Agricultural Information and Knowledge Sharing: Promising Opportunities for Agricultural Information Specialists

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ABSTRACT: The recent food crisis has pushed agriculture and food security back on to national and development agenda’s. Additional international funds have been mobilized, national and regional initiatives have been strengthened, and a wide range of new and innovative instruments and approaches have been promised. Most of these efforts call for greater investment in knowledge creation, information access, and the wider use of information and communication technologies (ICTs).

This paper explores what this renewed interest might mean for information and communication specialists working in agriculture. Starting from an ‘innovation systems’ perspective, it highlights some promising opportunities for information and communication specialists. These include: working with farmer knowledge, using information and communication technologies (ICTs) to enable agricultural development activities, ensuring that public investments result in public goods whose benefits can travel, making agricultural content open and accessible, using the power of the ‘social’ web, and transforming the roles of library and information centers.

Opportunity 1: Agricultural Innovation Systems

According to Hall (2006), an innovation systems perspective recognizes that the determinants of innovation, as a process of generating, accessing and putting knowledge into use, are the interactions of different people and their ideas, and the social setting of these interactions.

This is different to earlier linear thinking that saw research institutes as the creators of knowledge and technology, extension as the diffusers of advice, and farmers as the adopters of new practices. Innovation systems recognize that the relations among people and organizations are the key to knowledge sharing and application. “Innovation processes can be enhanced by creating more possibilities for actors to interact” (Waters-Bayer et al., 2006).

Cet article explore ce que cet intérêt renouvelé pourrait signifier pour les spécialistes de l’information et de la communication, qui travaillent dans l’agriculture. Commencant par la perspective « systèmes d’innovation », il souligne quelques occasions prometteuses pour ces spécialistes. Parmi celles-ci: travailler avec la connaissance des agriculteurs; utiliser les technologies d’information et de communication (TICs) pour permettre le développement d’activités agricoles; s’assurer que les investissements publics aboutissent à des biens publics dont les bénéfices peuvent voyager, rendre le contenu agricole ouvert et accessible; utiliser le pouvoir de la toile « sociale », et transformer les rôles des bibliothèques et des centres d’information.

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The ‘collective’ aspect of this thinking is emphasized in a report promoted by the FORAGRO Technical Secretariat at IICA IICA (Salles-Filho, 2007): “Overcoming the linear view of the innovation process has led to an understanding that innovation is an entirely collective process, because: (i) it involves different actors with different perspectives; (ii) it looks at a common objective with different concepts, tools and perspectives; (iii) it requires a division of work; (iv) it requires the distribution of property rights; v) it has economies of scale and scope; (vi) it requires coordination.”

Kristjanson and colleagues (2009) applied such an innovation framework to livestock research projects in Africa and Asia. They concluded that ‘linking knowledge to action’ can be improved by attending to 7 principles, including: “combining different kinds of knowledge,
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learning and bridging approaches, strong and diverse partnerships that level the playing field, and building capacity to innovate and communicate.”

What does this mean for information and communication management in agriculture? The CGIAR Science Council (2005) suggests that “all actors in the R&D process—from research design through to those who will apply the outcomes in the field—should communicate with each other and should have equal access to knowledge.” We need inclusive, participatory approaches to knowledge-sharing.

This knowledge has to be mobilized from a diverse set of sources. It is not sufficient, for example, that research institutes only access each others’ reports. They must tap into many other information flows, including farmers, and find ways to document and provide access to this knowledge. They must design information products and services for more diverse audiences. They must devise different, collaborative, interactive ways to share and exchange information.

There are opportunities here for new ‘communicators’ who are skilled at supporting collaboration and interactive processes that involve different types of stakeholders, and can help people harvest and share different kinds of knowledge.

There are also opportunities to contribute to ‘user generated innovation’—where specialist skills will help make the innovation systems work.

Opportunity 2: Connecting to Farmer Knowledge

Ann Water-Bayer (2006) and colleagues from the PROLINNOVA project argue that farmers and local communities are key actors in agricultural innovation systems—“the type of innovation that ultimately makes the difference is what farmers decide to do.” However researchers tend to under-value the indigenous knowledge of farmers. Farmers and outside advisers tend to see farmers “as receivers of technologies, information and instructions, instead of people who have something to offer.”

PROLINNOVA therefore promotes participatory innovation development with farmers, by encouraging ‘farmer-led experimentation’ and the integration of farming communities into innovation systems. The idea is to foster knowledge sharing among farmers and other innovation actors, encouraging farmers to compare and share their experiences and to more critically experiment. They also support ‘Farmer Led Documentation’ in which rural communities express their own knowledge, experiences and practices in their own words—often using a mix of traditional and modern media: text, drawings, photography, video and audio recordings.

There are many initiatives like this—Bioversity International works with local communities looking at how their traditional knowledge is documented, while IFAD and FAO support a ‘Linking Local Learners’ project in East Africa where groups of farmers learn together, exchanging ‘know-how’ and organizing their own knowledge networks and sharing. The ICT for development community looks at these issues as part of a concern for ‘local content’ on the Internet.

A really interesting aspect is the experimentation taking place with different knowledge sharing formats, from drawings to the Internet, and from databases to participatory video.

There is an opportunity here for information specialists to explore ways to connect their activities into the existing rural and farmer knowledge systems. How do we support their autonomous exchanges? How do we help bring this into the mainstream of agricultural science and development?

We also need to recognize that valuing the knowledge of farmers poses significant challenges to traditional research and extension ‘experts’ and information professionals. Our new role is perhaps more about catalyzing communication and knowledge sharing among farmers and other groups than it is to bring modern technology and knowledge to backward communities.

Opportunity 3: ICTs for Rural Communities and Livelihoods

We are seeing a transformation in the ways that rural communities interact with information, ICTs, mobile phones and the delivery of services. It is an enormous challenge to keep up with all the developments.

One major driver of change is the increasing use of information and communication technologies (ICTs)—including mobile phones—to link farmers and producers to markets and credit as well as government services. Increasingly, farmers can receive timely information on markets, prices, and weather as well as technical advice; these services often draw in experts to answer questions. Farmers, researchers and extension workers are also coming together through various ICT-based systems and portals.

In 2006, information and communication specialists working in agriculture met online (www.dgroups.org/groups/inars) to explore different dimensions of this revolution, exchanging experiences on “knowledge management and sharing in agriculture”. Some key points arising were:

- ‘Ordinary communication’ is as important as more sophisticated ‘knowledge sharing’. Mobile phones are widely used because they satisfy ordinary communications needs.
- Local service providers and telecenter operators play an important role in mediating communications between rural communities and information providers. Extension systems need to also transform themselves to make effective use of new ICTs.

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The Internet is no replacement for traditional information sources for farmers. Best results come from a mix of media such as phones, radio, television, computer-based information kiosks, computers, video and digital cameras and through the Internet, the web and e-mail services.

Farmers have information and communication needs beyond those related to agriculture. We need to look holistically at rural community needs for information exchange and sharing.

To successfully use ICTs to support farmers and rural communities, the first step is to empower farming communities to define their own needs.

Using ICTs at the interface between farmers, extension and research is one area where we can observe much experimentation and innovation.

Francisco Proenza has brought together a number of interesting reports and project material from Latin America and Asia. In terms of projects, VERCON in Egypt uses the Internet to strengthen research-extension linkages so that agricultural advisory services to farmers can be improved. The Open Academy for Philippine Agriculture has set up the Pinoy Farmers’ Internet as the country’s first Internet-based extension support system. Something similar is also being developed in the USA where a National eXtension Initiative is developing an interactive learning environment that will deliver knowledge and “connect knowledge consumers with knowledge providers.”

Another promising area associates the use of ICTs with the availability of credit and financial services in rural communities.

In the Philippines, e-commerce provider b2bpricenow.com established an ‘E-commerce for farmers program’ comprising an e-marketplace where agricultural commodities can be bought and sold online, local ‘b2b’ (business-to-business) centers in rural areas, and mobile commerce to help cooperatives and farmers move money around. In India, a ‘Lifelong Learning for Farmers’ project brings together community associations in rural villages, ICT kiosk operators, an IT company, agricultural universities, and the State Bank of India. The project combines access to information, learning, and credit opportunities, seeking to improve local livelihoods by enhancing capacities (knowledge and skills), providing affordable credit, and generating employment.

Countries like India are experimenting on a large scale with rural telecenters that provide a wide range of services—both from the government and the private sector. In Africa and Latin America, there are also active telecenter movements. A growth area is the use of ICTs to improve agricultural markets, marketing systems and commodity exchanges. By making, particularly, price information available to farmers they can be empowered to make better decisions—and earn better returns on their produce.

In 2008 and 2009, we are seeing massive interest and increasing investments in the use of mobile phones to support farmers with information.

While it is challenging to keep up with all these developments, they offer a fast-growing set of opportunities for information specialists. In particular, there is scope to reach new markets and customers with our information and content (it probably needs to be adapted). New services that draw on different types of content and technology carriers will emerge. Since, as we know, information does not flow on its own, new roles as catalysts, facilitators and brokers of information and knowledge are emerging. While the innovators and business people in these projects often have strong technological and business capacities, there is a great need for people with skills in accessing, organizing, and packaging content of all kinds.

### Opportunity 4: Public Goods

There is an ongoing international debate on the ‘public good’ nature of research, and the steps needed to achieve this. This discussion on the positioning of research vis-à-vis other development activities is also important for the information and communication agenda.

Research institutes traditionally produce a variety of ‘goods,’ typically new knowledge and technology for others to use. Depending how a research activity is sponsored and designed, these outputs may or may not be a ‘public good’—in that the output is non-excludable (when provided for one person, it is provided for all) and non-rival (one person’s consumption does not diminish its consumption by any other person).

The CGIAR is particularly active in these discussions. A recent document (CGIAR, 2006) sets out the arguments why the CGIAR should pursue international public goods, defined by Ryan (2006) as:

International public goods are taken to mean research outputs of knowledge and technology generated through strategic and applied research that are applicable and readily accessible internationally to address generic issues and challenges consistent with CGIAR goals.

The key is the ready international applicability and accessibility as essential features of public knowledge and technology outputs. In the same report, Pardey argues that “most research products are not intrinsically public.” They “can be made more or less public (or not) through policy and practical actions” (CGIAR, 2006).

This last point is very important. It suggests that information and knowledge are not born ‘public.’ We must work on them to make them public, i.e., that they are available, accessible, and applicable.

The way that a research output is made accessible thus helps to determine whether it will become a public good. A classic example is where public research outputs are disseminated in limited-access scientific journals that exclude some users, or where outputs are only available...
on websites that are not accessible to people with low bandwidth. This logic also applies to outputs in one language only, written in a ‘scientific’ style, published in a proprietary format or with restricted intellectual property licenses. These all result from choices we make, or are forced to make. No matter what the policies say, these practical choices will shape whether or not a good is a public good or not.

To make data, information and knowledge public, we need to manage them so they are created and deposited in formats and systems that allow perpetual access; are licensed to allow and encourage widespread use; are described and indexed to allow easy finding and dissemination; and are optimized to encourage widespread adoption.

These tasks are what most information specialists already do. The opportunity now is that we can anchor these tasks in the heart of policy debates happening in science and agricultural research policy. We can show a scientist or research leader exactly how his or her work can become a public good… by investing in our work!

In 2008, these challenges were taken up by a new effort—the Coherence in Information for Agricultural Research for Development (CIARD) initiative. Facilitated by FAO, the multi-agency group has agreed a manifesto “to make public domain agricultural research information and knowledge truly accessible to all.” It is working on a set of ‘pathways’ that individuals and organizations can use to make their information more accessible.

**Opportunity 5: The Social Web**

One key feature of the innovation systems perspective is that many actors are involved. It follows that many different sources, types and forms of knowledge and information need to be circulated, communicated and aggregated to support ‘new-style’ agricultural research and innovation for development.

We can see similar trends on the Internet. Ten to fifteen years ago, few organizations had a website. Their libraries held collections of paper documents indexed in electronic catalogues. Researchers, policy makers and practitioners communicated by letter, fax and perhaps by e-mail, and sometimes met face-to-face. ‘Content’ was mainly text-based, and shared through printed reports, press releases and newsletters. Producing, publishing and disseminating content were expensive, and much was priced to recover costs. Communities communicated through networks and associations that offered well-defined meeting spaces (conferences) and exchange mechanisms (newsletters and journals).

Today, this information flows in different ways. The collections of information, in electronic as well as paper form, are still there. There is also online access to library and other databases, and many organizations publish full text reports and documents on their websites, without charge. Communities have become virtual networks and e-communities. More and more people seem to have at least one email address, every organization has its own website, and publishes a variety of digital content—audio, visual and text-based. It is becoming technically more and more easy for an organization, group or individual to publish and disseminate digital content.

We also see more and more use of ‘social’ media or ‘web 2.0’ applications such as blogs, wikis, RSS, and social networking. Like innovation systems, this ‘social’ web 2.0 offers a range of opportunities for participatory knowledge-sharing, where the knowledge is sourced from many people. It can act as a catalyst for people to interact and for knowledge-sharing and communication to flourish.

The changes are widespread. Blogs are appearing, organizations are making content available as RSS feeds—and more and more are publishing such feeds from partners on their own websites. We also see the emergence of completely new approaches powered by these new media: In the USA and the Philippines, ‘e-extension’ connects farmers with science and advice.

What does it mean for agricultural information specialists? These media undoubtedly offer many opportunities. They can help get messages out, they can help bring messages in, they enrich our knowledge base, they speed up communication and the spread of ideas, they can be used within organizations to reinforce knowledge sharing and information exchange, and they can be good ways to work collaboratively. They can also be demanding, difficult to ‘control’ and they require that we learn a new toolset and have a different mindset.

In a recent book, Charlie Leadbetter (2008) summed up the changes very well:

> The spread of the web invites us to look at the future from a different vantage point, to see that what we share is at least as important as what we own; what we hold in common is as important as what we keep for ourselves; what we choose to give away may matter more than what we charge for. In the economy of things you are identified by what you own: your land, house, car. In the economy of ideas that the web is creating, you are what you share … The biggest change the web will have on us is to allow us to share with one another in new ways and particularly to share ideas.

**Opportunity 6: Rethinking Future Roles for Libraries**

What do some of these developments mean for traditional information management practitioners such as libraries?

In January 2009, a session on the future of agricultural libraries was held at the ‘Knowledge Share Fair for Agricultural Development and Food Security’. Participants reflected on the future roles and added value of agricultural libraries.

Key points highlighted in the discussions included:
Future libraries will play a wider range of roles. They will be more active in opening access to information and knowledge, in disseminating—not just collecting and documenting)—global goods, in catalyzing knowledge sharing among people, in providing integrated platforms for information and knowledge management, and in providing a range of targeted services and products.

Future libraries will be more and more ‘e-libraries’, providing access to current and archival knowledge in a wide range of digital formats.

Future libraries will increasingly be places to exchange and interact, they will manage and facilitate processes of organizing and sharing and collaborating.

Future libraries will be part of wider information and knowledge exchange systems in which ‘users’ will increasingly become ‘collaborators’ and librarians will become knowledge sharing catalysts and brokers.

These changes are likely to require substantial re-positioning of traditional information centers—away from mainly ‘collecting’ roles towards more ‘connecting’ ones. Such libraries will need to add skills from knowledge management, social media, participatory communication, and information technology to their existing core focus on agricultural content.

**Postscript**

Like in innovation systems, this paper is a personal collection of areas where agricultural information and communication managers may find opportunities.

The choice of topics reflects changes I see in the agricultural information and communication “business”—as new actors join and as technologies transform processes, products, services, and expectations. ‘Business as usual’ is likely to become the exception rather than the norm.

In the past, information and knowledge management in agriculture was rather linear, with processes managed by specialists. Tomorrow’s harvests will come from more organic approaches where agricultural innovators will join us as active creators and managers of information and knowledge, and information managers will become innovators and brokers. Such ‘inovation’ is already happening around us: Researchers become bloggers, scientists publish websites, farmers form learning networks, and information managers will become knowledge sharing catalysts and brokers.

One route I have used to track and benefit from such opportunities is the professional association. Groups like IAALD provide spaces and networks to meet, connect, share experiences, and especially to better understand how to realize the benefits of these opportunities. They are opportunity number 7.

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**Notes**

1. See www.prolinnova.net/fld.php
2. See www.bioversityinternational.org/Themes/Communities_and_Livelihoods
3. See www.linkinglearners.net/
6. Franz Martin from FAO tracks many interesting developments in Latin America and The Caribbean on the IAALD blog: see http://iaald.blogspot.com/search/label/latin_america
7. There are many places to find information. FAO facilitates a global platform—they are e-agriculture.org_/E-ForAll document efforts to use ICTs to empower the rural poor—www.e-forall.org FAO’s ‘Bridging the Rural Digital Divide’ web site has cases and good practice — www.fao.org/rdd/. The id4online web site has news on ICTs in agriculture—www.id4online.net/news/news.asp?catid=1
8. See: www.e-forall.org
10. See: www.openacademy.ph
11. See: http://about.extension.org
12. See: www.babpricenow.com
13. See: www.col.org/LiFarmers
14. See www.telecentre.org for information and updates from around the globe.
19. See http://www.cgiar.net
21. See for instance the news blogs of IAALD (http://iaald.blogspot.com), ILEIA (http://familyfarming.typepad.com/) and CABI.
22. See www.agrifeed.org/ which provides an aggregation service.  
23. FARA is a good example: www.fara-africa.org/knowledge-base/international-news-feeds/; see also the DFID-funded research for development portal at www.research4development.info/
25. See www.sharefair.net; see also http://iaald.blogspot.com/search/label/sharefair09 for more postings and comments.

References


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