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**Knowledge, Information and Communication for Rural and Agricultural
development in the Near East: Recent Experiences and Lessons Learned**

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I. Introduction

1. Reliable agricultural information constitutes a cornerstone in the construction of agricultural development and in the formulation of policies that, relying on valid and scientific basis, are designed to enhance food security and reduce rural poverty. Nevertheless, as a result of many factors, at present access to and adoption of agricultural information and knowledge in the Region is inadequate.
2. Among these constraints are: inadequate agricultural research; inefficient information and communications management; poor linkages between researchers and extension officers; diversity of institutions and of the methodologies used for collecting agricultural data and information; lack of coordination and collaboration; an absence of virtual national networks of agricultural institutions of Ministries of Agriculture and Agricultural Research Centers (MOA/ARC) that can be accessed through a national portal.
3. Institutional capacity development is required for effective information management and knowledge exchange that is based on stakeholders needs.
4. FAO recognizes the role of three key components in its strategic approach to the use of information and communication in the fight against hunger and fight poverty. These include: (i) information content relevant to agricultural and rural development and food security; (ii) innovative mechanisms for information exchange; and (iii) networks made up of formal and informal stakeholders' associations.
5. The purpose of this document is to focus on the recent experiences with lessons learned in the field of information management and knowledge exchange. In spite of some significant progress related to institutional capacity development that has been made in this area in Egypt, Jordan and Oman, there is an urgent need in the Region for more in-depth implementation for institutional capacity building and development in the area of knowledge and information management for development.

II. Recent Experiences in the Region

6. Regional knowledge exchange and information management for development has been identified as a priority by various regional bodies; it has also has been recognized as such by the FAO framework of actions designed to implement both the World Food Summit (WFS) targets and the Millennium Development Goals (MDG). Work in this area in the period from 2004 to 2009 included technical assistance, advisory services, policy assistance, and capacity development to facilitate knowledge access and to strengthen stakeholders' linkages and participation at both national and regional levels.
7. FAO's assistance in this sector has focused on developing and strengthening institutional and human capacities in national agricultural research and extension systems. Recent efforts included five field projects. Three of these were Technical Cooperation Programme (TCP) and two were Unilateral Trust Fund (UTF) projects for national capacity development through rural and institution-based information and knowledge systems/networks. All of these were designed to enhance effective information management and knowledge exchange in the field of rural and agricultural development.

1. Rural Information and Knowledge System/Network

8. The Virtual Extension Research Communication Network (VERCON) is a conceptual model developed by FAO that any country can adapt to strengthen linkages between extension officers, researchers, farmers and other stakeholders involved in agricultural and rural development in their areas. The project was designed to improve agricultural advisory services to farmers. It should be noted here that VERCON-Egypt was implemented under the TCP modality and was successfully completed in 2001-2002.
9. FAO also assisted Egypt in formulating a UTF project for national capacity development designed to boost effective information management and knowledge exchange in rural and agricultural development. This Rural and Agricultural Development Communication Network Project (RADCON), which was set up between 2004 and 2008, is now fully operational and consists of

sustainable and dynamic information and communication system that responds to the needs of 50 poor farming communities.

10. Currently, over 250 RADCON sites are operational and provide information services in Egypt. Some 150 village facilitators (at least one man and one woman per village) from 50 villages were trained to work with farmers using participatory approaches designed to link rural communities and enable them to participate in generating, developing and sharing knowledge through the system. They are supported, both online and offline, through an extensive network of mentors and experts in research, extension, health and nutrition, environmental waste, women's affairs, community development and rural enterprise.

11. There is still a long way to go as Egypt has more than 4000 villages. The project covers most of the country's research stations and directorates but the ongoing implementation of RADCON is still required to be extended to the grass-roots level in order to reach out more resource-poor farmers. The technical efforts needed at the central level for developing new information components are not representing any bottle neck and can be smoothly evolve in coming years

2. Institution-based Information and Knowledge System/Network

12. Countries in the Region can now take advantage of a full range of conceptual models and networks that give stakeholders access to all major research on agricultural science and technology. These fall into three broad categories. First, there are those facilitating worldwide access to the scientific literature in agriculture appearing in peer-reviewed learned journals that for the most part are published commercially and thus sold at prices which are unaffordable in developing countries. The second category includes projects designed to build capacity for developing an effective information management system based on stakeholders' needs to manage, disseminate and share relevant information and knowledge relating to agricultural development and food security policies. The third includes those initiatives developed to help organizations active in agricultural science to publish and disseminate the results of their work.

13. Within the first category is the Global Online Research in Agriculture (AGORA), a global partnership set up in October 2003 to provide developing countries with free online access to full-text scholarly journals in the field of agriculture. The main objective of AGORA (<http://www.aginternet.org/>) is to increase the quality of agricultural research and education by providing researchers in poor countries with online access to some 1278 peer-reviewed key journals in agriculture and related sciences.

14. Within the second category, the appropriate models to illustrate are three projects [NARIMS, NAIS and NAKEMS] under field programme and one project [the Agricultural Information System (AIS) at institutional and national levels] under regular programme of work.

15. The National Agricultural Research Information Management System (NARIMS) enables agricultural researchers and scientists to carry out research more effectively by providing access to other research organizations and their output. It is an integrated, bilingual (Arabic/English) web-based system designed to capture and disseminate data about research institutes, researchers working in those institutes, publications, development projects along with information regarding the national plan on agricultural and veterinary research. The system (<http://www.arc.sci.eg/>) was developed in Egypt for the Agricultural Research Center (ARC) by the Central Laboratory for Agricultural Expert Systems, which was able to build on existing FAO tools and methodologies and work closely with FAO staff. The system was launched in 2007 and is fully operational at Egypt's ARC.

16. A National Agricultural Information System (NAIS) project was approved for Jordan in 2007 to provide technical assistance designed to strengthen the capacity of the Jordanian Ministry of Agriculture for establishing an effective and efficient information system. The project is fully operational (<http://nais-jordan.gov.jo>) and has managed both to formulate an operative agricultural information strategy and to establish a Jordanian Agricultural Information Centre (JAIC). In 2010, special focus was given to training activities, including hands-on Trainings for Trainers and core staffs.

17. Upon the request of the Sultanate of Oman, FAO provided that country with technical assistance designed to lead to the development of an Agricultural Information Centre. The objective of the project is to strengthen the capacity of the Oman Ministry of Agriculture for effective information management and knowledge exchange in support of agricultural development and food security policies. The project began in 2009 and a National Agricultural Knowledge Exchange Management System (<http://nakems-oman.fao.net/>) and website of Ministry of Agriculture of Sultanate of Oman (<http://moa-oman.fao.net/>) are now fully operational. The project has made a good deal of progress towards the establishment of an Agricultural Information Centre.

18. FAO has continued to furnish technical support to a variety of operational projects in Egypt, Jordan and Oman. These include technical backstopping, provision of technology systems and capacity development that focus on information and knowledge policy assistance, on strengthening of national institutions, on training, as well as on advisory missions when requested.

19. FAO has also continued to strengthening collaboration and partnership with national counterparts and executive committees responsible for national field projects to proceed with activities within the framework of the projects activities and outputs that serve their national requirements, support regional stakeholders needs and lead for improving the training efficiency given to the stakeholders and serving the Arabic speaking stakeholders community in addition to strengthening their collaboration and partnership with FAO. This practical approach is applied where FAO normative work in association with the field programme (application, adaptation and feedback) is best illustrated as an example of building the field programme development upon the normative strengths of FAO regular programme.

20. Towards serving member countries in this regard, FAO has made in-house development for the Institution-based Agricultural Information System/Network (AIS) at institutional and country levels (Version 2.0 released in 2009). It was distributed in collaboration with AARINENA and GFAR to the information focal units of Cyprus, Iran, Jordan, Lebanon, Libya, Oman, Morocco, Sudan, Syria, and Tunisia and is available online (<http://ais.fao.net/>) to be downloaded free of charge.

21. Within the third category mentioned above in paragraph 12, that allowing researchers to publish their own work is the International Information System for the Agricultural Sciences and Technology/AGRIS (<http://agris.fao.org/>). This was established in 1975 and consists of a network of over 200 organizations worldwide that collaborate on improving access and information exchange in the field of agricultural science and technology. FAO has also developed another institutional repository tool for capturing and disseminating scientific and technical information. This is called the "Web Documents Information Management System" (<http://web-dims.com>) and can be downloaded free of charge.

22. In the context of ongoing regional and global projects, FAO has continued to work with AARINENA, GFAR, AOAD and ICARDA to build capacities in information and knowledge management. Its efforts have been directed primarily at the national Focal Points in the agricultural research institutions of 12 countries in the Region, namely Cyprus, Egypt, Iran, Jordan, Lebanon, Libya, Oman, Morocco, Sudan, Syria, Tunisia and Yemen. In cooperation with regional and international partners, FAO organized several training workshops (eight regional and forty national) on information management and knowledge exchange systems for agricultural research and development.

3. Regional Thematic Knowledge Networks

23. FAO has continued to work closely with regional partners such as the Association of Agricultural Research Institutions in Near East and North Africa (AARINENA), the International Center for Agricultural Research in Dry Areas (ICARDA), the Global Forum on Agricultural Research (GFAR) and the Arab Organization for Agricultural Development (AOAD). The goal in all cases has been to establish and develop thematic networks of professional staff and collaborating centers for sustainable agriculture and food security.

24. In collaboration with AARINENA and GFAR, FAO worked on developing the Near East and North Africa Rural and Agricultural Knowledge and Information Network (NERAKIN - <http://www.nerakin.net/>). This system consists of a regional network gateway along with some 17 national knowledge and information portals. NERAKIN was launched in October 2008 and is designed to help member countries strengthen their regional networking and knowledge Sharing.

25. FAO, in collaboration with AARINENA, also developed and facilitated the Regional Agricultural Biotechnology Network (RABNENA- <http://www.rabnena.net/>), a virtual community of professional staff and collaborating centers related to biotechnology.

26. In response to the rapid development of the aquaculture sector in the Region, members of the Regional Commission for Fisheries (RECOFI) requested the creation of a Regional Aquaculture Information System (RAIS). During the third session of the Commission in Doha, in May 2005, Kuwait offered to provide the premises for RAIS and allocated funds to develop this regional information system further. The RAIS system (<http://www.raisaquaculture.net/>) uses up-to-date information technology and database management and is user-friendly, allowing rapid data entry from administrators and easy retrieval by end users.

27. FAO provided the technical support necessary to develop a website for the Preventive Desert Locust Management Network (EMPRES) and the Commission for Controlling the Desert Locust in the Central Region (CRC). It is now fully operational (<http://crc-empres.org/>).

28. In 2008, FAO also assisted in developing the Near East and North Africa Regional Network for Agricultural Policies (NENARNAP – <http://www.nenarnap.org/>). The primary objectives of NENARNAP are to enhance the capabilities of agricultural policy analysts and institutions to collect, document, synthesize, exchange and disseminate information on agricultural policies.

29. FAO is giving due consideration to building capacities further among policymakers, managers of agricultural institutions and information managers; the goal is to promote investment in agricultural information and knowledge management and to spread awareness of the importance of creating effective information management strategies, structures and procedures within their respective institutions.

30. FAO and a large number of international and regional partners were responsible for putting and promoting together the Coherence on Information for Agricultural Research for Development (CIARD) initiative, which is aimed at making agricultural research information truly accessible to all (<http://www.ciard.net/>). During a workshop held in 2009, the CIARD Manifesto was revised on the basis of feedback received from member countries in the region and subsequently this was endorsed at the Global Conference on Agricultural Research for Development (GCARD) held in France in 2010. In addition to the Manifesto, the CIARD initiative facilitates access to practical tools that can help to support coherent approaches to enhancing access to agricultural information.

III. Lessons Learned and Good Practices

31. Some key lessons were learned during the implementation of the Rural Knowledge and Information Network (VERCON/RADCON) and the other institutional and national information and knowledge networks/systems set up in Egypt, Jordan and Oman. These included: (i) the need to create an enabling environment that recognizes the value of connectivity; (ii) institutionalization of networks; (iii) Acquiring knowledge-sharing culture that is based on collaborative methods and exchange mechanisms; (iv) the significance need to network facilitation with face-to-face meetings; (v) Networks depend on and work with people and not on technology alone; and (vi) the need to ensure sustainability and self-financing. Further details can be found at the following address: <http://kim-lessons-learned.fao.net/>

32. The benefits that derive from regional and national partnerships in the development of networks are: (a) the likelihood that the system established will be based on collaborative efforts and effective communication; (b) broader exchange of information and knowledge; (c) greater technical cooperation, (d) lower operational costs; (e) synergies in information management; and (f) the application of agreed standards, methodologies and tools.

33. The following is a summary of **good practices** for the development of a national and institutional agricultural information system/network:

- Prepare a strategy for agriculture information management, including an operational plan that has a clear mission and well-defined objectives likely to engender support from decision-makers;
- Create an enabling policy environment by establishing a Steering Committee that includes a national coordinator, a technical director and a variety of representative members;
- Designate a *champion* who can help solve managerial problems and therefore facilitate the development of an agricultural information system/network;
- Establish a coordinating unit that includes the National Admin/Focal Point;
- Appoint stakeholders who will be responsible for managing their own information systems;
- Design and implement a robust network infrastructure to develop systems and tools using appropriate technology;
- Establish a central information management unit and focal points, with efficient structures that can work to ensure sustainability;
- Build supportive alliances to reduce risk failure and to minimize production time and costs; this can be done by adapting existing standards and methodologies developed by FAO such as the AGRIS Application Profile that has been selected as the metadata standard and the AGROVOC thesaurus;
- Install the software system in an institution server;
- Build the capacities of institution staff through training, including training in automation and systems development;
- Conduct awareness-raising workshops to promote the system; and
- Establish appropriate financial mechanisms since continuous government support is essential to ensure sustainability,

IV. Challenges and Recommendations

34. The main requirements for the effective implementation of regional networks projects are:
- Strong political commitment that will work to generate contributions from stakeholders;
 - Capacity development that will make decentralization possible;
 - Establishment of decentralized national networks and institutions;
 - A common approach for standards and tools;
 - Partnerships at both the regional and international levels.

35. More details on regional and national challenges and recommendations regarding ways to deal with them can be found at the following address:

<http://kim-challengesrecommendations.fao.net/>

36. Proposed recommendation: That all agricultural institutions in member countries in the region consider adopting and implementing the global CIARD Manifesto to ensure that agricultural information is truly accessible. In support of this process, FAO and AARINENA would be available to provide advice on policy and technical practices wherever appropriate.