

Survey of LAC agricultural research institutes on technical information management.

FORAGRO Technical Secretariat

Area of Technology and Innovation

Directorate of Technical Leadership and Knowledge Management, IICA



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Introduction

IICA's Medium Term Plan (MTP) establishes as one of the priority actions of the Area of Technology and Innovation of the Directorate of Technical Leadership and Knowledge Management, the promotion of information and knowledge management to support technology innovation processes. Similarly, Line of Action No. 5 of the 2006-2008 Plan of Action of the Forum for the Americas on Agricultural Research and Technology Development (FORAGRO), whose Technical Secretariat is operated by IICA, includes guidelines for enhancing the capacity to manage agricultural technological information of the professionals responsible for the information strategies of national research and innovation organizations.

To provide some of the background information needed to achieve those objectives, and aware of the importance of information and its management for institutional development and to enhance the performance of agricultural science, technology and innovation in the Americas, IICA decided to conduct a survey of the agricultural science and technology institutions that are members of FORAGRO. Targeted at national agricultural research institutes or their equivalent, the survey was designed to ascertain their current practices, capabilities and opinions regarding information management (IM) and information and communication technologies (ICT) related to their technical functions.

This document is not intended to provide an exhaustive analysis of the orientation of the institutions' IM resources and policies, but rather an initial assessment of how these Latin American and Caribbean (LAC) institutions manage technical information and harness ICT. As well as providing an overview of IM and the use of ICT in the institutions concerned, the aim is to help generate a shared vision of the importance and usefulness of IM and ICT, and to identify criteria for preparing joint hemispheric strategies to enhance IM capabilities within the regional research system.

Methodological framework

Objectives

The general objective of the survey was to:

- Develop a preliminary profile of how agricultural research institutions in LAC view information management and information and communication technologies, and assess their current capabilities in regard to IM and how they expect to use such technologies in the future. The ultimate aim was to prepare a communications strategy for advocating the management of technical information in the field of research and innovation.

To achieve this general objective, the following specific objectives were set:

1. Create an up-to-date directory containing information about the directors and personnel in charge of information at the national agricultural research institutions.
2. Ascertain how much importance is attached to IM and general aspects of the institutes' strategy and capabilities in this area
3. Gather information about how the institutes' view ICT, their current capabilities in this area and how they expect to harness ICT in the future

Methodology used

One of the lines of action called for in FORAGRO's 2006-2008 Plan of Action is information management in support of research and innovation. The specific actions proposed include gathering information management indicators in LAC and data about successful examples of the use of ICT and strategies and ways of promoting or sensitizing people to the subject. Other actions called for include efforts to enhance the capacity to manage agricultural technological information of the professionals responsible for the information strategies of national research and innovation organizations.

To achieve the objectives set for these lines of action, the intention is that the members of FORAGRO implement a participatory strategy so that, by means of a joint effort, they can identify the core actions needed to support their information management activities. This will be done by establishing communities of practice and encouraging the members of the Forum to develop strategies together.

To develop a joint strategy for information management and the use of ICT, the institutions need to have a basic idea of the current situation and the importance attached to these topics within their institutions, which is what the survey was designed to provide. The first goal was to identify the directors of the institutions concerned and the person(s) in charge of technical information management (if any).

The second objective was to obtain baseline data for the two main topics of interest: IM and ICT. With regard to the former, the survey was used to ascertain whether the institutions had a technical information management strategy in place, and details of their basic capabilities in this area.

The survey focused on two aspects of ICT: how these technologies are viewed and how they might be used to manage technical information in the future. The former revealed the role, purpose and importance of ICT in the institutions surveyed, while the second exercise required them to analyze their current use of ICT and reflect on the use they expected to make of them in the future.

The information was compiled by first identifying the directors of national research institutes in LAC. A form was devised to garner the information and the directors were contacted in August 2007. A consulting firm was hired to contact the directors and a form was made available online, to make it easier to compile the information. In this way, information was gathered from 18 Latin American and Caribbean countries (Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Honduras, Mexico, Panama, Paraguay, Peru, Uruguay and Venezuela). Once the information had been compiled, it was stored in a database that was used to prepare this report.

I. Technical information management strategy

This section was used to characterize and assess some of the aspects involved in the NARIs' information management activities, from the directors' perspective. Information was sought about two specific points: the importance given in the institution to information management strategy and an assessment of how IM activities are being carried out.

1.1. Existence of an information management strategy

In this section, the directors of the NARIs were asked whether their institution had an explicit information management strategy or policy in place. The aim was to ascertain whether IM formed part of the institutions' planning and organization. Ten of the 18 institutes consulted said they had such a policy or strategy.

1.2. Specialized information management units within the institutes

As many as 15 of the 18 institutes consulted said they had a unit specializing in information management. Table 1 lists the units and the countries concerned.

Table 1. Specialized information management units in consulted NARIs

Institution	Name of information management unit
INTA, Argentina	Office of the Manager of Information Management
Ministry of Rural and Agricultural Development and the Environment, Bolivia	Communication Unit
Embrapa, Brazil	Secretariat for Strategic Management, R&D Department, Embrapa Technological Information
INIA, Chile	Planning, Follow-up and Project Appraisal Unit (UPSE)
CORPOICA, Colombia	Office of the Deputy Director of Innovation and Territorial Development
INTA, Costa Rica	Department of Technology and Information Transfer
IDIAF, Dominican Republic	Dissemination Department
INIAP, Ecuador	General Communication Department
DICTA, Honduras	Training and Communication Unit
INIFAP, Mexico	Coordination of Research, Innovation and Linkages
IDIAP, Panama	Agricultural Information Center
DIA, Paraguay	Technology Transfer
INIA, Peru	Office of the Director of External Agricultural Affairs, General Technology Extension Office
INIA, Uruguay	Communication and Technology Transfer Unit
INIA, Venezuela	Dissemination Office, National Editorial Committee

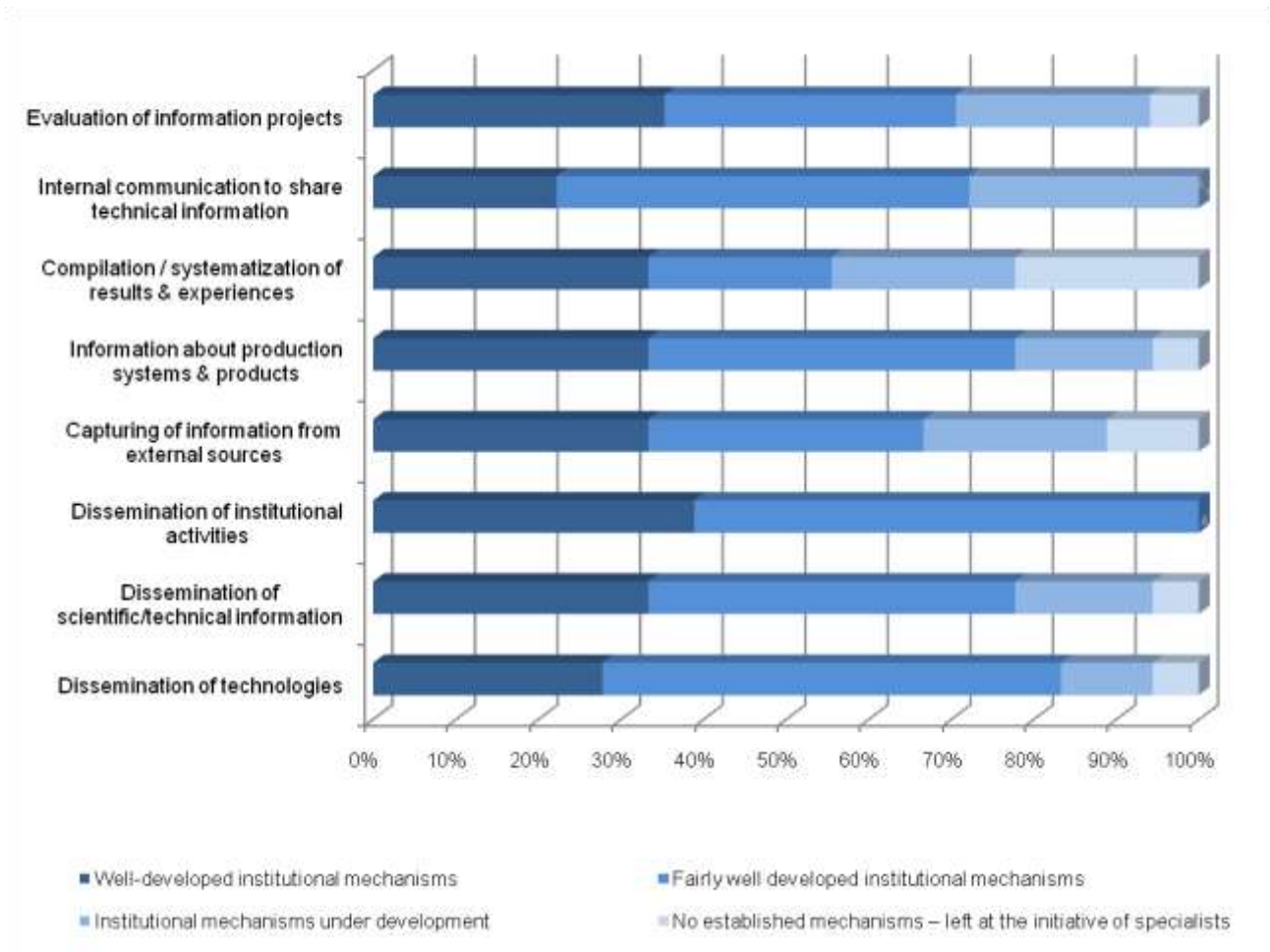
1.3. Researchers trained in IM

The survey included a request for information about how many of the institutions' researchers had received training in IM. This was included as an indicator of the importance attached to the issue in the institutions' policies. Eight of 18 organizations surveyed said their researchers had received training in this area.

1.4. Implementation of technical information management activities

According to the directors, most of the information management activities listed in the survey are currently being carried out with mechanisms developed by the organization. The activities they all mentioned as being carried out with institutional mechanisms included the dissemination of information about institutional activities, and the internal communication for information sharing. On the other hand, the activities they reported as having less well developed institutional mechanisms were the compilation or systematization of results and experiences, and the acquisition of scientific information from external sources, as shown in Figure 1.

Figure 1. Assessment by directors of NARIs in LAC of the development of IM activities

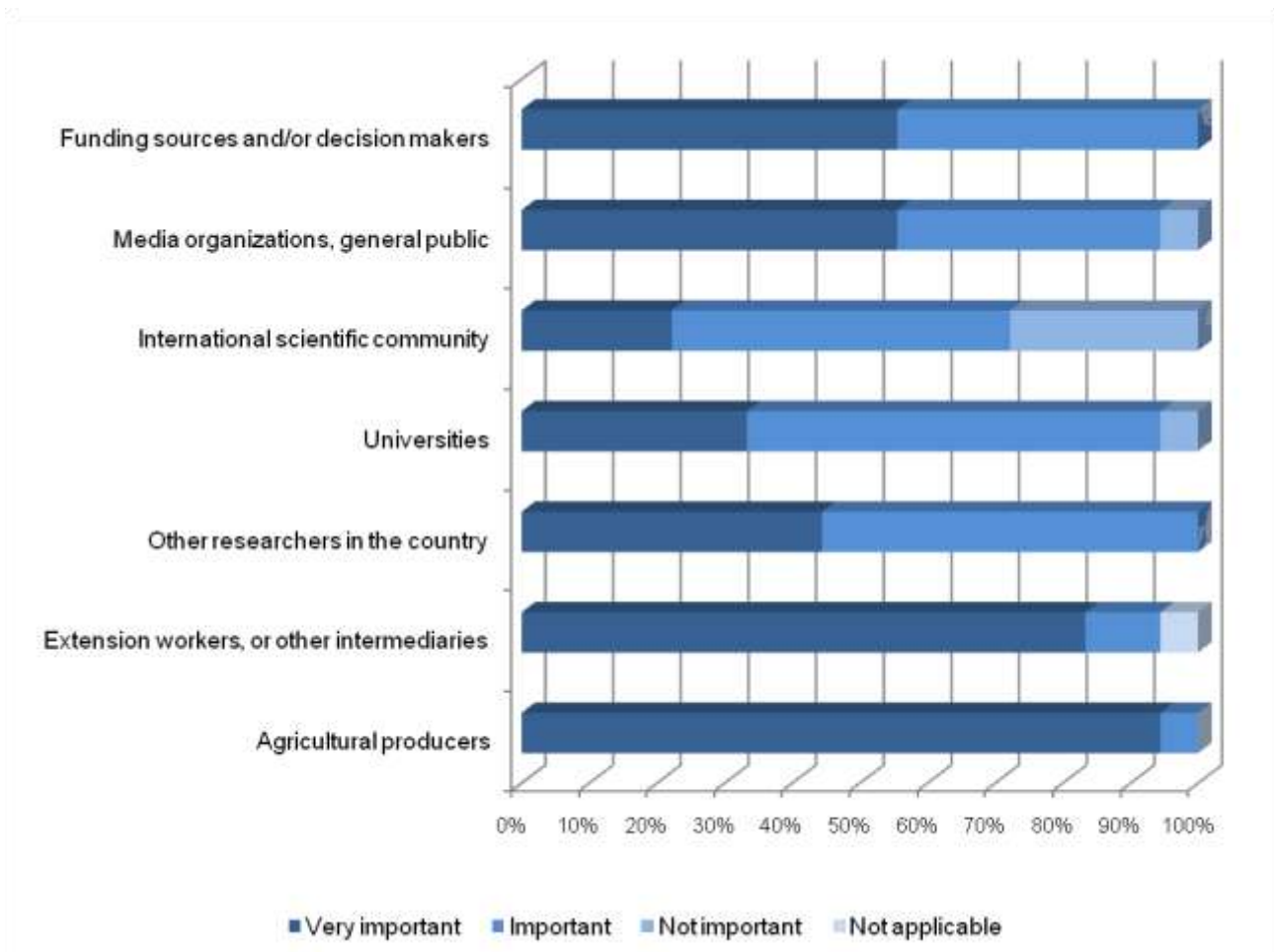


1.5. Importance of users of IM services

The NARIs were asked to rate the importance they attached to the various groups that make use of the information services they provide. Agricultural producers rated highest in order of importance, with nearly 90% of respondents saying they were “very important” and the rest rating them as “important.” Slightly less but still very important were extension workers and technical service providers (90% rated them as “very important” or “important”). Nearly 50% rated funding sources and/or decision makers as “very important,” with the rest rating them as “important,” as shown in Figure 2.

Less important groups of users were the press and the international scientific community, although none of the NARI directors regarded them as of little importance. Other types of users mentioned as being important for at least one institute were agroindustry, consumers, public organizations in the agricultural sector, and NGOs.

Figure 2. Opinions of directors of NARIs regarding the importance their institutions attach to the different groups of users of the information management services they provide

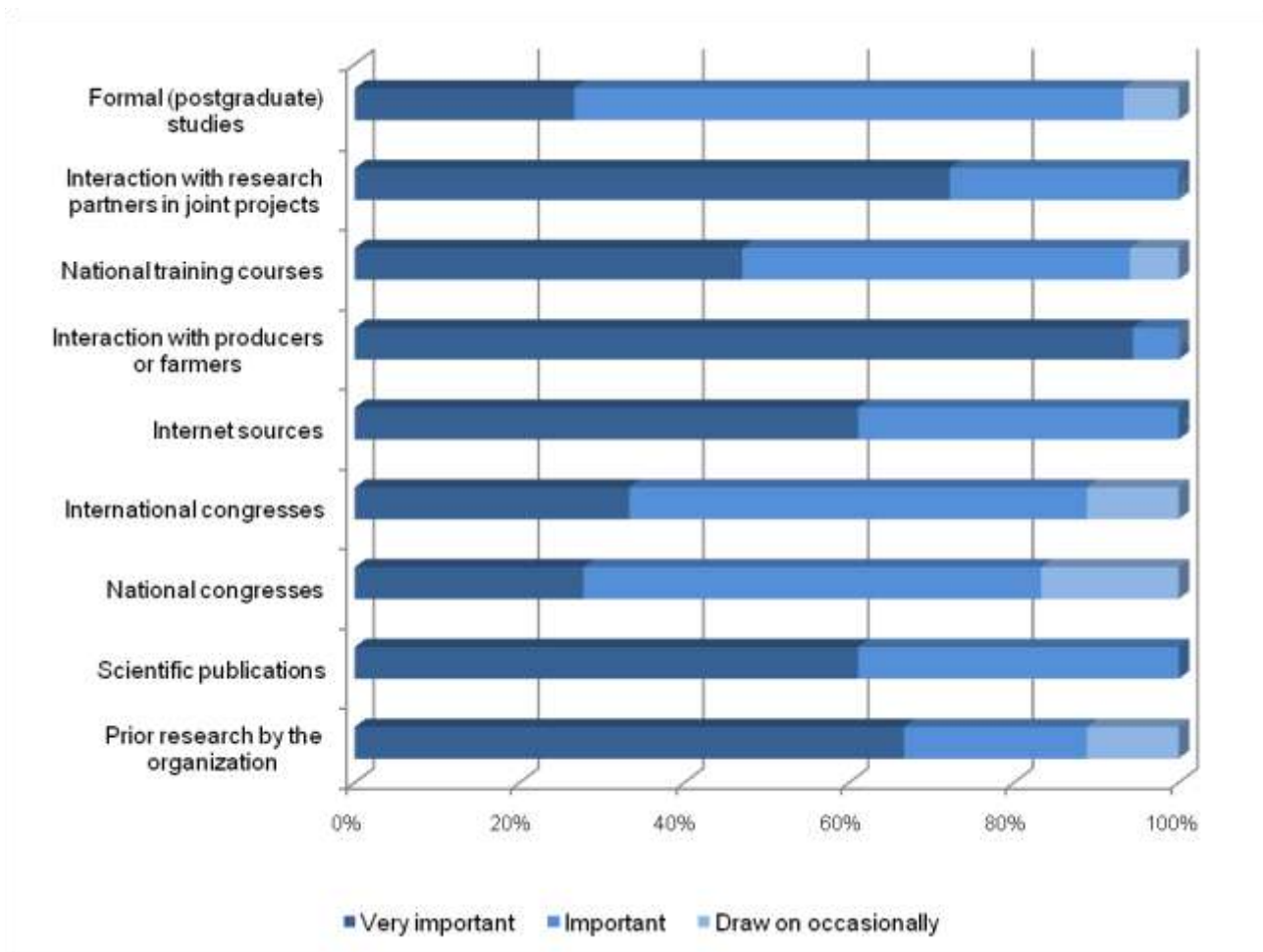


1.6. Sources of information for research

In general, all the sources suggested in the survey were rated as relatively important. As many as 85% of the directors rated producers and farmers as “very important,” while the other 15% rated them as “important” (see Figure 3). The next two categories that scored highly were interaction with research partners in joint projects (just under 70% rated it as “very important” and the rest as “important”) and scientific publications (just under 60% rated it as “very important” and the rest as “important”).

“Drawn on occasionally” was selected for only a few sources, most notably national and international congresses. Among the other sources mentioned in the survey were companies, suppliers of inputs and internship mechanisms.

Figure 3. Opinions of the directors of the NARIs regarding the importance of the sources of information they use to support research.



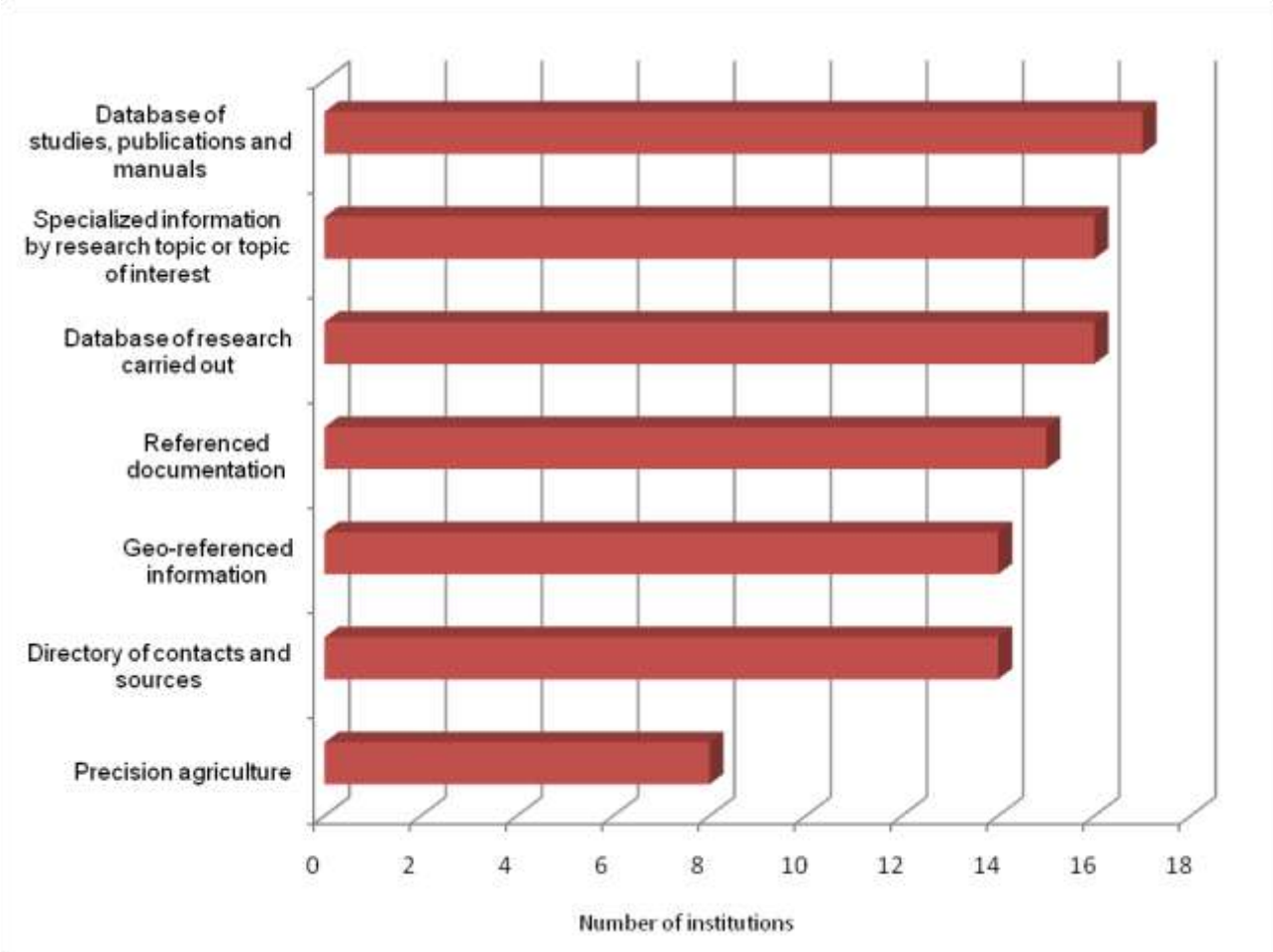
II. Role of ICTs for management of technical information

2.1. ICT use: Equipment and tools

The number of computers with Internet access available to the NARIs' researchers varies considerably from one institution to another in the hemisphere. Some have one computer for each researcher (in some cases, even more), while others have 3-6 computers for each 10 researchers. In the most extreme cases, there is only one computer for each 10 researchers.

On the other hand, most of the NARIs said they use digital tools a great deal for information management. Databases of studies, publications and manuals were the tool mentioned most often in the survey. Other tools mentioned less frequently, but nonetheless of importance, were specialized information by topic; databases of research carried out by the institute; and referenced documentation. The least used tools, according to the survey, were geo-referenced information; directories of contacts and sources; and, lastly, information about precision agriculture, as shown in Figure 4.

Figure 4. Digital tools used in the information systems of the NARIs



2.2. The directors' view of the role that ICT play in the institutes' technical information work

The replies given by the directors of the NARIs regarding their view of the contribution that ICT make to their organizations' work fell into three main groups. The first group included the views of ICT mainly for communication or information flow; the second group emphasized the tools themselves (hardware and software); and the third group described ICT as a basic element of information management processes in the organizations.

In the answers classified in the first group, the directors made two main points. The first is related to **communication** among different actors or towards target audiences. In some cases, the **dissemination** to producers was explicitly mentioned. The second point concerns **information sharing**. Some of the replies referred to systems and tools that facilitate the flow of information, the sharing of data and documents and the access to strategic information or information of interest.

The second main group into which the replies fell described ICT as technological, and especially informatics, resources. ICT were described as electronic **tools**, computer programs, infrastructure, computers and modern techniques for sending information.

Finally, in the third group of replies, ICT were considered as a basic element of **information management processes** in the organizations. These replies suggested that ICT had a more general use within the organizations. Some replies defined ICT as the means to retrieve, store, organize, handle, produce, present and exchange information. In the view of several directors, ICT are closely related to the concept of knowledge management and the processing of information.

2.3. The directors' thoughts regarding the role that ICT could play within the different institutions in the future

The directors' thoughts regarding the contribution that ICT could make to their institutions' future development provide an important frame of reference for the strategic planning of information management. The replies fell into two main groups: directors who believed that ICT could be used to help improve the services their institutions provide and others who said they could prove useful for strengthening networks of researchers and key institutions.

The replies of the first group are related to the promotion of an info-culture, in which ICT are tailored to the needs of individual institutions and can support the continuous development of services and of the institutions themselves. Several directors suggested that ICT could be used to develop closer, more effective ties with the target populations, and as a means to sustain the design, preparation and implementation of projects. The coverage of ICT and the efficient dissemination of information were regarded as important in this regard.

The second group sees an important role for ICT in strengthening networks. Some of the key aspects with respect to the strengthening of networks are as follows:

- Connection to different databases and information systems
- Interaction among researchers and the socialization of scientific information
- Interaction among key actors such as producers and experimental and research centers

Conclusions

The general objective set for this work was the preparation of a profile of the concept, use and expectations regarding information management and information and communication technologies within the institutions surveyed. The work focused on these two fields and the information that was compiled could be useful for devising a shared strategy for the development of these areas. This initial diagnosis, nevertheless, does not pretend to be an exhaustive review of the state of the art of information management in all LAC AIS (agriculture information systems). It only compiles the basic information – from a group of institutes – for the design of advocacy and capacity building strategies.

In general, most of the surveyed organizations reported to be supporting IM activities. This is apparent through the implementation of information management units in most institutes (83%) and in the fact that 55% of the institutes surveyed report having an explicit IM strategy. However, the study revealed that, at the time when the survey was carried out, good opportunities existed for further development of institutional mechanisms for IM activities. Few institutes considered having in place well-developed institutional mechanisms for the different activities proposed and most directors expressed their interest in learning more about IM topics.

The results of the survey indicate that great store is put in the interaction with agricultural producers, both as a primary source of information and as the main audience. This point requires more in depth analysis for future activities since it is not consistent with the apparent focus on disseminating information about institutional activities rather than more technical information.

Regarding the availability of ICT resources and tools for technical IM, there are considerable variations among organizations. While some institutions have enough computers for all their technical personnel, at others such equipment is in short supply. As to digital tools, the replies suggest that most institutions possess many of the tools mentioned in the survey, although geo-referenced information and those related to precision agriculture, were found to be less common. Many researchers do not have access to training in the use of tools and courses on information management, since only half of the institutes surveyed said they had implemented activities of this kind.

The different directors expressed a range of opinions about the purpose of digital tools and how they expect them to contribute to their institutions' performance. Nonetheless, their comments did include certain common elements: facilitated information flow processes; improved sharing of information; more interaction with strategic actors; and improved coordination and organization of institutional activities.

Finally, the directors viewed the use of ICT in the future as a tool that could help improve the services their institutions provide and as a means of strengthening internal networks (researchers, local personnel) and external networks (other research centers and external information systems).

The survey proved to be a valuable exercise for several reasons. First, because it provided an initial, basic characterization of the overall state of IM and ICT within agricultural research institutes in the Americas. A comprehensive characterization would call for a more complete and exhaustive study

than this one, and a process of continuous follow-up. Nonetheless, it provided the basic elements for the design of a communication strategy for advocacy and capacity building.

Furthermore, this initial survey made it possible to identify some common elements (e.g., importance of groups of users, sources and an appraisal of the development of IM activities) that, through a process of dialogue and consensus-building, could pave the way for the joint development and planning of IM activities.

San José, Costa Rica
January, 2008