

Report on The National Agricultural Information System (NAIS) of the Sudan

**Regional Workshop for
Strengthening National Information Communication Management
Focal Units in Near East and North Africa Region”
AARINENA in collaboration with GFAR, FAO and the Ministry of Agriculture of Oman
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Introduction

Sudan is a vast agricultural and pastoral country with a rich cultural diversity. It is the largest country in Africa with about 2 500 000 km² of land, a total population of well over 30 million, out of which 75% live in rural areas. Agriculture is the dominant sector in the Sudanese economy. It contributes about 45% to the Gross Domestic Product (GDP), generates over 85% of the foreign exchange earnings, and provides the raw materials for agro-industries and employment for over 80% of the labour force. About 87% of economically active people are depended on agricultural or pastoral activities and related enterprises for their livelihoods. Forest resources contribute about 10 % to the GDP, while livestock, which is predominantly kept by the traditional nomadic people, contributes about 8 % of GDP.

Agricultural research started in the Sudan in 1902 to explore the possibility of growing cotton under irrigation in the North and under rain in the South. It expands rapidly to include research activities in different crops and ecological zones in the country. Contribution of agricultural research projects completed during the period 1983-1993 to the total research projects in other sectors in the Sudan was between 35%-68%. The Agricultural Research Corporation (ARC) was affiliated to the Ministry of Agriculture until 2001 it has been moved to the Ministry of Science and Technology (MOST).

The National Agricultural Information System (NAIS) of the Sudan

The National Agricultural Information System (NAIS) of the Sudan consists of different institutions fall under the following categories:

- 1- International and regional agricultural organizations such as the agricultural libraries and information centers of FAO Khartoum office, the Arab Center of Documentation and Information (ACADI) of the Arab Organization of Agricultural Development (AOAD) and the library of the Arab Authority of Agricultural Investment and Development (AAAID)

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- 2- Governmental and Semi-governmental agricultural research and extension institutions, e.g., the Central Library of Agricultural Research Corporation (ARC) and the Documentation and Information Center (DIC) of the national center of Research (NCR)
- 3- Government Ministries.
- 4- University agricultural college libraries

Sudan has put in place a policy that seeks to promote research and development in basic and applied sciences including agriculture. It has also developed long, medium and short- term national strategies in science and technology that are aimed at achieving sustainable socio-economic development in the country. Scientific research is conducted by multidisciplinary teams composed of scientists with differing specialization, working in multiple locations in different parts of the country. These have generated massive information that needs to be properly managed and made available to all the different stakeholders.

Steps recently taken to establish focal units in the Sudan

The first workshop for the establishment of the Sudan National Agricultural Information Network (SNAIN) was held on Monday and Tuesday 30-31st of August 2004 at the Conference Hall of the Training Centre, Agricultural Bank of Sudan at Khartoum. About 66 individuals attended the workshop and participated in its deliberations. Participants came from all parts of the country and represented a wide spectrum of stakeholders involved in the generation, dissemination and utilization of agricultural information such as agricultural research and extension institutions, agricultural training institutions, federal Ministry of Agriculture, state Ministries of Agriculture, various agricultural departments, farmers' and pastoralists' trade unions as well as development partners such as NGOs, and regional and international organizations. The main results of the workshop were the establishment and agreement of the Sudan National Agricultural Information Network (SNAIN). National Steering Committee (NSC) for SNAIN has been established and five national institutions have been selected for the initial involvement in the activities of SNAIN. These institutions are:

1. Agricultural Research Corporation (ARC).
2. University of Khartoum
3. University of Gezira.
4. Agricultural Economics and Statistics Administration, Ministry of Agriculture and Forestry.
5. Documentation and Information Centre (DIC), National Centre for Research (NCR).

Capacity Building activities in the Sudan

A number of activities have been carried to develop institutional and human capacity building of agricultural information in the Sudan. These activities led by government ministries, the Agricultural Research Corporation (ARC) as the NARIs of the Sudan, the national Council of Research and some national Universities. The most recent activity is the AGRIS/IMARK national training workshop that was held during the period 8-16 March 2006 at the ARC, Wad Medani. This workshop organized by the Sudan National Agricultural Information Network (SNAIN) under the leadership of the ARC and the support of the Regional Agricultural Information Network (RAIN) of the Association of Strengthening the Agricultural Research in Eastern and Central Africa (ASARECA). Highly appreciated technical support for this activity had been provided through FAORNE-Cairo and FAO/FAORAF-Ghana. National resource persons and trainers came from the ARC, the Arab Organization of Agricultural Development (AOAD), FAO Khartoum office and

other national institutions. The workshop consisted of lecture and practical training for 23 participants present 10 national institutions.

It is worthy of consideration to mention the WEBLIS national training workshop that had been organized in the Sudan last August 4-9, 2007 under the sponsorship of the Sudanese Association of Library and Information (SALI) and the Sudan Academy of Science (SAS). Professor Egbert de Smet, training manager of INASP was the chief trainer of this national workshop program.

However, there are many government and private institutions in the Sudan provide training in ICT/ICM. An example is the most recent and active program, the Information and Communication Technologies Programs Coordination Council (ICT-CC) of the Sudan Academy of Sciences (SAS), <http://www.sas-sd.net>, Ministry of Science and technology, <http://www.most.gov.sd> . The ICT-CC was established in 2004 and its main tasks are to coordinate different capacity building skills and research programs in ICT in the country for social and economic development. It collaborates with the following Institutions to perform its tasks:

- Informatics Industry Sector, Ministry of Science and Technology
- National Centre For Research
- Documentation and Information Centre (Registrar Office and Laboratory)
- Remote Sensing Authority
- Agricultural Research Corporation (the NARIs of the Sudan and Coordination Council for Agricultural Research Programs in the Sudan Academy of Sciences- SAS as well as the focal point of national, regional and international agricultural information networks/systems)
- National Corporation for Telecommunication
- Sudatel, the largest telecommunication company in the Sudan and the region
- Miraag for Space Technologies Company.
- Kuch Company
- National Centre for Information

Current Status and Strategies in Building Information Content

Agricultural research institutions in the Sudan produce massive types of information content. This information includes research reports, journals, theses, conference proceedings, research guides and so on. Such information is well processed and organized at most of the library and information centers. There is a common agreement to use FAO standards to process and disseminate agricultural information in the Sudan. Electronic journals are the most preferred type of information used by agricultural research scientists followed by abstracts and research reports. There are national trends towards the use of internet and open access initiatives. Plans are underway to provide access to various value-added information services and resources through the website.

Available human resource capacities in ICT/M

Although there is shortage of qualified human resources in ICT in the Sudan, but the existing cadre of agricultural is capable to lead the country's trends towards the use of agricultural information for development.

Existing mechanism of accessing and exchange information

Most of the agricultural libraries and information centres in the Sudan have developed their local

databases and internet/intranet websites. Most institutions has move from printed to electronic resources and the internet has become new way of accessing information than any source. AGORA play significant rule in accessing electronic journals in the Sudan. The Essential Electronic Library (TEEAL) introduced at the Central library, ARC since 2002. LAN TEEAL, the Local Area version of TEEAL has been introduced at the Central library in 2006. AGRIS database and CAB abstracts also considered as the most commonly used source of agricultural information. It is expected that AGRIS standards and methodologies would support the national trends to establish the national agricultural information network.

Available infrastructure and financial facilities

As mentioned previously, the national agricultural information infrastructure in Sudan is made up of university libraries, agricultural research institutions, documentation and information centers, statistics bureaus, and agricultural extension service units and international and regional agricultural development organizations. These library and information centers play a very important role in the management and dissemination of agricultural information in support of the peoples' livelihoods. They have considerable sources of information in different format, covering different sectors of the national economy, including agriculture, education, economy, industry, finance, natural resources, social welfare and research. Agricultural libraries and information centers in the Sudan has well developed their local databases, web sites and produced full-text institutional documents. WebAGRIS and Arabized WINISIS are the most widely used database management systems. Also, the country has formulated a twenty-five year strategic plan since 2002 that included activities in the ICT domain.

The Agricultural Research Corporation (ARC) work endeavor to develop and maintain efficient ICT infrastructures. The main infrastructure of agricultural information available at the ARC, Sudan:

- Establishment of WAN and connection through frame relay link with CISCO 710 Router of 1 MBps support with fiber link. 5 ARC research stations and centers at deferent parts of the Sudan are part of the ARC/WAN. The work continues to connect the other ARC research stations and centers
- Establishment of remote Video Conference Hall at the ARC H.Q
- Establishment of specialized Computer Training Laboratory at the ARC H. Q, Wad Medani to provide continuous training to The ARC scientists and ICT staff
- Development of intranet that provide full-text access to the ARC journal articles. The work continues to publish full-text of the other ARC publications.
- Utilization of the use of internet, e-mail, AGORA, HINARI and the other available web resources
- Development of the ARC website at the URL: <http://www.arcsudan.sd>
- Introduction and application of LAN TEEAL, the Local Area Network version of the Essential Electronic Agricultural Library (TEEAL).
- Development and collaboration of national, regional and international agricultural information networks and partners such as SNAIN, AGRIS, AARINENA/RAIS, ASARECA/RAIN, the Twining of the Agricultural Information System Project (Sudan, Egypt and ICARDA) as well as other partners such as AOAD, FARA, ITOCA and TEEAL

Constraints affecting the building of NAIS in the Sudan

The Sudan agricultural information system is facing several challenges, which are also affecting other information and knowledge systems in the country. Overall, the existing organizations and their resources are inadequate for the country's needs. This is further compounded by the fact that there is no coordination in the management and provision of information, and this brings with it certain weakness in the system, and issues such as complete neglect of certain areas of agricultural knowledge, fragmentation of information resources, inadequacy of the services provided, and costly duplication of information materials and services. Among the major challenges facing the development of a well-coordinated agricultural information network in Sudan are the following:

- Absence of effective national agricultural information management policy
- Absence of institutional information management strategies and policies
- Failure to use common agricultural information management standards and tools in agricultural libraries and information centers, making it difficult to share information resources in digital format
- Weakness of cooperation and coordination among agricultural libraries and information centers
- Failure by some agricultural information professionals and library managers to change and adopt new ways of managing information resources
- Ineffective capacity building programs and inadequate training on technologies related to information and knowledge and management
- Shortage of funds to purchase modern equipment for information management and dissemination

Conclusion and recommendation

The agricultural information sector in Sudan has a relatively weak technological base and insufficient scientific, technical and educational capacity and thus needs substantial capacity building. There is also a dire need for radical change in the Sudanese agricultural information system, if widespread management and dissemination of information and knowledge in digital format is to take root. This change can be driven by building partnerships among agricultural information professionals in the country, the government and international and regional partners such as FAO, AARINENA/RAIS, ICARDA, AOAD and ASARECA.

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