

## In the Networking Age, Cassava Development Relies on Public-Private Research Partnerships

***Bernardo Ospina Patiño, Latin American and Caribbean Consortium to Support Cassava Research and Development (CLAYUCA)***

### SYNOPSIS

**C**LAYUCA transcended the traditional country-based model of cassava research to develop a regional research and development network that attracted nontraditional partners and funding. All members participate in planning, financing, and implementing prioritized activities for cassava research and development while sharing costs, risks, and benefits. An emphasis on competitiveness and a value chain approach helped CLAYUCA to focus on issues limiting efficiency in production, processing, and utilization, in which the private and public sector had common research interests. CLAYUCA demonstrates the importance of allowing different interaction, coordination, and innovation mechanisms to emerge and of coordinating value chain actors to contribute to policy debates related to cassava (especially support for public-private-CSO-NGO collaboration). Another lesson is that facilitating partnerships between public and private organizations will become increasingly challenging unless stable financing is available and public organizations maintain their expertise.

### CONTEXT

Cassava, the fifth most important crop in the world, can compete with coarse grains in animal feed, partially substitute for maize and other starchy crops in food products, serve as a source of industrial starch, and be used to process ethanol. The crop is especially important in Latin America, sub-Saharan Africa, and Asia. Although national and international organizations have conducted cassava research at least since the 1970s, many of these institutions experienced radical changes in the 1990s as public funding for agricultural research evaporated and the need for a less linear, more participatory model of agricultural innovation became clear. Institutions and

countries sought to establish strategic alliances to continue agricultural research and development. In 1999, the Latin American and Caribbean Consortium to Support Cassava Research and Development (CLAYUCA, Consorcio Latinoamericano y del Caribe de Apoyo a la Investigación y al Desarrollo de la Yuca) was formed as a regional mechanism to plan and coordinate research for the cassava subsector.

### THE CLAYUCA MODEL

CLAYUCA is a network operating through collaborative agreements between its members—public and private entities—in which all members participate in the planning, financing, and implementation of prioritized activities to accomplish jointly established objectives while sharing all costs, risks, and benefits. An executive committee defines priorities and lines of activity, and coordinates and evaluates research undertaken by the consortium. Each member country elects one representative (not necessarily from the public sector) to serve on the committee; the participating international organizations also elect a representative. The committee approves the entry of new countries into the network and elects the executive director, who coordinates CLAYUCA's activities. Initially a regional network for Latin America and the Caribbean, CLAYUCA has attracted members from other regions, and member countries now include Colombia, Costa Rica, Ecuador, Guyana, Haiti, Mexico, Nicaragua, Panama, Peru, Trinidad and Tobago, and Venezuela, as well as Ghana, Nigeria, South Africa, China, and the United States.

A Technical Committee defines the research agenda, which is developed in detail by one representative per member country. Research focuses on competitiveness, given the tremendous challenges in identifying and strengthening market opportunities for cassava and moving from traditional to more competitive modes of production.

Aside from the collaborative agreements with its members, CLAYUCA operates through a formal agreement between its executive committee and CIAT. CIAT is a strategic partner, hosting the consortium, providing core funding, legal support, administering CLAYUCA funds, and facilitating the use of the laboratories, fields, equipment, and offices under a fee payment scheme. CLAYUCA's activities are partially financed through an annual membership fee of US\$15,000 per country. In some countries, a private institution pays the fee; in others, a public agency pays (the Ministry of Agriculture, for example). In Costa Rica and Colombia, the annual quota is paid by a group of public and private entities. Additional funding is obtained through special projects and consultancy services. These resources are invested only in activities defined collectively by the members.

## THE INNOVATIVE ELEMENT

The innovative aspect of CLAYUCA is its role as a regional facilitator of public-private alliances for cassava research and development, using a value chain approach and emphasizing competitiveness. Different actors in a member country's cassava subsector identify where cassava's overall competitiveness can be improved along the value chain (production, processing, or utilization). They identify organizational and technical constraints and formulate and implement technological interventions. The new emphasis on competitiveness, a prerequisite for private sector involvement in cassava-based industries, has motivated farmers, especially small-scale farmers, to adopt improved production technologies such as better varieties and improved crop and soil management practices. Increased competitiveness on the supply side is complemented by private investments and contributions to processing capacity and management. The network's regional and international character offers particular advantages for countries where cassava research has been limited by small national budgets and little external interaction.

## BENEFITS AND IMPACT

CLAYUCA's structure enables members to have better control of the regional research and development agenda for cassava and participate more equitably in the distribution of benefits. The consortium also facilitates better access for public and private agencies to technologies generated by international and advanced research centers. Those centers, in turn, benefit from participating in a regional agenda for cassava research with relatively little investment.

Examples of technology and other knowledge generated and shared through CLAYUCA include the following:

- *Technology platforms for more competitive cassava production and utilization.* Technology platforms include equipment as well as the methodologies, instructions, processes, training, and other elements to use it correctly. CLAYUCA has developed a number of platforms: (1) for producing high-quality, refined cassava flour for human and industrial use; (2) for producing and using cassava leaves in animal feeding systems; (3) for producing and using sweet potato in human food and animal feed; (4) producing hydrated ethanol for local use with cassava, sweet potato, and sweet sorghum (the technology is small-scale, low-cost, and easily operated and managed by small-scale farmers); and (5) for producing cassava commercially (mechanized planting, partially mechanized harvesting, and soil fertility, pest, and disease management practices).
- *Planting and breeding materials.* CLAYUCA has facilitated access to improved, elite cassava germplasm developed by CIAT and other advanced research centers.
- *Communications.* CLAYUCA communicates relevant, current information on cassava technologies to stakeholders in the form of websites, electronic bulletins, training events, annual meetings, study tours, and technical books and bulletins.
- *Human resources development.* Through training offered at CIAT and in member countries, CLAYUCA has strengthened technical capacity in such areas as cassava processing, crop management, product and market development, tissue culture, and cassava germplasm evaluation and selection.

During its first decade, CLAYUCA has benefited various actors in the cassava subsector of each member country. It also generated the regional benefits described in the sections that follow.

### Benefits to the public sector

Public institutions have taken advantage of the presence of CLAYUCA in their countries, supported by the strong research background of CIAT, to improve their capacities in areas such as managing genetic resources, training technical personnel, and improving knowledge and information about modern technologies for cassava production, processing, and utilization. At the country level, it is difficult for one single institution to possess the interdisciplinary

capacity to scale up new technologies into commercial activities. Through CLAYUCA, national and regional networking ensures that experience and knowledge are shared. In some cases, the presence of CLAYUCA has helped to reconfigure relationships between the public and private sector and farmer organizations.

At a relatively low cost, CIAT benefited from CLAYUCA's role as a regional forum for planning, financing, and implementing cassava-based research and development to reestablish itself as a stronger actor in the regional innovation system for cassava. Public and private institutions that require technologies generated by CIAT now have access facilitated through CLAYUCA. At the same time, CIAT receives stronger feedback from CLAYUCA stakeholders on the performance of its technologies and emerging problems and priorities in the cassava subsector.

### **Benefits to the private sector (producers and processors)**

CLAYUCA is a technology clearinghouse, constantly searching worldwide for competitive technologies and transferring this information to its stakeholders. Many companies lack the budget, time, and capacity to seek this information on their own. A processing technology for cassava starch would be more expensive if obtained in Europe than in Brazil or in China. The difference in the initial investment cost could affect a private entrepreneur's decision to establish a cassava processing plant in a given country. CLAYUCA organizes study tours to other countries and regions (Brazil,

China, Europe), allowing members to see technologies in operation and make informed investment decisions.

The wealth of cassava genetic resources in germplasm banks at international and advanced research centers will enable cassava to cope with the effects of climate change, among other needs. CLAYUCA has helped member countries and farmer groups gain better access to this genetic diversity for their own in-situ evaluation and selection programs. CLAYUCA has also facilitated farmer groups' access to improved varieties with higher yield potential and greater adaptation to biotic and abiotic stresses. Farmers have benefited from the new markets, additional income, and employment opportunities represented by the cassava-based agroindustries established in some CLAYUCA countries. Through CLAYUCA, some farmers have gained access to special services such as production credits under very favorable terms (box 1.30).

### **LESSONS LEARNED AND ISSUES FOR WIDER APPLICATION**

The lessons and issues emerging from CLAYUCA's work over more than a decade reflect its experiences in inducing collaboration throughout a large network of diverse participants.

#### **Public-private partnerships are built on trust and history**

The establishment of partnerships among public and private actors, farmers groups, NGOs, and other entities is

#### **Box 1.30 Raising Cassava's Profile among Policy Makers in Panama**

The Panayuca Project, Panama's stakeholder in CLAYUCA, is a strategic alliance between Panayuca, a private company, and the Association of Small and Medium Agro-producers of Panama (APEMEP). Panayuca's main goal is to raise living standards in Panama's poorer rural areas by producing cassava and its derivatives. APEMEP is an association of more than 300 organizations, including farmer unions, cooperatives, women's groups, and indigenous groups, with more than 60,000 individual members. APEMEP members produce the cassava; Panayuca develops the industrial

infrastructure and handles logistics and marketing. Before Panama's cassava subsector was affiliated with CLAYUCA, credit lines for cassava at premium rates were not available to small-scale producers. The government did not regard cassava as a priority crop. After intense lobbying led by Panayuca, the government included cassava as one of the crops eligible for credit at very low, almost subsidized rates. This policy decision benefits a large group of small-scale farmers, facilitates their partnership with the private sector, and enables farmers and industry to operate at a competitive commercial level.

*Source:* Author.

*Note:* APEMEP = Asociación de Pequeños y Medianos Productores de Panamá.

facilitated when they already have a shared history and significant knowledge and trust of one another. CLAYUCA's development was strengthened by the effects of previous partnerships and activities between CIAT, civil society, and farmer groups in many member countries.

### **Different interactions and innovation mechanisms are important**

Some countries coordinate their CLAYUCA agenda through a public agency, but in others the private sector or a combination of both sectors is more active. Other member countries have strong traditions of cooperatives and industry associations. Still others have policies that emphasize the social and economic feasibility of a dualistic agricultural sector, in which small- and large-scale producers coexist and develop. Others have policies that emphasize the importance of science and technology in agricultural development. These different traditions, practices, and attitudes have allowed different forms of interaction and coordination to emerge in work funded by CLAYUCA and its partners:

- **Partnerships** between CIAT, cooperative processing plants, and the national agricultural research organization in each member country.
- **Creation of an apex association** to link cooperatives in processing and marketing innovations.
- **Creation of a research-focused network** comprising a regional consortium, the industry (with its small-scale farmer base), national and international research organizations, government, and financial organizations, all linked to domestic, regional, and international markets.

### **Enabling environment for public-private partnerships**

The success of public-private partnerships depends greatly on a supportive policy environment. Most Latin American and Caribbean countries (excluding the Southern Cone countries, except for Chile) import large quantities of cereals to manufacture animal feed. Most governments sought to meet growing demand for feed through policy instruments that caused producers of traditional starchy staples such as cassava to compete with imported cereals at a substantial price disadvantage. CLAYUCA has sought to counter this problem in a number of ways: through its efforts to develop more efficient production and processing methods, new cassava-based products and markets, and a

greater voice for the cassava subsector in the policy debate. The case of Panayuca (described in box 1.30) is one example of the relationship between policy and the success of a public-private partnership facilitated through CLAYUCA. Another example comes from Costa Rica (box 1.31).

After more than a decade of functioning through public-private partnerships, CLAYUCA is well aware that such partnerships have a greater impact when they are sustained by a group of well-funded technical experts with sufficient time to dedicate to the needs of the partnership's stakeholders. For example, CIAT provided strategic core support for CLAYUCA staff, operations, logistics, and management. This funding enabled successful institutional learning, the formation of a long-term network of partners, capacity building, and organizational innovation. The availability of such funding cannot be taken for granted, considering the dynamic environment in which institutions such as CIAT operate. Leaving the financing of public-private partnerships to stakeholders alone may not be sufficient for those partnerships to have an impact. CLAYUCA participants in each country must be creative to find complementary strategies for supporting the financial requirements of the partnership.

### **Improve coordination in value chains**

Another lesson emerging from CLAYUCA's experience is that more attention should be given to coordination across value chains. Because public-private partnerships operate in an environment heavily influenced by policy, stakeholders benefit from operating in a coordinated manner, both inside and outside the partnership boundaries. For example, in Colombia, the Ministry of Agriculture's official policy is to support agricultural development and technology generation through "agro-productive value chains." The cassava subsector has not organized itself into a centrally coordinated value chain, so cassava projects do not meet government requirements for funding. They are forced to seek funding indirectly through more organized value chains (livestock, poultry, animal feed, bioenergy, human food, and so forth).

### **Public agencies require sufficient capacity to form productive partnerships**

In each CLAYUCA country, public agencies play a central role in research and advisory services to improve the competitiveness of the cassava subsector. These agencies are often seriously affected by frequent changes in their

### Box 1.31 Policy Action to Diversify the Market for Cassava in Costa Rica

Costa Rica's cassava area is not very large, but intensive cassava production and processing operations have converted Costa Rica into the world's leading exporter of frozen cassava and paraffin-coated cassava, principally to markets in the United States and Europe. In 2008, Costa Rica exported 75,000 tons of frozen and paraffin-coated cassava, with a market value of US\$60 million, but a significant share of cassava is not harvested because it does not meet export standards. In 2010, the

*Source: Author.*

Ministry of Agriculture created a country-level Cassava Committee to promote the use of cassava in animal feed and thus diversify the market for the cassava crop. This policy decision means that a large group of institutes and entities that were working independently will begin working in a coordinated fashion. CLAYUCA's Costa Rica group is a member of the new committee and will play an important role in transferring CLAYUCA technologies for growing and processing cassava for feed.

institutional, political, and financial environment, however. Rarely can they implement long-term strategies to support cassava farmers and enhance the subsector. The skills and scientific capacity of technical personnel in some CLAYUCA countries must be strengthened. In some cases the private sector is willing to finance such training, but some of the burden must be shared by public agencies, or they will not be able to form productive partnerships with private organizations. Successful partnership will be facilitated if public agencies allocate specific funding for training through specific projects, competitive grants, donor support, and other means.

#### **Instability and frequent changes in government support for research**

In many countries, every change in the central government (such as a new president or minister of agriculture) brings a wave of new policies that alter support for agricultural research and development. Public support for cassava research in Colombia, for example, has run the gamut from full to negligible support and funding for cassava technology development projects. It is vital for public-private partnerships to seek independent, stable financing sources to avoid the vagaries of public funding and successfully pursue partners' research priorities.