

## AGRICULTURAL EXTENSION AND ADVISORY SYSTEM IN SUDAN: A REVIEW

*Igbal Osman Moffereh Salm<sup>1</sup>, Hamid El Bilali<sup>2</sup>, Snežana Janković<sup>3</sup>,  
Aleksandra Despotović<sup>4</sup>, Sinisa Berjan<sup>5\*</sup>, Noureddin Driouech<sup>2</sup>, Vedran Tomić<sup>3</sup>*

**Abstract:** Sudanese government attaches great importance to extension services. The review paper provides an overview on agricultural extension and advisory system (AEAS) in Sudan. It focuses on extension history, policy framework and governance, financing, human resources, gender, approaches and methods. In 1958, after Sudan's independence, a national agricultural extension system was established. Extension services are almost entirely public. Main extension services providers are the federal Technology Transfer and Extension Administration (TTEA) and the General Directorate of Extension, Technology Transfer and Pastoralists' Development. Moreover, each Sudanese federal state has a decentralised extension system. Sudan tried different extension approaches such as Commodity Development, Training & Visit and Farmers' Field School. Primary extension methods include field visits, demos, workshops and field days. The main problem faced by Sudanese extension system is low extension workers' number. It is crucial to strengthen linkages with agricultural research system and to improve coordination among institutions dealing with extension.

**Keywords:** Extension, Advisory services, Agriculture, Rural areas, Sudan

### Introduction

Sudan has a multi-tiered political system with three levels: federal, state and local. It is divided into 17 states (wilayah) and 133 districts. Sudan is still mainly a rural country. About 70% of the population is rural (Gaffar, 2011). Agriculture is the main economic sector contributing 39% to the GDP and employing about 80% of the workforce (IFPRI, 2012). Total arable land in Sudan is 84 million hectares. The major crops are sorghum, millet, wheat, maize, rice sesame, groundnuts, sunflower, cotton and tomato. The main cropping systems are irrigated farming schemes and rain-fed farming. Major agricultural exports are cotton, sesame, Arabic gum and livestock. Agricultural extension is among the most important policy instruments that governments can use in agricultural development thus contributing to agricultural productivity and farm incomes increase and quality of life improvement in rural areas (Swanson et al., 1998). FAO recommended to all national governments to develop and periodically review their agricultural extension policy, which should include, among others, the goals of agricultural extension, the responsible agencies

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<sup>1</sup>Federal Ministry of Agriculture and Irrigation, Khartoum, Sudan;

<sup>2</sup>International Centre for Advanced Mediterranean Agronomic Studies (CIHEAM), Mediterranean Agronomic Institute of Bari (CIHEAM-IAMB), Valenzano (Bari), Italy;

<sup>3</sup>Institute for Science Application in Agriculture, Belgrade, 11000, Serbia;

<sup>4</sup>Biotechnical Faculty, University of Montenegro, Podgorica, Montenegro;

<sup>5</sup>Faculty of Agriculture, University of East Sarajevo, East Sarajevo, Bosnia and Herzegovina, e-mail: [sinisaberjan@yahoo.com](mailto:sinisaberjan@yahoo.com);

and personnel, the clientele to be served and the broad programmatic areas to be addressed (Swanson et al., 1998; Alamaen, 2009). In Sudan, extension played an active role in the famous irrigated Gezira Scheme that was initiated in 1925 over two million hectares. After independence in 1956, USAID assisted the government in establishing agricultural extension services (IFPRI, 2012). The Sudanese government want to convert its agriculture into an agri-business entity. Therefore, it attaches great importance to the strengthening of extension services (IFPRI, 2012). One of the main objectives of the Sudanese Agricultural Revival Strategy is the development of agricultural research, technological dissemination and adoption to sustain long-term growth of agricultural productivity (Geberaldar et al., 2014). As a matter of fact, one of the programs under the strategy focuses on “enhancing the capacity of technology transfer and extension services using the village as a centre for providing services and agricultural knowledge, in addition to introducing and adopting successful technologies aiming at increasing the productivity and improving the quality of products” (IFPRI, 2012). These technologies include water management techniques, improved seeds and rural lending. The paper aims at providing an overview on agricultural extension and advisory system (AEAS) in Sudan.

### **Material and methods**

The review paper is based secondary data. The approach used is both descriptive and explorative with a critical analysis of the different issues. Secondary data were collected from annual reports of Sudanese public institutions dealing with agriculture in general (e.g. Federal Ministry of Agriculture and Irrigation) and agricultural research and extension in particular (e.g. Technology Transfer and Extension Administration) and some papers, theses and books. The following issues were addressed: policy frameworks and governance structures of extension and advisory services (EAS); history of EAS; financing of EAS; human resources in EAS; importance of gender within EAS; extension approaches, methods and media; EAS and integrated rural development; and role of EAS in building social capacity (e.g. producer groups). The main problem faced during the preparation of the present paper is the lack and/or difficult access to recent and reliable scientific data. In fact, most of the available data have not been published in scientific journals so their reliability is questionable. Added to this is language constraint as most of publications regarding extension in Sudan are in Arabic, the official language of the country.

The main weakness of the paper is that it is to a large extent descriptive. However, this weakness is a characteristic of review papers when data availability and accessibility is a big constraint. Nevertheless, the paper is original and provides data about different elements and components of sudanese EAS.

### **Research results**

#### **History of extension in Sudan**

The history of agriculture extension and agricultural technology transfer started in Sudan at the time of establishing the research centres in 1902, with the establishment of experimental cotton farms in Shendi on the main Nile and in Alkamleen on the Blue

Nile (Hassan, 1981 in Eltayeb, 2005). In 1944 the first educational service outside of school was provided to rural communities using adult education method (Mohamed, 1997). In 1952, agricultural season failure on rain-fed schemes near Gadarif led to establishing the first experimental farm at Tozi devoted principally to food crops (Hassan, 1981; Eltayeb, 2005). In 1958 the Agricultural extension division was established as a branch of agricultural education in the Ministry of Agriculture with the technical assistance of the United States (Anas et al., 1991; Eltayeb, 2005; Alamaen, 2009). Until the 80s of the last century, extension was a section in the Ministry of Agriculture. However, this situation changed with the Ministerial Decree No. 288, July 1991, that gave the national extension service the name of Federal Information and Extension Administration. Therefore, extension was transformed into an administration within the Ministry of Agriculture. In 2000, the name of Administration was changed to the General Administration for Technology Transfer and Extension (Eltayeb, 2005).

### **Main actors in and governance of Sudanese extension system**

Extension services in Sudan are almost entirely public. Main extension services providers are the Ministry of Agriculture and the Ministry of Animal Resources and Fisheries (MARF) (IFPRI, 2012). The major public institutions providing extension and advisory services are TTEA under the federal Ministry of Agriculture and Irrigation and the General Directorate of Extension, Technology Transfer and Pastoralists' Development (GDE) under MARF. At national level, the TTEA is considered the main institution providing agricultural extension services. It aims to make AEAS farmer-driven and farmer-accountable. Its main activities include farmer-oriented activities (training, demonstrations, exposure visits, group mobilization and capacity building) and information dissemination (exhibition, information technology, and print media). TTEA is composed of different divisions: agricultural extension, agricultural information, seed, and agricultural engineering. The Agricultural Extension Division deals, among others, with extension research studies, evaluation of extension events, support to states' extension programs, capacity building of extension staff and other stakeholders. TTEA also maintains a Technology Transfer Centre that acts as an active mediator to transfer information from the specialized resources to beneficiaries and stakeholders including farmers. TTEA structure employs 105 extension officers. All of them have BSc as minimum degree and about 80% of them have MSc while about 10% have PhD degree. In terms of gender, 70% of them are women. The Agricultural Research Corporation (ARC) is the main public semi-autonomous organization in charge of agricultural research. It is under the Ministry of Agriculture. It has a Technology Transfer and Extension Division running sporadic research outreach activities in farmers' fields. As for universities, the two major ones, whose contribution to extension is mainly in the area of training, are Sudan University of Science and Technology and University of Khartoum (IFPRI, 2012). The GDE is responsible for extension matters related to animal production and fishery. The Directorate comprises three departments; Extension and Technology Transfer, Pastoralists' Development, and Communication and Documentation. Extension and Technology Transfer department has a field extension division and research and Technology transfer division (IFPRI, 2012). Another public extension actor is the Animal Resources Research Corporation

(ARRC). At state level, the Ministry of Agriculture and MARF located in each of the 17 federal states of the country, have their own extension services. Re-structuring of governance in Sudan from regions to federal and states system during 1990's resulted in restructuring of the agricultural extension administration (Mohamed, 1997). Since 1981, agricultural services were regionalized and hence state extension units were established. These units now operate under the State ministries of agriculture, with limited or no ties with TTEA. They give limited extension coverage in some of the rain-fed areas particularly in western States (Kordofan and Darfour) and with more concentration on fruits and vegetables along Nile and its tributaries (Alamaen, 2009). Recently different Sudanese governmental departments and corporations provide agricultural extension services; TTEA is considered the main institution providing extension services; however, there are some other bodies offering extension services especially in irrigated schemes (e.g., Sudan Gezira Board, Mechanized Farming Corporation, Rahad Agricultural Corporation, New Halfa Agricultural Corporation, Blue Nile Agricultural Corporation) and in some remote rural areas (e.g. some NGOs) (Eltayeb, 2005).

Public structures dealing with extension have institutional linkages and partnerships with different actors in the agro-food sector such as agricultural universities, input supply firms, exporters, farmer cooperatives and organizations, consumer associations, banks and micro-credit institutions (Bohn, 2011). Only in some states, where donor-funded projects were or are being implemented, certain NGOs (e.g. Plan Sudan, MADRE, Crop-life Africa & Middle East, Sudanese Agrochemicals Association) receive project funding to perform extension activities (IFPRI, 2012). In remote areas of the country such as western Sudan, extension services have been provided also by some international non-governmental organizations (Eltayeb, 2005; El Hassan, 2004). The private companies' are not involved in extension work in a major way as they mainly provide instructions on applying farm inputs (IFPRI, 2012).

There is also collaboration with some international and regional organizations. A national extension policy and strategic action plan have been developed in 2012 with the assistance of FAO. The objective is to introduce a demand-driven, pluralistic and gender-sensitive extension system instead of existing extension services that are mainly top-down and supply-driven (IFPRI, 2012). Pre-service education and in-service training in extension is provided by all universities that have agriculture and/or livestock faculties. TTEA also organizes training programs for the extension staff. In addition, many private firms are offering training in agriculture including some extension aspects (e.g. Tdbir Consultancy, International Training & Consultancy Centre, International Centre for Quality, Top Centre for Training Consultancy & Quality Services, Charisma Workforce Development) (IFPRI, 2012).

### **Extension models and approaches**

Sudan has tried a number of extension approaches and models including commodity approach, Training & Visit (T&V) system and Farmer Field School (FFS) (IFPRI, 2012). Nowadays, agricultural extension services in Sudan use different extension approaches to transfer technology packages and agricultural knowledge to farmers such as: Commodity Development approach; Conventional approach; Training & Visit approach; Integrated Agricultural Development Approach (IADA); Integrated

Rural Development approach and Farmers’ Field School (FFS) approach (El Hassan, 2004; Mohamed, 2010; Omer, 2013).

### **Extension methods and media**

Primary methods used by field extension workers include field visits (farmers), field and farm exchange visits (producer groups), demos, seminars and workshops, field days and sites touring, cross-site “cluster” meetings, and extension office meetings (Bohn, 2011; Mohamed, 2013). One can distinguish between direct and indirect communication methods as well as between individual and group communication. Group communication takes place in different forms, such as meetings, lectures, training of leaders, group discussion and conferences, trips, schools, explanatory farm experiments. Indirect communication tools include radio and TV programs that can easily be understood by farmers (Eltayeb, 2005).

### **Role of Sudanese extension services in social capacity building**

The clientele served and targeted by the Sudanese extension system is varied and includes small-scale subsistence farmers, women farmers, large commercial farmers and small/medium-scale commercial farmers (Bohn, 2011). The percentage of farmers that belong to farmer or producer organizations in Sudan is 40% (Bohn, 2011). Extension builds social capacity of farmers by organizing them in groups, and providing different kinds of training and services, especially for rural women, who have a big role in all agriculture activities especially in the traditional sector where they represent more than 75% of agricultural workforce (Mohamed, 2010). Farmer organizations have a role in extension activities. They also influence extension policy, assess extension performance, and help setting extension priorities and specifying extension programs (Bohn, 2011; IFPRI, 2012). Extension agents are also involved in gender empowerment activities. Many Sudanese villages have rural women’s groups. These are mostly supported by NGOs and are especially active in dairy processing, poultry and fisheries. In addition, different capacity building activities for rural women are organized by the Gender Mainstreaming in Development Unit of the Ministry of Agriculture through its decentralised gender focal points (IFPRI, 2012).

### **Conclusions**

There is no unified extension system in Sudan. Separate extension programs are conducted by each agricultural corporation, by each administrative region, by each private and multilateral company. Generally, in terms of management and administration four categories of extension services can be identified: National Technology Transfer and Extension Administration; regional (state) extension units; extension units or divisions in irrigated agricultural corporations (e.g. Gezira, Rahad, New Halfa); and extension in rural development projects and programs.

There are many suggestions to improve extension system efficiency at national/federal, state and local levels. At the National level he suggested the restructuring of the administration of agricultural extension. At state level, autonomy of agricultural extension from other state departments should be promoted as in Khartoum

State model, where TTEA is responsible for all extension services. At local level, financial and administrative autonomy should be fostered. Integrated Agricultural Service centres should be created to provide extension services at local level. Furthermore, extension services should be gradually extended at village level.

The Sudanese AEAS, that plays an important role in the development of agricultural and rural areas, face many challenges. Therefore, to make the extension system more efficient it is necessary to strengthen linkages with the agricultural research system and to improve coordination among the institutions dealing with agricultural and rural extension at different levels (federal, state, district, village) as well as with other agricultural advisory services providers (e.g. private sector and NGOs). Moreover, there is a need for more capacity building of extension workers and to encourage intensive usage of ICTs.

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