

Extension: object of reform, engine for innovation¹

by William M. Rivera and V. Rasheed Sulaiman²

Extension activities are being pulled in many directions. Among others they are being called on to respond more effectively to the needs of farmers to produce and to forge links with markets. In the USA a different development can be observed. State Cooperative Extension Services have a variety of purposes in urban areas and operate in cooperation with other government agencies. Thus extension services, while concentrating on production agriculture, especially via privatized and private extension-type service companies, are simultaneously broadening out to include new purposes and a new clientele. While extension's role is straightforward in contract farming and other commercial ventures, such is not necessarily the case with public sector extension. Nonetheless, whether in the private or public sector, a major concern for extension is to operate in the context of agricultural innovation systems (AIS) so that new knowledge is applied and used. This article reviews the ongoing extension reform initiatives in the context of AIS and argues for major institutional reforms to strengthen extension so that it facilitates innovation more effectively.

Changing views on extension and innovation

The major theoretical paradigm that contributed to the emergence of extension as a discipline and profession was the 'diffusion of innovation' suggested by Everett Rogers (1962). Innovation was defined as a new technology developed by scientists, transferred by extension personnel and adopted by farmers. Governments established extension organizations in different countries mainly to transmit new technologies developed by agricultural research centres. Extension also provided feedback to researchers on farmer problems.

Challenges to the linear 'transfer of technology' approach began in the 1980s, as professionals began to realize the inappropriateness of promoting high-input technologies in diverse, risk-prone and variable conditions (Chambers and Jiggins, 1987). At that time, participatory research methods were promoted to strengthen the types of research needed for understanding and strengthening farmers' own capacity to develop new knowledge to solve problems. However, both participatory technology development and farming systems research have so far had only a very limited impact on the way technologies are developed and promoted. The role of extension was still identified with promoting technical innovations.

In the 1990s, discussion on agricultural knowledge and information systems – AKIS (Röling, 1994) brought into focus the importance of a wider set of information sources and the value of creating systems that assisted in the generation and dissemination of knowledge. AKIS highlighted the need for strengthening the capacity of the different systems (mainly research, extension and education) and the linkage

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mechanisms among these systems. The concept of innovation was broadened further to include the outcomes of interaction among the diverse actors required to address a particular problem. In this scenario, the role of extension was identified as facilitating the processes of reflective action, learning and decision making by stakeholders.

More recently, the innovation systems concept has been applied to agriculture (Hall et al, 2001, 2004; World Bank, 2006). Its attraction is that it recognizes that innovation is not a research-driven process simply relying on technology transfer. Rather, innovation is seen as a process of generating and accessing knowledge and putting it into use. The main focus of the emerging agricultural innovation system (AIS) is on strengthening the capacity of the different actors in agricultural development to create, diffuse and use knowledge – or in other words, on strengthening attitudes and skills to enable innovation. According to the World Bank (2006), a national AIS can be defined as ‘a network of organisations, enterprises, and individuals focused on bringing new products, new processes, and new forms of organisation into economic use. In the AIS, the main focus is on the policy and the institutional environment, which are conducive to the flow of knowledge, and include the manner in which different actors interact, as well as policies and practices that determine how well these interactions work! In this new view of agricultural innovation, some of the potential roles for extension include: setting the innovation agenda; organizing producers and the rural poor and building their capacities; building coalitions of different stakeholders; promoting platforms for information sharing; experimenting with and learning from new approaches; and acting as a ‘bridging organization’ that provides access to knowledge, skills and services from a wide range of organizations, including research institutes (Sulaiman and Hall, 2002, 2004).

Reform initiatives

Disparate pieces of innovative reform are being advanced to change public sector agricultural extension systems in developing countries. These include structural changes aimed at the privatization and

decentralization of extension services; changes in the mode of funding involving cost recovery; and organizational and management changes, including better linkages with research and use of information technology. Changes to extension programmes have also been suggested and are being implemented: these include linking farmers to markets; extension playing a brokering role with different actors in the AIS; and addressing health, environmental and population issues.

Initiatives for structural change

Two radical initiatives on structural change have been put forward: namely, privatization involving the withdrawal of government funding and delivery of extension, and the decentralization of authority to lower levels of government, including delegation to non-governmental, farmer organizations and other grass-roots control.

Privatization. Extension systems, originally designed to transfer non-proprietary information to farmers, have already been totally privatized in the UK, New Zealand and the Netherlands. Efforts to privatize extension in developing countries, however, have not been very successful. Peru opted for a privatized system, with agricultural extension being carried out by international NGOs and private companies (Rivera, 1998), but this system proved to be inadequate for the country’s needs. Bolivia has devolved extension to municipalities, which depend almost entirely on non-governmental organizations to carry out extension-type services. Several years ago, Bojanic (2001) argued that the critical factor was the lack of state initiatives to regulate and promote pro-poor extension activities (as still appears to be the case in Bolivia).

Chile, having gone through various reform stages (Cox and Ortega, 2004) has only recently discontinued its involvement in extension, leaving its function primarily to private extension. In Uganda, however, the jury is still out. In 1997, the Government of Uganda requested the World Bank’s help to design a different kind of extension programme. The expectation is that the Uganda National Agricultural Advisory Services (NAADS) will transform extension into an institution that empowers farmers to identify and pursue answers to their own questions about opportunities and

problems on their own farms (Nahdy, 2004). However, progress is slow and major challenges appear to be impeding the development of NAADS.

Decentralization. Nation states are encouraged to decentralize authority. Three types of decentralization tend to be highlighted: political, administrative and fiscal decentralization (Parker, 1995). There are various forms of decentralization, which may overlap. Indeed, the World Bank's World Development Report 2008 refers to an increasing 'devolution' – which is, the transfer of authority to lower levels of government – 'of extension functions to farmers' associations, rather than to local government' (for example, Carney, 1996; see also World Bank, 2006 on client groups).

Another, more radical form of 'decentralization' involves the withdrawal of government from the funding and delivery of extension services: namely, total privatization. The trend towards privatization has led to another one, which involves reconstituting public sector agricultural extension as a fee-based institution.

Reforms in financing extension

Cost recovery. There has been a push by governments for extension systems to institute cost recovery for services rendered. Knowledge and information have become 'commodified' (Buttel, 1991).

In their review of private extension schemes involving fee-for-service extension with no public support, Hanson and Just (2001) argue that 'a universal movement toward paid extension is not in the public interest'. They conclude that 'optimality calls for a mix of public, private, and paid extension including policy support of private extension', or in other words, they advocate 'pluralistic' systems.

Recovery of the cost of advisory services through user charges is sometimes seen as having several objectives – easing the burden on public funds, stimulating private sector participation in service provision and making services accountable to farmers as paying clients (Kidd et al, 2000). Van Crowder (2000) notes, that the ability of Ugandan farmers to pay even partially for advisory services is limited by their lack of surplus financial resources.

Charging for extension, however, need not be based on financial resources, but could be based on receipt of materials in kind, such as (1) through donating a proportion of the crop produced, (2) through providing services to the extension service, or (3) through selling farm-related materials. For this to work, the extension agent's advice must be appropriate to the circumstances. An example of this kind of fee charging for extension exists in China (Fei and Hiroyuki, 2000), where contractual arrangements are developed between farmer and extension technician, and payment for extension services depends on the production and sale of farm-related products. Although not feasible in all instances, this system of direct contracting between extension technician and farmer provides a valuable alternative for cost recovery in developing countries.

Initiatives in organization and management

In general, the organization and management of extension will depend on a number of basic considerations: for example, the organization or reorganization of the ministry of agriculture; the ministry's legal framework and objectives; the mission of the extension services; the regions to be serviced by extension; the governing principles underlying the management of extension; and the mechanisms and management of linkages with other organizations. The extension service/organization will be governed by the reforms undertaken at the policy level and the strategies intended to implement the policy and evaluate its results.

Additionally, for extension organization and management to function properly, linkages are important, especially with research, but also with post-secondary agricultural education and training systems. Engel (1990) and Ortiz (1990) claim that integrating research, education and extension could improve the overall performance of agricultural technology systems. If this is the case, asked Van Crowder and Anderson (1997), then why is the problem of 'weak linkages' so persistent and so pervasive? Their answer is that major actions are required to improve agricultural technology systems: namely, shifts in research, extension and education priorities; stronger policies to

mandate linkages; improved functions and funding; changes in the organization, staffing and management of these institutions; and the development of strong multilevel links among these organizations and with farmers. For instance, in India, agricultural technology management agencies (ATMAs) are constituted at the district level to bring convergence among programmes of various departments, with their activities being guided by a committee comprising farmers and other stakeholders. Organization and management of extension is also being affected by other emerging developments such as information and communication technologies (ICTs) and new techniques and procedures being increasingly employed in leadership training and programme development.

Initiatives for new programme directions

While some still associate extension with production, others, as we have noted, promote the idea of extension's role in linking farmers to markets (Neuchatel Group, 2002), reducing vulnerability and enhancing the voice of the rural poor (Farrington et al, 2002), developing micro-enterprises (Rivera et al, 2001), poverty reduction and environmental conservation (Alex et al, 2002) and strengthening and supporting farmer organizations (Sulaiman and Hall, 2002). Increasingly, extension is related to communication and learning activities involving other professional disciplines, such as health and the environment.

Extension services are also being called on and expected to respond to issues (as noted in the World Bank Development Report 2008 chapter on 'Agricultural advisory services') such as those relating to health (and especially AIDS), population, sustainable agriculture and the environment, and not only to the productivity and profitability concerns of linking farmers to markets.

Extension changes in retrospect

Public sector extension in both developed and developing countries is undergoing major reforms. The variety of extension reform initiatives also reflects the value governments and businesses attribute to extension. The presence of more actors in extension provision,

mainly the private sector and NGOs, has ensured the availability of different kinds of extension support. However, much of the extension provision still revolves around dissemination of technical messages and problem-solving advice at the farm level. Farmers who are small and poor can benefit from these arrangements only when they are organized into groups and supported by the state to access quality advice. Privatization and cost recovery seem to have further reduced extension's role in educating farmers to build their capacity so as to make sense of information from multiple sources. Extension, especially in the public sector, needs to strengthen the capacity of small farmers to access, adapt and use knowledge, and this will necessitate the provision of technical, managerial and organizational support.

While there is a case for strengthening linkages among the different organizations in the AIS, the emphasis continues to be on strengthening research-extension-farmer linkages. While the innovation systems framework emphasizes the importance of better interaction and knowledge flows for innovation, extension planning and implementation continue to be based on the research-extension-farmer paradigm. Linking farmers to markets is important, and extension services need to sharpen their ability and expertise to do this. Quite often, linking farmers to markets has to go beyond providing price information, and involves developing new market arrangements. Ideally, extension within the AIS should act as a bridging organization, linking together the different aspects of knowledge, expertise and skills available in different organizations (including research) so that the capacity to access, adapt and apply knowledge is enhanced.

Recent reform initiatives have not yet fully addressed the issue of either broadening the mandate or building the capacity of extension to perform these wider roles. For too long, development analyses and programmes have given in to bureaucratic tendencies to promote 'one-size-fits-all' solutions. Happily, this conceptual bias is being replaced by the more pragmatic concept of 'best fit' (Birner, 2005), which insists on an individual country analysis before extension changes or development.

At the same time, whether public or private (or whether called advisory, front-line or knowledge and information business services), extension has an important role to play in strengthening the AIS. Extension's reform and development are critical to strengthening the capacity of the AIS to deal with the rapidly evolving environment. Meanwhile, contemporary extension institutions are being called on to confront societal issues that are not strictly speaking agricultural issues (as noted in the World Bank Development Report 2008 chapter on 'Agricultural advisory services') such as those relating to health (and especially AIDS), population, sustainable agriculture and the environment, not just the productivity and profitability concerns of linking farmers to markets. If this shifting of responsibility is to continue, then rather than diminish extension, extension will have to be expanded to include professionals in these various areas and to train them for work in the field. Indeed, if the role of public sector extension is expanded, then leaders and policy makers will probably find themselves called upon to consider, in addition to extension's commitment to agricultural advancements, its role in the development of rural economies, social equity and the protection of the environment. This would mean a serious review of public sector extension.

Conclusion

In summary, public sector extension provides an important service component in the knowledge system, as well as in the agricultural development process. What we see, then, is that public sector extension is at one and the same time concentrating on production agriculture in privatized and private extension-type service companies and, in contrast, widening its vision as to its aims and the clientele to be served. Overall – whether in private or public sector extension arrangements, the main concern for extension in the context of AIS is to promote innovation, so that new knowledge is applied and used. Indeed, one of the objectives in reforming extension, therefore, should be to ensure that extension plays this role as a better instrument, or engine, for innovation. The effectiveness of extension will ultimately depend on the political resolve of a country to strengthen its agricultural innovation system, plus the nature and extent of policy

and institutional changes that extension organizations are willing to make. In short, extension is presently an object of reform, while continuing to be an increasingly important engine for knowledge, innovation and development.

References

- Alex, G., ed (2004), *Agricultural Investment Sourcebook*, World Bank Agriculture and Rural Development, World Bank, Washington, DC.
- Alex, G., Zijp, W., and Byerlee, D. (2002), *Rural Extension and Advisory Services – New Direction*, Rural Strategy Background Development, Vol 18, pp 1481-1499.
- Birner, R. (2005), *From Best Practice to Best Fit: A Framework for Analyzing Agricultural Advisory Services Worldwide*, IFPRI, Washington, DC.
- Bojanic, A. J. (2001), *Extension, Poverty and Vulnerability in Bolivia and Colombia: Country Studies for the Neuchâtel Initiative*, ODI,
- Buttel, F. (1991), 'The restructuring of the American public agricultural research and technology transfer system; implications for agricultural extension', in Rivera, W. M., and Gustafson, D. J., eds, *Agricultural Extension: Worldwide Institutional Evolution and Forces for Change*, Elsevier Science Publishers, Amsterdam.
- Carney, D. (1996), *Formal Farmers Organisations in the Agricultural Technology System: Current Roles and Future Challenges*, Overseas Development Institute, London.
- Chambers, R., and Jiggins, J. (1987), 'Agricultural research for resource poor farmers, Part I: Transfer of technology and farming systems research', *Agricultural Administration and Extension*, Vol 27, pp 35-52.
- Cox, M., and Ortega, H. (2004), 'Chile: origin and evolution of a privatised system', in Rivera, W. M., and Alex, G., eds, *Extension Reform for Rural Development: Vols 1-5: Case Studies of International Initiatives*, Agriculture and Rural Development Discussion Papers, World Bank, Washington, DC.
- Engel, P. (1990), *The Impact of Improved Institutional Coordination on Agricultural Performance: The Case of the Nariño Highlands in Colombia*, Linkages Discussion Paper No 4, ISNAR, The Hague.
- Farrington, J., Christoplos, L., Kidd, A., and Beckman, M. (2002), *Extension, Poverty and Vulnerability: The Scope for Policy Reform: Final Report of a Study for the Neuchatel Initiative*, Working Paper 155, Overseas Development Institute, London.
- Fei, Xu, and Hiroyuki, T. (2000), 'Fee-charging extension in China: implications and function', *Journal of Extension Systems*, Vol 16, No 1, June, pp 58-67.

- Hall, A. J., Sivamohan, J. M. V., Clark, N., Taylor, S., and Bockett,
- Hanson, J. C., and Just, R. E. (2001), 'The potential for transition to paid extension: some guiding economic principles', paper presented at the Allied Social Science Association, Department of Agricultural and Resource Economics, College Park, MD.
- Hall, A., Yoganand, J. B., Sulaiman, R. V., Raina, R., Prasad, C. S., Naik, G., and Clark, N. G., eds (2004), *Innovations in Innovation: Reflections on Partnership, Institutions and Learning*, CPHP South Asia, Patancheru, Andhra Pradesh.
- Kidd, A. D., Lamers, J. P. A., Ficarella, P. P., and Hoffmann, V. (2000), 'Privatizing agricultural extension: "caveat emptor"', *Journal of Rural Studies*, Vol 16, pp 95-102.
- Nahdy, S. (2002), 'Uganda: the Ugandan National Agricultural Advisory Services (NAADS)', in Rivera, W. M., and Alex, G., eds, *Extension Reform for Rural Development: Vols 1-5: Case Studies of International Initiatives*, World Bank, Washington, DC.
- Neuchatel Group (2002), *Common Framework on Financing Agricultural and Rural Extension*, Swiss Centre for Agricultural Extension and Rural Development, Lindau.
- Ortiz, R. (1990), 'A joint venture in technology transfer to increase adoption rates', in Whyte, W. F., ed, *Participatory Action Research*, Sage, Newbury Park, CA.
- Parker, A.N. (1995), *Decentralization: The Way Forward for Rural Development? Agriculture and Natural Resources Department*, World Bank, Washington, DC.
- Rivera, W. M. (1998), 'Preparing and upgrading the agricultural extension workforce: extension education and inservice training at four agricultural higher education institutions – Honduras, Malaysia, Nigeria and Peru', in FAO, ed, *Training in Agriculture and Rural Development (TARD)*, FAO, Rome, pp 112-129.
- Rivera, W. M., Van Crowder, L., and Qamar, K. (2001), *Agricultural and Rural Extension Worldwide: Options for Institutional Reform in the Developing Countries*, FAO/SDRE, Rome.
- Rogers, E. M. (1962), *Diffusion of Innovation*, The Free Press, Ithaca, NY.
- Röling, N. (1994), 'Platforms for decision making about ecosystems', in Fresco, L. O., Stroosnijder, L., Bouma, J., and Van Keulen, H., eds, *Future of the Land: Mobilising and Integrating Knowledge for Land Use Options*, John Wiley and Sons, Chichester, pp 386-393.
- Sulaiman, V. R., and Hall, A. J. (2002), 'Beyond technology dissemination: reinventing agricultural extension', *Outlook on Agriculture*, Vol 31, No 4, pp 225-233.
- Sulaiman, R., and Hall, A. J. (2004), 'India: the emergence of Extension-Plus: future for extension beyond technology transfer?' in Rivera, W. M., and Alex, G. E., eds, *Extension Reform for Rural Development*, World Bank, Washington, DC.
- Van Crowder, L. (2000), *National Agricultural Advisory Service (NAADS)*, FAO/World Bank Formulation Mission, Uganda.
- World Bank (2006), 'Enhancing agricultural innovation: how to go beyond the strengthening of research systems', ARD, World Bank, Washington, DC.
- World Bank (2008), *World Development Report 2008, Agricultural and Rural Development*, World Bank, Washington, DC.