

Agricultural Extension in Egypt: Issues and Options for Improvement

الإرشاد الزراعي في مصر: قضايا وخيارات من أجل التحسين

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Abstract: In Egypt, the agriculture sector plays a crucial role in the health of the economy. Agriculture contributes almost 20% towards the GDP and involves about 35% of its workforce. More than 50% of the population lives in the rural areas and, directly or indirectly, their livelihood depends upon the agricultural sector. Despite agriculture's positive and significant contributions to food security and supply, the economy, employment, export earnings, the ecological balance, the sector faces many threats and challenges. Egypt's agricultural extension service can help realize higher yields through sustainable agriculture. Today, extension activities are carried out through a one-way transfer of knowledge, where farmers are considered recipients, not participants. However, an efficient extension service, an effective extension system and dedicated extensionists can help achieve sustainable development. Initiatives to improve the technical knowledge and enhance communication and facilitation skills of extension staff deserve attention. In this article, an effort has been made to identify the constraints faced by the agriculture sector and outline an extension strategy to realize sustainable development.

Keywords: Agricultural production, Small landholdings, Capacity building, Participatory approach, Women and youth.

المستخلص: يلعب القطاع الزراعي في مصر دوراً رئيسياً في دعم الاقتصاد. إذ تمثل الزراعة نسبة 20% تقريباً من إجمالي الناتج المحلي، ويستوعب حوالي 35% من القوى العاملة، وأكثر من 50% من السكان يعيشون في المناطق الريفية، يرتزقون بشكل مباشر أو غير مباشر من هذا القطاع الزراعي. وعلى الرغم من مساهمته الايجابية والهامة في تحقيق الأمن الغذائي، والاقتصاد، والعمالة، وعائدات التصدير، وتحقيق التوازن الإيكولوجي، إلا أن القطاع الزراعي يواجه العديد من الصعوبات والتحديات، الأمر الذي يمكن أن يكون للإرشاد الزراعي دوراً هاماً في المساعدة على تحقيق الزراعة المستدامة، وتحقيق عائدات أفضل. وترتكز أنشطة الإرشاد الزراعي على نقل المعرفة، ومشاركة المزارعين المستفيدين، إلا أنه يمكن تقديم خدمة إرشادية أكثر كفاءة وفعالية من قبل المرشدين تساعد في تحقيق التنمية المستدامة، وتقديم المبادرات لتحسين المعارف التكنولوجية، ورفع مستوى مهارات الاتصال التي تيسر على العاملين الإرشاديين تحقيق ذلك. مع ضرورة بذل الجهد لمواجهة المعوقات والتحديات التي تواجه القطاع الزراعي، ووضع إستراتيجية إرشادية لتحقيق التنمية المستدامة.

كلمات مدخلية: الإنتاج الزراعي، الحيازات الصغيرة، بناء القدرات، النهج التشاركي، النساء والشباب.

INTRODUCTION

Agriculture has been a fundamental sector in the Egyptian economy since time began. Egypt has a population of about 83 million and about 53% live in rural areas, depending directly or indirectly upon agriculture and rural enterprises. About 35% of the labour-force is associated with the agricultural sector and 20% of the GDP is generated from agricultural production. Despite industry receiving significant emphasis, Egypt still continues to depend largely on agricultural production (El-Din, 2006).

In the past, Egypt has produced enough agricultural commodities to feed its population and exporting surplus to generate income. However, due to a sharp increase in population, shrinking of good agricultural lands and declining water resources, the country needs to bring primary and immediate changes in its crop production system. Improvement programmes would not be of any use if they are not supported by strong extension programs executed by a dedicated extension staff. The most viable solution is to educate farmers, convince them to use resources judiciously and adopt modern scientific farming practices, to realize higher yields and maintain sustainability.

This means agricultural extension would not be business as usual. Many extension methods are being employed by the extension workers. However, these methods should be combined and supported by the electronic media as it gains popularity due to the recent visible changes in the social and cultural fabric of Egypt's rural society. The country is experiencing a real shortage of extension professionals in remote areas. Extension staff often lacks transportation, and are usually not well-paid. In the absence of basic facilities, extensionists lack motivation, satisfaction in performing their duties.. In this article, an effort has been made to present the current agricultural extension system, identify problems of extension staff, enlist shortcomings of the extension organization and outline a strategy for improvement. in light of problems associated with the current system.

Issues Associated with the Extension System in Egypt

Egypt's extension system and service plays a very significant role in enhancing agricultural production in Egypt. At present, promoting change to replace old practices of with new seems the main challenge. Despite the extension services good work, it is constrained by several problems, limiting its efficiency. At present, extension activities serve customers through a one-way transfer of knowledge where farmers are recipients, not participants.

Two Groups of Problems:

- Organization of the Extension system
- Extension service and working staff

Prime Issues in the Extension Service and Organization:

- A wide communication gap within the extension organization
- difficulties in effecting behavioral change in farmers to adopt modern farming technologies to enhance crop yields
- Extension workers lack proper education, modern technical skills and appropriate qualifications
- Low incomes, indicate transport facilities, and poor working conditions
- Motivation, pride in work, Job satisfaction lacking.

Overview of Agriculture in Egypt

Agriculture is considered dominant sector in the Egyptian economy (Rivera, *et al.* 1997). The country covers about one million square km, an estimated seven (7) million feddans (three (3) million ha) cultivated, including newly reclaimed lands in Sinai, Ismailia, Noubaria, Toshka and East Al Oweinat. Modern agricultural practices are being introduced to cultivate new reclaimed lands; such practices include modern irrigation systems, organic farming and integrated pest management. Due to the shortage of fertilizers and other agricultural chemicals, farmers usually produce agricultural commodities organically which are exported. Water sources such as ground and surface water are being used for irrigation

purposes in the new lands (Abdelhakam, 2005).

Rivera, *et al.* (1997) report that as little as three (3) percent of the area under cultivation with small land holdings makes farming intense. In order to realize maximum yields from the same piece of cultivated land, two (2) different crops are planted together; in this way the same land is used to produce more than one crop a year. Greenhouses are also becoming popular for producing higher yields of vegetable crops. However, crops like cotton, wheat, rice, sugarcane, beets, fodder, clover, vegetables, peanuts, sesame, sunflower, lentils, beans and onion, and fruits like citrus and dates are grown on fertile lands. Due to favorable agro-climate, fertile soils, irrigation facilities and skilled and hard-working farmers, Egypt has made impressive gains in agriculture with yields quite comparable with countries producing the highest yields in certain crops like wheat, cotton, fruits and vegetables (World Bank, 1993; USAID, 1994; World Bank, 1995). Fish-farming in rice fields elevate incomes levels of the farmers, and fisheries sector in addition to income also provides fish for consumption. Agricultural credit facilitates and loans are also available to farmers to purchase fallow lands, chemicals and fertilizers for agriculture; machines and equipment; and to build facilities and necessary infrastructure, such as farm roads, irrigation network. To facilitate marketing for the farmers' produce free market policy prevails in the country. However, among the other constraints, according to Narayanan (1991) information on markets is not gathered and made available to the farmers through extension system and professionals which is of prime importance.

In addition, the government also purchases crops such as cotton, wheat, pulses, rice and olives from farmers at reasonable prices. Export companies negotiate the prices and purchase produce directly from the farmers. Egyptian rice has been enlisted in worldwide ranking. The Veterinary Services of the Ministry of Agriculture and Land Reclamation are engaged in exploring methods and ways to improve and enhance animal production and provide veterinary services in villages (Abdelhakam, 2005). Despite all the constraints associated with the agricultural sector, gains in agriculture and its significant role in the economy, the importance of agriculture cannot be ignored in the country.

Agricultural Extension in Egypt

A description of the agricultural extension system in Egypt reveals a complex of agricultural information transfer services mainly in the public sector with a small private sector component. From a review of secondary sources and personal experiences, the authors suggest the public sector extension system is in transition, characterized by decentralization of programming decisions and operations with a shift from an agricultural performance orientation to a more comprehensive, community development perspective (Rivera, *et al.* 1997).

The country's extension service being run with sound and careful planning and cooperation. Integrated planning and formulation of programs is done centrally through cooperation between the Specialized Research Institutes and Agricultural Extension Centers. Researchers and Extension Specialists work together to address problems faced by farmers by implementing suitable extension activities during field visits (Abdelhakam, 2005).

To promote higher education, the country has 14 universities; six having agricultural faculties : Ain Shams, Alexandria, Assiut, Cairo, El Menya and Al-Azher. Agricultural extension are taught at these universities up to the M.Sc. and Ph.D. levels. The Agricultural Research Centre comprises 23 specialized research institutes staffed with highly qualified members, all holding M.Sc. and Ph.D. degrees. The students are exposed to practical field training where they get opportunities to communicate with farmers, identify problems and propose possible solutions. Field visits are arranged for students to make them aware of the theoretical and practical problems of the farming community, make them capable to address issues and help them devise possible solutions. At the end of each crop season, to appreciate the efforts of extensionists, some small incentives are also being offered (Abdelhakam, 2005).

Roles and Responsibilities of Extensionists

Agricultural extension staff provide guidance and advice on agricultural and animal production and promote rural and environmental development initiatives. This means the role of the extensionist is the main axis from which the development process starts and expands

(Abdelhakam, 2005). At present, there is a specialist for each area of agriculture at each local, governorate and national level. The Central Administration for Agricultural Extension Services (CAAES) sets clear roles so that the main goals of the national plan can be met. To enable and assist extensionists to accomplish their assigned roles effectively and efficiently, the Central Department of Agricultural Extension arranges training programmes for specialists at all levels. To make agricultural extension professionals more productive and useful, focused efforts are made to enhance their extension skill and their trainings technical aspects in order to ensure excellence in agricultural production is achieved (Abdelhakam, 2005).

Extensionists perform various functions at different levels at several institutions. These levels include: Extension specialists at the Central Department of agricultural extension; Governorate-level extension specialists; and extension specialists at the agricultural unit level. An account of their activities is presented in (Table 1)

Table 1. Review of functions performed by extensionists at various institutions.

- Prepare, plan and design of extension programs.
- Implement extension programmes in field.
- Monitor of on-going, existing and current extension programs.
- Evaluate economic feasibility of implementing programs.
- Enhance performance of specialists and upgrade their skills at governorate and agricultural unit levels through training programs.
- Organize and supervise training programs and extension workshops.
- Help to identify and select extension methods to be used for different crops at various levels like governorates and agricultural units.
- Observe and implement field and harvest extension days in governorates and agricultural units.
- Identify needs of farming communities for extension and technical advice.
- Follow up on extension centre activities.
- Implement national programmes for major

crops.

- Identifying rural leaders and equip them with technical skills through training programs.
- Preparing technical reports on status of crops.
- Establish links and coordinating with research organizations to provide governorates with recommendations and technical information on all aspects of agriculture; this sort of professional cooperation enables them to devise and find out necessary solutions/treatments for the agricultural issues, problems and diseases.
- Supervise the implementation of recommendations by farmers offered by specialized research institutes.

Source: (Abdelhakam, 2005)

Extension Measures Adopted and Methods Employed in Egypt

Extension has a great number of individual methods and media at its disposal. Maunder (1984) discusses more than 20 methods in his extension manual, excluding combination methods. Each individual extension method has specific properties with respect to acceptance by clients, to extension staff preferences in using them and to their suitability to convey certain messages or a certain effect. According to Baig (1992); Baig, et al. (1999) methods can be classified according to different viewpoints. The extension Service employs various methods to create awareness among users and educate farmers in modern scientific cultivation techniques, farming practices and to transmit information effectively. A brief description of the extension methods employed in Egypt is presented in (Table 2).

Role of Extension Centers

In addition, extension units are engaged in providing training and recommendations on crops to the farming community. Throughout Egypt, some 184 extension centers have administrative offices accommodation for extensionists and crop and rural development specialists and meeting rooms equipped with TVs, videos, projectors, computers, internet and telephones. Each centre serves three or four nearby villages. Most extensionists have transport such as motorcycles to visit farmers (Abdelhakam, 2005).

Table 2. Percentage of total yield from the various algal extracts.**Extension through Electronic Media**

- Agricultural TV broadcasts two programs, namely “ Secret of the Land” and “Our Green Land” to enhance technical skills of farmers and provide information on new innovations. These programs are aired twice a week and each program runs for 30 minutes. The agricultural Extension department has the responsibility of organizing field meetings with specialists and farmers to describe various aspects of innovations being introduced and eliminating farmers’ fears and doubts about new innovations.

Extension through Print Media

- Publications and pamphlets are prepared by specialized research centers to disseminate information.
- A bi-monthly Agricultural Extension Magazine provides information on agricultural practices and aspects.
- A magazine named “The New Land” is published specially to provide information on all aspects of farming new reclaimed lands like: cultivation of new crops, recommended cultivation methods and irrigation (sprinkler and drip irrigation) with other farm operations.

Extension through Mobile Vans

- The country has experimented a new method of disseminating knowledge: using mobile vans. The extension service uses a number of vehicles equipped with TV, video and microphones to create awareness and educate farmers in the villages.
- Video have been prepared for each crop; these videos explain technical information in a plain and simple language and provide ample information on planting, land preparation, harvesting etc. They also highlight various recommendations for each crop.

Extension through Information Technology (IT)

- The internet has been introduced and employed by the country’s Extension service. Egypt has also launched two (2) website, namely VERCON and RADCON. “The Virtual Extension and Research Communication Network (VERCON)” is the network that is successfully disseminating desired information to the designated quarters among interested parties. Its prime goal is to provide information, solve problems immediately and establish professional links to realize a meaningful cooperation between extension and research organizations. The other site namely RADCON, seems more comprehensive, as it focuses mainly on the overall farming process and rural development, addressing all issues related to agriculture and problems faced by the society.
- In order to make full use of IT, the extension service now presents recommendations on all valuable major crops and disseminates available modern scientific and technical agricultural information to all potential users on CDs.

(Abdelhakam, 2005)

The Changing Rural Scenario

Due to sprawling, many villages and suburbs have now become part of urban communities; in addition, the nature of villages has changed due to introduction of basic facilities like electricity and water the increase in literacy and the development of an infrastructure. Recent construction has added innumerable new buildings in rural areas. Each building now contains apartments for four to six families. Most homes now have

TVs, videos, ovens, refrigerators and, in some cases, satellite dishes. The influx and flow of new home appliances and modern facilities to villages have completely changed the lifestyle of rural communities (Abdelhakam, 2005). This all means that rural areas have turned into urban areas and rural people living near cities are involved in home-based business as poultry, small ruminants and dairy products. Now all have turned into consumers instead of just producers; this changing scenario has imposed a further

strain on the production systems of the country.

The Impact of Modernization on the Lives of Farmers and Production Include:

- Single- storied houses converted into multi-storied buildings in many suburbs; therefore, most villagers are less likely to raise poultry and small animals in their respective premises, causing farmers to buy eggs, poultry and meat from nearby markets.
- Dietary habits of suburbans have changed. In the past, farmers used to have big houses and afford their own ovens. New buildings do not have enough room for traditional ovens, so bread has to be bought from the market.
- Farmers used to store cereals produced on their farms in village-style cereal storage facilities. Now, in the cities, with no extra room for cereal storage, people depend on buying from markets.
- Wide-spread expansion of TV, videos and satellite dishes, and the increasing number of literate people in villages have led to changes in all aspects and practices to be applied in farming and agriculture.
- Most farming activities, are now carried out by hired agricultural workers and rented machinery because farmers' children who are more likely literate than their parents are not interested in working in agriculture (Abdelhakam, 2005).

Extension and Capacity-Building in the Changing Scenario

All the above-mentioned changes result from development witnessed in rural areas and should be considered when preparing extension and training programmes. It is essential to be aware of the extension clients' needs and their level of knowledge. Extensionists now make use of modern communication sources and equipment like TV, video, internet, publications and year-round training programs (Abdelhakam, 2005). However, the following steps would be helpful to include in the strategy for extension to see sustainable development and improvements.

Strategies for Improvement

At the moment, Egypt carries out its

agricultural extension services through a one-direction transfer of knowledge, where farmers are considered recipients, not participants. With the liberalization of the cotton sector, agricultural extension services must move from supply-led information to information tailored to farmers' actual needs. Now seems the best time for agricultural extension services to move from supply-led information to information tailored to farmers' actual needs. It is seems that Extension in Egypt suffers from a dearth of extensionists in remote areas. Extensionists lack of transport facilities and experience and their low incomes and the poor working conditions lead to low motivation. Increased budgets are needed to provide extensionists in areas where they are lacking, especially remote areas (Abdelhakam, 2005).

Extension Staff Development and Professional Growth

In order to enhance the efficiency of extension staff, a dire need exists to enhance extension workers' technical and communication skills to enable them to help farmers learn new agricultural practices. Developing a capacity-building program targeting, improving technical knowledge and enhancing communication and facilitation skills of extension agents is needed. Participatory approach has proved quite effective in introducing new, innovative farming technologies, with a need to establish local professionals capable of providing assistance and training extension workers to implement participatory approaches.

Capacity Building

There is a need to create a strong base to develop and launch a capacity-building program targeting extension agents, to improve their technical knowledge and enhance their communication and facilitation skills. It has been observed that farmers may know about new «technologies», but often misuse them due to inappropriateness.

In addition, it is crucial that extension workers learn to communicate technical information to farmers. This should preferably be achieved by mixing typical instruction with new participatory methods. Efforts are needed

to enhance extension workers' technical and communication skills to enable them to help farmers learn new practices, with Extension workers are very eager to learn about innovations in agriculture and seem quite willing to invest their own time to learn and improve their skills. This feature clearly indicates the extension workers' sense of responsibility, commitment and dedication to purpose.

Adopt a Participatory Approach

As in many other developing countries, a participatory approach has a promising future in Egypt. Therefore, old traditional extension methods need replacement with the participatory approach. Local cadres able to provide assistance and training to extension workers using the participatory approach need to be established. A major factor in the sustainability of the participatory approach is support from management. Factors like clear task description; coordination among different departments for effective information exchange; clear policy direction and accountability are important from all extension workers along with management support.

Clear Job Descriptions

Each extension professional should have a clear job description and be held responsible for all work actions. In many cases, there is no clear job description; therefore, at times extensionists sometimes are involved in non-prescriptive activities not desired by their organization. This particular feature removes them from responding to the urgent needs of farmers. Subsequently, there is time, money and resources wasted with loss of effectiveness.

Extension Services for Women and Youth

Women join hands with men and work in the fields. Women participate extensively in almost all farming operations, from crop cultivation, pest control and harvesting till the disposal of the produce. Women make up an essential part of the active labour force in the rural areas; unfortunately suffering the most from illiteracy, poor nutrition, poor health, high birth-

rates and unacknowledged labour. Women own fewer assets, have limited economic options and less access to social services.

Similarly, children, because of economic pressure, are compelled to leave home to seek employment and, as such, fall victim to child labor abuse. On the other hand, youth also do not have ample leisure healthy activities, and may become attracted and involved in un-healthy hobbies as a result.

In some governorates, there are a few extension workers dealing with women farmers learning groups. Most extension work is being carried out in the less conservative Delta region of Egypt, where women farmers happen to be members of mixed groups where male extensionists assist and educate women farmers. However, women extension workers would need to change their belief that they should be more focused on home-based activities than agriculture.

This scenario warrants an active and strong extension system that primarily focuses on women farmers, children and youth as they significantly contribute towards agriculture and the economy. In addition, research on women's role in cotton production illustrated their extensive participation in crop cultivation, pest control and harvesting. This requires inclusion of women extension agents in the capacity-building program and necessitates the re-orientation of extension agents regarding gender issues. So far, there are no women extension workers leading training programs for fellow extension workers and women farmers.

CONCLUSIONS AND RECOMENDATIONS

Egyptian agriculture significantly contributes towards the economy and development of the country. However, under the existing set of limitations of small-holdings, labour-intensive cultivation and farming methods with traditional irrigation, Egypt's current small-scale agriculture seems under threat due to population growth, land fragmentation and low quality of life in rural communities. Currently, about 80 percent of landholdings are smaller than 5 feddans and working and operating conditions for farmers

are quite harsh. According to El-Sayed and El-Sawi (2006) Egypt has 10.7 million poor, 70 percent living in rural areas. Agricultural extension programs and policies adopted for the development of agriculture must also focus on poverty alleviation among resource-poor farmers. To realize economic yields, it is recommended that farmers with small landholdings cultivate high-value crops. To realize sustainable crop yields, a workable strategy backed by strong extension campaigns seems essential. In addition to this, the following steps deserve due attention:

- Initiatives are needed to make rural areas more attractive to reduce and prevent urbanization.
- Farmers should adopt “Good Agricultural Practices” [GAP] and there is a need to create awareness and launch a campaign for its use
- Water quality and quantity needs wise management and consumption.
- Efforts to be made to gain cooperation of other organizations involved in addressing poverty issues to work on enhancing rural income generations within and outside agriculture.
- Extension programs to help farmers explore and adopt farm income sources and activities
- Agricultural Extension should create awareness about GAP to promote sustainable development
- Government attention is needed to provide facilities to promote agro-processing in rural areas
- Small-scale projects enhance economic value of agricultural products
- Farmers and their families, to be provided with technical and financial assistance to improve quality and production levels, to create more export opportunities and protect the environment.
- Villagers are slowly becoming consumers of agricultural products and commodities, losing their status of producers and suppliers of basic food items with is a need to re-convert villages as producers to enable them to meet food requirements of nearby cities with small-scale agricultural projects
- Need to explore all possible avenues to make farming economically viable and productive to return farmers to their villages in farming businesses.

The agricultural extension service can help in realizing higher yields and sustainable rural communities. Today, extension activities are a one-direction transfer of knowledge, with farmers considered recipients not participants. Agricultural extension services will need to move from supply-led driven information to demonstrations tailored to farmers' needs. For example, Egyptian cotton production could be improved if extension workers and farmers worked together.

A need exists to develop capacity- building programs for both male and female extension agents, to improve technical knowledge and enhance communication and facilitation skills. Farmers may know about new «technologies», but misuse them due to inappropriateness. Women participate extensively in almost all farming operations, starting from crop cultivation, pest control and harvesting to the transportation of produce to the markets.

The agricultural sector and extension service both play a very significant and positive role in achieving sustainable development. Projects and programs on sustainable agriculture based on scientific concepts and principles would improve rural livelihood – this means good agricultural management would lead to sustainable rural communities.

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