

# STUDY CASES OF NATIVE PLANT PROJECTS FOR MAPUCHE COMMUNITIES IN THE SOUTHERN REGION OF CHILE

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## Abstract

Two projects were done with indigenous communities in southern Chile. Both related to native plants propagation. One of them was done with a group of mapuche women that gather native “greens” for flower arrangements. There was a rustic greenhouse built and 60,000 plants were produce in order to make some restoration efforts and assure they will have enough native plants to continue with their business. The mapuche women were trained in plant production and establishment techniques. The other project was done with mapuche communities organized to produce medicinal plants, essential oils, and wild berries. Their interest was to learn to vegetatively propagate 7 native species. This project was undertaken by a whole group of students who decided to make it a classroom project. Seven propagation protocols were established, and simple written material was completed. In this paper, we analyze and share many social and technical aspects of working with indigenous communities.

## Key Words

Community-based conservation programs, mapuche, native plant production, indigenous communities

## INTRODUCTION

The largest mapuche rural communities are found in the surroundings of Temuco, IX Region and X Region, by the coastal range (37° 35' to 44° south latitude), totalling approximately 250,000. Their total population, however, is approximately a million according to the last census done in Chile in 1992 (INE 1992). From the whole IX region, forests constitute 40% of the area, where 27% are exotic plantations and 73% are native forests. For the X region, the forested areas represent 56% of the total surface, where 95% are native forests and only 5% are exotic plantations (INFOR 1997). In the early days, the mapuche lived in larger communities, which meant they had community crops, vegetable gardens, and forest lands. However, in 1979, a law was promulgated where the land was divided among the different families. In other words, they ended up having large families with a reduced amount of land. This was one of the main reasons for a tremendous destruction of our native forest, because lands needed to be cleared for agricultural practices. Forests were

considered a problem and were burnt and cut down (Catalan and Ramos 1999).

At the same time, in 1974, another law was promulgated that subsidized forestation with exotic species of rapid growth in areas which had always been classified as forest lands and now had clear signs of erosion and degradation. Private companies saw the great opportunity of using this subsidy to reforest large areas, and many times bought the land, at very low cost, from the mapuche. Some of these lands were not eroded, nor had degradation problems. In many cases, these lands had considerable amounts of native forest on them. These forests were classified as bushes in order to comply with the law that permitted the burning of the bushes to convert the land use “to something more productive” (Lara and others 1995). The biodiversity of these forest areas was considered quite high: 443 vascular species, and 44 tree species from 32 different genus and 20 families (Arroyo and others 1996). Currently, some of these species have conservation problems in these locations.

Besides the environmental effects caused by large exotic plantation areas, there was a considerable social impact that now, after almost 30 years, is surfacing. Many mapuche families sold their lands and moved into the cities, where they found no jobs; the cultural shock made it impossible for them to adapt to this new environment. Overall, their decision to sell their lands only made them even poorer (Lara and others 1995; Catalan and Ramos 1999). Their cultural beliefs state that their lands belong to their ancestors and, therefore, they would only find misery if they ever left their lands behind (Quidel 2000). This explains why some of the mapuche communities are asking for their lands back; they want a historical revindication of their rights and properties; they want to “straighten” their lives in the eyes of their ancestors. The forests have been used by the mapuche for centuries to get different products, such as construction wood, fire wood, fruits, roots, seeds, fungus, and medicinal plants. Also, for ritual purposes, they used many forest plants. Just lately, the mapuche have started to recollect fruits, fungus, and foliage to sell in small amounts in order to increase their income. Overall, the situation after 30 years is that the mapuche families had to welcome back the families who had sold their lands, therefore dividing their small properties into even smaller areas, from which it is very hard to make a living. They are surrounded by plantations, which they believe have had a desiccating effect on their streams. They also believe the pest control methods used in company plantations to control insects and mice have poisoned some of their animals.

The government has addressed this issue by creating a new governmental office (CONADI), which has limited funding, to buy some of the original mapuche territory from private owners, mainly forestry companies. This idea has had many problems along the way, and it is not the objective of this study to discuss them here. Overall, the government has had, for years, programs in which the objectives were to promote and generate capacities for small farmers and indigenous communities to become productive in a sustainable way. All of these programs have had a paternalist approach to the participation of the communities, which mainly created dependency from the mapuche people in government programs. Furthermore, these programs limited the creativity of the mapuche, and maintained internal poverty and hopelessness (Velázquez 2002). Currently, there is the willingness to incorporate community-base

methodologies and gender issues that could improve the long running impact of the government programs. But first, we need to understand participation as a process in which the main purpose is to strengthen the capacities and abilities of the local communities; to learn to come up with solutions to their problems with their own knowledge and resources, also known as empowerment (Schmink 1999; Velázquez 2002). There is a world-wide consensus on the need to find new ways of working with local communities to help them to manage their natural resources.

Schmink (1999) states that the scenario of local communities is that they are not only having to deal with government agencies, business interests, and NGOs, but also with significant differences in interest, perspectives, and powers within their own communities. This is very much the case of the mapuche communities in Chile. We also need to add one more factor: the loss of identity they have experienced through the years. Some of the overall effects of these many factors influencing the mapuche communities result in some very complex social issues, such as high levels of alcoholism and intra-family violence.

The mapuche are not conservationist by nature, but they understand how nature works and the natural laws that have to be respected in order to maintain their resources. The mapuche women have an immense knowledge and care for the land and plants. The important role of women in conservation projects, and its promising potential as a conservation agent, has not yet been recognised by the large majority.

This paper will present 2 projects done with indigenous communities in San Juan de la Costa (X region) and in Villarica (IX region). The objective of this presentation is to share our experience of the process of working with local communities, one of them with gender emphasis and the other emphasizing the work of students and mapuche people. Both will be presented as study cases.

### **STUDY CASE 1: SAN JUAN DE LA COSTA**

This is a group of mapuche women, specifically Huilliche (people of the coast) who gathered to start a business together. They have legal status and their name is “Mujeres Follaje de San Juan”. There are 60 of them in total, and they all live relatively close to each other in a total area of 3000 ha. Two years ago, they started collecting and commercializing foliage from native trees, otherwise known as “greens”. The

foliage is used in flower arrangements. In a study done by INFOR (2002), the amount of US dollars received for exporting foliage in 2001 was approximately US\$ 312,000, a very significant amount for these communities. However, as we all expect, the amount received by them was considerably less. A project done by the group of women, the Universidad de la Frontera, and a NGO was proposed to the National Environment Committee (CONAMA), who agreed to finance it. A former student (Juanita) was already working in the NGO, and she was already acquainted with this group of women. Therefore, there was a lot done before we got there in building a trustful and good relationship with the women. While writing the proposal, we decided to go and visit them in order to hear directly from them what their problems were, instead of us guessing them. The main problems stated were: 1) lack of foliage nearby their homes; 2) some species were already showing signs of scarcity (they didn't seem to be regenerating in the forest anymore); and 3) family factors that limited their productive activities.

The main objective of the project was to contribute to the mapuche community forest conservation in San Juan de la Costa. This objective included growing 6 native plants they were interested in for 2 purposes: 1) to help restore some of the ecosystems from where they had been gathering foliage species; and 2) to establish these species near their houses. This would definitely have a positive impact in their family issues, such as lack of time, too many things to do, their husbands not liking them to be gone from the house, little children not been able to walk long distances, and so on. The project was financed for only 1 year and with a low budget. So we also decided to include the development of a thesis in order to do the forest baseline study of the area.

## **MATERIALS AND METHODS**

This study was conducted in San Juan de la Costa (40°22' to 40°32' south latitude), 750 km south from Santiago. The CONAMA project consisted of 5 phases, some of them occurring simultaneously.

### **Phase I**

The objectives of this phase were: 1) to determine what they saw as "the problem"; 2) what solutions they visualized in order to solve this problem; 3) how did they want us to help; and 4) finally, but most important of all, build a trustful and strong relationship with them. As mentioned before, we went to visit them at their homes for a couple of days. Sharing

meals with them and talking a variety of topics besides the conservation issue proved to be a very effective method in building trust.

### **Phase II**

The objective of this stage was to build the greenhouse financed by the CONAMA. All the building was done by the mapuche women. The greenhouse size was 120 m<sup>2</sup>, made with strong plastic, a very simple irrigation system, and wooden structure and benches.

### **Phase III**

The objective of this stage was to characterize the forest ecosystems where the 6 species of interest were found. As part of a thesis, the final product will be the complete site characterization of the areas where these species are grown. This was accomplished by inventorying 300 plots in the 3000 ha. Ten of these plots were done permanently in order to monitor changes in frequency, regeneration, and different aspects of their natural dynamics. Part of the methodology used was to ask some of the women to help Juanita in taking the field data. This would allow them to experience their land with different eyes, and Juanita could learn from them to look at it with mapuche eyes. Details on the inventory methods are not given, because that is not the objective of this paper.

### **Phase IV**

The objective of this stage was to train the women in plant propagation techniques, going through all stages of collecting, to stratification, to production, fertilization, irrigation and finally, to establishment. The methods used were all practical: "learning by doing". We spent 3 days working at their nursery and in the forest. Because of time constraints, some of the contents were given by oral presentations. The most important aspect was to convert all technical aspects into simple words, and let them give examples, so that we could evaluate if they were understanding what we were saying. We also continuously encouraged them to give suggestions on how they could apply what we were explaining, using their own resources.

### **Phase V**

This phase consisted of creating written material for them to help them remember the native plant production course. These materials were done by the students of

the Facultad de Ciencias Agropecuarias y Forestales as part of a plant propagation course they needed to take at the University.

## RESULTS AND DISCUSSION

We had 20 of the 60 mapuche women participating in the construction of the greenhouse and in the 3-day training course. The greenhouse was built in a community area which was determined by the women and which had extra space for some outdoor production. There were 60,000 plants produced the first year, mainly from 3 of the 6 species they were interested in (*Lomatia ferruginea*, *Gevuina avellana*, and *Pernetia mucronata*). For the other 3 species, it was decided to do some trials first, because the plants were ferns and therefore harder to produce. The majority of the plants produced (90%) were from seed, collected by the same group of mapuche women from their forests before the project started. The plants were produced in large wooden benches filled with a mix of peat and soil (3:4, v:v). Once they acquired a height of 2 to 4 inches (5 to 10 cm), they were transplanted to polybags (6 inch<sup>3</sup> [100 cm<sup>3</sup>]) filled with the same soil mixture mentioned before. They were irrigated and fertilized manually and periodically. The plants were grown for 7 months.

The 3-day training course was a good opportunity to discuss their seed collecting procedures, what kind of problems they had faced, and ways of improving the seed collection. The course allowed them to practice seeding, transplanting, watering, and fertilization techniques. All of them were analyzed to see if they could be applied considering their resources. The discussion then turned to share other methods they had been using to do certain things in the past and the similarities with the methods being taught. As mentioned by Schmick (1999), adaptation of methodologies to the reality of the community, and to their own ways, really makes a difference in the capacity of the local people to adopt those techniques as theirs.

The last part of the training course covered topics such as conservation relevance, restoration, and plant establishment. Also, basic marketing techniques were discussed in order to find a more effective way of selling their products. Needless to say, it is important to consider many other factors, such as external market behavior and quality product issues. But the main consideration must be the differences between the indigenous world, how they do things, the world they need to sell their products to, and how they want things to be done. This is a limiting factor in most of

the projects done with local communities (Schmink 1999; Velázquez 2002). It seems that one good solution could be found in the niche of organic products where the clients appreciate the uniqueness of their products. The other result is the thesis being done by a student of the University, which will give them the site characterization of their forest resources and an estimate of the amount of greens they have left on their property by the end of the year. This study is crucial in order to plan and design strategies for future restoration projects in that area; it will give us the base line studies in order to prioritise which sections need to be worked in first. Finally, a simply written/illustrated manual was done for the mapuche women to help them to remember the training course.

## STUDY CASE 2: VILLARICA

This is an extension course done for a group of 20 indigenous farmers from one mapuche community, and a group of young natives called Grupo Lawenko. They came to ask for some help from the University; specifically they wanted to learn about vegetative propagation of some native plants they were using for medicinal purposes, including essential oils and wild fruits. Their need was taken as a challenge for the students of the nursery and reforestation course given by the University, and it lasted 3 months. The objective was to train indigenous farmers in the production of 7 native plants by vegetative propagation, encouraging the exchange of knowledge between them and the students and, finally, recommending some improvements in their production processes.

## MATERIALS AND METHODS

The course was designed in 7 phases, some of which were done by the students, some by the natives, and some by the researchers. The students were organized in 8 different groups, each was responsible for propagating one of the species. Phase I included a visit to the communities in order to know their needs in depth, define the objectives, methods, and their expectations. As stated in the previous study case, it is very important in this first visit to create a strong confidence relationship between the communities, the students, and us. Phase II was done by the students, gathering all the information available on the plant production of the 7 species (*Drimys winteri*, *Peumus boldus*, *Luma apiculata*, *Laurelia sempervirens*, *Ribes magellanicum*, *Ugni molinae*, *Berberis darwinii*) the mapuche had identified as important for them. The third phase consisted of the selection of the propagation methods

to be used. The students had to propose a method to produce plants inside the greenhouse (in a controlled environment) and in a rustic greenhouse made by them with recycled materials. Phase IV included a visit from the mapuche groups to the university, where the students presented their experiments and discussed their methods and materials with the mapuche people. This was done in a way of validating their methods and motivating them to give opinions and criticize their work. The fifth phase consisted of a visit to the community, specifically to 3 greenhouses, in order to see how they were propagating the plants and what problems they were having. Phase VI included the creation of self-instruction written material for the mapuche people, stating the different potential uses, site conditions for growth, and recommendations for the species. The final phase consisted of the evaluation of the experience by students and by the mapuche groups. The evaluation was done by interviewing, in depth, at least one of the students per group and a third of the mapuche people involved in the project.

## **RESULTS AND DISCUSSION**

One of the results was the high motivation shown by the mapuche and students. This motivation was reflected in the efforts the mapuche made in establishing their own experiments as they had seen them at the university, but also including their own modifications. The students' motivation was shown in the efforts they made in building recycled rustic greenhouses, in their attitude towards the mapuche people every time they saw them, and finally, 3 students decided to take this experience and present it at the Latin-American Forestry Students Meeting in Costa Rica in October 2002.

Protocols were determined for producing 7 native species using cuttings in rustic greenhouses. All these protocols were put in a self-instruction written material, the main purpose of which was to remind the mapuche people, in a simple and graphic way, of propagation methods. The perception of the mapuche people was that they really wanted something on paper, hopefully many pictures and very little wording. We realized that only the things that we had explained to them in person made sense when they looked at the manuals. In many cases, we even realized that some did not have the ability to read. From the students' point of view, the results were a higher commitment and understanding of the mapuche culture and a higher interest in continuing this type of work. The mapuche people also expressed their

interest in having students and the university working closer with them as a means of feeling more supported in their activities.

Some of the studies done with indigenous communities state the importance of having the local people doing trials in their own lands and experimenting with different things, even if they are very simple (Velázquez 2002). This would provide them with the feeling of "owning" the results and, therefore, empowering the methods used by them. It would also be a way of assuring the internalization of the new knowledge. Most of the time, the knowledge is not even that new; it would be better to define it as "giving significance" to some of the customs they already had from generation to generation. We feel that this group is ready now for the next step, where they can identify and analyze their production problems and propose solutions for them: the real form of empowerment. The role of facilitators or researchers would only be that of technical support for them, and this would hopefully help end their dependency on eternal help. From the point of view of the educational process of the students, we as professors believe we made a contribution to making professionals-to-be who will be much more sensitive and tolerant of ethnic differences. They understood the 2 basic principals: honest respect and the art of listening.

## **SUMMARY**

We would like to emphasize how important it is, when working with indigenous people, to have a group that is associated in a legal or formal way; they can easily organize better and have a better capacity to negotiate. The role of indigenous women in conservation is more recognized everyday, but we also think that concrete changes that favor these women need to be taken in order to move from "talk to action"; just recognition doesn't help them to increase their quality of life. Honest respect and listening seem to be the 2 most important strategies to work with indigenous groups. Socializing, building trust and confidence as a first phase, is a must in order to have any success in working with them. Understanding that, by bringing the ancestors knowledge, their own knowledge could be the only way for them to adopt new methods. Then we are not only helping them to maintain their culture, but hopefully with their own resources, improve their lives.

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