

“Today we are treated like human beings!” Methodological strategies of Action Research with family farmers’ practitioners of the slash-and-burn system in Southern Brazil

Cintia Uller Gómez, Reney Dorow

We present and discuss the action-research methodological strategies used with farmers of Biguaçu, on the coast of Santa Catarina State, southern Brazil, over eight years. These strategies have enabled access to the formal market of farmers who produce in the slash-and-burn system the added value to products from this system and, above all, the collective organisation and raising their self-esteem. Cutting and burning agriculture, locally known as "roça de toco", consists of the felling and burning of a small piece of vegetation (glebe) for the implementation of annual crops for a few years. After that, the glebe is left fallow so that the forest and soil fertility regenerate, and another glebe is felled and cultivated. In Biguaçu, three main products are obtained in this system: charcoal, cassava and cassava flour. Although having recognised quality and being produced in an ecologically intelligent system, these products were marketed irregularly, with little financial return for farmers who were surrounded by large legal and environmental insecurity. Within the framework of different projects, different strategies were used to overcome this situation. We highlight the unprecedented combination, in working with farmers, of the thematic research of Paulo Freire with the Teaching Moments, used for the transposition of Freire's premises for the teaching of science. On that basis, the group took conscience of their problems and of the need to acquire new knowledge and new attitudes that would overcome them. To plan for overcoming the problems, the method ZOPP of participatory planning (Objectives-Oriented Project Planning) was used. The set of strategies used resulted in the development of packaging and collective marks and the constitution, in July

2013, of the Association "Valor da Roça" ("The Farm's Value"). Collectively, we created the Association's statutes and the Regulations laying down detailed rules for the use of packaging and the umbrella brand "Farm's Value" as well as that of the collective marks of the products Our Coal, Our Flour, and Our Cassava. Thus, another important result is the fact that, currently, farmers are independent, managing their brands and packaging autonomously and reaching new markets.

Key words: methodology, pedagogical moments, family farming

“Agora somos tratados como seres humanos!”

Estrategias metodológicas de investigación-acción con agricultores familiares que practican la agricultura de barbecho en el Sur de Brasil

En el presente trabajo se presentan y discuten las estrategias metodológicas de investigación-acción que fueron utilizadas con agricultores familiares de Biguaçu, en el litoral del Estado de Santa Catarina, en el Sur de Brasil, en un periodo de ocho años. Estas estrategias permitieron el acceso al mercado formal de los agricultores que practican la agricultura de barbecho, se logró añadir valor a los productos, y la organización colectiva de los agricultores, y sobretudo una mejoría en su de autoestima. La agricultura de barbecho, conocida localmente como “roça de toco”, consiste en la tala y quema de una pequeña parte de la vegetación para el plantío de cultivos anuales por un periodo corto de tiempo, generalmente dos o tres años. Al término de este periodo, se deja la tierra en descanso (barbecho), favoreciendo la regeneración natural del bosque y se disloca a otra parcela donde el ciclo se reinicia. En Biguaçu, los principales productos de este sistema son: carbón vegetal, mandioca congelada y harina de yuca. A pesar de la alta calidad y producción ecológica inteligente, la producción y comercialización irregulares de estos productos decantaban en bajos ingresos económicos para los agricultores, los cuales eran vulnerables al contexto de inseguridad jurídica. Por intermedio de distintos proyectos fueron utilizadas diferentes estrategias para superar esa situación. Destacándose la conjugación inédita de los Momentos Pedagógicos, utilizados para la transposición de las premisas freirianas para la Enseñanza de Ciências, con métodos de

planeamiento participativo. Con esta base, el grupo se concientizó de su problemática y de la necesidad de alcanzar nuevos conocimientos y nuevas actitudes para superarla. Se utilizó el método ZOPP de planeamiento participativo (Planeamiento de Proyectos Orientado por Objetivos) para planificar cómo superar los problemas. Del conjunto de estrategias utilizadas, resultó la elaboración de embalajes y marcas colectivas y la formación, en julio del 2013, de la Asociación Valor da Roça. De manera colectiva, fueron construidos el Estatuto de la Asociación y el Reglamento Interno, el cual establece las reglas para el uso de los embalajes y de la marca de la Asociación "Valor da Roça" y de las marcas colectivas de los productos: Nuestro Carbón, Nuestra Harina y Nuestra Mandioca. Actualmente los agricultores son independientes, hacen la gestión de sus marcas y embalajes de manera autónoma y alcanzaron nuevos mercados.

Palabras clave: metodología, momentos pedagógicos, agricultura familiar

Introduction

In this text we present action research procedures used with family farmers of the village of Three Rivers, in the municipality of Biguaçu, coast of Santa Catarina, Brazil. They enabled the collective construction of strategies that helped make the formal market accessible for agriculture products of cutting and burning, the added value of these products and, above all, collective organisation and raising the self-esteem of farmers. These advances are results of a series of inter-institutional and interdisciplinary projects that have been developed since 2006. Taking into account the limits of space, we delve into the methodological procedures used during the period from 2012 to 2014, under the Project "Valor da Roça" (Uller-Gómez, 2011).

The discussion presented here includes a broader theme that relates to the form of action of rural extension services to rural communities and the need

for rescue and revaluation of traditional systems of land use, featured here as slash-and-burn agriculture¹.

Rural extension services originated in Brazil in the late 1940's in Minas Gerais with the purpose of promoting the improvement of the living conditions of the rural population and support the process of modernisation of agriculture. In Santa Catarina, they began in 1956 with the creation of the Santa Catarina Association of Credit and Rural Assistance (Acaresc). These services were included in the country's industrialisation policy, which would require the modernisation of agriculture with the intention of increasing agricultural productivity, replacing imports, generating raw material, and freeing labour for industry. This process, based on the extreme value of technical and scientific knowledge and on the devaluation of the knowledge of farmers, led to the production and dissemination of agricultural technologies. From that point on, it became known as "modern technological standard", widespread in central countries in the 1920's and 1930's, and in peripheral countries from 1960's, through what is called the "green revolution" (Muller, 2001).

In Brazil, the construction of a vision about how agriculture and rural extension should be, contributed to the bias against slash-and-burn agriculture, which has often been considered old-fashioned and degrading. However, in the Atlantic forest Biome, the system, which has existed since the pre-Columbian era (Dean, 1997), is still present in many traditional communities

¹ Other terms are also used in literature to refer to this type of traditional land use system, as "itinerant agriculture", "fallow ground agriculture", "fallow fields of play" and "slash-and-burn". Although there are variations, the essential characteristics of the system are similar throughout the tropics. The vegetation of a small area of forest is felled and burned to prepare and fertilize the soil for cultivation of agricultural species for a short period of time, usually one to three years; after harvest, the area is left fallow for a long period, which usually ranges from ten to twenty years. Few characteristics of the system of slash-and-burn, according to Padoch and Pinedo-Vasquez (2010), fall into a category of sustainable management. The cutting and burning of the vegetation, the weeding, the relatively low productivity and the apparent abandonment of fields after two or three years of cultivation are considered primitive and destructive characteristics. Because of this, these authors point out that this system has been condemned and criminalised, and the efforts to eliminate the "roça de toco" are common in conservation and development programmes. As a result, the "roça de toco" is disappearing or being replaced by other land uses in recent decades (Van-Vilet et al. 2012).

(Adams, Munari, Van Vliet, Murrieta, Piperata, Futemma, Pedroso JR., Taqueda, Crevelaro, & Spressola-Prado, 2013). Biguaçu is an example of where this type of agriculture persisted in most of the rural establishments that have inclined areas (Uller-Gómez, Gartner, & Pinheiro, 2014).

Contradicting the prejudice, recent approaches on this type of agriculture point out their environmental benefits, including biodiversity conservation, landscape heterogeneity and food safety (Van-Vliet *et al.* 2012; Adams *et al.* 2013). In Biguaçu, however, farmers until recently acted in a clandestine manner by a number of factors: environmental laws are very restrictive and do not contemplate the traditional use of the forest that uses extended periods of fallow, and the official extension technicians were not allowed to address, along with the population, native forest-related matters or to the production of coal. These two factors fostered ignorance with respect to some possibilities of legislation (such as the settlement of coal kilns and authorisation of the practice of fallow up to ten years) and the elimination of rural extension services. These factors, allied to an aging population, favoured replacing of the traditional system of slash-and-burn by planting exotic trees in many rural establishments (Bauer, 2012; Bauer, Fantini, Valois, & Uller-Gómez, 2014).

In summary, the problem was complex: the production system was very interesting ecologically and quality products were obtained. Coal, for example, was sold in irregular packaging, and farmers had little economic return although consumers recognised its quality (Carrieri-Souza, Fantini, Uller-Gómez, & Dorow, 2014). The irregular situation left the population in a condition of great social fragility. This situation was highlighted for the first time by research carried out in 2006-2007 (Uller-Gómez & Gartner, 2008; Uller-Gómez *et al.*, 2014). After this initial work, a series of action-research projects has been developed since 2009 by different research institutions, and it managed to advance in many aspects, especially in social organisation, in marketing and in the re-empowerment, such as the formation of an Association of farmers, the branding and packaging, the development of a participative certification process of products, the improvement of self-esteem and the possibilities of access to public services, especially with technical assistance and environmental agencies. This article aims to present and analyse the methods of action-research which allowed those advances, a combination of

methods originated in science education with participatory planning methods. We believe that this analysis can help improve the use of the methods themselves, representing important breakthrough for the methodological possibilities of research projects with rural communities, as well as bringing to light their potential for action research processes in other fields of knowledge.

Background – understanding the context

Hired by the official organ of extension of the State of Santa Catarina, the first work carried out in the communities, from 2006 to 2007 (Uller-Gómez & Gartner, 2008; Uller-Gómez et al., 2014), was based on the procedures of "Thematic Research" (Freire, 1975) to understand the reasons for the lack of participation by the community in the activities that the extension staff proposed. The work concluded that the lack of participation was motivated by the rural extension team not treating some themes to the population, according to the same survey, which were: Food Security; Pesticides and Soil Management; Technical Assistance; and Permanent Preservation Areas and Forests (including coal production with native wood). The work also concludes that all these topics were assembled in a great Unifying Theme: the Market. And it highlighted that although it might be easier to start mobilising the community for the discussion of a Generating Topic whose importance was already evident, as was the case with the irregular use of the forest and the production of coal, one should always take into account the totality of the themes. In addition, since you always take into account that totality, regardless of the theme initially approached, one would inexorably get to the Unifying Theme "Market".

These themes have continued not being dealt with by the rural extension, but prompted an inter-institutional group of researchers, that since 2009 has been meeting with the community, to address the issue openly across three linked action research projects. The work carried out in 2009 to 2011 generated a plethora of information about the use of the forest, social organisation and forms of commercialisation, as well as facilitated environmental and agrarian regularisation of a group of farmers (approximately 10 families). In dialogue with the community the particularity of the system of slash-and-

burn was evident, and it provided the maturation of consciousness of farmers and researchers around the singularity of their traditional practice. It was becoming clear to researchers and farmers that the main products targeted to the market were produced in the agricultural system of cutting and burning, and that this system had interesting features, especially the conservation of forest resources.

From 2011, the need for formal inclusion of products in the market, and of its differentiation, become clearer, ensuring that the set of researches developed would result in benefits for the community. To do so, it would be necessary to overcome other challenges: find product differentiation strategies, and achieve group organisation for trade, which used to be done informally and individually. This way, the "Valor da Roça" project was designed (Uller-Gómez, 2011), structured precisely to find strategies for the recovery of stump farm products, whose methodological approach is discussed below.

The methods – what was planned

The proposal of intervention within the framework of the project "Valor da Roça" has always been based on the understanding that, as pointed out by Thiollent (2008, p. 24), "action research is not constituted only by action or by participation. It is necessary to produce knowledge, gain experience, contribute to the discussion or to advance the debate about the issues raised".

The works were targeted, in the long run, by the dynamic proposed in Teaching Moments (Delizoicov, 1991): Initial questioning, organisation of knowledge and application of knowledge, all of them analysed below. With the progress of the project, the method was combined with the participative planning method known as ZOPP (Goal-Oriented Project Planning) (Brose, 2001; Helming & Göbel, 1997). The integration of these methods will be described properly in another section of this text.

The Teaching Moments originated in the area of Science Education, of Brazil, were designed for the transposition of the premises set by Paulo Freire for formal education, and have been analysed in various initiatives (Delizoicov, 1991; Delizoicov, Angotti, & Pernasmbuco, 2002; Ferrari, Angotti, & Tragtenberg, 2009; Lindemann, 2010; Muenchen & Delizoicov,

2010; Silva, 2004). The possibility of the use of Teaching Moments, however, is far beyond structuring the dialogue for appropriation of knowledge in classroom activities. It can be used in the organisation of teacher training, in structuring the curriculum, in the organisation of meetings, the elaboration of disciplines, in distance learning and in the organisation of work with farmers (Pernambuco, 1993; Lindemann, 2010; Ferrari *et al.*, 2009; Silva, 2004; Uller-Gómez *et al.*, 2014).

Delizoicov (1991) distinguishes the three teaching moments and their distinct functions:

- a) Initial Questioning: the present situation in discussion as a problem that needs to be faced. The goal is to "sharpen the contradictory explanations and locate possible limitations and gaps of knowledge that is being expressed" (Delizoicov, Angotti, & Pernambuco, 2002a, p. 201). The culmination of this moment is to make people feel the need of acquiring knowledge that they still do not have.
- b) Organisation of knowledge: it is the moment in which the knowledge necessary for understanding the situation presented in the earlier time is studied systematically.
- c) Application of knowledge: "is intended, in particular, to address systematically the knowledge that has been built to analyse and interpret both the initial situations that determined their study and other situations which, although not directly linked to the initial motive, can be understood by the same knowledge" (Delizoicov *et al.*, 2002a, p. 202). It is important to highlight that the Teaching Moments are fractals, i.e., within each of the above Moments there will be three other Moments.

It is important to highlight that, in science education in formal education, the use of Teaching Moments derives from Thematic Research (Freire, 1975), which reveals the themes of the community that need to be addressed, and for which the school has knowledge to contribute. Thematic research, carried out by a multidisciplinary team in conjunction with the population, reveals issues for whose solution new knowledge is necessary, and the population is not always aware of this need. Then, through the teaching moments, a critical

view on the situation of the population is built, arousing the need to "learn more".

In the case of the project "Valor da Roça", the thematic research had already been done during Uller-Gómez and Gartner's work (Uller-Gómez & Gartner, 2008; Uller-Gómez *et al.*, 2014), and the themes suggested by the population were dealt with by other action research initiatives that began in 2009. When we started the project "Valor da Roça", the level of discussion pointed that, to advance the development of the community, it would be necessary to discuss the marketing of the products as well as all the implications (legal and fiscal aspects, adding value, need for social organisation). There was no consensus among farmers, not even between the researchers and the public managers on the best ways to go. It was necessary to grasp new knowledge. It was in this context, in order to advance and promote awareness of the entire group, involving farmers, researchers and public managers, that the tool of the Three Pedagogical Moments was used.

So, initially the project was formulated with the following structure:

- a) *First Moment: Recognising products, processes and actors* – When the researchers should exchange information on ongoing projects in the community to subsidise the elaboration of strategies of differentiation. It aimed to provoke in the community the need to participate more actively in the search for alternative and differentiated markets.
- b) *Second Moment: Organising and reflecting with the community and with the public managers about the knowledge generated* – It involves actions intended for the collective study of the possibilities raised in the earlier time as regards the possibilities of product differentiation.
- c) *Third Moment: Dissemination of the results and referrals* – It involves activities to spread the results to different audiences, synthesising the strategies identified. Methodologically, it could mean the beginning of a new process in which public managers and community would interact more in search of market for products with differentiated quality.

(Re)visiting the process

Initially, we point out that we agree with Delizoicov and Zanetic (1993, p. 9) when they claim that for the "historical and instrumental seizure that was built it is necessary to consider the process-product indivisibility". Thus, although the intent is to present and discuss the methods, we cannot avoid presenting the process and, minimally, the results which were made possible through its use.

Analysing the dynamic process occurred, it is possible to identify that changes were made in relation to what had been proposed initially for two primary reasons:

- a) the researchers who were the main performers of the process in the community were also undergoing training, and were adding to the project new capacities and knowledge acquired, especially regarding the processes of differentiation and added value and environmental legislation;
- b) the results achieved (such as the preparation of packages, which we will see below) demanded that other methods were used, in this case the Zopp method, which was the instrument to which we resorted in order to punctuate properly objectives, targets and actions to farmers, so that collective action was successful.

The reader will notice that the process was so dynamic that we managed to deploy the strategies outlined with farmers, and not just define them or elaborate them, as was the initial idea. In other words, our initial intention was to study and choose strategies for adding value. Surpassing initial expectations, it was possible to not only choose them but also implement them, such as the development and purchase of packaging, the formation of the Association, the creation of a book of norms, among others. However, the organisation around the Teaching Moments has always been the guiding North of the task:

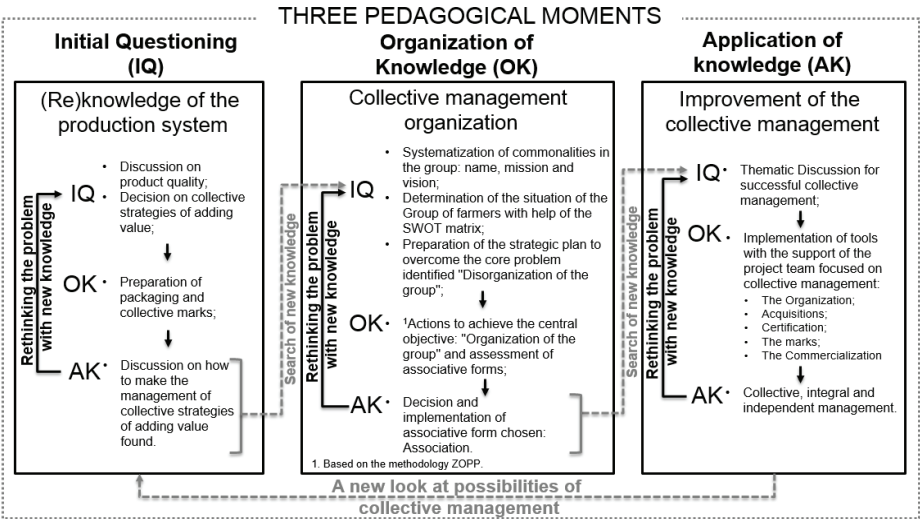
- a) First Moment: Which is the current perception of technicians and farmers of the situation? What do you know and what else do you need to know? How to make the Group understand the need to know more about it?

- b) Second Moment: How to organise our knowledge about what's on the agenda? How to learn more?
- c) Third Moment: How to deploy the knowledge we have acquired to improve our situation? What other issues are viewed now that, in turn, require a new quest for knowledge?

Watching now the process performed, we can say that the intervention in the community in the period from 2012 to 2014 was based on three main sets of actions, observing the Teaching Moments. But they are better referred to as follows:

- 1. (Re) Knowledge of Slash-and-Burn;
- 2. Collective management organisation; and
- 3. Improvement of Collective Management; each of which, in turn, also structured internally with the dynamics of the three Teaching Moments (see Table 1 below).

Table 1: Structuring the Design "Valor da Roça", on the basis of the three Teaching Moments (Delizoicov, 1991)



In the set of meetings that constituted the (RE)Knowledge of the "Roca de Toco Project, initially we discussed (Initial Questioning) the characteristics and qualities of the products from the "roça de toco". Once these elements were identified and organised, the Group decided that differentiated packaging would be made and that they should refer to the common identity of the origin of the products: the "roça de toco" system, including cassava, cassava flour and charcoal. The second moment (Knowledge Organisation) was the preparation itself of the packaging in a participative manner. Discussions were made with the community about the quality of its products and production and manufacturing processes, as well as how to value these characteristics in the presentation of the products to transmit them to the consumer public. To assist in this process, a professional in communication was hired, and he provided his specific knowledge, translating the discussions of the community in the design of packaging for the main products from the agricultural system of cutting and burning. This way the discussion stage of packaging was finalised, and we began the last moment of the great educational block, the "recognition of the 'roça de toco' ". Thus began the Application of Knowledge, reflecting on the need to establish rules for the collective use of this packaging. At that time we began the second major set of actions, which we called Collective Management Organisation. The reader will notice that this set of actions is also subdivided into the Three Teaching Moments.

In this second set of actions, the initial questioning was intended to promote reflection on the group's way of life to put in evidence the commonality of these families' lives, and arouse the desire to know more about the possibilities to manage the production of packaging collectively. These packages presented themselves as a feature until then never accessed by them, and represented an important step for the improvement of marketing. The Initial Questioning of this second set of actions was developed in several meetings, allowing farmers to recognise that their activities feature common trajectories and challenges, such as the use of the same production system, the concern with environmental surveillance, and illegal marketing. To this end, we used the brainstorming technique, which enabled the collective building of Denomination, Vision and Mission of the group of farmers. This set of highlighted words underwent a frequency analysis, in which those most repeated

were taken to the group, which adopted them as words that represented the spirit of the group. And these words were: quality, work, organisation, group, union, and co-operation. Based on this discussion, the Group decided to refer to itself as Slash-and-Burn Family Farmers Group of Biguaçu, SC.

In addition, we structured a SWOT matrix, whereby the group identified the strengths (S) and weaknesses (W) internal to the group, as well as found opportunities (O) and threats (T) relating to its external environment. This exercise made it possible to structure the next step, based on the ZOPP² method, which consisted in the conversion of internal and external elements identified in the SWOT matrix into structured problems, and these, in turn, into objectives, a total of four, which dismembered into a set of ten specific actions.

Soon, the organisation of knowledge of the second great set of actions started, and it was characterised by the implementation of actions aimed at fulfilling the objectives: capacity on collective forms of work (associations, co-operatives); formation of thematic groups of discussion, formation of the self-control Group that performs periodic inspections in establishments, with the purpose of providing participatory certification of the production system and of marketing forms practiced by farmers of the Group; preparation of a book of rules for use of collective certification mark consisting of them and named "Valor da Roça"; establishment of rules for the correct use of the

² According to Brose (2001), briefly, the Zopp presents the following steps: 1) Diagnosis: an analysis of the actors involved, of the problems and of objectives is made. In this step it is intended that the group can build a joint vision of the future that makes the commitment to the implementation of actions. 2) Choice: a reference mark is designed (time horizon, partner institutions, and resources available for a project are defined) and an analysis of the alternatives (definition of objectives and basic intervention strategies). 3) Strategy planning: it makes a logical framework for the project. Initially, the planners are defined, because only the people involved in the planning will also perform afterwards. Then a hierarchy of objectives is set; this hierarchy defines the strategy: a) the higher objective: describes the desired situation; b) project objective: specifies the beneficiary group and the specific situation; c) results: represent innovative products and services that will be offered to the public beneficiary under the project. For each outcome the required activities for success are described. There is still an analysis of risks that threaten the achievement of the goals and the definition of indicators for measuring, monitoring and evaluating. In the project analysed here, the first step had already been carried out within the framework of the work leading up to the design "Valor da Roça".

collective marks and packages developed for the products from this system of land use ("Roça de Toco"), in particular for charcoal.

After this intense collective construction, which used different techniques and participatory methods, we came to the understanding that the tools developed should be underpinned by a formal collective organisation. Thus was initiated the application of knowledge, which resulted in the founding of the Association "Valor da Roça": the Association of Roça de Toco Family Farmers in Biguaçu, SC, which went on to hold the property rights concerning the certification mark, collective marks, packaging and product standards.

Once certain standards for collective marketing were determined, and the Association was formed, the third set of actions started: Improvement of Collective Management. This third set of actions is based on a new survey of Generating Themes, this time pertaining to this specific group of farmers that reveal knowledge to be captured for their strengthening and autonomy: Collective Organisation and Productive System. The development of these two themes, still in progress, led the group to deepen their knowledge about bureaucratic processes for acting on the formal market through a seminar for associates. Here it is important to remember that the purpose of the Third Moment is to analyse the initial problems of the group from a new look, based on new knowledge, acquired during the process. That is, it was time to get back to the initial situation: irregular trading of agriculture products from cutting and burning. At this point in the process, the group had implemented strategies for adding value (brands, packaging, certification process) and was already able to look at the situation differently, perceiving the advances, as well as the new needs. It was noticed, then, that it was necessary to know more about the bureaucratic procedures to regularise the production before the municipality. The farmers themselves then requested that some municipality officials come to enable them to carry out some specific bureaucratic functions.

The following meetings were prepared to deepen management aspects of the Association, and have contributed to progress in challenging issues for the Group of farmers, as the collective purchase of packaging, negotiating with suppliers, the Organisation for the collective sales and, among others, the institutional markets.

As a continuation of this process, farmers go on with their organisation autonomously, with occasional aid from researchers who no longer have the resources to do research. In March 2016, the first collective sale of charcoal took place, curiously a 780-bag load for export to Canada. This fact was symbolically very important for the Group: it showed that collective organisation for sale is possible, it greatly reinforced the importance of the Association before the municipal authorities, and it enhanced the farmers' self-esteem.

A brief reflection on the potential of the methods used

We believe that the method used promoted a healthy restlessness, allowing technicians and farmers to look at the world as an object of knowledge. During the process, the situations raised: initially, the irregular trading of products, brought formidable challenges, both for technicians and for farmers. Both had to start to observe what was happening as the object to be unveiled, to be known, each with their ability, theory, traditional knowledge or practice. The numerous meetings, based on the Teaching Moments, allowed the synthesis of new knowledge from the complementarity of views between farmers and technicians that led to the success of the actions.

From a practical point of view, value to products which had been marginalised was added, and farmers' self-esteem was improved. From the methodological point of view, this achievement represents confirmation that to achieve community participation, the start could be with any one of the Generator Themes identified, but one would always get to the Unifying Theme "Market", identified in the first work, done in 2007. And, in fact, the theme "market" came up, not by a methodological preciousness but because it was real, it belonged to the community and, therefore, the community recognised itself in it.

However, to get to the confrontation of the theme "market" and to take on the challenge of acquiring new knowledge that were necessary for this confrontation, especially the knowledge related to the new ways to organise collectively and to present their products, the methods used were indispensable. In other words, in the practice here described and analysed, it was the

combination of the Teaching Moments with the ZOPP method-based participatory planning that allowed the encoding-questioning-decoding process, presented by Paulo Freire as necessary to the understanding of the situations identified in the Thematic Research and the pursuit of knowledge needed to overcome them.

In 2004 Brazil promulgated the National Policy of Technical Assistance and Rural Extension (BRAZIL, 2004): the new Pnater. It emphasises the need for professionals who deal well with the popular culture and dialogue between different kinds of knowledge so that it exceeds the vision that the technician is the absolute owner of knowledge. However, few effective changes are perceived in the performance of the technicians towards the rural populations. Present-day critics believe that the enactment of this policy represents possibilities of change and construction of autonomy for farmers. We believe that the analysis presented here contributes concretely to the development of the possibilities identified with the advent of Pnater. The fact of having achieved major improvements in the lives of farmers from the confrontation of the Generating Themes encourages us to assert that the combination of methods presented here could be used as methods of work in rural extension. The momentum established in the process of encoding-questioning-decoding imposes on the technicians the responsibility to promote improvements in (and with) the community. At the same time, these dynamics make you realise the need to learn more and to be a constant researcher.

In the practice here related, there were numerous theoretical and technical challenges that were presented to the technical team as "live encodings" (Freire, 1975). They also needed to be properly raised with farmers. The results of decoding which was processed in conjunction with the community are evident in the speech of farmers: "Today we are treated like human beings!".

References

- Adams, C., Munari, L.C., Van Vliet, N., Murrieta, R.S.S., Piperata, B.A., Fudemma, C., Pedroso JR., N.N., Taqueda, C.S., Crevelaro, M.A., & Spressola-Prado, V.L. (2013). Diversifying Incomes and Losing Landscape Complexity in Quilombola Shifting Cul-

- tivation Communities of the Atlantic Rainforest (Brazil). *Human Ecology*, 41, 119-137.
- Brasil (2004). Ministério do Desenvolvimento Agrário. Secretária da Agricultura Familiar. *Política Nacional de Assistência Técnica e Extensão Rural – Versão Final*: 25/05/2004. Brasília.
- Bauer, E. (2012). *Mudanças no uso da terra em Biguaçu-SC: agricultores em permanente processo de adaptação*. Dissertação (Mestrado em Agroecossistemas). Universidade Federal de Santa Catarina, Florianópolis.
- Bauer, E., Fantini, A.C., Valois, C.M., & Uller-Gómez, C. (2014). *Roça de toco e mudanças no uso da terra em Biguaçu-SC, região da Mata Atlântica*. In: X Congresso da Sociedade Brasileira de Sistemas de Produção, 2014, Foz do Iguaçu. Anais... Foz do Iguaçu: Foz do Iguaçu, 2014.
- Brose, M. (2001). O Método ZOPP para planejamento e gestão de projetos. In Brose M. (Ed.), *Metodologia Participativa: uma introdução a 29 instrumentos* (pp. 177-184).
- Dean, W. (1997). *With Broadax and Firebrand: The Destruction of the Brazilian Atlantic Forest*. University of California Press: Berkeley.
- Carrieri-Souza, M., Fantini, A.C., Uller-Gómez, C., & Dorow, R. (2014). Cadeias produtivas do carvão vegetal na agricultura familiar no sul do Brasil. *Desenvolvimento e Meio Ambiente*, 31: 97-110.
- Delizoicov, D., & Zanetic, J. (1993). A proposta de interdisciplinaridade e o impacto no ensino municipal de 1º grau. In Pontuschka N.N. (Ed.), *Ousadia no diálogo: Interdisciplinaridade na escola pública* (pp. 9-15). São Paulo: Edições Loyola.
- Delizoicov, D. (1991). *Conhecimento, tensões e transições*. 1991. Tese (Doutorado em Educação). Faculdade de Educação. Universidade de São Paulo. São Paulo.
- Delizoicov, D., Angotti, P.A.J., & Pernasmbuco, M.M.C. (2002). *Ensino de ciências – fundamentos e métodos*. São Paulo: Cortez.
- Delizoicov, D., Angotti, P.A.J., & Pernambuco, M.M.C. (2002a). “Abordagem de temas em sala de aula”. In Delizoicov, D.; Angotti P.A.J. & Pernambuco M.M.C. (Eds.), *Ensino de ciências – fundamentos e métodos* (pp. 173-250). São Paulo: Cortez.
- Ferrari, P.C., Angotti, J.A.P., & Tragtenberg, M.H.T. (2009). Educação problematizadora a distância para a inserção de temas contemporâneos na formação docente: uma introdução à Teoria do Caos. *Ciência e Educação (Bauru)*, 15(1), 85-104. Available from http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1516-73132009000100005&lng=en&nrm=iso. Access on 26 Apr. 2015. <http://dx.doi.org/10.1590/S1516-73132009000100005>.
- Freire, P. (1975). *Pedagogia do oprimido*. Rio de Janeiro: Paz e Terra.
- Helming, S., & Göbel, M. (1997). *ZOOP – Objectives-oriented Project Planning*. Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH. Eschborn.
- Lindemann, R.H. (2010). *Ensino de química em escolas do campo com proposta agroecológica: contribuições a partir da perspectiva freireana de educação*. 1 v. Tese (Doutorado) – Universidade Federal de Santa Catarina, Programa de Pós-Graduação em Educação Científica e Tecnológica, Florianópolis. Available from: http://www.dominiopublico.gov.br/pesquisa/DetalheObraForm.do?select_action=&co_obra=191950. Access on 01 Feb. 2014.
- Muenchen, C., & Delizoicov, D. (2010). Práticas de ensino de ciências na região de Santa Maria/RS: algumas características. *Revista Brasileira de Ensino de Ciência e Tecnologia*, 3, 47-65.

- Padoch, C., & Pinedo-Vasquez, M. (2010). Saving Slash-and-Burn to Save Biodiversity. *Biotrópica*, 42, 550-552.
- Silva, A.F.G. (2004). *A construção do currículo na perspectiva crítica e popular: das falas significativas às práticas contextualizadas*. Tese (Doutorado em Educação). Pontifícia Universidade Católica. São Paulo.
- Thiollent, M. (2008). *Metodologia da pesquisa-ação*. São Paulo: Corte.
- Uller-Gómez, C. (2011). *Estratégias para integração de agricultores, pesquisadores e gestores públicos na busca de mercados diferenciados para os produtos da roça-de-toco de Biguaçu-SC – Projeto Valor da Roça*. Edital CNPq Universal/2011 (Processo CNPq 484648/2011-0).
- Uller-Gómez, C., Gartner, C., & Pinheiro, S.L.G. (2014). *Pesquisa participativa e extensão rural como processos educativos*. Florianópolis: Epagri, 2014. 94p.
- Uller-Gómez, C., & Gartner, C. (2008). *Um caminho para conhecer e transformar nossa comunidade*. (Relatório de pesquisa) Florianópolis: PRAPEM/MICROBACIAS 2.
- Van-Vliet, N., Mertz, O., Heinemann, A., Langanke, T., Pascual, U., Schmook, B., Adams, C., Schmidt-Vogt, D., Messerli, P., Leisz, S., Castella, J.C., Jorgensen, L., Birch-Thomsen, T., Hett, C., Bruun, T. B., Ickowitz, A., Vu, K.C., Fox, J., Cramb, R.A., Padoch, C., Dressler, W., & Ziegler, A. (2012). Trends, drivers and impacts of changes in swidden cultivation in tropical forest agriculture frontiers: a global assessment. *Global Environmental Change*, Boston, 22, 418-429.

About the authors

Cíntia Uller-Gómez – Engineer agronomist, master in Agroecosystems, doctor in Human Sciences (2006). Since 2006 has dedicated herself to the study and implementation of approaches based on Freire's education models to work with rural communities. From late 2009 to mid-2012 did post-doctoral internship at the Santa Catarina Agricultural Research and Rural Extension Company (Epagri), studying the methods of participatory research implemented by the company. She is currently environment analyst at the Santa Catarina Environment Foundation (Fatma) and researcher at the Rede Sul Florestal-PDI (South Forest Network) in forest systems and energy production on smallholder agriculture in southern Brazil.

Reney Dorow – Engineer agronomist, master in Agribusiness (2013). Since 2002 has dedicated himself to the planning and management of regional development. In 2009 he worked in the management of research and innovation at Epagri and since 2010 has been working at the Center for Socioeconomics and Agricultural Planning (Epagri/Cepa), aimed to

study the rural communities and agricultural markets, in addition to being a researcher of the Rede Sul Florestal (South Forest Network).

Authors' addresses

Cíntia Uller-Gómez

Rua Felipe Schmidt, 485, Centro

CEP: 88010-001 – Florianópolis, SC Brazil

E-mail: cintiaug@gmail.com / cintiauller@fatma.sc.gov.br

Reney Dorow

EPAGRI – Empresa de Pesquisa Agropecuária e Extensão Rural de Santa Catarina

Centro de Socioeconomia e Planejamento Agrícola

Rod. Admar Gozanga, 1.486

Bairro Itacorubi

88034-001 – Florianópolis, SC Brazil

Email: reney@epagri.sc.gov.br / reneydorow@gmail.com