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Reform of National Agricultural Research & Extension Systems

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I. AGRICULTURAL DEVELOPMENT – FUNDAMENTAL FOR SUSTAINABLE ECONOMIC GROWTH, POVERTY REDUCTION AND FOOD SECURITY

1. The fact that the vast majority of the world's poor live in rural areas and most are involved in farming tends to mark poverty as a rural phenomenon. This is especially evident in the Near East Region where about 70 percent of the poor live in rural areas and depend mainly on agriculture for their livelihoods. As in most of the developing world, agriculture provides a means for sustainable development, poverty reduction and improved food security in the Region. If the Millennium Development Goal of halving poverty and hunger by 2015 is to be achieved, using agriculture for development is essential.
2. The agricultural development context faces constant changes resulting from global forces combining with regional and local challenges. With the Region's increasing scarcity of land and water, the main opportunity for agriculture to meet the demand for food and agricultural products is to increase productivity. In addition, the globalization of supply and value chains requires innovation on the part of farmers, communities, agribusinesses and others who need to respond quickly and competitively to changing market demands. Dealing with climate change calls for developing technologies to help farmers adapt to the impacts, especially in the case of risky rain-fed farming systems.
3. Using agriculture for development, therefore, requires innovative policy initiatives, institutional reform and strengthening and, of course, strong political commitments – nationally, regionally and internationally. Governments need greater capacity to coordinate across sectors and form partnerships with the private sector and civil society, especially with farmer and community-based organizations, producer associations, agribusinesses and market intermediaries.
4. Investment in knowledge and technology development through, e.g. national research institutions and international research centres as well as in human and social capital through, e.g. universities, extension services and farmer groups is essential for sustainable and equitable agricultural development. However, in many countries, this will require national agricultural research and extension systems (NARES) to redefine their roles and develop new capacities. Fortunately, new options and models for reform are emerging.

II. PRO-POOR RESEARCH AND EXTENSION

5. It is generally accepted that for research and extension to address poverty and food insecurity effectively, they must do so from a livelihoods perspective within a wider, poverty-focused policy environment. Policies in agriculture and extension have traditionally promoted technologies aimed at increased productivity of land. While still relevant, this policy needs to be supplemented by strategies aimed at improving access to markets, increasing on- and off-farm employment, raising returns to labor and enhancing the organizational and learning (skill development) capacities of poor farmers.
6. In this context, researchers must address the socio-economic viability as well as productivity of technologies, and extension workers must liaise with local market actors such as traders, processors and vendors in order to ensure the advice they give is based on sound market prospects. New technologies and innovative approaches must recognize the heterogeneity of farmers and their diverse needs, especially the factors that limit their access to production assets, knowledge and information.

7. Achieving widespread, equitable development requires the active engagement of all producers, including poor and women farmers. Multi-disciplinary research-extension teams are needed to work at the community level where they can make realistic diagnoses of situations, and set up on-farm trials and farmer group training that responds to local demand. These teams, working with groups or networks of farmers, can facilitate rapid testing and deployment of improved technologies for agricultural production within a local or regional value chain context, building productive capacity directly in farmers' fields while at the same time enhancing market skills.

III. INNOVATING THROUGH KNOWLEDGE, TECHNOLOGY AND COMMUNICATION – IMPLICATIONS FOR AGRICULTURAL RESEARCH AND EXTENSION SYSTEMS

8. Knowledge has long been recognized as an economic resource and, as with other sectors, knowledge and technology are key resources for agriculture development. Empowering smallholders to improve agricultural production efficiency and to generate income through market engagement requires better access to appropriate information and the generation of local knowledge to shape existing and new technologies to suit their farming situations.

9. There are numerous examples of local innovations and discoveries that include crop breeding, grafting against pests, water harvesting, soil management and food processing. However, all too often indigenous innovators are overlooked in the search for solutions to agricultural problems. This can be attributed to a) the innovations and discoveries they produce are mostly incremental meaning that they do not carry high income gains and b) culturally, there is little knowledge sharing due to lack of records and the application of innovations in isolation. A serious drawback is the lack of an organizing framework for indigenous knowledge, which means that while local innovations do take place, they are largely unknown.

10. Appropriate organizational conditions for knowledge sharing among local innovators and potential adopters are needed to facilitate collective learning and nurturing local innovation. NARES have a clear role in facilitating such interaction to support local agricultural innovations that combine endogenous knowledge with exogenous knowledge for wider application. In many cases, this requires NARES to change their conventional ways of interacting with farmers and learn to appreciate farmers' perceptions and respect their traditional knowledge.

11. There is both a need and an opportunity to improve knowledge and information sharing by increasing the capability of farmers to communicate with researchers, advisory service providers, educators, local government officials, marketing agents and others that work with them. Innovative communication for development approaches that draw on a wide spectrum of participatory methods and tools, have a great potential for promoting the creation and sharing of local knowledge.

12. Egypt's Rural and Agricultural Development Communication Network (RADCON) project is a good example of the successful appropriation of innovative communication for development methods and tools for the benefit of farmers. Initiated in 2003, RADCON has become a model for adaptation in other developing countries. The system combines modern, Internet-based information technology with participatory communication approaches. Through linking public and private sector actors and service providers such as research and extension institutions, universities, NGOs, marketing and credit organizations, it provides farmers with timely access to relevant and technically sound information and services.

13. The institutional context for technological innovation in agriculture has changed drastically in recent years, becoming more complex and pluralistic, opening spaces for a wider range of actors in the innovation process. Trade, markets and consumption, not only production, increasingly drive the innovation process. Knowledge, information and technology are now generated, diffused and applied more and more by the private sector.

14. The new framework is one that views national agricultural research and extension systems within a wider Agricultural Knowledge and Information System (AKIS). The AKIS approach promotes partnerships, coalitions and networks and the need for effective communication channels among the institutions and individuals that form the system. It switches the focus from stand-alone “research and extension” institutions to important “system elements” in a wider process of innovation.

15. An agricultural innovation framework encourages multiple providers and users of knowledge and technology to: work together, often through public-private partnerships, to facilitate pooling and sharing assets and knowledge (e.g. research tools, intellectual property and genetic resources); create economies of scale and reduce transaction costs; improve products, business opportunities and market engagement; increase profits and employment; and, ultimately, enhance economic growth and sustainable livelihoods.

16. This is a sharp contrast to the traditional linear model of technology transfer from researchers (the suppliers) to extension agents (the messengers) to farmers (the recipients). In a pluralistic framework, communication for development emerges as a core element that goes beyond message dissemination. It becomes a catalyst for engaging all stakeholders, from policy to grassroots levels. Well planned communication strategies and processes can set the stage for mutual dialogue, which facilitates building partnerships and linkages that, in turn, enable NARES to address national priorities while responding to farmers’ needs and priorities.

17. For research and extension to have an impact, they need to be carried out in close proximity to the users of the resulting knowledge and technology. Mechanisms need to be put in place or developed for engaging farmers in the actual design and implementation of research and extension programmes, indicating they are respected as partners and innovators in their own right rather than as mere users of knowledge.

18. One of these mechanisms is empowerment of farmer groups through enhancing leadership and strengthening organizational capacities in order to give them a “collective voice” through which they can articulate their knowledge and technology needs, aggregate their own indigenous knowledge, and lobby research and extension systems to ensure that their priorities are reflected.

19. In Pakistan, FAO has introduced a demand-driven, bottom-up, gender-sensitive extension service that involves men and women villager groups in preparing grassroots demand-for-services plans. Drawing on this experience, the government is working to institutionalize a collaborative and demand-led approach that will provide extension and other rural services in support of community development throughout the northern region of the country.

20. Advances in biological sciences have great potential, but the benefits of biotechnology are still mostly driven by large, private multinationals and have yet to spill over to smallholder, poor farmers. There is a growing recognition of the need for an integrated regional approach in the Near East that seeks to increase biotechnology advancement for agricultural and environmental sustainability. To address this, FAO organized a number of consultations on biotechnology in the Region (Alexandria, 2006; Tunis, 2007). In addition, broad-based consultations involving representatives of the agriculture and environmental sectors were organized jointly by FAO, UNEP and ICARDA to facilitate capacity building in biotechnology and biosafety and, in turn, promote agricultural and environmental sustainability. Held in Aleppo (September 2007), the consultation developed a proposal focused on building regional capacity to promote development of policies, strategies, research and information sharing in biosafety and biotechnology.

21. However, the reduction in public agricultural research capacity during recent decades, owing in part to declining national and international funding, suggests that countries will have to rely more and more on regional partnerships, research spillovers from more developed countries and the private sector to remain competitive. This means active engagement of NARES with regional

and global agricultural innovation systems, including regional and subregional research and extension organizations such as the Association of Agricultural Research Institutions in the Near East and North Africa (AARINENA) and international institutions such as Consultative Group on International Agricultural Research (CGIAR), FAO and other development organizations.

IV. REFORMING AGRICULTURAL RESEARCH AND EXTENSION SYSTEMS – CONSIDERATIONS AND OPTIONS

22. There is a widespread perception that performance of agricultural research and extension systems is disappointing in many developing countries. However, in some countries, there have been successes, especially in adapting “green revolution” technology and spreading it to areas that have favourable agricultural potential and good market access. Much less has been achieved in risk-prone environments, such as marginal lands and rain-fed agriculture. Yet this is where the majority of poor farming communities are found, communities that depend on rain-fed crops, harsh production conditions and poor physical and social infrastructure.

23. Many public sector research and extension systems are over centralized, lack client orientation and are weakened by declining levels of domestic and donor support. As a result, they have been unable to adapt to new demands, constraints and challenges. However, in recent years, converging views among government policy-makers, donors, practitioners and others about reforming and revitalizing agricultural research and extension systems has led to identification of basic common principles for reform. It is generally agreed that the key to reform is bringing research closer to farmers and engaging different actors through participatory approaches. This requires building capacities at all levels that are in line with the new principles of reform.

24. Current trends in reform focus on decentralized, demand-led, participatory, pluralistically delivered, outsourced or contracted, privatized and cost-shared aspects of research and extension services and programs. To adapt to these trends, it is important to be aware of and potentially include the following:

- pluralistic institutional approaches to identify funding and deliver research and extension – recognizing the roles and potentials of private firms, NGOs, producer organizations, universities and others;
- new funding sources and mechanisms to allocate public funds – including public sector financing and cost sharing with the private sector and civil society, competitive grants and separation of financing from provision of services and programs;
- new challenges and approaches to promote sustainable livelihoods – targeting poverty reduction and food security, natural resource conservation and environmental protection, market-orientation and the use of appropriate communication methods and tools;
- reformulated role for the public sector to support pro-poor research and extension – developing a national vision, policy and strategies that assure the delivery and enhance the relevance and quality of services and programmes for poor men and women farmers; and
- capacity building in line with reform measures at all levels – creating an enabling environment for sustained capacity development and professional growth.

25. In many countries, such as Egypt, Morocco and Tunisia, mixed public-private systems involve public agencies, NGOs, private firms and producer organizations, among others, that loosely form an innovation system. Now, through openness to mixing various approaches, the shift has been from a “one-size-fits-all” or “best practice” approach to a “best fit” approach that takes into account the specific social, economic and political conditions of a country.

26. Results of regional consultations held on Agricultural Technology Development and Transfer (Muscat, 2004), Reform of National Extensions Systems (Amman, 2004; Tunis, 2006)

and Mainstreaming Communication for Development in Agriculture and Rural Development (Cairo, 2006; Amman, 2007) have indicated the need for NARES to develop new partnerships with relevant actors within the agricultural knowledge and information continuum. This includes farmers' and women's associations, universities, and marketing and credit organizations. NARES also need to adopt participatory approaches that engage actors at various levels in the design, planning and implementation of their programmes through well planned communication strategies that set the stage for mutual dialogue and enhanced linkages.

27. The above recalls the Amman Appeal and "Framework for Action: Promoting Agricultural Research and Extension for Sustainable Development in the Near East" issued at the conclusion of an FAO and AARINENA regional workshop in Amman in 2002, and presented as an information note to the Regional Conference in Doha 2004. The document is still valid and can provide valuable guidance for priority action.

28. These regional and global reform initiatives have led to a number of lessons and guides:
- view research and extension within a wider innovation system perspective;
 - define policy for a pluralistic research and extension system;
 - develop mechanisms for wide stakeholder coordination, a common framework in which all actors can operate;
 - formulate research and extension communication strategies and plans that engage all actors;
 - decentralize the administration of public funds – research and extension should be part of the decentralization and devolution agenda to engage local government and community-based organizations;
 - build capacity of service providers – including public, private, civil society and especially farmer organizations;
 - introduce some cost recovery where appropriate – reforms should encourage valuing technology and information, and fee-for-service can encourage a market for advisory services;
 - identify indicators and develop a strong monitoring and evaluation system from the beginning to assess outcomes and impacts and feed them back into policy; and
 - make long-term commitments – institutional reform is a lengthy process.

29. Building capacity of decision-makers and research and extension managers to "take stock" of the current situation and identify reform options and modalities that best fit the specific conditions and priorities of their country is often required. Tools exist to carry out such exercises, and various technical assistance institutions and development organizations can help.

30. FAO's Research and Extension Division has various relevant resources and is just completing a training module on "Agricultural Extension in Transition Worldwide: Policies and Strategies for Reform". The Division also provides technical support to member countries through its field programme. Initiatives addressing various aspects of research and extension strengthening or reform are underway in many countries in the Region, including Egypt, Kingdom of Saudi Arabia, Lebanon, Libya, Morocco, Oman, Pakistan, Sudan, Tunisia and Yemen.

V. CONCLUSION AND RECOMMENDATIONS

31. It is clear that agriculture for development is on the agenda globally and regionally and that a revitalized role for research and extension institutions is central to success. While there is a convergence of views on the guiding principles or major reform elements needed, it is clear that the success of new approaches depends on their adaptation to local institutional, socio-economic, cultural and political circumstances.

32. Farmer participation and empowerment, particularly strengthening the organizational capacity of farmers, are widely recognized as key elements in improving productivity and market linkage. Ultimately, demand-led, farmer-responsive research and extension systems require that farmers have a “strong voice” in the services and programmes delivered, with viable communication approaches and channels in effect. Building institutional capacity for new research and extension functions is also critical.

33. The following specific actions are recommended.

- Conduct an in-depth review of the national research and extension systems to assess current status and identify reform needs and areas for interventions, taking into account farmers’ needs and national development goals.
- Initiate national dialogue on present and future directions and priorities for NARES. By involving all stakeholders and undertaking efficient communication planning, the process can help define and re-establish national fora for NARES.
- Analyse reform options and develop proposals for reforming the national research and extension system, outlining its organizational structure, human resource needs, mandate, scope, linkages and potential partnerships for optimum performance.
- Formulate a national research and extension policy and implementation strategy, with a clear communication component conducive to partnership building and pluralistic (public-private) service delivery.
- Identify resources for direct implementation of short- and medium-term initiatives and formulate proposals for funding long-term plans and interventions.