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Discovering the secrets of Cagaiteira (Eugenia dysenterica), an awakening of Cerrado

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Abstract. O cerrado presents a diversity of fruit species known and used by the population, these species present big potential economic and ecological, awakening the interest industries, in addition to presenting source income for local population. The cagaiteira (*Eugenia dysenterica*) is an typical tree do cerrado presents a great potential, however o consumption its fruit still is little diffused by the population that many times is unaware of its health benefits. O goal of this work was bring information for the population of the micro-region of Sete Lagoas on the potentialities natural that o cerrado presents, so that there a greater preservation of the cagaiteiras present region in, being able to be used as an alternative source of feeding interfering significantly in the improvement of feeding and contribution nutritional. The results have shown that the this work interventions of contributed to a better dissemination of information on the cagaita promoting a better use of this species fruitful through the population.
Keywords: Eugenia dysenterica, cagaita, cerrado, culinary manual, prospects.

Introduction

The cerrado is the second largest Brazilian biome, occupies approximately 204 million hectares, covering approximately 25% of the Brazilian territory and approximately 57% of the territory of Minas Gerais (Rocha, 2011; Santos & Zampero 2012; Ministério do Meio Ambiente, 2015). It presents one of the most biodiverse in the planet where its flora has more than 4000 species dispersed formations countryside, forest and savannah (SOUZA et al., 2002; RIBEIRO & WALTER, 2008).

The cerrado was long considered a region that had a poor and poorly fertile soil, where the economy is based in small subsistence agriculture and extensive cattle ranching in this way, environmental conservation agencies and even farmers do had not much interest in this biome, however, since the 60s, with the change from the federal capital of Rio de Janeiro to Brasilia, a city that is embedded in the heart of the savanna biome, with the implementation of the policy of interiorization and national integration and also through the construction of roads, this region was seen with other eyes of society, entering in the context of food and energy production, contributing in 2008 with more than 30% of the national production of grain and oilseed legumes 37% of the country's cattle herd (Ávidos & Ferreira, 2000; Grzebieluckas, 2010).

On the other hand, this type of occupation contributed greatly to the increase of deforestation, fires, the use of chemical fertilizers and pesticides, endangering many species of endemic plants, most of which have not been studied. Only 8.6% of the area of this biome is protected by federal, state and local conservation units, and approximately 3.1% of the area is protected as integral protection conservation units, such as national parks (Ministério do Meio Ambiente, 2015).

The fruitful species of the cerrado has great economic and ecological potential, which attracts the interest of the industries, as well as a source of income for the local population, where it uses these fruits as an alternative source of food, often complement the diet and serving as a source of drugs, fiber, vitamins, minerals and antioxidants, fruit peels and species of these leaves are also used in folk medicine, being also an important source of food for wild animals (birds, rodents, armadillo, etc.) and even itself in cattle (Martinotto ET AL., 2008; Assumpção et al., 2013; Rodrigues et al., 2016).

There are more than 58 species of native savanna fruit trees known and used by the population of the region (Ávidos & Ferreira, 2000). We also have those fruits that in spite of being spread over a large area, there is little known by the

population due to lack of information or even fruitiness the fruit is very perishable marketing hindering, as is the case of cagaita, presenting a great potential, However, little is exploited by the *in natura* population, as the ripe fruit should be used for immediate consumption.

The cagaiteira (Eugenia dysenterica) Can produce 200-2000 fruits per tree, belongs the family Myrtaceae family name comes from the Greek term myrtos which means perfume, is one of the most important families by being distributed in all Brazilian ecosystems, as well To be considered one of the 10 most representative families of cerrado (Oliveira et al., 2005, Chaves & Telles, 2006, Silva et al., 2015). It blooms between the months of August and September, during which the tree stands out for its exuberant beauty (Chaves & Telles, 2006; Lorenzi, 2000; Silva et al., 2015, Rodrigues et al., 2016). The fruiting period is between the months of September to November, where apex takes place in October, the fruits develop and mature over a period of about 30 to 40 days, the green color of the bark when young, thin and yellow light when ripe, with visible streaks in the proximal region due to the vascular bundles of *sui generis* taste, pleasant and slightly acidic, contains from 1 to 4 seeds ellipsoids and flat (Donadio et al., 2002; Martinotto et al., 2008).

Figure 1. Cagaiteira flowering.

Cagaita has a high content of proteins, lipids, carbohydrates and fiber, and is considered a good source of vitamin C (18-72mg/100g), which are higher than those found in many fruits of conventional culture Such as ripe banana and apple Argentina, vitamin B2 (0.4 mg/100 g), calcium (172.8 mg/100 g), magnesium (62.9 mg/100 g) and iron (3.9 mg/100 g)(Chaves & Telles, 2006). The oil of the pulp has cagaita monounsaturated fatty acids over 50%, especially acidic (36%); 28% of fatty saturated, mainly palmitic acid (24%); and 22% polyunsaturated, particularly linoleic acid (12%), which is an essential fatty acids that is not synthesized by the body and must ingest in our diet, which are substances precursors in the structure of the cell membrane, as constituents of the structures of the brain, the retina and reproductive system (Almeida, 1998).

The consumer market for processed products based on cagaita pulp is still little explored by the population, because people have many prejudices about cagaita, because of its delicacy it difficult transportation of fruit, however, this perecividade is only present in the ripe fruit thus, where opening new markets should only occur if there is a greater investment in advertising campaigns than the properties and benefits that this fruit offers.

Based on the above, there is a need for studies that aim to understand and discuss about the preservation of cerrado seeking through various activities, to rescue the native fruit culture in the region to educate people about the importance the use of sustainable practices to ensure the development economic, social and environmental development of the natural resources of this biome. A very interesting approach adopted in this work was to carry information about the cagaita for the users of collective buses that circulate in different parts of the city. In the bus pass a lot of people who have access to books, magazines, newspapers and/or leaflets, but also have those people who have little or no access to these means of information (Silva et al., 2009). This action catches the attention of bus users, which is easy to read in real time during the route (Daniel & Souza, 2012). Reading is part of the daily life of people, which allows the critical view of society, acting with greater autonomy, which reflects in their values and behavior (Silva et al., 2009).

The objective of this work was to bring the information to the population of Sete Lagoas and the region on the potentialities natural presented by the cerrado, so occurs is a greater preservation of cagaiteiras in the region, which seek to raise the awareness of the local population about the environment in addition to showing the nutritional properties that cagaita offers, which can be used as an alternative food source intervening significantly in improving food and nutritional support.

Methods

The work was carried out through different interventions, in order to promote the empowerment of the population regarding the preservation of this fruit of the cerrado species, contributing to its use in a sustainable way and improving the food quality.

The first intervention was the preparation of a manual of culinary cagaita with recipes of different ways of using cagaita also contains hygiene tips in the preparation of dishes and curiosities about fruit in order to preserve the culture of food. This culinary guide was worked and provided to the teachers of the city school José Maria da Fonseca City Santana Pirapama near Sete Lagoas, was distributed to the sellers of fruits of cerrado of Road borders in the city of Várzea da Palma (North of Minas Gerais) and

also the traders who sell the fruits of the cerrado, conserves, and additives vegetables in a fair in the neighborhood of Boa Vista, in the city of Sete Lagoas.

Figure 2. Supply of the Manual Culinary of cagaita for persons.

The second intervention was through the development and the fixation of posters over the cagaita, they were fixed at the Federal University of São João del Rei - *Campus* of SeteLagoas and several schools of the city and the region.

The last intervention was addressed to a wider audience, making several prospectuses on cagaita, presenting different forms of use, methods of conservation, nutrition information, botanical and medical information, these prospectuses were fixed in several collective buses of the city of SeteLagoas.

This last intervention was carried out through a partnership with an extension project of the Federal University of São João del Rei entitled "Collective Nutrition", this project constantly disseminates different nutritional information in the collective buses of the city, contributing to a better food habit of the population, the estimated number of people affected by this program is approximately 108,000 users.

A questionnaire to evaluate the conception the users' of collective about the prospectuses set exhibited in the different public transport lines of the city was structured.

Results and discussion

The manual culinary cagaita was presented to 30 teachers from the city school Santana Pirapama which has a large number of cagaiteiras and many are not knew of had the benefits of this species of fruit. It was noticed that most teachers did not know or were a little afraid in the consumption of cagaita, after the presentation of the booklet they reported that would make some recipes at home and even eat the fruit *in natura*.

The cagaita Culinary Manual was presented and distributed to 12 vendors in the Boa Vista neighborhood of the city of Sete Lagoas and also the vendors located on the roadsides of the northern region of Minas Gerais, all the people who received the booklet commercialized some fruits of the cerrado such as pequi, araticum, umbu, cajá ciriguela, among others, raw or processed, mainly in the form of preserves, however, of 12 hawkers in the city of Sete Lagoas only one marketing cagaita, and the vast majority are unaware of its nutritional properties and health benefits. In the northern region of Minas Gerais it is more common the commercialization of cagaita therefore the sellers of the northern region of Minas Gerais and the exhibition center of the city of Sete Lagoas realized the importance of the Manual to transmit the nutritional information To customers and add value to the marketing of fruit products in different ways: pasta, sweets, juices, among others, since the marketing of cagaita is more frequent in the period of fruiting in the form *in natura*.

The questionnaire to evaluate the opinion of the population on the fixed bus leaflet had multiple choice and discursive questions. The survey was conducted with 55 people aged 17-74 years living in different neighborhoods of the city, and the majority was women (76.4%), training respondents ranged from incomplete elementary school to complete Higher education. In the first survey question was whether the respondents saw a fixed prospectuses at bus stops collective Sete Lagoas and what bus line they saw. It is observed that the vast majority of the respondents (76.4%) viewed the prospectuses, (10.9%) said they do not viewed and (12.7%) did not notice the presence of prospectuses within the collective bus.

The second question was asked if the respondents remembered the issue addressed in the prospectus, more than half of the respondents (56.4%) they remembered of subject, stating that the booklet contains information related to the fruits of the cerrado, some Recipes that lead to cagaita in its composition and information about cagaiteira, (43.6%) of the respondents did not remember the topic discussed in the prospectus.

The respondents remembered of subject matter or not find significant disclosure in the prospectuses of fruit species of the cerrado. It was observed that (90.9%) of the respondents found that this description is very important, and only (9.1%) disagree with its importance. Another factor to note is that even people who have not seen the prospectuses reported to be of fundamental importance of information to the knowledge of the population.

They were asked if they knew the of fruit tree cagaiteira and their cagaita fruit. Most respondents (76.4%) knew the tree and the fruit is a small part (23.6%) are not aware of this tree and its fruit specie.

It was asked to respondents if they have consumed the cagaita ou any product that has the fruit in its constitution. It is observed that the majority of respondents (94.5%) never consume and few people (5.5%) have consumed cagaita or any product that contains fruit. The investment in programs and projects related to the fruits of the cerrado and

the community is fundamental for the knowledge of the people who look for a better use of these fruits and preservation of the fruit species.

Respondents were asked if they had any qualms fear eating cagaita. More than half of the people (52.7%) reported that cagaita is an undigestible fruit and the fruit causes diarrhea, (47.3%) of respondents said they are not afraid from fruit consumption.

He was asked if after seeing the leaflet if they continued with the same idea about the cagaita and found that respondents who were afraid to eat the fruit, 91% said they had partially changed their eyesight regarding the fruit, reported that to read the leaflets clarified their doubts because cagaita if ingested in hot and in large amounts causes the fermentation in the stomach that causes diarrhea.

The respondents took any prescription to use it during the fruiting period, it is observed that more than half (52.7%) said yes and (47.3%) said no. Some of the respondents reported that they took pictures of the revenues presented in the prospectuses, others said they took home the prospectuses with their own recipes to show off their family and friends.

He was asked what these revelations aroused in the interviewee, some pointed out that this information aroused in them, curiosity, more interest in the consumption of fruits of the cerrado, others said that this information was important to encourage reading, distraction while Are on the bus, these revelations make people remember that these fruits are close and can be introduced into our feeding with what improves the quality of life, promote the conservation of fruit species of cerrado and consequently preserve the environment.

Conclusion

All the interventions of this work were carried out in the anticipated date in which it was possible to demonstrate the population of the city of Várzea da Palma (to the north of Minas Gerais) and also population micro region Sete Lagoas benefits that cagaita offers. Fixing prospectuses within the collective Sete Lagoas was an alternative that provides the dissemination of information to the public about the cagaita.

Interaction with masters of the city Santana Pirapama was also a satisfactory alternative, because the teacher is a key professional in human development, responsible for transmitting knowledge.

The supply of Manual Culinary gives cagaita the marketers, cooks and teachers contributed to the possibility of inserting the cagaita and typical dishes of this species of fruit in the diet of the population as an alternative feeding source that contributes to nutritional intake or as a source of income for the population.

Therefore, cagaita is presented as a fruit species with great economic and social potential, which makes it promising for commercial exploitation through sustainable harvesting.

References

ALMEIDA, S. P. Frutas nativas do cerrado: caracterização físico-química e fonte potencial de nutrientes. In: SANO, S. M.; ALMEIDA, S. P. (Ed.) Cerrado: ambiente e flora. Planaltina: Embrapa-CPAC,p. 247-285, 1998.

ASSUMPÇÃO, C. F.; BACHIEGA, P.; SANTANA, A. T. M. C.; MORZELLE, M. C.; BOAS, B. M. V.; SOUZA, E. C. Néctar misto de mangaba (*Hancoria speciosa*) e cagaita (*Eugenia dysenterica*): Perfil sensorial e características físico-químicas.Revista Brasileira de Produtos Agroindustriais, Campina Grande, v. 15, n. 3, p. 219-224, 2013.

ÁVIDOS, M. F. D.; FERREIRA, L. T. FRUTOS DOS CERRADOS: Preservação gera muitos frutos. Revista Biotecnologia: Ciências e Desenvolvimento, n. 15, jul./ago. 2000.

CHAVES, L. J.; TELLES, M. P. C. Frutas nativas da região Centro-Oeste do Brasil, Embrapa Recursos Genéticos e Biotecnologia, Brasília, p. 120-130, 2006.

DANIEL, L. M.; SOUZA, M. C. Comunicação em movimento: O Expresso: jornal-cartaz dos usuários de transporte coletivo de Viçosa. Revista de C. Humanos, Viçosa, v. 12, n. 1, p. 108-120, jan/jun 2012.

DONADIO, L. C.; MÔRO, F. V.; SERVIDONE, A. A. Frutas brasileiras. Jaboticabal: Novos Talentos, p. 288, 2002.

GRZEBIELUCKAS, C.; CAMPOS, L. M. S.;ALBERTON, A.; MARINHO, S. V. Práticas de Sustentabilidade da Cadeia Produtiva de Frutos Nativos do Cerrado: Um Estudo no Cerrado Goiano. XXX Encontro Nacional de Engenharia de Produção Maturidade e desafios da Engenharia de Produção: competitividade das empresas, condições de trabalho, meio ambiente. São Carlos, out. 2010.

LORENZI, H. Árvores brasileiras: manual de identificação e cultivo de plantas arbóreas do Brasil. Nova Odessa: Plantarum, v. 2, p. 368, 2000.

MARTINOTTO, C.; PAIVA, R.; SOARES, F. P.; SANTOS, B. R.; NOGUEIRA, R. C. Cagaiteira (*Eugenia dysenterica* DC.). Boletim Técnico. Lavras, n. 78, p. 1-21, 2008.

MINISTÉRIO DO MEIO AMBIENTE. Monitoramento do Desmatamento nos Biomas Brasileiros por satélite, Cerrado 2010-2011. Ministério do Meio Ambiente – Mma E Instituto Brasileiro do Meio Ambiente E dos Recursos Naturais Renováveis – IBAMA. Brasília, set. 2015.

OLIVEIRA, R. N.; DIAS, I. J. M.; CÂMARA, C.A.G. Estudo comparativo do óleo essencial de *Eugenia punicifolia* (HBK) DC. de diferentes localidades de Pernambuco. Revista Brasileira de Farmacognosia Brazilian Journal of Pharmacognosy, v.15, n.1, p. 39-43, jan./mar. 2005.

RIBEIRO, J.F.; WALTER, B.M.T. As principais fitofisionomias do Bioma Cerrado.*In* SANO, S.M.; ALMEIDA, S.P.; RIBEIRO, J.F. (eds.). Cerrado: ecologia e flora. Embrapa Cerrados, Planaltina, p.151 -212, 2008.

ROCHA, M. S. Compostos Bioativos e Atividade Antioxidante (*In Vitro*) de Frutos do Cerrado Piauiense. Dissertação de Mestrado em Alimentos e Nutrição, Universidade Federal do Piauí - UFPI.Teresina, p. 94, 2011.

RODRIGUES, D. B.; COSTA, L. T.; MELO, C. P. O. F.; SOUZA, A. G.; GARCIA, E. M.; TAROCO, H. A.; MELO, J. O. F.Analysis of project about Cerrado fruits developed with students from two public schools. Scientific Eletronic Archives, v. 9, n. 3, 2016.

SANTOS, T. J. R.; ZAMPERO, R. Árvores Frutíferas do Cerrado e a Sustentabilidade. Revista científica Aprender. 6ªed., out. 2012.

SILVA, C. R. M.; OLIVEIRA, M. M. S.; SOUSA, R. C. S.; SOUZA, T. S.; SANT'ANNA, V. L. L. Um olhar pedagógico sobre o projeto cultural da FALE/BHtrans – "leitura para todos" – no interior dos ônibus: repercussões e alternativas na prática da leitura. Pedagogia em ação, v. 1, n. 1, p. 1-141, jan/jun. 2009.

SILVA, S. M. M.; SILVA, C. A. G.; BAZZO, Y. M. F.; MAGALHÃES, P. O.; SILVEIRA, D. *Eugenia dysenterica* Mart. Ex DC. (cagaita): planta brasileira com potencial terapêutico. Revista Infarma Ciências Farmacêuticas, v. 27, n. 1, p. 49-95, 2015.

SOUZA, E.R.B.; NAVES, R.V.; CARNEIRO, I.F.; LEANDRO, W.M.; BORGES, J.D. Crescimento e sobrevivência de mudas de cagaiteira (*Eugenia dysenterica* DC) nas condições do Cerrado.Revista Brasileira de Fruticultura,v. 24, p. 491-495, 2002.