the evolution of the role of advisors, from recommendation and orientation towards collaboration and support.

Developing countries experience difficulties in adapting agricultural extension and advisory systems, for the establishment of participatory advisory methods, as is the case for Algeria, with regard to the rehabilitation of its national system, of agricultural extension into a system of advisory support, agricultural and rural communication (*Himeur, 2022*).

*Developments prospects:* Studies around the world show that counseling is a vast subject. The analysis of agricultural advisory systems is placed in the forefront and the question of its financing arises as a major problem. In Algeria, it happens that the state extension and advisory services are not effective and mark an absence on the ground. Small farmers are in the majority, unable to pay the cost of the advice, but also, they show a lack of interest in the free advice provided.

The opinion of the population of the study is split between the privatization of extension and agricultural advice, its management by the national chamber of agriculture and the reform of the public system.

It is imminent to strengthen the means of the public system and increase the remuneration of the

adviser. The upgrading of his knowledge and his improvement are mandatory. A clear agricultural policy with management of the farm is essential.

Establishing a professional system based on the grouping of farmers is the only alternative for small farmers. Breeders are aware of the difficulty of bringing them together despite collective collaboration. The difficulty of managing a cooperative is obvious. Are the breeders cooperative? If everyone puts forward their own interest at the expense of the other breeders, we will not succeed in the regrouping. While a good number of advisers and breeders find that, in a few years, the regrouping (by ten) of farmers would be feasible in Algeria, if it is well supervised, organized and structured by the State. In consultation with the professional organizations which are in daily contact with the farmers. This grouping has as its main objective the economy of scale for the wholesale purchase and for the grouped sale with a fixed price and the sharing of the cost of private advice. Conditions are necessary for a successful merger. The number of farmers grouped together is limited. The counselor recruited must be specialized as needed. The state provides the framework.

*The reforms advocated in Algeria with a new technical adviser:* During the last two decades, the vision of the evolution of agricultural advice has escaped planners, decision-makers, researchers and also advisers. Private sector participation is amplified and potential in a pluralistic agricultural advisory landscape. No governmental organizations, farmer groups, agricultural cooperatives, associations, consultancies, consultants and ICT-based services.

In a changing agricultural and rural context, the new technical adviser renews and clearly articulates the role of the agricultural advisory system (SCA). It ensures its global vision and visibility. In order to play an expanded role of the SCA, the advisor must develop new skills at different levels.

The SCA encompasses and brings together public, private and civil society actors supporting agricultural and rural populations. The SCA plays a key role in facilitating innovation. The approach focuses on the interaction of agricultural policies and various institutions. The novelty lies in: 1) The new skills required of the technical adviser; 2) The organization of the SCA and 3) The expanded role of the SCA.

The SCA needs human resources with adequate

skills to manage social processes. It must deal with institutional, legal and regulatory issues. He must have prerogatives for the management of human and financial resources. Institutional strengthening is recommended to facilitate learning and partnerships. This implies institutional changes and political reforms; in order to succeed and establish a strategy for overhauling and reforming the current system.

A better contribution to agricultural innovation is keenly felt. The role and mission of the SCA must be:

1. To ensure the organization of farmers;
2. To facilitate access to credit, inputs and products;
3. To design, set up and develop networks;
4. To ensure the animation of innovative projects;
5. To facilitate on-farm management and knowledge management;
6. To promote gender;
7. To support adaptation to climate change;
8. Strengthen training and demonstration activities in order to disseminate new knowledge.

At the individual, organizational and environmental levels, it is essential to have mechanisms to improve the performance of the SCA. In particular, the possibility of using ICT. Equitable access for disadvantaged and deprived groups. Appreciate male-female parity. Encourage youth participation in agriculture.

At the national level, we support a proposal based on three levels: plurality, the individual agricultural advisory service and innovative tools.

*The reforms:* the diagnosis being carried out within the framework of our study on the suppliers of the SCA in Setif and Souk-Ahras in Algeria. The analysis is carried out on the existing model. We advocate additional data factual research for the promotion of agricultural policies on the current system to undertake the necessary and indispensable reforms. Through the various actors who are: 1) the Ministry of Agriculture and Rural Development; 2) Universities and policy research institutions; 3) Research and development institutes under the supervision of the Ministry of Agriculture; 4) The directorates of agricultural services, the national chamber of agriculture (restructuring is necessary); 5) Farmers' organizations.

*Networks:* the establishment of a national and regional network of SCA suppliers: 1) Ministry of Agriculture and Rural Development; 2) Development and research institutes; 3) Training centers. And the establishment

of a national network of private advice.

*Institutional development and technical support:* strengthening the SCA in terms of technical support provided by development and research institutes. Emphasize the results of research to be used in agricultural advice. The Ministry of Agriculture in collaboration with farmer organizations and system providers should focus on institutional development of farmers and agricultural advice.

*Monitoring and evaluation of learning:* establishing mechanisms for regularly monitoring learning and evaluating the results of the SCA. Arrange for facilitation by a facilitator and farmers' organizations. Coordination and collaboration between the SCA and its networks.

*Education, development and reinforcement of skills:* soliciting and associating education and training establishments in economics and management to develop tailor-made development programs according to real needs for the benefit of the SCA (operational management, leadership, coaching, etc.). Develop a continuous training program for the benefit of SCA actors to improve their qualifications. A review is recommended, at least, once every 3 years. Strengthen training centers in the form of a contract in specific skills required to improve capacity building. In addition, solicit education and training establishments and farmers' organizations from the Ministry of Vocational Training to develop a vocational training program, in view of improving the qualification of farmers. A review of the program at least once every 3 years.

*Financing:* revision, improvement and facilitation of public financing mechanisms (contracting, subcontracting, subsidies, banks) and private (cost recovery by the National Chamber of Agriculture, private firms, banks).

*As a reference to take, an emerging country, the largest milk producer in the world:* while Brazil and Russia have entered recession and the South African economy seems to be permanently trapped in an energy crisis and governance problems, India and China remain the only two BRICS countries to continue their dynamic of catching up with advanced economies. India seems to be the economy that has been able to adapt most quickly to the new international monetary context (Caupint and Pamies-Sumner, 2016).

India is a reference country for world agriculture.

From an international point of view, the Indian agricultural sector impresses with its size and the importance of production: employing more than 250 million people. India is indeed one of the world's largest producers of rice, cotton, tea, sugar cane, jute, pepper, milk and eggs. It is thus positioned as a major player in the global agrifood trade (Pouch and Kheraief, 2016) in (Lutringer, 2017).

Agriculture remains the mainstay of Indian economy and major source of livelihood of rural household, predominantly by small and marginal farmers, and securing the food and nutritional security. These farmers face several problems of credit, input supply, proper linkage with market as so on (Kumar et al. 2020).

According NSSO, (2014), 69.4 per cent of farms cover less than one hectare and are considered by public institutions as 'marginal'; the process of fragmentation of Indian farms and the decrease in their average size raises the question of their viability (Lutringer, 2017). Singh, (2012) estimates that four-fifths of Indian farms would not be viable without additional income. Therefore, one of the main challenges for the Indian public authorities is to support this category, by improving access to institutional credit and reducing indebtedness. Also, the strengthening of bargaining power in the markets and the improvement of rural infrastructure.

With the emergence of the AMUL dairy cooperative model and the supply of low-cost breeding inputs (artificial insemination and concentrates), breeding is in the midst of intensification: almost all farmers have become milk producers, including those without land. The vast majority of farms have fewer than four cows or buffaloes, but some have invested in larger farms bringing together 30 to 200 dairy cows. All or part of the production of cereals or milk is self-consumed by farming families, especially in small farms (Dorin and Aubron, 2016).

Decision-making based on risk is a major factor in agriculture and therefore it is important to put in place mechanisms that allow it to be reduced. The establishment of minimum support prices in India has been very effective in this regard. In addition, thanks to the price policy, farmers obtain a guaranteed return on investments in new inputs (Lutringer, 2012).

From more than two decades, Indian agriculture has witnessing and benefitting from the use of ICTs

in agriculture. Various offline and online efforts are made and use of modern ICTs in agricultural extension service delivery has enhanced the efficiency of Research-Extension-Farmer-Market linkage system much greatly (Raksha et al. 2017). Among all constraints, the administrative and financial constraints were ranked high by a high majority (>90 per cent) as major constraints in the job performance of agricultural extension officers and related departments (Purnima et al. 2018).

According to the authors Rauch and Kersting, (2016), the Indian system is relatively strong but more decentralized. A widely acclaimed institutional innovation with formalized participatory bottom-up elements at the district level has been recently introduced in form of Agricultural Technology Management Agencies (ATMAs). In contrast to the Krishi Vigyan Kendra (KVK) agricultural centers that operate at the local level but have been working rather top-down so far, these are financially autonomous multi-stakeholder forums, which aim to include representatives from farmers' organizations (such as advisory or marketing groups) in the design local extension programs. Since the nationwide implementation of the ATMA-model is less than ten years old, systematic reviews of its effectiveness are still lacking, especially with regard to social inclusiveness and the cooperation of the ATMA and the KVK.

While farmer participation has been formally institutionalized in the ATMA model, de facto inclusion seems to be the exception rather than the norm. Especially in upper level committee structures, such as the Indian FACs, poorer groups, minorities and women are less represented or are not in a position to adequately articulate their interests.

The Indian ATMA model presents a promising approach because it aims to involve resource users on a twofold basis. Thereby, smallholders initially specify the future programs' main contents during Participatory Rural Appraisal (PRA) assessments. The Farmer Advisory Committee, constituted by elected or appointed farmer representatives, provides an opportunity to warrant these claims in the plan's final wording.

Agricultural extension and advisory services in India are pluralistic. Agricultural information plays a crucial role in agricultural development as well as in improving the livelihoods of farmers. Agriculture

information is dynamic, due to increased awareness of farmers of their needs. Farmers use a combination of formal and informal sources of information to secure information. The provision and targeted delivery of agricultural information to small and marginal farmers remain a challenge in extension programs. Overall lack of extension facilities and access to agricultural inputs are the major constraints that farmers face in fully utilizing the benefits of information (Kumar et al. 2018).

## CONCLUSION

Funding mechanisms determine the rules of agricultural advice and governance. In Algeria, the lack of financial support from rural development policies hampers the introduction of innovations on farms. So we need to reflect on rural governance appropriate to the local context in future rural development plans. This also being said, support for innovations through a supporting political decision; with sensitization, participation and empowerment of the rural community. Thus, we act on farms in their territory for rural development.

## CONFLICTS OF INTEREST

The authors have no conflicts of interest.

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