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Myriam Sánchez

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# HEALTHY AGRICULTURE (Agricultura saludable®)

## Agricultural conversion to alleviate hunger and poverty<sup>1</sup>

Myriam Sánchez M  
Corporacion Biotec  
CALI-Colombia  
[myriams@cgiar.org](mailto:myriams@cgiar.org)

**Abstract:** Healthy agriculture: Agricultural conversion to alleviate hunger and poverty, is a concept, a Program and a brand, that Corporación Biotec and a group of institutions, companies and associations of producers are developing in Colombia, promoting a new culture of social, environmental and market competitiveness, in the production of food, mainly tropical fruits productive chains.

Some world wide challenges, ask for biomass as raw material for different sectors: food security, energy supply and security, environmental sustainability, technology change, poverty and social inequity, which give agriculture a new position in economy and decision making.

For small producers in tropical areas, this situation is both: a risk and an opportunity. The development of a concept, a program and a brand: Healthy agriculture (Agricultura saludable ®), to help food production competitiveness, offers, more than a debate, a mobilisation of efforts to contribute to the hunger and poverty alleviation, giving an innovative use of science and technology within rural communities linked to urban consumers desiring natural, rich and original products from the tropical production. The concept is supported by three characteristics: 1) agricultural production contributing to food security and its productive chains, 2) high value added generation, going through an specialized production chain (gastronomy industry, processing, nutraceutics and cosmeceutics ), and 3) environment friendly production. This newly promoted production culture, contributes to develop “production for a better living” within and outside the communities of producers.

**Key words:** food security, added value agricultural production, environmental sustainability, technical innovation. Human nutrition.

## INTRODUCTION

Some world wide challenges, ask for biomass as raw material for different sectors: food security, energy supply and security, environmental sustainability, technological change, poverty and social inequity, which give agriculture a new position in economy and decision making. For small producers in tropical areas, this situation is both: a risk and an opportunity.

The development of a concept, a program and a brand: Healthy agriculture (Agricultura saludable ®), to help food production competitiveness, offers, more than a debate, a mobilization of efforts to contribute to the hunger and poverty alleviation, giving an innovative use of science and technology within rural communities linked to urban consumers, desiring natural, rich and original products from the tropical production.

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<sup>1</sup> This paper is based on and takes parts of previous presentations the author has made, related to the Agricultura saludable concept, program and brand. The author would like to mention the participation of a large group of people in the development of the process. In Corporación Biotec, mainly Ings. Martha Vivas and Daniel Campo.

The concept is supported by three characteristics: 1) agricultural production contributing to food security, and its productive chains, 2) high value added generation, going through a specialized production chain (gastronomy industry, processing, nutraceuticals and cosmeceutics) and 3) environment friendly production. This newly promoted production culture, contributes to develop “production for a better living” within and outside the communities of producers.

This initiative is a cultural process, and as such is a long term process. The initiative has been in place for 5 years now, but in fields only for two years now.

As results we can mention three: 1) the identification of the Program components, 2) the design of the brand and 3) the application of a pilot case in the Northern part of Departamento del Cauca in Colombia, in association of Corporación Vallenpaz, and the Agrocauca, association of producers, for the plantain (*Musa Paradisiaca L*) productive chain. Other than the improvement of the farming systems, we have identified opportunities for gourmet markets, a research line for bio products and new uses (or recovered uses) as local effective products for child nutrition.

For the implementation of the Agricultura saludable brand certification, it all starts by contacting an organized community, with an agricultural production and a need for innovation identified. A group of scientists and technology managers, together with the community, define a common purpose of improvement for a productive chain, and design together an improvement program for the chain. Normally there is a technology package available for the fresh products production, but not value added production is taking place. A technology proposal (no longer package) is designed and the community with social, agricultural and agroindustrial scientists and technicians put in place the improvements and the appropriation or recovery (from ancestors knowledge) of new knowledge and innovations. The market is consulted and tightly linked to the process, as the specific trade mark Agricultura saludable ® for each product and process, is designed by an engaged group of interested producers and consumers.

This method is grouped in a model we call a Local Innovation system (SLI, in spanish), as different actors are empowered and involved.

This paper aims at showing the concept and the program, and a pilote application of the certification (brand), for sharing the experience and exchanging points of view.

## **1. HEALTHY AGRICULTURE: A CONCEPT, A PROGRAM, A BRAND.**

The Cauca Valley Region, in Colombia, has been a pioneer in identifying the opportunity of development based on life sciences and innovation, taking advantage of their mega diversity and of an institutional network of enterprises, academic and research organizations that contribute to productive developments with biological resources as raw materials, that account for 40% of the GDP of the region (CoBI, 2007).

These productive developments can be put into ten bio industry chains, in different development levels: 1) Industrialized short cycles agriculture. 2) Food and feed Agriculture and agro-industry. 3) Micro-organisms (yeasts) and derived. 4) Sugarcane cluster. 5) Fruits. 6) Coffee. 7) Forest and paper industry and derived. 8) Fishing production and marine

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Industry 9) Oil, soaps and cosmetic industry. 10) Natural products, derived from the sustainable use of the biodiversity.

In this context, Corporation Biotec (CB)<sup>2</sup> was constituted in Cali, Cauca Valley, in 1995, as an answer to the opportunity to improve the bioindustry and the use of life sciences, identified within the studies for the future of the Colombian western region.

CB has been a dynamic actor in the promotion of strategic conditions for the regional knowledge based development, taking advantage in some cases and anticipating in others, to policies and strategies of technological innovation and of public-private and academic relationships. CB has also promoted the development of life sciences to the service of the agricultural and agroindustrial production (Corporacion Biotec 1995).

From its conception, CB has outlined knowledge and innovation management in social processes and not only in academic processes. In this sense and with this purpose it has developed a school of thought and it has generated mechanisms and tools that facilitate the “research value chain”, as a fundamental concept and practice and has developed an associative work in “innovation systems”<sup>3</sup> that facilitate the social and productive appropriation of the generated knowledge. (CB/CRES2008).

Within this framework, Corporacion Biotec has designed and proposed in the Valle del Cauca region in Colombia, the concept Agricultura saludable, now developed as a program and as a brand.

HEALTHY AGRICULTURE (Agricultura saludable®): Agricultural conversion to alleviate hunger and poverty, as a concept is defined as the agricultural and agroindustrial production oriented by three characteristics : 1) agricultural production contributing to food security and its productive chains, 2) high value added generation, going through an specialized production chain (gastronomy industry , processing, nutraceutics and cosmetics), and 3) environment friendly production.

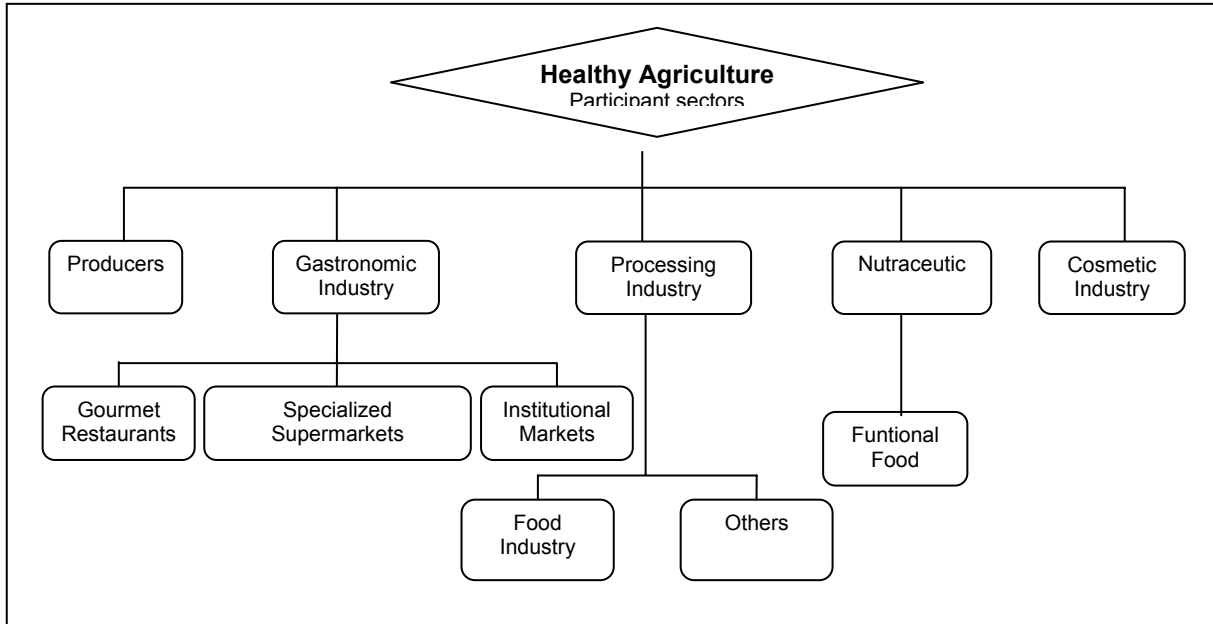
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<sup>2</sup> Corporación BIOTEC (CB) is a CDT (Centre for technology development and innovation) organized as a private, not for profit Corporation, in the framework of the science and technology colombian Law. In 1995, with the leadership of Universidad Del Valle, CB was constituted with the participation of 39 entities from the private, academic and governmental sectors. Its mission is to develop and apply microbial and plant biotechnologies to contribute to the optimization of bioindustrial production chains, based on knowledge and sustainable use of the biodiversity in western Colombia. CB and CIAT entered into a special agreement whereby the Corporation had its headquarters at CIAT since 1999, as part of the AGRONATURA Science Park.

<sup>3</sup> Innovation systems understood as the group of agents and processes that allow the competitiveness and welfare of communities, empowered by the mobilization of capitals, specially (the capital) knowledge. ( Bennet Aand D.,2007)

In figure 1. The chain of actors and beneficiaries for the Program is included.

Figure 1. Healthy agriculture participant sectors.



As a Program, HEALTHY AGRICULTURE (*Agricultura saludable*®): Agricultural conversion to alleviate hunger and poverty, has adopted some principles:

1. Cosmovision: Life. This philosophy aims at having a perspective which is different from anthropocentric ones. The cosmovision life (Holistic approach to life) looks for harmony in all the elements of nature, where all of them are important. Its purpose is to portray each element as an essential player in the proper functioning of the whole.
2. Two Key Topic Areas: Nutritional Security, quality and sustainability (social, economic and environmental) in the Agricultural and agroindustrial production. The nutritional security takes into account aspects such as availability, access, and quality of foods. It is included as a key aspect due to its growing importance and we want to emphasize it in the context of the Healthy agriculture brand. Healthy Agriculture puts hand in hand agriculture with health, through clean production, nutritional contribution and the benefits of an adequate diet.
3. Technological Innovation. Through technological innovation and social and productive appropriation on behalf of the actors involved, the improvement of processes in agricultural productive chains is promoted. The rendering of technological services that go alongside the work provided by Corporacion Biotec and the network of alliances will facilitate the improvement of the quality and advantages of the brand. The chain value in production encompasses three aspects: In all the production chain: The added value in the products does not solely imply high levels of transformation. The value added can be present in any of the links of the chain. Social Appropriation in the productive chain: Distribution of benefits in the whole chain. Innovation systems: Work under non traditional schemes, where the knowledge of all the actors involved is taken advantage of, with the purpose of jointly formulating work methodologies and strategies.
4. Profitability increase. Through the adoption of the Healthy Agriculture brand, we intend to increase the profitability of the actors in the chain. We refer to financial, social and environmental profitability. PRODUCTION FOR BETTER LIVING.

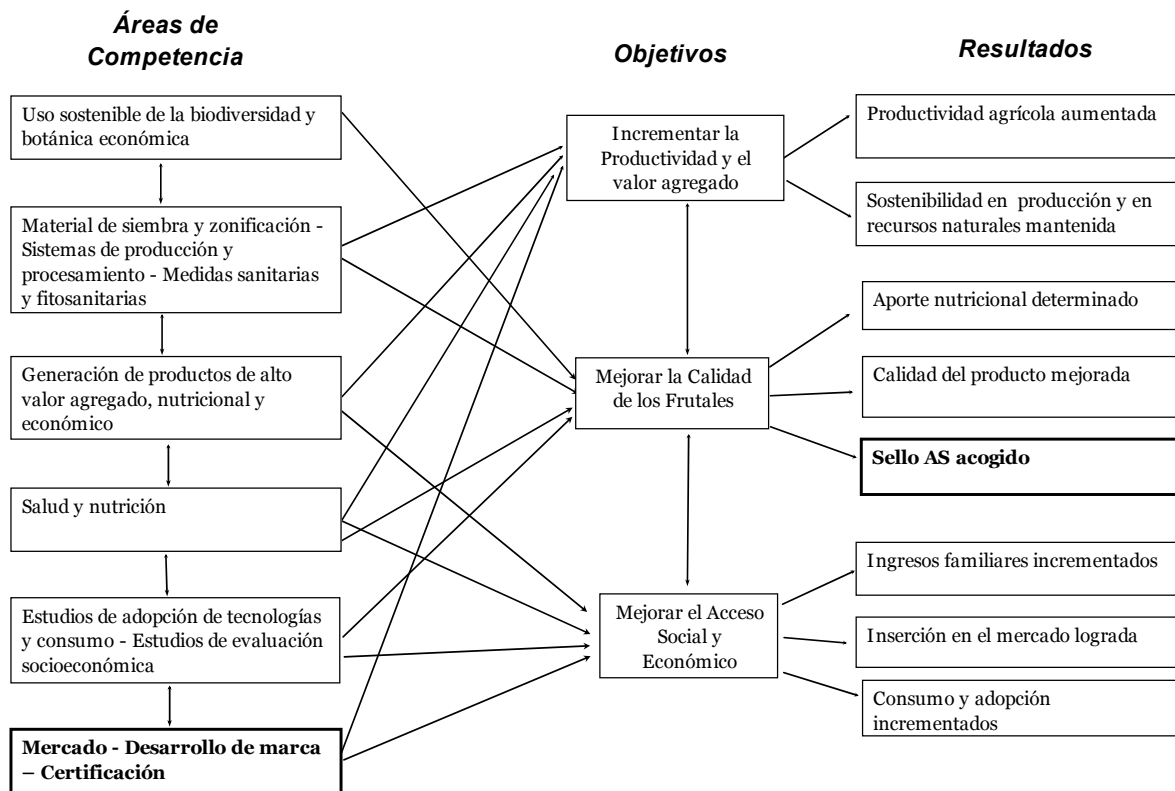
The Program identifies the main areas of competence, or components, in which research, development and innovation is needed to accompany the innovation processes in the fruits production chains involved in the Agricultura saludable process. Figure 2 shows these relationships between components and expected results.

The complexity of the program and the definition of the initiative as a cultural process make it a long term process for which different types of results are offered for 20, 10, 5, 3 and 1 years. It invites different groups and types of actors to join the culture, for different fruits chains and different regions of the country and different communities. There is interest on promoting the initiative abroad, in other tropical countries.

As a brand, a logo has been designed in a participative way. For the management of the brand, six components have been developed, through the implementation of the pilot case: the plantain chain (*Musa Paradisiaca L*) in Northern Cauca -Colombia ( Guachené y Padilla).

The 6 components are listed in point 3 and a map of the Northern Cauca region and some photographs of farmers and researchers illustrate the processes taking place.

Figure 2. Healthy agriculture Program components and relationships with expected results



*Figure 3. Healthy agriculture Brand logo.*



## **2. IMPLEMENTATION OF THE AGRICULTURA SALUDABLE BRAND CERTIFICATION.**

For the implementation of the Agricultura saludable brand certification, it all starts by contacting an organized community, with an agricultural production and a need for innovation identified. A group of scientists and technology managers, together with the community define a common purpose of improvement for a productive chain, and design together an improvement program for it. Normally there is a technology package available for the fresh products production, but not value added production is taking place. A technology proposal (no longer a package) is designed and the community with social, agricultural and agroindustrial scientists and technicians put in place the improvements and the appropriation or recovery (from ancestors knowledge) of new knowledge and innovations. The market is consulted and tightly linked to the process, as the specific trade mark (brand) Agricultura saludable ® for each product and process, is designed by an engaged group of interested producers and consumers. This method is grouped in a model we call a Local Innovation system (SLI, in Spanish), as different actors are empowered and involved.

Six main components have been developed for this process:

- Sensibilization on the Agricultura saludable culture.
- Development, discussion and adoption, by the SLI of the specific Agricultura saludable standards (Norma agricultura saludable for a specific chain in a specific site or region).
- Training of the producers and technicians community on technological innovation developments.
- Technological services for accompanying a supporting the process, and offering sustainable innovation conditions.
- Bio active compound research for identification and use for industrial interests.
- Monitoring system for following the competitiveness improvements (MIC in Spanish).

The process, through these components is a collective construction, demanding social, organizational and technological innovation.

We apply the 20x10x100 scheme of multiplication: 20 producers in the process, engaged to influence 10 more producers each (20x10). And from a demonstrative effect those 200, in

turn, influencing other regional, institutional or production chains, newly interested (20x10x100).

### **3. UN EXAMPLE OF APPLICATION OF THE AGRICULTURA SALUDABLE PROCESS.**

In northern Cauca, small farmers grow and harvest at low level for local consumption, around 25 local varieties of plantain, other than the 5 commercial varieties produced<sup>4</sup> Recovery of knowledge and experience from local traditional use of these varieties, non-commercial currently, offers to the local community a high potential of generation of value added for nutrition and food security, processing, and product recovery processes for both, food and other uses.

This recovery is done from the study of trends in the market, and based on the deepening of scientific and technological knowledge about the properties and content of industrial value of these varieties.

In all cases, at the time these processes would help to increase the generation of resources in the local community and to promote rural entrepreneurial developments to improve the quality of life of the peasant community, these recoveries contribute to the conservation of biodiversity (30 local varieties of plantain ) and related cultural heritage (knowledge and flavors, saberes y sabores). Also, it would contribute to incorporate knowledge to the peasants production, integrating innovation processes

Rural entrepreneurs associated in the northern Cauca, supported by community processes led by the Corporacion Vallenpaz, have achieved an empowerment and organization for the cultivation and marketing of plantain, improved through the healthy agriculture brand process implementation, coordinated by Corporation Biotec<sup>5</sup>,. Plantain farmers have advanced in the registration and quality culture and identified potential agro-industrial processing to advance in the production chain.

Agrocauca, Corporacion Vallenpaz and Corporacion Biotec have identified the opportunities to deepen integration of knowledge and innovation processes to increase the competitiveness of the chain of plantain. Some other institutions are involved in the process as is the case of CIAT-Agronatura in the bio active products identification from the plantain varieties. The generation of agribusiness of high value added in the peasant social economy of Northern Cauca, is thought as part of a next step in comprehensive development processes.

### **4. SOME RESULTS.**

The initiative HEALTHY AGRICULTURE (Agricultura saludable®): Agricultural conversion to alleviate hunger and poverty, is a cultural process, and as such is a long term process. The initiative has been in place for 5 years now, but in fields only for two years now.

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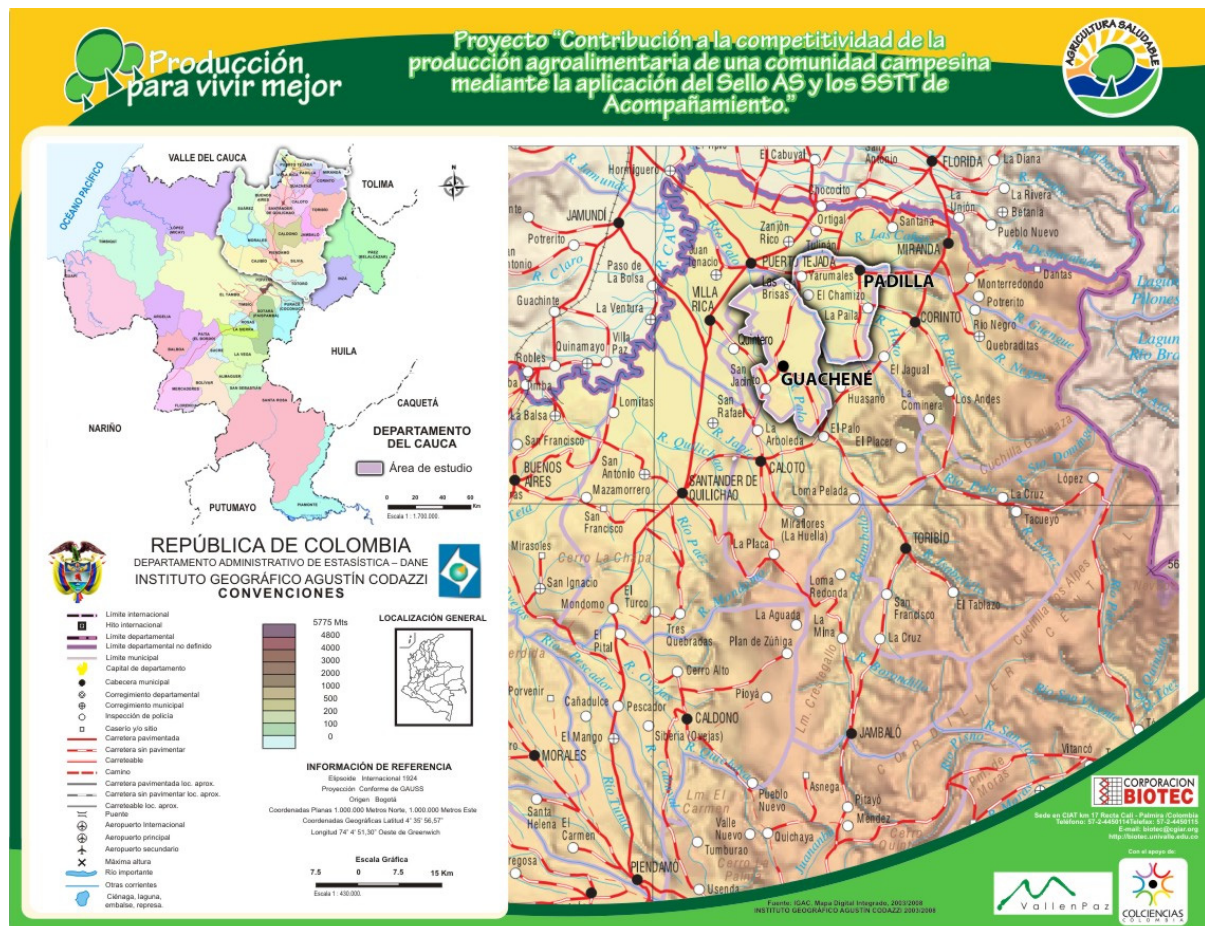
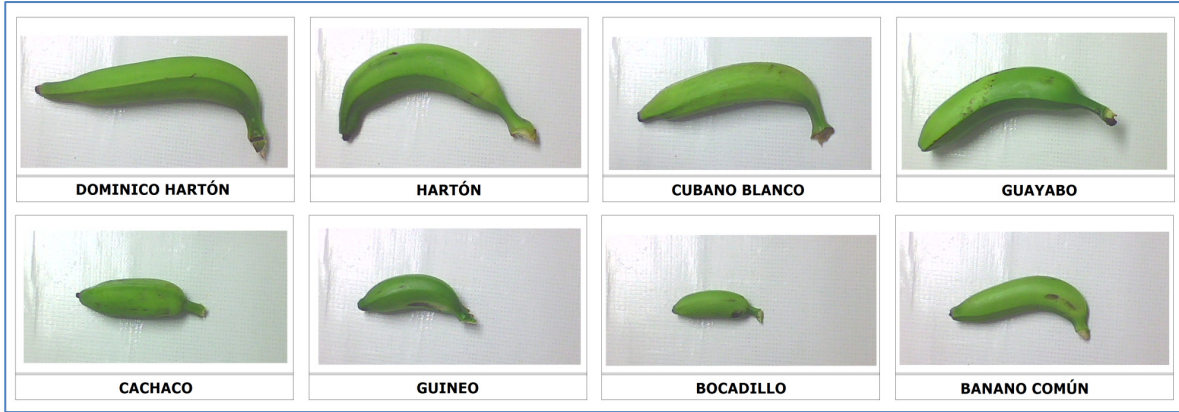
<sup>4</sup> Dufour Dominique; et al. "Diversidad y usos del plátano de cocción consumido en Colombia" (2008).

<sup>5</sup> Proyecto Corporación Biotec\Vallenpaz\Colciencias 2009-2010 "Contribución a la competitividad de la producción agroalimentaria de una comunidad campesina mediante la aplicación del Sello Agricultura Saludable y los Servicios Tecnológicos de Acompañamiento".

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As results we can mention three: 1) the identification of the Program components, 2) the design of the brand logo and management and implementation scheme, and 3) the application of a pilot case in the Northern part of Departamento del Cauca in Colombia, in association of Corporación Vallenpaz, and the Agrocauca, association of producers, for the plantain (*Musa Paradisiaca L*) productive chain Agrocauca.

Other than the improvement of the farming systems, we have identified opportunities for gourmet markets, a research line for bio products and new or recovered uses.



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*Padilla, Northern Cauca – Colombia, 2010*

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