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Co-construction IAP of the Uchuva Production Chain in the Municipality of La Calera-cundinamarca, Based on International Commercial and Environmental Standards

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Abstract

Uchuva in the last 10 years has become as one of the most representative fruits of Colombia. Its vitamin properties, as well as its innovative applications in the agroindustry and haute cuisine, have positioned this as one of the most desirable exotic and with the greatest potential for colombian international trade. Taking into account that reaching international markets is a hard work, commercial competition transcends its borders and seeks a competition based on cooperation, which can respond to international requirements, which poses the growing global demand. In this sense, the present research proposes the collective construction of the Uchuva`s crop productive chain, which is carried out by a group of producers from the municipality of La Calera, Cundinamarca, in order to promote the union and the association of the peasants in favor of the development of export initiatives. In this same line, the methodology used here, is the Action-Participatory Research (IAP), which goes to practices of conversation, debate, knowledge transfer and co-construction, which allows the approach of the community, recognition and the search for a common goal, and the joint creation of productive and cultivation techniques. This will be built based on the terrain conditions of the peasants studied and will be established on the basis of good environmental practices and international commercial standards. It is evident that, although the cooperation that must exist in the peasantry must be mainly among them, the groups closest to these, such as public ministries, universities and private companies, must their first companions, so that the colombian peasant can be more productive and it can get to conquer international markets.

Keywords: Participatory Action Research, Uchuva, Production Chain, Associativity, Exportation, Environmental Practices.

1.0.0 Introduction

Today, Uchuva has become one of the most representative fruits of Colombia. Its vitamin properties, as well as its innovative applications in the manufactured food industry and in national and international haute cuisine, have placed the Uchuva as one of the most desirable exotic fruits with the greatest prospects for Colombian international trade.

Between 2005 and 2016, exports of the species Physalis Peruviana L (scientific name of the cape gooseberry) surpassed by 300% those of any other exotic Colombian fruit, such as passion fruit and Gulupa, thus occupying the first line of total exports of This group of fruits, although the third of total fruit exports in Colombia, being surpassed only by bananas (Cavendish valery) and bananas for cooking, traditional fruits of Colombian international trade For Colombia, the cultivation and export of cape gooseberry represent an important opportunity for its growth and economic development, since those responsible for these crops are mainly families located in tropical, rural and remote regions of the country (family economy), whose scarce income obtained they constitute 30% of their agricultural crops and, the rest, their formal and / or informal jobs in the large cities they surround. Thus, for these peasant families owning land with the characteristics required for the cultivation of cape gooseberry is an advantage of great value, since, given the Colombian tropical climate, they can easily guarantee a permanent production and supply of Physalis throughout the year, regardless of your destination, whether for national or international markets, or if your sale status is fresh or transformed.

Given the inevitable needs for growth and development that the Colombian countryside has been presenting for decades and that, with the current post-conflict atmosphere, are expected to be solved, it is considered pertinent to support the increase of the Colombian agricultural production capacity from a cooperative perspective, which will lead to the associates of CO-COMPETIR and that jointly it is possible to shorten the path, obtain a quick return on investments and achieve a greater international positioning, through the sale of its fruits in external markets, whose technical demand as productive, it is only achieved with exceptional teamwork (Porter, 1991).

Therefore, the present research proposes a space for Participation Action, through a pilot group that integrates and associates a small portion of the total cape growers in the municipality of La Calera, Cundinamarca, in order to [1] share the productive practices of each one of the farmers; [2] standardize the practice, in accordance with international commercial and environmental standards, to transmit it to all current and future associates; and [3] mobilize farmers towards the export of their products, in order to strengthen

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the development of the region and strengthen the very action of associativity. Given the state of productive development in which the chosen cultivators were found, the need to dismember their production and distribution chain was evident, to be compared, as shown in the following sections, with the duty to be that supposes the fundamentally worked theory by Gerard Fischer, and the market, and thus guarantee greater learning to growers and strengthen their practice, based on international standards.

The document will be developed as follows: in addition to this introduction, a second part is devoted to the explanation of the IAP methodology, here used and its application to the chosen community. A third part corresponds to the theoretical-practical debates that have taken place around the practice of growing cape gooseberry, taking into account the applicable international environmental and commercial practices. In a fourth part, the theory is contrasted with the common practice carried out by the group chosen to grow cape gooseberry, in order to jointly determine the most optimal form of cultivation and applicable to the chosen group. Finally, it closes with conclusions about the IAP process and the productive practice co-constructed with the community.

2.0.0 Methodology

Next, a brief description of the methodology used in this study, the stages that compose it and the way it was adapted and applied to the community will be developed.

Location and shows: The present investigation was carried out in the municipality of La Calera, Cundinamarca; with a sample of 10 farmers with properties located in the villages: Altamar, Buenos Aires the Epiphany, El Rodeo, Jerusalem and La portada (See Image 1.)

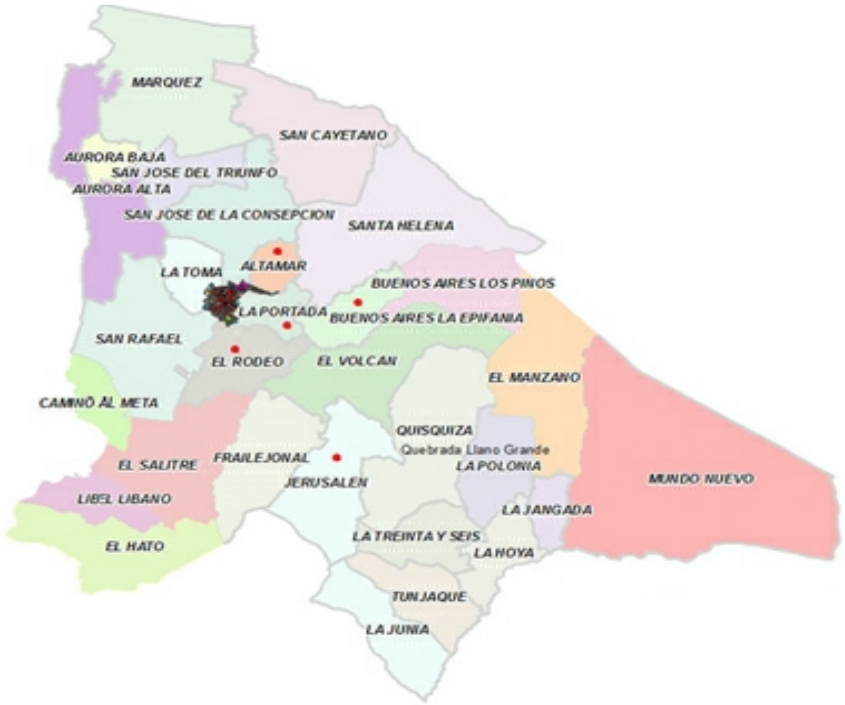

Image 1: Veredal Map of the Municipality of La Calera, Cundinamarca, with signposting of the trails where the present investigation was carried out. Taken from: http://www.lacalera-cundinamarca.gov.co. Retrieved on November 30, 2017

Method: Given the collective nature and the objective of co-construction that the present research seeks, the Participatory-Action-Research (IAP) was chosen as the methodological axis, which according to Tomás Alberich Nistal (2008), is defined as a method of study and action. that allows, through the participation of the groups themselves, to investigate, together with the interaction with external researchers, the obtaining of results that allow the improvement of collective situations. The IAP is based on a systematic methodology that allows the analysis of information through the execution of three main stages: diagnosis, programming and collective proposal (Marti, 2000), explained below:

First stage: Diagnosis This stage corresponds to the investigation of the current situation of the community producing Uchuva, which for the present investigation was carried out in two phases: the first phase, consisted in the execution of open interviews directed to experts with direct relationship with the community. Two community leaders were interviewed and an agronomist representing the municipality's environmental authority, UMATA (Municipal Agricultural Technical Assistance Unit), giving assistance to farmers; obtaining information on the technical, social, programmatic aspects and agreements to support Uchuva cultivation in the municipality.

The second phase consisted of the observation work carried out through visits to the villages to which the participating farmers belonged and which were selected as pilot by the information obtained in the first phase.

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[3]This concept refers to the point raised by Michael Porter since 1991 and noted in the visit he made to Colombia in 2005, about the need to stop competing and to compete and, on the contrary, to increase the levels of cooperation and associativity in Colombia in order to generate faster and sustained growth in the country, with implications for Colombian social and economic development.

This allowed to know that the community of these villages had a community organization to export, through the intervention of the Foundation of the Municipality, of which several farmers, including those studied, did not participate. A visual inspection of the farms was carried out with cape gooseberries, obtaining an initial diagnosis, based on the perception of the external researchers, of the conditions of the crops, and an approach to each one of the farmers present by means of open questions that allowed to identify incipiently the interest of the community towards the present investigation.

Own source

Image 2: Visual inspection performed on the sample cultures.

Second stage: Programming

This stage corresponds to the opening of all the knowledge and points of view of the participants, through the execution of IAP workshops based on qualitative and participatory methods (Marti, 2000).

Through the results obtained in the first stage it was agreed with community leaders that they would work with a group of 10 farmers recently coordinated to form an association for commercial and export purposes, in such a way that they were selected as the group with greater interest and need compared to the present investigation.

With this working group, three IAP workshops were held, which allowed for the collection and systematization of information to achieve co-construction.

The first workshop consisted of the presentation of the research proposal by the researchers to the community, allowing recognition of the working group, identification of the expectations of the community and the generation of a work plan formed by the workshops later. The second workshop was carried out through a focus group with which the different practices that farmers perform concerning the cultivation process (pre-sowing, sowing, harvesting and post harvesting), environmental practices, understanding of sustainability, problems, standards of export, among others. This instrument acquires importance for its usefulness in the consolidation of collective information, generating a space for debate, where farmers share experiences that allow them to disseminate their empirical knowledge, generating strengths through collective work and cooperation (SAC, 2013).

The third workshop consisted of the application of a SWOT exercise carried out at two levels: first, the individual evaluation of each farmer was carried out in order to generate a space for personal analysis in order to highlight aspects that are not usually characterized in a group and open dynamic.

The second level of this instrument is given by the moderation of the external researchers, generating a document with the main threats, weaknesses, strengths and opportunities according to the common aspects in the individual evaluation and the most relevant aspects according to the criteria of the community.

Own source

Image 3: Group of farmers in the execution of the IAP workshops.

Third stage: conclusions and proposals.

Through the collection and systematization of the information collected in the first two phases, the external researchers present a sketch with the information that the booklet will contain, for the modification and subsequent approval by the community. This booklet is intended to inform current and future members of the uchuva farmer association, about the forms of production, common mistakes and a route for the export process. Finally, an action plan is generated that allows the publication of the booklet and the training of farmers to continue.

3.0.0 Theoretical Framework

3.1.0 Production Cycle of Uchuva Cultivation

Next, the theoretical support of the present study will be developed, which consists in the breakdown of [1] the productive cycle of the Uchuva in each of its stages (pre-sowing, sowing, harvesting and post-harvesting), [2] the relevant topics about the commercialization and the international trade of cape gooseberry, and [3] the good environmental practices applicable to the crop. This support is based on the most relevant debates in each aspect and represents the starting point with which the praxis of the community of cape gooseberries studied will be contrasted.

3.1.1 Pre-seed:

Before any sowing process of an agricultural crop, several variables must be taken into account in order to ensure maximum productivity and sustainability in the long term. This process of preparation and analysis is called Pre-sowing, and among the variables that must be studied are: soil, pH, climate, height and humidity where the crop is located, type of crop plant and / or planted, among others (Fischer 2000). Regarding the soil, as the first variable of study, it is essential to carry out a rigorous preparation and disinfection of the same, which disposes it to receive all the components and nutrients that will later be supplied and which will be necessary for the seeds and the crop to thrive in itself. Therefore, carrying out soil studies through certified institutions is considered the first step at the time of establishing a crop and identifying the degree of acidity or exact pH of the land and the agronomic needs that oblige to act accordingly. (Fischer, 2000).

According to Angulo (2001), the most propitious pH required by the soil to grow Uchuva is between 5.5 and 6.8 degrees, while Fischer et.al (2000) and Corpoica (2002) assert that the optimum level is among the 5.5 and 7.0 degrees. However, these authors agree that cape gooseberry requires a soil of granular structure, with a sandy or clayey texture, rich in organic matter (Mo), especially Calcium, and with a water table greater than 1, which requires of a constant drainage. With the above, Alvarez, Fischer and Vélez (2012) add that the cultivation of cape gooseberry requires constant water and develops very well when its atmosphere is between 1,000 and 1,8000mm of precipitation during the year, with ranges of relative humidity between 70 % and 80%. Thus, daily drainage becomes essential because soils flooded for more than 4 days cause radical death of the plant, in addition to negatively affecting its height, foliar area, its physical appearance and its weight (Aldana and Garcìa, 2012).

Regarding the climate and location relevant to the good performance of the crop, FAO (2014) indicates that it is more productive when the plantations are located in high areas between 1,500 and 3,000 meters above sea level at temperatures of 13 and 16ºC, although for Colombia, the Agrisan firm (2012) argues that the ideal height is between 1,800 and 2,800 meters above sea level, although with the same temperatures as those exposed by the FAO. In addition to the above, in his study, Agrisan presents a land preparation plan adjusted to the Colombian case and in the conditions outlined above, where he indicates that in order to prevent the main viruses, diseases and bacteria that attack

[4] Colombian company dedicated to research, production and marketing of inputs for plant nutrition and plant extracts that act as bioprotectors for plant health against the attack of pests and diseases.

the crop during its cycle (such as nematodes, whitefly, fusarium, pulper, aphid, among others) it is vital to mix the soil with 4 liters of castor hydroxide, together with 2 liters of nutrihumu, 200 liters of Tichoderma, Beauveria, Metarhizium and Paecilomyces, as well as moisten and release the soil well. In addition, Agrisan recommends using a mixture of organic fertilizer, echinacea, or any well-prepared and disinfected biocompost, in quantities of 400 Kg / ha, plus Triple 15 fertilizer, in order to nourish the soil and prepare it with all the substances it requires. Prior to these procedures, the firm emphatically clarifies that these tips should be applied after knowing the real needs of the soil and its pH, previously resolved with the cerftificado study and combine them with a complete disinfection of the soil, using 10 kg of soil disinfectant (Agrisan 2012).

Reproductive Material

A study carried out by the Government of Antioquia and the SENA (2014), based on Good Agricultural Practices applied to cape gooseberry, demonstrates the importance of traceability for the assurance of quality and reliability of the productive chain before third parties, therefore, it emphasizes that since the beginning of the plantation, the seeds to be used must come from commercial houses or nurseries certified by the ICA, which comply with the technical characteristics of quality. In addition to this, Zapata (2002) adds a disinfection process to the seeds, and that agrees with Angulo (2005) and Agrisan (2012), which consists of washing the seeds with clean water and drying in the shade on a Absorbent paper in a maximum of 48 hours, preferably in cool and ventilated places, in order to be able to mix them with organic fertilizers and generate the seedlings that after 25 to 60 days in which they have emerged, will be transplanted to the cultivated soil prepared.

3.1.2 Sowing

The sowing process considers different stages in the cultivation of Uchuva: Planting as such, support, pruning and fertilization (Angulo C., 2000):

Sowing: The planting distances must be framed within the following measures: 2 to 3m between plants and 2 to 3m between rows or streets. This implies that sowing at 2m between plants and 3m between rows would have an area of influence of 6m2 / plant, for a density of 1,660 plants / ha. Once the planting density is defined, the holes or holes where the plants are to be planted will be made. If the soil is loose and frank, these should be 50cm long by 50cm wide and 50cm deep. If the ground is heavy, the holes should be 80cm long by 80cm wide and 80cm deep. A soil analysis must be carried out to determine the pH and thus determine the fertilization plan that ensures a pH between 5.5 and 6.5.

A disinfection of the soil should also be done and, if possible, inoculate antagonistic fungi, which are available on the market, especially *Trichoderma harzianum* and *Penicillium sp*. It is also necessary to apply 1 or 2 kg of hen per hole, since this is an excellent means for the propagation of the antagonistic fungi, improves the structure of the soil and contributes some mineral elements, especially nitrogen.

It is vitally important that the planting be done on rainy days or at least very cloudy, so that the plant does not dehydrate easily. The sowing of the plants should be slightly raised from the ground (as in morrito) to avoid problems of puddles and, consequently, problems of fungi of the soil.

Support or Tutorado: There are two common systems of hanging, the double trellis system which consists of placing the plants within two or four wires No. 14 or 16 supported by poles located at the beginning and at the end of the bed, where the distance of the two wires It is approximately 80cm. And the system in V, which is currently the most used and consists of placing two shelves of 3m long (which are used in greenhouses of flowers), placed and buried in the same hole forming a V. In each of 7m is placed another pair of shelves, this in order to give support to the plant since its branching begins, after the initial blunting. (Angulo C., 2000)

Pruning: According to the perception of each author there are different kinds of pruning, for example, Forero (1999) establishes three types of pruning: training, cleaning and renewal, unlike Angulo (2000) that only reports pruning or pruning and pruning health . The first consists in removing 30-45 days from the growth of the plant, the apical part of the branches, to originate tertiary and reproductive branches; the second (sanitary pruning) consists of removing branches that visually show diseases or weakness, to avoid losses in the crop.

Fertilization: The cape gooseberry is a resistant plant to different environmental conditions, nevertheless, it is very demanding in nitrogen at the beginning of its cycle, for that reason it is important to add to the soil 1 or 2 Kg of dry manure, avoiding the chemical fertilization since this can burn the new roots of the plant. This should be applied after one month after the transplant. (Angulo C., 2000)

3.1.3 Harvest

The production of the plant depends on the altitude where the crop is established, however it is recorded that this production begins between 4 and 5 months after sowing (Galvis, Fischer, & Gordillo, 2005), for example Fischer (1995) that in Villa de Leyva and Tunja with altitudes of 2300 meters above sea level and 2600 meters above sea level and temperatures of 17.4 and 12.5 ° C, respectively, the highest harvest occurs between 5 and 10 months after planting.

It is not recommended to harvest Uchuva during or after the rain; If it happens, it should be left to dry in the sun. At the beginning of its maturity stage the fruits fall naturally to the soil, however, the ripening process continues until the color changes from green to yellow - gold. Periodic harvests should be made when the yellowing has begun to prevent the fruit from falling. For export, it is advisable to pack the cape gooseberries when they are yellow (Golden variety) and light green (Kenyan variety) (Fischer, 2000).

3.1.4 Post-harvest

The post-harvest stage is understood as the moment after the harvesting of the fruit obtained, that is, it refers to the moment in which the product is stored, prepared and conditioned to undergo distribution and commercialization. However, another moment that can be understood as Post-harvest, is where the productive cycle of the planted crop

finally ends and the soil is recovered, either to change the type of crop to plant or to restart a crop. new cycle of the same crop planted.

Given the marketing perspectives of this document, regarding the post-harvest storage and commercialization, Fischer, Flórez and Sora (2000), as well as Corpoica (2002), FAO (2014), and Almanza et.al (2014) indicate that the harvested fruit must meet a minimum of physiological requirements in order to be accepted in national and international markets. These requirements to be taken into account are synthesized in: healthy and whole fruit (without rajadoras or samples of pests or diseases), that does not show physiological or phytopathological damage, that is clean, free of strange smells and flavors, that presents an orange color intense and have a fresh look. Additionally, for the international market it must be possible to demonstrate that the fruit does not exceed the maximum permitted limits of pesticides and agrochemicals (Codex Alimentarius). In line with the above, the Colombian Technical Standard N°. 4580 issued by the Colombian Institute of Technical Standards and Certification-Icontec-, presents the classification of the fruit that both farmers and marketers must take into account at the time of collection and selection to demonstrate their quality.

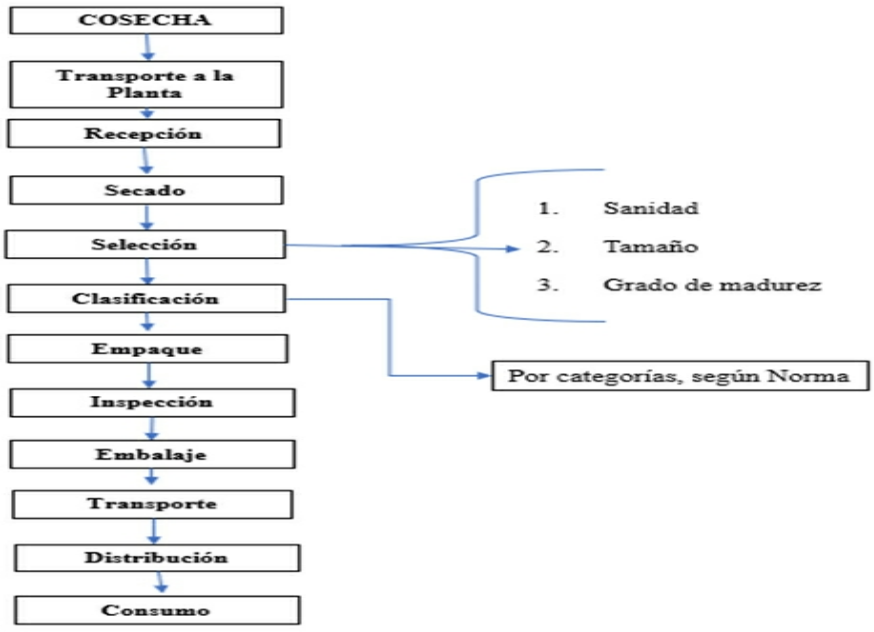
This classification is given by the relationship between the coloration of the futo and the degree of maturity. To the classification of the NTC, others have been added by authors such as Fischer (1999), Almanza and Espinoza (1999) and Herrera (2000), the latter cited in the compendium made by the National University, entitled "Production. Post-harvest and export of cape gooseberry (Physalis peruviana L.) ", which shows, although allocation of slightly different colors, great similarities, these new classifications becoming a greater academic support for the NTC. Under penalty of the above, the authors make an interesting reservation to this reaction, clarifying that the variables that affect the maturity and coloration of the fruits depend to a large extent on the height at which the crop is located, the type of reproduction of the seed used, the fertilization process, the irrigation system, among other factors capable of resulting in colors slightly different from those indicated and that are likely to be excluded from the category, even being part of it. For all the above, and as a synthesis, the classification presented in the NTC 4580 is presented below.

Table 1: classification of the relationship between maturity and fruit color

CATEGORY	COLOR OF FRUIT
1	Physiologically developed fruit, dark green color
2	Fruit of a lighter green color
3	The green color remains in the area near the calyx and towards the center of the fruit appear some orange tones
4	Fruit of light orange color, with green to the chalice area
5	Futo light orange
6	Futo orange
7	Futo intense orange

Source: Own creation based on Icontec NTC 4580 and Fischer *et.al*, 2000

Finally, the postharvest can be understood as a process that clearly FAO (2014) and Fischer (2000) have been able to outline (Figure 1), and that today apply even unconsciously, farmers and all those involved with the commercialization of cape gooseberry (Lizarazo, 2016).



Source: Own creation based on Icontec NTC 4580 and Fischer et.al, 2000

Figure 1: Post-harvest process

3.2.0 International Marketing

According to Fischer, Almanza and Miranda (2014), on the farm a pre-selection of the harvest is made, but in the collection centers the marketing companies also carry out their selection process, which classifies them by size and degree of maturity, and whose requirements may vary according to the importer's requirements. For reasons of health and market demands, Galvis et.al. (2005), mentions that chalices should be dehydrated with forced air, between 18 and 24 ° C, about 6 hours or more, according to their moisture content, before or after packing, in plastic baskets with a weight of fruits of 100- 150gr. For export, the fruits are packed in cardboard boxes weighing 1kg of fruit, for example 8 baskets of 125gr each. Galvis also indicates that the temperature, relative humidity (RH) and ethylene concentration factors in the cold room are the most influential environmental factors in storage success. To store the cape gooseberry up to 5 weeks, temperatures between 4 and 10 ° C are used (with RH between 80 and 90% and without calyx it can be increased up to 95%); however, it resists temperatures as low as between 1 and 2 ° C. Lópe z and Páez (2002, cited by Fischer and Miranda, 2012), as well as other authors have shown that the use of plastic sheets serves to create passive modified atmospheres that contribute to the conservation of time and fruit quality; such films obey to polymers such as microperforated polypropylene, polyester polyethylene or polyolefin. Following with Galvis et.al. (2005) in the agro-industry, the products that are derived from cape gooseberry are mainly:

1. natural or sweetened pulps, frozen or pasteurized, with and without seeds;

2. nectars and soft drinks) with different formulations;

3. partially dehydrated cape gooseberries, whole, through direct osmosis as snacks (simple or those coated with chocolate or other products);

4. Canning of cape gooseberries in syrups, sauces and compotes and

5. concentrates in the form of jams, sandwiches or sweets.

In Colombia, for 2016 the cape gooseberry was positioned as one of the most desirable and most prospective exotic fruits for Colombian international trade. Between 2005 and 2016 the exports of the species surpassed in 300% those of Grenadilla and Gulupa, others also exotic, occupying therefore the first line of the total of this type of fruits exported, although the third of the total of fruit exports, being thus surpassed by banana (Cavendish valery) and bananas for cooking, traditional fruits of international trade in Colombia. The U.S. market imports cape gooseberry without calyx and since 2014, it is also sent if carrying out a cold or quarantine price treatment.

In the same way it happens with the European countries, although to these countries generally the cape gooseberry if it is exported with calyx (or capacho) and with EuroGap certification, attached, which means the highest accreditation that guarantees the use of Good Agricultural Practices in farm (Fischer, Galvis and Gordillo, 2005); whose certification supposes to be one of the most demanding worldwide.

Today the Netherlands with US $ 15.2 million, Germany with US $ 3.8 million, the United States with US $ 1.2 million and Belgium with US $ 1.1 million, control 89% of the export destinations of the Colombian cape gooseberry. The international price of this in the Dutch and German market is U $ 4.7 and 4.5 FOB / Kg, respectively, in the Belgian market U $ 4.8 FOB and in US market U $ 5 FOB. In the nascent markets of Canada and Brazil an average of US $ 3 FOB / kg is paid. All these destination countries require an uchuva of average size of 2.0-2.5cm, of intense orange color without any type of scratches or breaks in the fruit, in fact, both the fruit and the layer should be smooth without black spots or damage samples . For export, cape gooseberries are presented in individual packages of 250g to 450g, with dimensions of 40cm x 30cm or 50cm x 30cm or submultiples of 12cm x 80cm (Cárdenas and Morales, 2007). To the above, (Alvarez, 2012, cited by Fischer et.al, 2014) adds:

> - The conventional Uchuva is sent by maritime mode from the ports of Barranquilla, Santa Marta, this with special destination to the United Kingdom and Belgium), or Cartagena to Rotterdam with a duration of the trip of 18 days; while the organic Uchuva can only be sent by plane, due to being more perishable. The advantage of organic gooseberry is the good price in international markets.
>
> -The seasons with the most activity for export to the European continent are the months of February-March and September-December, entering mainly through the ports of Rotterdam (Netherlands) and Antwerp (Belgium) (Fischer et.al., 2014). However, since most of the production is destined to international markets, the producers carry out the sowing and harvest planning taking into account the months of greatest demand in the European market (Universidad Nacional de Colombia, 2007), thus, the planting begins approximately towards the months of March, avoiding the frosty characteristics of the months of December and January of the country in the high regions.

3.3.0 Good Environmental Practices

In Colombia, environmental practices in crops are determined by norms that allow guiding farmers in BPA (Good Agricultural Practices), which are defined as "the application of available knowledge to the sustainable use of basic natural resources for the production, in a benevolent way, of safe and healthy food and non-food agricultural products, while at the same time seeking economic viability and social stability "(FAO, 2004). The monitoring of these norms brings competitive advantages within the regional and national economy and also becomes the means to obtain certifications required in the export processes; in such a way that at the present time it is not possible to consider the export of an agricultural product without meeting the environmental standards of each market.

[5]Taken from: http://www.procolombia.co/actualidad-internacional/agricola/las-oportunidades-de-la-uchuva-en-estados-unidos. Retrieved on November 30, 2017

[6]Taken from: http://www.freshplaza.es/article/111750/Colombia-exporta-un-63-por-ciento-m%C3%A1s-uchuvas-y-gulupas-desde-el-Puerto-de-Santa -Martha. Retrieved on November 30, 2017.

In addition to the environmental regulations, there are different advances in research that allow optimizing agricultural processes from the environmental point of view in order to reduce negative impacts, enhancing the development of agriculture in the country. Next, the main contributions in these topics will be addressed in Uchuva crops.

Normative Resolution 020009 of 2016, issued by the Colombian Agricultural Institute -ICA-, entity responsible for contributing to the sustainable development of agriculture, fisheries and aquaculture in the country, through research and monitoring activities that allow advising Colombian farmers through concepts and dependencies associated with the Ministry of Agriculture and rural development (Ministry of Agriculture and Rural Development, 2008); establishes the requirements for the Certification in Good Agricultural Practices in primary production of vegetables and other species for human consumption; This resolution establishes the main processes for a farmer to obtain such certification, within the main aspects to be taken into account the following are established (Instituto Colombiano Agropecuario, 2016):

- Legal representation and accreditation of the property
- Accreditation of technical assistance by an agronomist with the corresponding professional card in force. ? Plans of the property with the corresponding location of the cultivation areas.
- Land use certificate, and corresponding analysis in a certified laboratory.
- Permits for water uses and microbiological analysis of it.
- Accreditation documents for the technical verification visit of the property.

In addition, the minimum documents for certification are established in article 12: Annex I. Manual of Good Agricultural Practices, Annex II. Checklist, Annex III. Compliance Criteria for Certification of Farm Good Agricultural Practices and Annex IV Audit Request for Good Agricultural Practices.

The fulfillment of this resolution is reflected in the certification in BPA granted by ICONTEC, which affirms the fulfillment of the requirements established in the norm NTC 5400: Good agricultural practices for fruits, culinary aromatic herbs and fresh vegetables. General requirements. (ICONTEC INTERNACIONAL, 2012); This certification allows the recognition and normalization at international level of the processes carried out by the farmers in this case those dedicated to the production of the Uchuva fruit. The NTC 5400, therefore, establishes GAP and implicitly the environmental practices that must be carried out in the cultivation of Uchuva, and are divided into the following main control points (ICONTEC INTERNACIONAL, 2012):

1. Crop planning: It refers to the characterization of the area in accordance with the Territorial Ordinance Plan (P.O.T) of the Municipality, the Environmental Evaluation, and evaluation of the resources for cultivation such as soil and water.
2. Facilities: Verification of the existence of all the necessary areas for an adequate sanitary management of the crop such as: Area of dosage and preparation of mixtures of agricultural inputs, Storage area of equipment and tools, Storage area, Post-harvest area, Facilities sanitary and Areas for the welfare of workers.
3. Equipment, utensils and Tools: Review of maintenance, calibration and conditions thereof.
4. Water Management: Evaluation and analysis by certified laboratories of the appropriate physicochemical and microbiological conditions according to the legislation in the different stages of the production process, current permits for the use of water resources and measures for the rational use of water.
5. Soil management: Evaluation and analysis by certified laboratories of the appropriate physicochemical and microbiological conditions according to the legislation in the different stages of the production process, current permits, appropriate use according to P.O.T. and measures to prevent soil erosion and the spread of pests.
6. Propagation material: Verification of seed or seedling origin that assures the minimum sanitary requirements for their respective use.
7. Plant nutrition: Existence of standardized programs for nutrition in the crop, with the respective identification of each fertilizer, chemical and organic.
8. Crop Protection: Analysis of the use of pesticides and correct disposal of pesticide residues.
9. Harvest and Postharvest Management: Records and documentation of the planning of these stages that contemplate the necessary plans for the correct environmental management of the crop.
10. Documentation, records and traceability.
11. Health, Safety and Welfare of the Worker.
12. Environmental Protection: Existence of an Environmental Management Plan (P.M.A.); Conservation plans for associated resources, liquid and solid waste management.

Therefore, the environmental practices that must be established to obtain the certification that is the international insurance of compliance with environmental standards and that is a requirement for exporting Uchuva is extensive and requires advice to the agricultural sector and associations that allow compliance with them.

At the municipal level, this advice is provided by the Mayor's Office, through the Municipal Units of Agricultural Technical Assistance (UMATA), which is the body in charge of

providing agricultural technical assistance, directly to small producers (Presidency of the Republic of Colombia, 2007).

3.5.0 Research Participatory Action (Iap) as a Methodology for Agricultural Development.

The "action research" was born as a concept in 1944 proposed by Kurt Lewin, who argued that theoretical advances and social changes could be generated simultaneously (Martínez Castillo, 2003) without the need for any exclusions. This term has evolved to understand the IAP "as a movement necessarily linked to political actions, generator of theories and methodologies that guide research, and as an intellectual basis in community processes in terms of communicative action" (Salazar, 1992). The main objective of the IAP, is to generate knowledge from actions developed from the popular knowledge that explains the reality in a systemic and holistic way, including all the internal and external variables associated with a phenomenon; in such a way that transition processes can be generated that together with political tools allow to achieve positive social transformations or in the communities. (Fals Borda, 1991).

The IAP is introduced in works with the rural population based on the work of Paulo Freire, Extension or communication? Awareness in rural areas (1978), where an analysis of the training systems used for the modernization of agriculture is carried out; from this it is understood that the IAP as a methodology for rural development should be based on the integration of realities, needs, aspirations and beliefs of the rural population (Guzmán Casado & Alonso Mielgo, 2007) and the external agents should be the support that this community requires, sometimes set apart, in societies.

4.0.0 Results and Contrasts

Taking into account the methodology used, it should be remembered that the results presented in the following section have been the product of the information collected through the IAP instruments applied, which inquired about the common practice carried out daily by farmers in their crops and that they suppose for them the success of their crops, and the failures to avoid.

In this sense, this information corresponds to unpublished material to make the following contrast between the usual practice of cultivation of farmers and the corresponding theoretical debate, with the aim of, as far as possible, extending the practice to other crops of the municipality, and at the same time, reveal the needs closest to the peasant community facing the international market.

4.1.0 Pre-seed:

Regarding the study of soils and soil preparation that must have been carried out before sowing, 100% of the farmers recognize the importance of carrying out a soil analysis and the use of organic materials to cultivate it; nevertheless, 100% of them have never submitted their land to a technical study and affirm, nor have they received any kind of support from public or private entities, to carry it out. Thus, and in the absence of such studies, farmers have resorted to their common sense, while their practice of preparing the land for planting is based on plowing and soaking the land to release, as suggested by Fischer (2000) and Agrisan (2012).

In addition to the above, Agrisan proposes to prepare the land mainly with organic fertilizers before, and not after, sowing, to regulate the pH of the soil and ensure a rapid and effective growth of the plant. In the praxis of the community, it uses organic fertilizers Cal and chicken, given the presumption of acidity of the soil, and combine it with natural sand, for 60 days after planting in the field.

Despite the lack of soil studies on the part of the peasants studied, it is evident that they have been making their decisions based on observation, with which, unwittingly, they have been partially approaching the theoretical debate, although at the expense of of losses and trials and errors, which as indicated by leaders and other community participants, conventional wisdom, although it has been useful and productive, it has been built at the expense of sad and varied losses of crops, money, time and will, given the unfortunate lack of professionals to guide them in aspects that farmers often fail to evaluate. Regarding the latter, the campesinos have pointed out a specific case in which they did not evaluate the effects of waterlogging on the crops, which, for the community, were synthesized in the same effects suggested by Aldana *et.al* (2014) focused on the yellowing and abscission of the leaves, with the farmers having to lose crops of 2 and 3 months and reseeding by dredging the soil and preparing it with monthly dredging techniques.

In spite of all the above, in the community there have been airs of intervention that the peasants have valued fiercely, which have consisted in the delivery, in a beginning, now commercialization, of seeds obtained by asexual way from a private University of the city to undertake uchuva crops in the town. This aid has spread the crop throughout the region and has helped to balance the income of these peasant families. In addition to this, they also appreciate the collaboration of La comercializadora internacional in the supply of another kind of seeds and the help received from the agronomist of the municipality UMATA.

Without good, the farmers consider this type of collaborations as important, they feel that it is not enough, since these organizations only assist them for once and forget them, knowing that all types of crops require constant monitoring and evaluation. . On the part of the leaders of the community, these have classified these academic, economic and commercial interventions as the push that somehow all, and especially the peasants and the people in the region, need to finally organize and become productive.

4.2.0 Sowing

60% of the farmers have obtained seeds through the marketer and the remaining 40% of the aforementioned University. In this stage of siembralos farmers apply an organic fertilizer bimonthly, obtained mainly from the biofactory of the town, program implemented by the Mayor's Office through the UMATA (Municipal Agricultural Technical Assistance Unit). However, it is important to clarify that 80% of farmers opt for fertilization with chemical products such as triple 15, through foliar fertilization techniques, since this technique has given them better results.

Source: Authors

Image 4: Tutorado system, cultivation of Upland trail Altamar, La Calera.

The harvest is for 2.8 years, after the first 8 months of planting. At 1.5 years (of 2 years), the harvest loses quality, therefore, the resulting fruit is sold to the national market. Additionally, each month pruning is done, which consists of cutting and separating the weeds and dead plants from the productive ones. In the first harvests, corresponding to only 20% of the study group, the harvest of the fruit was manual; in all the subsequent harvests the harvesting was done with the use of scissors. During the harvest, the fruit is separated according to its quality as a possible export fruit; This separation is made by visual inspection of the fruit so that the fruit that shows signs of plague or signs of physical deterioration (such as cracks due to low temperatures) are separated to be marketed in the local market either in fresh or to be the subject of a processed by-product.

4.4.0 Post-harvest

Given that the farmers studied here do not yet have a crop whose cycle has ended, the post-harvest stage is given by the following two aspects:

1. **Technician:** The postharvest for the farmers consists of letting decompose the layer in the same land of sowing in order that this serves as fertilizer to the crop. Product of the debate and the conversation generated by the research methodology used, we arrive at the generation of an Innovation for this moment. Given the cultivation cycle of 2.5 to 3 years, it is intended that at the age of 2.5 years of the plant, when the plant has already lost productivity and its fruits only serve the national market or be processed, the current space of 2mts with which the plants are separated from each other, 1mt of it would be used in order to re-sow and continue taking advantage of the land and the market. According to the theory, this should not imply problems for the crop or the plants, but it is expected to find the sustenance that endorses the technique or give indications of its infeasibility. Undoubtedly, the community proves to have perspectives of the agro business, which must be taken seriously either to transmit the praxis in the community and other farming regions, or to avoid future economic, social and / or environmental losses; as is the custom of Colombian agriculture.

2. **Marketing:** This aspect refers to the marketing postharvest, which is based on the alliance they have with an international trading company to whom they must send the harvest weekly to their collection center in Zipaquirá, and then distribute it to the national markets. and international with which the marketer has an agreement, including an international one in Europe. The classification process is carried out directly by the marketer, as well as the packaging, packaging and manufacturing process, where the farmers or their leaders do not intervene in any aspect, nor are they informed about it. Once the classification is finished, the farmer is paid around $ 3,000- $ 3,300 / kg according to the total useful product classified, regardless of whether its destination is the national or international market.

Given the initial intervention that the marketer had in the community, with a verbal agreement, in which she gave the community the first seeds to start growing cape gooseberry in the area, 50% of the population studied here sells her product to the firm at a price of $ 3,000 / kg, a price that will be maintained until the next few years, the end of the harvest and the cycle of the seeds.

4.5.0 International Commercialization

None of the farmers knows the customs regulations and / or export requirements in Colombia, nor importation in the destination countries. Although the community has an international marketer as an ally for the purchase of their crops, this has not allowed them to go further and obtain additional information; limiting them to the "business rules"

[7]The leaders interviewed also refer to this as a measure that in the long term may be counterproductive to the inhabitants, since it would mean getting used to not having to make any effort to implement their ventures. Without good, such perception could become true, according to the FAO the associativity begins when we contribute the individual resources and we make that we direct all the collaborators towards a same goal

and keeping them under the requirements imposed by the agronomist of the firm. The assistance offered by the marketer to the community comes from the first supply of seeds that this makes to the farmers for planting cape gooseberry, so that throughout the harvest obtained these sell the product, just at a price a little lower discounted the price of the given seeds, and ensure the supply of the fruit to the internal and external customers that has the marketer. In addition, the assistance received by the farmers also focuses on the necessary guidelines for how to grow, with fertilization formulas, often delivered directly to the crop by the firm's agronomists, as well as on periodic visits to the crops, to ensure the fulfillment of the demands of the target market to which the marketer intends to sell.

Undoubtedly, the firm has a business idea that, in addition to generating value for them as a company, also represents an employment opportunity for the farming community, since in a different way, the farmers obtain the resources and the means of production necessary for the production. agricultural practice, where the lack of these undermines the work of cultivating and the opportunity to take advantage of the land that the peasants own or the surrounding areas that can be leased. Similarly, it should be clarified that the need of farmers to use and / or sell their products leads them to have to look for intermediaries, who often do not clarify the destination of the product purchased (national, international and / or transformation market) or they offer real prices, making such information asymmetry contribute to a loss in the negotiating power of the peasants and forces them to take the first, and almost unique, option that is offered to them.

On the other hand, it also analyzes what makes the marketing company allied with the fruit it receives from the growers studied here, which consists of dehydrating it together with other fruits of exotic species, and marketing it in presentations of teas and teas as a great brand. in the national and international market at high prices. Unfortunately, the role played in this case by the marketing firm in the grower-distributor relationship highlights the economic importance of adding value to agricultural products, and even more, that which has the power to control areas of the chain of production. value as critical as marketing, where much of the final price is absorbed and in the face of the lack of vision and care in this aspect are to cause farmers in adverse scenarios for the fair trade of their products.

Finally, for farmers it is clear that the demands of the different markets also suggest requirements for them as suppliers and that given these demands, the way of cultivation must be careful to expect higher profits. It also concludes the need to move up the production chains and seek mechanisms and alliances to generate added value and transform the fruits they obtain, in order to achieve higher profits, avoid intermediaries that subtract them and appeal to the quality of the demands international It is this aspect, with the study it is evident that the farmers do not have any experience or empowerment whatsoever on the international trade of their fruits, despite their commercial alliance with the marketing firm, given that they are still shy about it, given the lack of knowledge of the process, what has left them behind and even, has put them at a disadvantage with their allies.

4.6.0 Environmental Practices

Through the workshops carried out, the perception of two main stakeholders in these processes was identified in terms of environmental practices: The UMATA (Municipal Agricultural Technical Assistance Unit), as a representation of the investment made by the City Hall in agricultural advisory and the set of Uchuva farmers who are starting their process as an association. The UMATA provides advice to farmers who request it on environmental practices in the various crops, mainly focused on crop rotation to prevent soil degradation, protection of water sources, installation of live fences, proportion of compost for free made by the biofactory realized as programs of the UMATA for treatment of organic residues with the purpose of being used as organic fertilizer inside by the farmers that wish it and advice at agricultural level in programs of fertilization and handling of diseases and pests.

However, there were barriers in the communication between UMATA and farmers, expressed in that several farmers already have some kind of agreement to export have advice from external agronomists who handle training and technical recommendations that do not agree with the environmental practices promoted by Mayor's office.

In the workshops held with the association of farmers who are starting their process in the cultivation of Uchuva, it was identified that of the 10 farmers that are part of the study group, only one of them recognizes and implements environmental practices such as the use of of organic fertilizer and minimum tillage, which is a consequence of knowledge acquired during independent training in SENA, however it is important to highlight that this knowledge is not disclosed to the farmers that make up the association. The perception that farmers have of the term sustainability in their crops, is limited to a recognition of the importance of environmentally friendly practices, but more as an independent process of environmental awareness but they do not have a definition or training in environmental practices and do not recognize the importance of these as requirements in the export processes. As an important aspect to highlight in terms of communication from the two aforementioned stakeholders, the farmers affirm that at the agricultural level one of their problems is that the specific advice on each farm offered by the UMATA is short for their needs and that there is no face-to-face advice or follow-up on the given technical advice.

The two points show the interruption in the communication processes of the two parties, in addition to the lack of investment in programs that allow monitoring and promotion for farmers.

4.7.0 Research Participatory Action as a Tool in the Development of Local Agricultural Practices.

One of the main objectives of this research is the inclusion of farmers to generate technical recommendations from the point of view of community, commercial and environmental organization from their own experience according to the characteristics of the land. This purpose required the use of tools proposed in the IAP, which allowed the role of farmers as internal researchers that through the moderation and participation of external researchers (authors) would

generate a disclosure of knowledge in the booklet created by the community and for the community.

In the first stage (Diagnostic), as mentioned in the methodology, two phases with different instruments were developed. In the first phase of this stage, through open interviews with experts, different points of view were identified about the evolution of Uchuva cultivation associated with municipal development, highlighting the following:

- The existence of a pilot group in central trails that, for approximately nine months through seeds provided by the UMATA in agreement with the ICA, venture into the development of Uchuva cultivation according to the characteristics of the land. - The main successful and problematic practices associated with each stage of the crop's productive cycle. - The need and development of a commercial association that allows the community to generate a figure that facilitates the export processes.

- The protection of water rounds through live fences, the transition of crops and the voluntary use of organic fertilizer (from the biofactory created by UMATA), as the main environmental practices associated with crops and led mainly by the UMATA.

In the second phase of the diagnostic phase through field observation and open interview with the farmers in each of the plots, the presence of said pilot group and some of the techniques indicated in the previous phase was corroborated; Likewise, it is important to highlight that through the first interaction of external researchers with farmers, it was evident that farmers individually distrust external research processes and refer the researcher to foundations with which they have some type of commercial link.

In the second stage of programming according to the diagnosis, three IAP workshops were carried out, in which the main results are:

- Workshop 1: Proposal of external researchers. Through the presentation of the proposal in the selected sample, it is identified that the main objective and therefore the need of the farmers is the independence (elimination of third parties) in the commercialization processes with which the training is directed so that they can appropriate tools that allow them to obtain this independence. Similarly, in this phase the heterogeneity of the pilot group is recognized in terms of training (the existence of farmers with basic education to farmers with professional training, the latter are those who identify themselves as leaders in the group) and the identification of the farms through the scheduled visits to them.

- Workshop 2. Focal Group. This instrument allowed to collect the successful and problematic practices associated with the crop cycle, evidencing that due to the uniformity of the land, the problems are similar in each farm, which are generated by two main pests: 1. Presence of Trozadores (larvae of different species of the Noctuidae Family, moths of great importance at the agricultural level for the generation of diseases in different crops, and the presence of aphids (Family Aphididae) which causes aging and wilting of the plants, and the farmers control it by means of the use of insecticides, which is why training on biological control that can complement and reduce the use of chemicals in crops.

In view of these problems, farmers indicate that they are mainly advised by the Agronomist provided by the UMATA, but that there is no monitoring of these councils, which generates uncertainty in the techniques associated with their crops, generating trial and error processes that have generated economic losses.

In addition to the problems, the successful practices that stem from trial and error, such as the measures of adequate planting distance (which without prior reading of the theory by farmers agree with the proposals by different authors), were collected and disseminated. V-tutored system, the preparation of the land in the pre-planting stage and the management of seedlings to adapt to the conditions of the farm.

- Workshop 3. DOFA. Through the group discussion, the main weaknesses, opportunities, strengths and associated threats were identified:

WEAKNESSES: The lack of cooperation and communication of successful practices in each farm among farmers.

OPPORTUNITIES: The possibility of association with educational entities that provide training and inputs for rural development.

STRENGTHS: The own learning by trial and error of the farmers which has allowed the total adaptation of the practices to the conditions of the land present in the municipality.

THREATS: The lack of accompaniment and monitoring by the UMATA and lack of adequate training in technical aspects associated with the productive cycle and environmental practices.

Finally, through training, improvement plans were designed for the developed agricultural practices that are expected to be executed in the medium / long term and that were included in the design of the booklet along with the practices already identified as successful and appropriate that arise from the experience of the group of farmers (internal researchers) and are complemented by the knowledge of external researchers

5.0.0 Conclusions and Recommendations

1. Through the applied instruments different levels of co-construction were evidenced. The first corresponds to a collective understanding based on the free and frank provisioning of information subsequently debated, which was giving rise to new and different ideas about the productive process and agribusiness, which came together in the rethinking of the post-harvest stage, as productivity mechanism of space and the market.

2. Although initially farmers were reluctant to provide information that they could consider sensitive to the knowledge of the researchers, the presence of the community leader was a valuable help to take them towards conversations devoid of mistrust and direct them towards the search for a same goal. With this, it becomes evident the need for the development of communities the presence of a leader to guide them in ways that allow the growth of its members, the regions where they perform and the community itself.

3. None of the farmers knows or has been related to customs regulations in Colombia, nor with the requirements of export or import in the destination markets despite the fact that they have an allied international trading company. This is considered a profound failure in the information that makes growers have to go to intermediaries that undoubtedly increase the transaction costs and reduce the bargaining power of the farmers.

4. The workshops showed that environmental practices are not recognized by 90% of farmers. Only 10% recognize some (as organic fertilizer), thanks to an independent work, but it has not been fully implemented either due to economic and expertise deficiencies.

5. There is an urgent need to make the ideas of small farmers allow themselves to be brought to reality through the expansion of alliances in the field with universities, research centers and other organizations in charge of the agricultural area, to investigate from their spaces all those solutions that go beyond the tactical aspect and are based on strategy.

6. The experience gathered in this research showed that farmers do not have adequate training in environmental practices because they do not identify their importance in the production process and there is no adequate communication and monitoring by government and commercial entities. However, the correct disclosure in the workshops allowed a greater understanding and appropriation of production, commercial and environmental concepts and practices, which had to be associated with export requirements in order to generate the need in the farmer to adopt these practices.

7. The models of advice for agricultural development at local or regional level often focus on technical recommendations made by experts to be executed by farmers in their different fields, however, the importance of the knowledge acquired by trial is ignored. and farmers' error since they are in direct contact with the field and they know in depth the vicissitudes and needs that rural work represents.

In this sense, the methodological approach used in this research allows the collection of such knowledge, since the IAP generates reflection and action spaces that involve different actors as internal researchers and that give voice to actors that have traditionally been excluded in the processes of knowledge construction (Kindon, Pain, & Kesby, 2007); in such a way that the present investigation allows corroborating the ideas of authors who affirm that "the integration of peasant knowledge in research and dissemination fits perfectly with the IAP approach" (Méndez, Bacon, & Cohen, 2013), which It is materialized in the creation of an information booklet that gathers the experiences of the group of farmers and the new knowledge generated in the collective construction.

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References

1. Agrisan (2012). B.P.M Program, Good management practices, uchuva technical sheet. compendium programs developed in clean agriculture (organic). Agrisan Abonos Superior Ltda. Bogotá D.C.

2. Aldana, F., Garcia, P., Fischer, G. (2014). Effect of waterlogging stress on the growth, development and symptomatology of cape gooseberry (Physalis Peruviana L.) plants. Academic Journal Colombia. National university of Colombia. -Pp. 393-400. Bogotá D.C

3. Alvarado, P .; Berdugo. C .; Fischer, G. Effect of a treatment at 1.5 ° C and two relative humidities on physico-chemical characteristics of cape gooseberry Physalis peruviana L. during the subsequent transport and storage. Colombian Agronomy Magazine, National University of Colombia. Bogotá, v.22, n.2, p.147-159, 2004.

4. Álvarez, J. Fischer, G. and Vélez, J. (2015). Production of cape gooseberry (Physalis Peruviana L.) under different irrigation sheets, irrigation frequencies and calcium dose. Colombian magazine of horticultural sciences - vol. 9 - no 2 - pp. 222-233, July-December 2015

5. Angle C., R. (2000). Planting, Support, Pruning and Fertilization. In V. Flórez R., G. Fischer, & Á. Sora R., Production, Poscosecha and Exportation of the Uchuva (Physalis Peruviana L.). Bogotá: National University of Colombia, Faculty of Agronomy.

6. Angulo, R. (2005) Uchuva the crop. agroindustrial research and advisory center, Universidad de Bogotá Jorge Tadeo Lozano, Bogotá

7. CORPOICA, (2002). Management of cape gooseberry cultivation in Colombia. Technical bulletin, regional research center. Rionegro, Antioquia.

8. Fals Borda, O. (1991). Action and Knowledge. How to break the monopoly with participatory action research. Bogotá: CINEP.

9. FAO, (2004). Good agricultural practices FAO Regional Office for Latin America and the Caribbean

10. Fischer, G. (2000). Growth and development. In Flórez, V.J., Fischer, G. & Sora, A. Production, Post-harvest and Exportation of the Uchuva Physalis Peruviana L. Universidad Nacional de Colombia, Bogotá. Pp 9-26: Unibiblos.

11. Fischer, G. 1999. "Non-destructive determination of fruit quality and maturity", in Annual Activity Report of 1998. Department of Crop Physiology. Agronomy faculty. National university of Colombia. Santa Fe de Bogota. p. 13-14.

12. Fischer, G; Almanza J.P; Miranda, D. (2014). Importance and Cultivation of the Uchuva (Physalis Peruviana L.). National University. Bogotá D.C.

13. Forero, S.J. 1999. The cultivation of cape gooseberry. Agroecological strengths of the department of Boyacá for the cultivation of cape gooseberry. My Parcela Magazine. INAT-FONAT-ISREX agreement.

14. Guzmán Casado, G., & Alonso Mielgo, A. (2007). Participatory research in agroecology: a tool for sustainable development. Ecosystems, 24-36.

15. ICONTEC INTERNATIONAL. (12 of 12 of 2012). Colombian Technical Standard. Good agricultural practices for fruits, aromatic culinary herbs and fresh vegetables. General requirements. Colombia.

16. Colombian Agricultural Institute. (April 7, 2016). Resolution 020009. Colombia.

17. Kindon, S., Pain, R., & Kesby, M. (2007). Participatory Action research approaches and methods: Connecting People, Participation and Place. Routledge.

18. Marti, J. (2000). Action-participatory research: Structure and phases. In T. M. Villasante, Participatory Social Research: Building Citizenship I (pp. 73-117). Madrid: El Viejo Topo.

19. Martinez Castillo, R. (2003). Participatory research methodologies: An agro-ecological contribution to endogenous development. Abra Magazine, 19-33. 20. Méndez, V., Bacon, C., & Cohen, R. (2013). AGROECOLOGY AS A TRANSDISCIPLINARY, PARTICIPATORY AND ORIENTED APPROACH TO ACTION. Agroecology, 9-18.

20. Méndez, V., Bacon, C., & Cohen, R. (2013). AGROECOLOGY AS A TRANSDISCIPLINARY, PARTICIPATORY AND ORIENTED APPROACH TO ACTION. Agroecology, 9-18.

21. Ministry of Agriculture and Rural Development. (December 18, 2008). Decree 4765. Colombia.

22. Morales A., Cárdenas E., (2012). Exporting chart of exotic fruits. Ocati S.A. Antioquia

23. Nistal, T. A. (2008). IAP, Maps and Social Networks: from research to social intervention. PORTULARIA Social Work Magazine.

24. Porter, M. (2003). Be competitive: new contributions and conclusions. Deusto S.A. Editions, Bilbao.

25. Presidency of the Republic of Colombia. (May 29, 2007). Decree 1929. Colombia.

26. Salazar, M. (1992). Introduction. In V. Authors, Participatory action research. Beginnings and developments (pages 9-12). Madrid: Popular.

27. National University of Colombia, (2007). Productive alliance for the production and marketing of cape gooseberry for the municipality of Ventaquemada. Bogotá, D.C.

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