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# **The new agro-biotechnologies**

**Challenges,  
trends and  
institutional  
considerations**

# The use of digital media for providing training in the rural milieu

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**I**n the current international context of greater openness and increased free trade, rural development acquires new dimensions. For public and private institutions in the rural milieu, a complex setting has been created that requires the training of capable human resources to encourage sustainable development and improved quality of life. On one hand, there is a need for the design and implementation of new education and training programs that benefit from the new information and communication technologies (ICTs). On the other hand, it is necessary to improve the training of extension workers, instructors and technicians, as well as producers themselves and other actors in rural development, regarding the use of ICTs, so they can take advantage of current developments to promote the generation and application of new knowledge for development.

In spite of governments' and institutions' efforts to expand the coverage and quality of extension services in the field of informal education or training, serious deficits remain in the formation of the human capital required for effective rural development, specifically in the areas of management skills, competitiveness, and a greater emphasis on agrifood chains and sustainable development.

Clearly, the use of new strategies for training and for knowledge management and exchange is a key factor in the fostering of human talent for rural development. Based on the above, the Inter-American Institute for Cooperation on Agriculture (IICA) has in recent years launched an accelerated process of ICT use in its technical cooperation activities, particularly training.

The Institute has been developing a blend of media products that enable the various stakeholders in the Americas - notably instructors, technicians, agribusiness entrepreneurs, and decision-makers in the ministries of Agriculture, of Education and of the Environment - to receive information, analyze it, and discuss it during video conferences. IICA also provides them with training materials in the form of interactive compact discs (CD-ROMs), and allows stakeholders to remain up to date through information networks like INFOAGRO (<http://www.infoagro.net>) or the Hemispheric Training System for Agricultural Development (SIHCA), at <http://www.sihca.org>.

## I. Training and communications technology programs

In keeping with the close links between education and development, as well as the mandate of its Member States and the hemisphere's national technical cooperation agendas, IICA and its Directorate of Education and Training (DECAP) have been supporting new processes of human capital formation in public and private organizations, contributing thus to national efforts aimed at achieving rural sustaina-

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ble development, food safety, and the prosperity of rural communities.

The increases in production and competitiveness achieved by industrialized countries are due in large part to educational efforts aimed at the main stakeholders in the rural milieu. These highly qualified stakeholders incorporate new productive technologies, achieve competitive advantages in penetrating and integrating into world markets, and are able to navigate changes in the economic, social and trade environment.

Less developed nations face the test of attaining similar advances through the development of their human capital. They also confront the challenge of incorporating ICTs into their training programs to achieve greater coverage at lower costs.

New information technologies can be an ally in the effort to bridge the gap between developing and developed nations. The fast evolution of ICTs offers enormous potential for the development of distance-learning programs employing digital media, as numerous international forums and scholarly papers have acknowledged. IICA-sponsored national technical cooperation agendas echo this concern when they call for human capital formation through the use of new information and communication technologies.

When dealing with training and communications technology, stress must be laid on the growing capabilities of telecommunications and information technology to expand educational coverage. These technologies can be deployed and integrated in a variety of ways, many of which change and broaden in spectacular ways the learning experience.

In particular, new technologies can perform a valuable role in the expansion of distance education and training programs. Several authors maintain that ICTs can enormously facilitate the training provided to entrepreneurs, producers, and even instructors themselves, especially when demand is high or face-to-face learning becomes challenging due to high costs.

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### Three lines of action

Through its Distance Education Center (CECADI), IICA has been working in recent years on the consolidation of training networks along the following three main lines of action:

**Videoconferencing.** Technicians, producers, entrepreneurs, instructors and politicians can all interact through this medium. The system puts these groups in touch with each other within the same country or at the international level, enabling them to participate in training courses and become acquainted with new points of view, while also serving as a means for personal expression. One of the most important actions in this field has been IICA's involvement - alongside the World Bank and its members - in the Global Development Learning Network (GDLN), which makes it possible to provide, or take part in, courses on the following, among other, subjects at the national or international level:

- Sustainability indicators
- Environmental economics
- Environmental project management
- Hazard Analysis and Critical Control Points (HACCP) for the food industry
- Environmental impact assessments
- Solid waste management
- Quality-control audits and techniques
- Bioterrorism legislation
- Competitiveness
- Primary and secondary rural education (in tandem with FAO)

Thanks to videoconferencing and an important mechanism known as Global Dialogues, it has been possible, besides, to establish a fruitful exchange among technicians, instructors, producers and exporters from several countries in the Americas and the world.

The most recent example of such learning networks is the ED-Rural Alliance (<http://www.ed-rural.net>), an open network of organizations fostered by IICA and the World Bank that strives to facilitate training and links between professionals and producers in the continent's rural and urban areas.

*New information technologies can be an ally in the effort to bridge the gap in productivity and competitiveness between developing and developed nations.*



**Interactive compact discs (CD-ROMs).** By employing this medium, training programs can be deployed that promote self-study and the application of practical knowledge to real-life situations in the rural milieu. This project was initially launched in the Caribbean with the support of the Organization of American States (OAS). Courses have been taught successfully in the following areas:

- Farm management
- E-commerce
- Organic farming for entrepreneurs
- Health and occupational safety for entrepreneurs
- Agricultural extension
- Organic farming

In recent years a multimedia approach has also been used for the conversion of traditional materials, turning them into CD-ROMs for the establishment of distance learning programs in the Americas in fields such as:

- Competitiveness in agrifood chains
- The development and implementation of Hazard Analysis and Critical Control Points (HACCP) in the food industry
- International trade

**Electronic networks.** Due to the physical isolation that normally characterizes country life, this technology can be useful in furthering the exchange of information across different technical fields and geographical areas. IICA promotes technological platforms like INFOAGRO (<http://infoagro.net>), a service that the Institute's Technical Cooperation Secretariat makes available to extension workers, producers, entrepreneurs and academics. This platform enables the dissemination of the following, among other products: a weekly bulletin, electronic documents in full text, news, links to other specialized sites, directories of technical institutions, events, listings of companies and experts, and technology market information in areas such as:

- Trade
- Technological innovation
- Agricultural health and food safety
- Sustainable agricultural and rural development
- Agricultural commodity exchanges
- Agribusiness and trade
- The Caribbean Animal & Plant Health Information Network (CARAPHIN)

## II. Quality and relevance of agricultural middle and higher education

A successful instance of the intensive use of ICTs in human capital formation, IICA's training program for improving the quality of education in agricultural and environmental sciences is an integral program consisting of four courses that guide instructors and administrators in strategic planning and the curricular development of their university department or school, as well as helping them with self-evaluation, as a means for quality control and eventual accreditation.

In each course, participants receive an interactive CD-ROM - developed by an IICA team of curricular-design specialists and multimedia technicians - which favors self-learning; feedback to and from tutors is also supported through an assortment of electronic media.

This initiative has been publicized among deans and directors of the departments of agriculture and related sciences of universities in Barbados, Costa Rica, the Dominican Republic, Ecuador, Guatemala, Panama and Peru.

The program is currently being offered by several institutions, among them:

- The School of Plant Health at the Department of Agrifood Sciences of the University of Costa Rica
- The five regional centers of the Department of Agriculture of San Carlos University in Guatemala
- At least 40 vocational high schools in Costa Rica

Evaluations to date reveal that this innovative tool for improving the quality of the education imparted at agricultural and related sciences departments, as well as mid-level and higher education agricultural schools and colleges in the Americas, is yielding significant dividends.

## III. Final comments

As a result of the efforts made by IICA to consolidate a digital-media distance-learning system, it currently enjoys significant assets in infrastructure and human resources. This has allowed the production of a large number of training materials that are made available to users through video conferences and CD-ROMs.

Even as technological advances enable this type of solution while decreasing communication costs, tools such as distance education centers, personal computers and Internet cafés have proliferated in rural areas.

Nonetheless, digital training still faces certain challenges. In Europe, research shows that the sole use of digital media is not enough. It is not simply a question of converting traditional materials to CD-ROM format, employing them during video conferences, or putting them online and promoting their use. The correct approach is much broader. Rather than simply offering isolated courses, what is required is the establishment of training programs in strategic areas based on the real needs of users, selecting the best means to reach them, providing tutors with training that brings to life the process and experience of learning, and crafting a rigorous evaluation program that provides the feedback needed to make adjustments.

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