

## **OUTPUT 3**

### **Collaboration with other institutions.**

#### ***Activity 3.1 Support national programs that have traditionally collaborated with CIAT in the development and improvement of cassava.***

##### **Rationale:**

CIAT has the responsibility to contribute with cassava research worldwide. In the past, this was achieved through the collaboration of National Agriculture Research Programs (NARs), and in the case of Africa, with the valuable collaboration with IITA. This scenario has changed drastically through the last decade, when the NARs in most of the tropical countries weakened consistently. However, new institutions and partners are assuming a leading role and CIAT is actively searching for these new partners. In this activity, at least for Latin America, we are closely collaborating with CLAYUCA. In the implementation of industrial uses of cassava, because of the convenience of our location, most of the validation and adaptive research is carried out in Colombia. Once the technology (for instance, for the artificial drying of cassava roots) is evaluated and offers acceptable results, it can be moved out to other countries. This strategy implies that a considerable portion of our research is carried out in Colombia. However, this does not imply that cassava projects at CIAT are restricting their activities only to Colombia.

##### **Specific Objectives:**

- a) To promote the use of cassava and the adoption of new technologies and germplasm by cassava growing countries of the world.*
- b) To contribute to the training of personnel involved with cassava research.*
- c) To identify new partners in each country.*

##### **Results**

A major thrust in CIAT's strategy to achieve the stated objectives has been through training and visits to NARs, in addition to the provision of germplasm described in Output 2. In Table 3.1 a list of the most important events in which personnel from the project participated is provided. In these list different type of events were considered: technical visits to different NARs, scientific symposiums or congresses, training courses, planning workshops, etc.

Because of the vigorous support from the Colombian Government a large effort has been invested in training and promotion of cassava research and development in the country. In Table 3.2 a description of the different courses and workshops in which the cassava improvement project personnel participated is provided. In Table 3.3 a list of conferences and field trips in which this personnel participated is also provided. There are many more specific activities and contributions that cannot be mentioned because of their informal nature. An important activity in this regard is the continuous consulting from producers, students, researchers and processors from Colombia and other countries. An important amount of energy is dedicated to satisfy the demand for information and products through these requests.

Table 3.1 International events related to cassava research and development in which personnel from the project participated.

	<b>Month</b>	<b>Event</b>	<b>Contact Institution(s)</b>	<b>Location</b>
1	End of year 2001	II Latin American Roots and Tubers Symposium (three days)	INIA-CIP- Univ. La Molina	Lima - PERU
2	February	Planning workshop for research and development activities in Haiti (one week)	Hillside Agriculture Project	Port-au-Prince, HAITI
3	February	Visit to Cornell Univ.: collaboration in the area of cassava biotechnology (two days)	Cornell University	Ithaca - USA
4	April	Planning workshop for the Biofortification proposal (three days)	IFPRI	Houston - USA
5	May	Technical visit to interact with cassava researchers from Brazil (one week).	EMBRAPA – IAC – Universidad Sao Paulo	Bahia, Brasilia, Campinas. BRAZIL
6	June	Course on modern systems for cassava production and processing (three days)	Agropecuaria Mandioca INIA-IDEA-CLAYUCA	Anoatátegui - VENEZUELA
7	June	Course on modern systems for cassava production and processing (three days)	INIA – IDEA - CLAYUCA	Cojedes - VENEZUELA
8	June	Course on modern systems for cassava production and processing (three days)	INIA – IDEA - CLAYUCA	Zulia - VENEZUELA
9	August	Technical visits to Northern and Southern Haiti (two week)	Hillside Agriculture Project	Several locations in HAITI
10	August	Technical visit to Dominican Republic (three days)	IDIAF	Several locations in DOMINICAN REP.
11	September	Intl Workshop on Conservation, Evaluation and Use of Cassava Genetic Resources (three days)	INIA	Huaral - PERU
12	September	Visit to ETH: collaboration in the area of cassava biotechnology (two days)	ETH	Zurich - SWITZERLAND
13	October	The use of biotechnology for cassava improvement (three days)	Rockefeller Foundation	Bellagio - ITALY
14	October	Visit to cassava growing regions in Southern China (one week)	CATAS-GSCRI	Hainan-Nanning CHINA
15	October	7th Regional Workshop on Cassava Research in Asia (one week).	The Nippon Foundation	Bangkok THAILAND
16	November	Intl course for modern technologies for cassava production and processing (two weeks)	CIAT-CLAYUCA	Cali-COLOMBIA
17	November	Technical visits to Northern and Southern Haiti (one week)	Hillside Agriculture Project	Several locations in HAITI
18	November	Study visit to cassava production and processing facilities in Thailand (one week)	CIAT's Regional Office-CLAYUCA	Several locations in THAILAND
19	November	Planning workshop for bio-availability studies for carotenes from cassava roots (two days).	IFPRI and several NGOs operating in Haiti.	Port-au-Prince HAITI

Table 3.2. Training courses and workshops to promote cassava and the use of modern technologies conducted during the year 2002 in Colombia.

	<b>Month</b>	<b>Topic</b>	<b>Participants (No.)</b>	<b>Location</b>
1	February	Integrated pest management practices for white flies in cassava	20	S.Quilichao, Cauca
2	February	Rapid multiplication systems for the production of vegetative seed.	25	CIAT-Palmira
3	February	Integrated pest management practices for white flies and frog skin disease.	8	Mondomo, Cauca
4	February	Traditional and modern systems for cassava production.	25	Municipio Tibú, Cauca
5	March	Mechanization of cultural practices for cassava production	30	CIAT-Palmira
6	March	Integrated pest management practices for white flies in cassava	20	San Luis, Tolima
7	March	Production and handling of stakes. Processing of fresh cassava roots.	10	Montería, Córdoba
8	April	Potential of cassava for the Middle Magdalena River Region.	15	Puerto Boyacá, Magdalena.
9	May	Production and handling of stakes. Rapid multiplication schemes.	40	Villavicencio, Meta.
10	May	Analysis of the problems related to the industry of fermented starches.	25	CIAT-Palmira
11	June	Training on techniques for chipping and natural drying of cassava roots.	10	Sabana Torres, Magdalena
12	June	Cassava production with special emphasis for industrial uses.	27	CIAT-Palmira
13	June	Cassava potential as an industrial crop. Relevance for the Santander region	45	El Zulia, Norte de Santander.
14	July	New varieties of cassava for the industry in the sub-humid environment.	15	Polonuevo, Atlántico
15	July	Production and handling of stakes. Rapid multiplication schemes.	na	S.Quilichao, Cauca
16	July	Follow up on the analysis of the problems for the industry of fermented starches.	20	CIAT-Palmira
17	August	Integrated pest management practices for white flies and frog skin disease.	9	S. Quilichao, Cauca
18	August	Identification and management of super elongation disease and bacterial blight.	12	Montería, Córdoba.
19	September	Training course: modern technologies for cassava production and processing.	40	Bucaramanga, Santander.
20	September	Cassava potential as an industrial crop. Relevance for the coffee growing region	35	Manizales, Caldas
21	September	Planning meeting for the creation of "trapiches yuqueros" in the Cesar.	12	Valledupar, Cesar.
22	October	Training course: modern technologies for cassava production and processing.	30	Yopal, Arauca

Table 3.3. List of conferences and field trips in which personnel working in the cassava improvement project participated.

	<b>Month</b>	<b>Topic</b>	<b>Participants (No.)</b>	<b>Location</b>
1	March	Cassava research for the sub-humid environment.	10	Barranquilla, Atlántico
2	April	Production and handling of stakes. Rapid multiplication schemes.	20	Cereté, Córdoba
3	April	Research for the genetic improvement of cassava.	15	CIAT-Palmira
4	May	Traditional and modern systems for cassava production.	35	Villavicencio, Meta.
5	May	Modern techniques for cassava production.	30	Villavicencio, Meta.
6	May	Production and handling of stakes. Rapid multiplication schemes.	40	Villavicencio, Meta.
7	May	Production and handling of stakes. Rapid multiplication schemes.	50	S. Quilichao, Cauca
8	June	Production and handling of stakes. Rapid multiplication schemes.	12	Villavicencio, Meta.
9	June	Description of new cassava varieties for the processing industry.	10	Villavicencio, Meta.
10	June	Modern techniques for cassava production.	11	Villavicencio, Meta.
11	June	Evaluation of production costs for cassava in different areas of the country.	27	CIAT-Palmira
12	July	Production and handling of stakes. Rapid multiplication schemes.	45	Montería, Córdoba.
<b>Field visits with farmers</b>				
1	March	Field visit to the nurseries in the sub-humid environment	12	Barranquilla, Atlántico
2	March	Field visit to the nurseries in the humid environment	12	Montería, Córdoba
3	June	Field visits to well managed production plots in the acid-soil savannas.	10	Yopal and Aguazul, Arauca
4	October	Field visits to production plots and processors in the acid-soil savannas	na	Arauca, Meta and Casanare

Figure 3.1 illustrates some of the events that have taken place during the period covered in this report. Whenever possible training courses will include field visits taking advantage of the nurseries scattered across Colombia.



Figure 3.1. Photographs of training events conducted in different locations and with broad range of topics covered.

***Activity 3.2 Publication of a book with updated information on modern cassava production and processing techniques.***

**Rationale:**

Considerable progress has been achieved in the last 20 years in cassava technologies. The economic conditions have changed dramatically in many tropical countries resulting in a renewed interest in the industrial uses of cassava roots and foliage. The last publication covering a broad range of topics from cassava breeding to utilization was already outdated.

**Specific Objectives:**

*a) To publish a book with updated information for cassava production and processing.*

**Results**

A huge effort has been made jointly between CIAT and CLAYUCA for the publication of this text, which demanded an active participation of many scientists for almost two years. The final product is highly satisfactory (Figure 3.1) and has begun to be distributed in all Spanish-speaking countries.



Figure 3.2. The most recent publication on cassava by CIAT and CLAYUCA. The text goes with a booklet with the illustration of the most important problems by diseases insects and nutritional disorders.

### ***Activity 3.3 Promotion of cassava for new uses in the International Agriculture Exposition at Bogota.***

#### **Rationale:**

Every other year an important agriculture exposition takes place for a week in Bogotá. People related to agriculture production and processing agriculture products from all Latin American countries as well as North America and Europe attend to this meeting. It is considered strategic to have a presence in the exposition to promote the new potential of cassava products.

#### **Specific Objectives:**

a) *To participate with a stand in the International Agriculture Exposition.*

#### **Results**

In Figure 3.3 several photographs of the stand that CIAT and CLAYUCA jointly prepared for the Exposition. It is estimated that more than 100,000 people attend this Exposition. Several industries are present as well.

For the stand there was a need for the presence of 3 or 4 people continuously for the week the exposition lasts. A major coordination effort was made by CLAYUCA to have this stand set up. During the event large number of publications and hand outs were sold and given, respectively.



Figure 3.3. Cassava stand in **AGROEXPO**, Bogotá. August, 2001

### **Activity 3.4 Participation in the training of young scientists from different regions of the world.**

#### **Rationale:**

There is always a need to train young scientists in cassava research. Training is envisioned as a fundamental activity to guarantee adequate human resources for the future of cassava and an ideal way for establishing close links with NARs.

#### **Specific Objectives:**

a) *To facilitate and finance training of young scientists interested in cassava research..*

#### **Results**

Whenever there was a possibility and resources to train young scientists the project responded positively. Table 3.4 provides a summary of the young scientists that have visited our project during 2002.

Table 3.4. Young scientists visitors that have spent from a few weeks to several months of training and research at CIAT – Palmira, during period covered by this report.

	<b>Name</b>	<b>Country</b>	<b>Activity</b>
1	Thi Cach Nguyen	Vietnam	Ph.D. Thesis of cassava breeding.
2	Henry Ojulong	Uganda	Ph.D. Thesis on cassava genetics
3	Jorge E. Gonzalez	Colombia	Young scientist program from COLCIENCIAS
4	Prapit Wongtiem	Thailand	Cassava biotechnology
5	Chommanat Kerdkhong	Thailand	Cassava biotechnology
6	María Cuevas	Dominican Rep.	Cassava production and processing
7	Armando Gerst	Venezuela	Cassava production and seed multiplication
8.	Emmanuel Okogbenin	Nigeria	Cassava biotechnonology
9.	Luis Montes	Guatemala	Cassava biotechnology
10.	Elizabeth Okai	Ghana	Cassava biotechnology
11.	Charles Buitrago	Colombia	Cassava biotechnology

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