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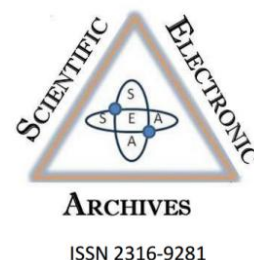
Issue ID: Sci. Elec. Arch. Vol. 10 (4)

August 2017

Article link

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Preservation of the Cerrado Produces Fruits: Fruit of the Cerrado Project in the Microregion of Sete Lagoas, Minas Gerais.

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Abstract: The Cerrado is one of the six Brazilian biomes and offers a wide variety of edible fruit species. This article is the result of an outreach program entitled Cagaita and Pequi, Economic and Social Importance of the Population of Sete Lagoas, created in 2014. It aimed to take information and build knowledge in the community about the possibility that the fruits of the Cerrado present, especially pequi and cagaita. He sought to contribute to raising awareness of the preservation of the environment and the inclusion of low-income local people, who can use the fruits as alternative food and generate income, thereby protecting and ensuring the survival of future generations and countless families that use the fruits. Still, he tried to contribute to the training and education of the students of the courses of Food Engineering and Bachelor's Degree in Interdisciplinary Biosystems UFSJ. As interventions were used methodology of work in Sete Lagoas and the region, with the support of leaflets, flyers and posters.

Key words: Pequi, cagaita, extension, alternative foods.

Introduction

Food is part of the daily routine and consists of a series of essential activities for man. In addition to being a basic need factor in obtaining has become a public health problem, because excess or lack of nutrients can cause disease (ABREU et al., 2001).

The native fruits of the Cerrado are considered the base of support of the wildlife and the source of food for the indigenous and rural populations, and the present cultural importance, are very nutritious, rich in vitamins and minerals (Harborne & Williams, 2000).

The Cerrado occupies approximately 23% of the country and more than half of the state of Minas Gerais. Until the 1960s the Cerrado region had undergone little human intervention, since the 1970s the accelerated process of agricultural development and human occupation caused a number of changes in the biome, causing significant environmental damage, such as fragmentation of habitats, The extinction of biodiversity, the invasion of exotic species, soil erosion, as well as the predatory

exploitation of its wood for the production of charcoal (Ribeiro& Walter, 1998). The direct action of burning and deforestation contributed to the extinction of several species of flora and fauna, including fruit species native to the Cerrado (Silva et al., 2001).

An option to minimize the degradation of the Cerrado and its sources (Ferreira et al., 2016) was to include the recovery of native species stimulate the investigation of its potential, a better knowledge of the genetic resources in the region, the analysis of the profitability and the sustainability of its use, thus contributing to conservation (JEPSON, 2005).

Native Brazilian fruit can be eaten raw or in processed form: jellies, jams, sweets, liqueurs, ice creams, bread, cakes and juices. In the juices, ice creams and jellies industries there is an increasing demand for new flavors and colors. The popsicles and ice cream of the Cerrado are the most successful ice cream - where the fruits are most often benefited by the domestic industry - of the market for these products (Silva et al, 2001).

Interest in these peculiarities has reached various parts of the food industry, cooperatives,

research institutions, universities and others. Because it is exotic fruits, with unknown flavors and aromas in many countries, the external market can also be obtained (Silva et al., 2001).

The city of Sete Lagoas is located in the central state of Minas Gerais, 70 km from the state capital (Botelho, 2008). According to the IBGE, in 2016 the city of Sete Lagoas had an estimated population of 234,221 inhabitants. The city has several companies and industries that emerged as a commercial and industrial center, its main economic activities are agriculture, metallurgy and food industry. As Sete Lagoas and its micro-region are found in the San Francisco river depression, where lithographic stratigraphy is mainly composed of limestone and professional dolomite, making the region a center of the cement industry (MORAES et al., 2016). Among the many fruits that are found in the Cerrado of Sete Lagoas, we highlight the cagaita and pequi. However, the city has undergone some changes, corresponding to population and economic growth, due to the implementation of various industries and also the installation of a *Campus* of the Federal University of Sao Joao del Rei (UFSJ) in 2009. The installation of these industries the deforestation brought about by what the felling of trees and many small cagaiteiras. Even with all the devastation, these trees resist and are still very much found in urban and rural areas. However, much of the population are not aware of these trees their fruits (RODRIGUES et al., 2016).

After checking these needs to modify the behavior towards pequi and cagaiteiras, there was the idea of the extension program, entitled "Cagaita and Pequi, Economic and Social Importance for Sete Lagoas Population", launched since 2014, the project was executed by 10 professionals, between professors and students of the course of Food Engineering and Biosystems Interdisciplinary Biosystems *Campus* UFSJ in Sete Lagoas. The aim of this program was to reduce the gap between the scientific community and the external community by promoting the interaction between the university and the company in question, aimed at student training, and mobilizing society to solve its problems.

The extension program was initially developed in a neighborhood near the *Campus* of the UFSJ, which targets a population with low income and high social risk. In general, people with this profile consume cheap, high in calories and foods low in nutrients, which favors the increase in the number of obese and malnourished people.

Another factor to note in the area is a large number of pequi and native cagaiteiras, which are scattered in the streets, on the patios and on the sidewalks. But cagaita and pequi that can be used with alternative foods are little known and exploited by setelagoga region and the population.

The cagaiteira is a tree that blooms from July to September and fructifica of August to October, reaching 10 meters of height, belongs to the family Myrtaceae, the same family of guavas and cherries. The fruit of cagaiteira (*Eugenia dysenterica*), is popularly known as cagaita, which refers to the laxative effect of fruits when consumed in excess or fermented (SCARIOT & RIBEIRO, 2015).

The cagaite (Figure 1) is globose, thin and soft crust yellow when ripe, has a bitter taste and is very juicy (SILVA & TASSARA, 2003). It can be consumed raw or used in the manufacture of jams, jellies, liqueurs, juices, ice creams and popsicles. In addition to the peculiar taste, the fruit contains high levels of vitamin C (18-72 mg/100 g), the highest values compared to other fruits of the Cerrado and found in many fruits of conventional culture such as mature bananas (6,4 mg / 100 g) (SILVA et al., 1994; ALMEIDA, 1998).

The pequizeiro is considered the symbol of the state tree of Minas Gerais (CÂNDIDO et al., 2012), fructifica from January to March, fruits can be found outside this schedule (RIBEIRO, 2000).

Pequi is the fruit of pequizeiro (*Caryocar brasiliense*) (Figure 2) is used in the preparation of dishes like rice with pequi and chicken with pequi. The pulp is directed to the extraction and the homemade or industrial production of edible oil, sweets, liqueurs, syrups and feeding food (LORENZI, 1992; OLIVEIRA, 2009).

Almonds can be consumed raw or intended for the manufacture of peanut candy and white oil (VERA et al., 2005). The pequi pulp is rich in vitamin A and E, and has twice as much vitamin C as an orange, which makes fruit prevent diseases associated with vision and the fight against premature aging (RIBEIRO, 2000).

The purpose of this article is to publicize the work of the Extension Project and provide some ideas on the improvement of the cultural identity of the population generates income through the fruits of the Cerrado, and improve the nutritional intake of individuals belonging to groups socially vulnerable, through the use of food.



Figure 1:Cagaíta.



Figure 2: Pequi.

Source: RODRIGUES, D. B.

Therefore, the activities described, and to meet the needs of the population worked as a moment of parallel formation for UFSJ students, once they have come to know, study and find alternative ways to prepare fruits to meet the particularities of the community.

The study also aimed to:

- Encourage the students who would carry out the project to develop lessons for children in grades 4 and 5;
- Provide ongoing training for teachers and employees who participated in the project;
- Encourage contact between the academic community and society in order to promote the exchange of experiences and cultures;
- Develop and implement educational support actions to the students of the schools participating in the project for the diagnosis and interventions needed to develop the project.

What is the Extension Program: Cagaíta and Pequi, Economic and Social Population Importance of Sete Lagoas?

The project develops actions, seeking the rescue of the fruits of the Cerrado in the community. Bring knowledge to the public about the main fruits of the region Sete Lagoas through information sessions, teachers who teach classes and students of schools, awareness of value and appreciation of the fruits of the biome itself. To stimulate not only the consumption but also the cultivation, the resumption of its importance for the population and its usefulness in order to preserve the biome.

The project was developed in the city of Sete Lagoas and micro-region, with approximately 90 children aged 4th and 5th years, two public schools in the area near the *Campus* of the UFSJ, and 48 servers, between teachers and cooks schools and 30 street vendors city, micro and mines of the north commercialized vegetables, seasonings, preserves and fruits of the Cerrado.

The interventions given by:

- Development of courses for 4th and 5th year students: Through the Booklet with the theme Frutos do Cerrado;
- Preparation of weekly lectures and studies based on the content of the fruit leaflet of the Cerrado;

- Classrooms of practical education support through playful textbook exercises and participation of teachers of children 4 and 5 years in the interpretation of the designed classes;
- Culinary Manual Cagaíta and Pequi Culinary Guide;
- Informational posters and pamphlets;

Teaching materials

The leaflet of Frutas Cerrado contains general explanations of the Cerrado biome, in its fauna and its flora in some medicinal plants, with photos and description of typical fruit trees of the Cerrado, which covers the period of occurrence of fruit. As they are born cagaiteiras and pequi, grow and reproduce as well as nutritional and how their fruits can be used to obtain information of the population.

This booklet also contains the establishment of exercises designed for students in schools, based on the subjects studied and reports on pequi and cagaíta and other fruits of the Cerrado, which are usually found in the micro region of Sete Lagoas, as pitomba, baru, mangaba and jatoba.

Theoretical Classes and Educational Support

The theoretical Classes were prepared according to the topics covered in the textbooks, was held once a week within the schools participating in the project, a way to have direct contact with students and teachers, staying close to the academic community. The classes were accompanied by the teacher responsible for the 4th or 5th grade class, to meet the difficulties encountered by the children, even in the translation of the concepts that children were not aware of.

The playful exercises involving the fruits of the Cerrado in portuguese subjects, mathematics, history, geography and science in order to strengthen, deepen the themes of the lectures and show the application of the Cerrado Fruit in practice.

Culinary Manuals

The Culinary Manual Cagaíta and the Pequi Culinary Manual contain recipes of the different ways of using fruits, which also contains interesting facts about fruits and hygiene tips in the preparation of dishes, since it is necessary to take into account good Hygienic practices of food vendors so that they can associate procedures to wash their hands other personal hygiene practices to safe food.

Once, food poisoning and other foodborne illness can occur due to poor hygiene practices, especially in areas where food and beverages are served. The sale of food, including fruits from the Cerrado, in the streets and fairs is an important means for generating income for many families that survive in the Cerrado, as well as gerazeiros and quilombolas, and little hygiene conditions can cause health problems if food is not prepared and handled under hygienic conditions (Dun-Dery&Addo, 2016).

pequi, with different ways of using fruits, nutrition, botanical and medicinal information and that were published in several schools and collective bus lines in the city of Sete Lagoas.

Informative Posters and Brochures

The preparation of leaflets and posters presented in the composition of the fruit, and cagaita



Figure 3: Fruit leaflet of the Cerrado.



Figure 4: Pequi Culinary Guide.

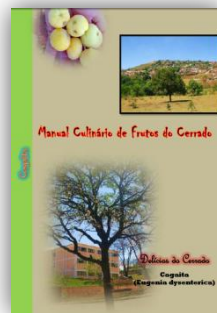
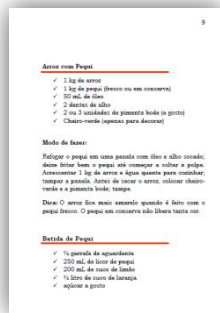


Figure 5: Cagaita Culinary Guide.

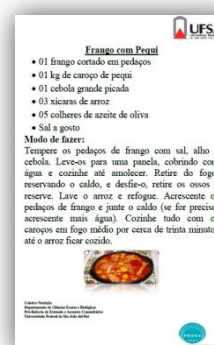
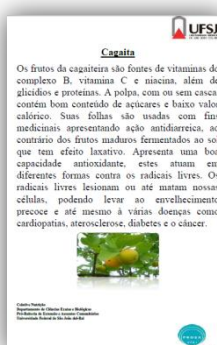
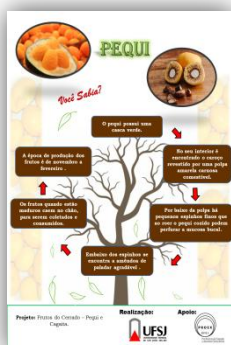
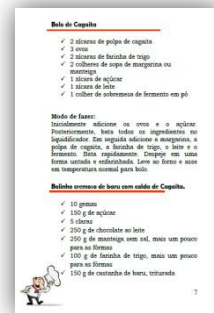


Figure 6: Informational and Collective Posters.

Some reflections on the Results of the Interventions Project

During the implementation of the activities we have encountered some difficulties such as the

dispersion of children in the speeches. As most of the children did not know the cagaita and pequi it was difficult to work some concepts, being necessary to adapt the weekly studies the language of the booklet. And to facilitate the perception of the children in the Cerrado, in the period of fruiting, in the ways of collecting the fruits in maturation of the fruit, other teaching tools indicative like change of color, that are used as slide classes, posters with images of fruit.

Positive Experiences

Through lectures and resolution of playful exercises the students of the schools participating in the project have developed a relevant experience that were linked to the everyday reality that the subjects studied by them in the classroom are often not met. Thus, students develop the perception:

- Identify and Cagaiteira Pequi as trees typical of the Cerrado in the school district;
- Identify the different types of fruit that compose the Cerrado;
- Raise awareness about the preservation of the environment, in relation to flora;

Through the culinary manuals presented and distributed to rural and urban traders, vendors selling fruits native to the Cerrado realized the contribution of culinary books to convey information to their customers, and innovate in the kitchen to add value to the product, marketing fruits in different forms (pulp, sweet, juice, etc.). All street vendors who received instructions sell some fruits such as pequi, araticum, siriguela cajá and umbu *in natura* or processed, mainly in the form of preserves.

Booklet fixing inside the collective Sete Lagoas was an alternative that provides the dissemination of information to the public about cagaita and pequi.

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