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REVIEW ARTICLE

Fruits of the Brazilian Cerrado are a potential alternative for food tourism and regional development

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Abstract

The Cerrado biome has tremendous social, heritage, and income-generating importance for traditional communities from this Brazilian region. Although the exotic fruits of Brazilian Cerrado are a subsistence source for communities that cultivate them and contribute to regional tourism promotion, they are not systematically studied. This study explores the potential of the biodiversity of exotic fruits from the Brazilian Cerrado biome as a promoter of food tourism. Exploring tourism and local production chains can enhance the development of Cerrado. Articulating this 'new' type of interaction between national public policies, local productive arrangements (LPA), traditional communities, and tourist activity actors can also help promote the exotic fruits from Cerrado. Thus, this is the first time the tourism experience emphasizing fruits has been explored as a promising alternative to regional development.

Keywords: Brazilian Savanna; Community-based Tourism (CBT); Exotic fruits; Regional development; Traditional food.

Highlights

- First review of the tourist experience with an emphasis on Cerrado fruits
- The gastronomic tourism market is a good option for regional development
- The extractive exploitation of fruit from Cerrado forms several productive chains

1 Introduction

Brazil is the world's most biodiverse country, hosting about 20 percent of the planet's species (Brasil, 2019b). Cerrado is the second biggest Brazilian biome, and its flora has a significant fruit diversity (Cardoso et al., 2013a; Morais et al., 2022a). This biome is also considered the richest Savannah around the globe (Brasil, 2019b), one of the world's hotspots of biodiversity. These characteristics make Cerrado highly and socially important to the local communities that explore its natural resources. The native fruit of many Brazilian biomes, traditionally used for local and seasonal consumption, has drawn attention from domestic and international markets since 1988 with the Amazon Rainforest exposition to the world media (Homma et al., 2018). From this fruit biodiversity, the possibility of exploring the experience of conscious consumption of these products through tourism could be faced as an income-generating alternative to the traditional communities of Cerrado.

The World Tourism Organization (UNTWO) mentions that tourism is a "[…] social, cultural, and economic phenomenon that entails the movement of people to countries or places outside their usual environment for personal or business/professional purposes" (United Nations, 2019). Food can be a travel motivation among the countless tourism categories, like, Agritourism, Cultural or Heritage Tourism, or even Food/Gastro/Culinary Tourism (Williams et al., 2014). Food Tourism can be defined as an "[…] intentional pursuit of appealing, authentic, memorable food and beverage related experiences of all kinds while traveling internationally, regionally or even locally" (Williams et al., 2014). The interest in a specific food or drink, and because of that, a particular culture, could be the key reason for a trip (Williams et al., 2014).

When seeking to provide authentic food experiences, places engaged in Food Tourism should look to the resources available in their neighborhoods, communities, villages, cities, and countries (Williams et al., 2014). Local dishes also demand authenticity since food is seen as an authentic product and a symbol of culture and identity (Yeoman & McMahon-Beatte, 2016). In Brazil, besides the natural landscapes usually promoted for international tourism, the possibility of a relationship between nature, culture, and ethnicity brings to gastronomy the exotic imagination, drawing attention and interest to the touristic experience (Cohen & Avieli, 2004; Long, 2004). In this scenario, this literature review aims to explore the potential of the biodiversity of exotic fruits from the Brazilian Cerrado biome for food tourism.

2 Brazilian Cerrado and its regional development and socio-economic issues

Brazil has continental dimensions considering population, territory, natural aspects, and cultural and socio-economic characteristics. To integrate this diversity, the Federal Government tries to promote national policies focused on regional aspects. One of these efforts is the National Policy for Regional Development (Política Nacional de Desenvolvimento Regional – PNDR), launched on 22 February 2007 by the Decree n. 6.047. One of the goals of the PNDR is to reduce inequalities in living standards among Brazilian regions and promote equity in access to development opportunities (Brasil, 2007). On May 30, 2019, the PNDR was updated by the Decree n. 9.810, establishing new principles, such as sustainable development and recognizing and appreciating the environmental, social, cultural, and economic diversity of the region (Brasil, 2019a). One significant PNDR goal is to add value and economic diversification in strategic production chains for regional development promotion (Superintendência do Desenvolvimento do Nordeste, 2019). In this context, the states that compose Cerrado biome present a promising socio-economic and cultural profile to implement this policy.

Brazilian Cerrado occupies 22% of the Brazilian territory (Figure 1), being part of the states of Paraná, São Paulo, Minas Gerais, Mato Grosso do Sul, Mato Grosso, Goiás, Distrito Federal, Bahia, Tocantins, Maranhão, Piauí, Rondônia, and small parts of Amazonas, Amapá, and Roraima (Instituto Brasileiro de Geografia e Estatística, 2019). Its territorial extension presents several groups of forests, climates, geographies, and physical-chemical aspects of the soil that form the Cerrado Domain. The basins of the Tocantins River, São Francisco River, and Prata River, the three largest in South America, are found in the Cerrado Domain. Cerrado also has a dry season that sharply contrasts with the Amazon, known for its high average annual rainfall (Jesus Silva et al., 2019).

In Cerrado Biome, it is possible to find singular characteristics such as forest, savanna, and countryside formations. All this plant diversity and the high water potential make Cerrado the richest savanna in the world, presenting many endemic forest and animal species (Brasil, 2019b; Klink & Machado, 2005). Another vital characteristic of Cerrado is the extensive transition zones among the Amazon, Caatinga, and Atlantic Forest Biome, resulting in a unique biodiversity. When combined with the local-level capacity to claim for actions and manage public policies, this unique biodiversity is a critical tool for regional development (Lira-Noriega & Soberón, 2015; Wondirad & Ewnetu, 2019).

Related to this and beyond environmental aspects, Cerrado also has substantial social importance. Several populations survive from its natural resources, including indigenous groups, riverside populations, quilombolas, geraizeiros, babaçueiros, and vazanteiros (names of traditional populations from Cerrado). These communities are part of Brazilian historical and cultural heritage, holding traditional Cerrado biodiversity knowledge (Brasil, 2019b). The relationship between biodiversity, sustainability, and food is latent. Although traditional communities, such as those mentioned above, are often on the margins of what can be observed in development policies, how food is produced and consumed is directly related to local economic growth. In the case of Cerrado, more than ten fruit species are regularly consumed by the local population and sold in urban centers, such as Pequi (*Caryocar brasiliense* Cambess.), Buriti (*Mauritia flexuosa* L.f.), Mangaba (*Hancornia speciosa* Gomes), Cagaita (*Eugenia dysenterica* DC.), Bacupari (*Salacia crassifolia* (Mart. ex Schult.) G. Don), Cajuzinho do cerrado (*Anacardium humile* A. St.-Hil.), Araticum (*Annona crassifolia* Mart.), and Baru (*Dipteryx alata* Vogel) seeds (Novaes et al., 2013).

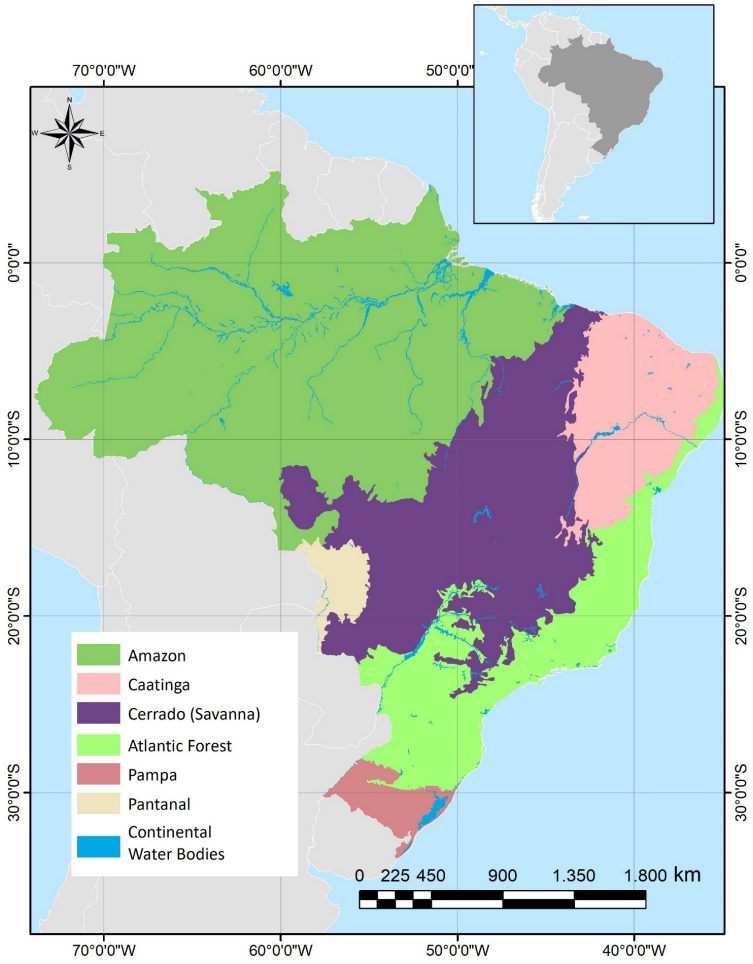

Figure 1. Distribution of Brazilian territory and biome.

Mainly in Goiás, Mato Grosso, and Mato Grosso do Sul states, Cerrado fruits are an income generation alternative to local entrepreneurship through development projects in agencies, like the Brazilian Service of Support for Micro and Small Enterprises (Serviço Brasileiro de Apoio às Micro e Pequenas Empresas – SEBRAE), that comprise governmental agencies, universities, and research institutes. Besides Goiás, Mato Grosso, and Mato Grosso do Sul states, in the Brazilian Northeast, Bahia, Maranhão, and Piauí states, also present a vast extension of the Cerrado biome. The Superintendence for the Development of Brazilian Northeast (Superintendência do Desenvolvimento do Nordeste, 2019) launched 2019 the Northeast Regional Development Plan (Plano Regional de Desenvolvimento do Nordeste – PRDNE), which focuses on reducing regional inequalities.

One of the PRDNE axes is an incentive to invest in existing productive activities such as, for example, food production, mostly fruit, allied to research development to open market space to this product (Superintendência do Desenvolvimento do Nordeste, 2019). Finally, in Tocantins, the youngest state of Brazil and located in the North region, even though its economy is based mainly on the services sector, followed by industry and agriculture (Tocantins, 2020), the vast diversity of exotic fruits from Cerrado biome is also used by the local population, and it has been generating interest from researchers and investors. Thinking about investors and entrepreneurship and looking at economic activities classified as agriculture, livestock, forest production, fishing and aquaculture, and food services throughout the Brazilian territory (Brasil, 2019a), it is possible to observe that:

i) there is still a need to articulate local productive systems among states for regional and national strengthening, minimizing social discrepancies.

ii) it is essential to incentivize productive chains in states that present few entrepreneurs and cooperatives, looking forward to adding value and economic diversification to regional development.

The study of the chemical composition of native foods contributes to a better comprehension of nutrition and biodiversity, especially regarding food production (Fernandes et al., 2010; Sousa Júnior et al., 2018). It can also be possible to think about promising elements to add value to these fruits, reaching new markets that value the conservation of the biome conservation beyond the more traditional forms (Diniz et al., 2013). One possible way to do this is to insert these products into the alternative food market related to tourism, considering sustainable development, policy integration, and tourism planning (Brendehaug et al., 2017; Sims, 2009).

3 Grown here: characteristics and potential from food of Brazilian Cerrado

Physical properties make the Cerrado soils suitable for agricultural production, although they have limitations regarding natural fertility. It is estimated that 112 million hectares are of native vegetation (forest and countryside formation) from the Cerrado biome, while 85 million hectares are occupied with agriculture and pastures (Bolfe et al., 2020). Despite the large area destined for monoculture, the Cerrado is the biome with the largest number of edible fruit trees. It has many other plants with potential for pharmaceutical, cosmetics, biofuel, and other industries. In its native flora, the Cerrado has innumerable species that present properties that make them attractive for extraction. These species are used as a source of food, such as medicinal, timber, ornamental, beekeeping, raw materials for handicrafts, and oil extraction, among other uses. Plant extraction is one of the oldest and most traditional activities in this region (Batista & Sousa, 2019).

During the harvest period of each native species, many families of producers, inhabitants of agricultural villages or on the outskirts of the cities, reduce other activities to dedicate themselves to extractivism, which guarantees them, for a few months, an income sometimes superior to that from other activities carried out during the year (Morais et al., 2022b). The extractive exploitation of fruit from Cerrado forms several productive chains. More than 58 native Cerrado fruits are used by the population, with high nutritional value, besides offering sensory attractions, such as unique and intense colors, flavors, and aromas (Arruda et al., 2012). Although these fruits have many sensory properties, most have not been systematically studied and they have not been adequately evaluated for market potential. These unique sensory characteristics make

Cerrado fruit very suitable for use as food or as a natural food additive. Besides the sensory attributes that make their consumption attractive, fruit is a potential source of phytochemicals such as carotenoids, flavonoids, fibers, and others that can contribute to human health as well as being welcomed in the world market as functional and nutraceutical food (Schiassi et al., 2018).

Many actors compose a possible chain of exotic fruit use, starting from local producers to members of the government, leading to the articulation of the Cerrado biome to establish the links of the supply chain and good visibility of fruit quality (Diniz et al., 2013). Some of these fruits are already available to purchase and consume in large urban agglomerations (such as Brasília and São Paulo) and, thus, visible to a higher number of people by the domestic and international visitors and tourist flow. These highlighted attention fruits are pequi, baru, Cerrado cashew, buriti, araticum, bacupari, guapeva, and mangaba (Leão et al., 2017; Morais et al., 2020, 2022b; Oliveira et al., 2020).

Pequi pulp stands out for its high concentrations of carotenoids, lipids, and fibers, in addition to the moderate levels of phenolic compounds, mainly gallic acid (GA) and ellagic acid (EA) (Alves et al., 2014; Cardoso et al., 2013a). The oil produced from the pequi pulp has been used to prepare rice, ground meat, and chicken dishes and produce sweets, preserves, and liqueurs (Lima, 2006). The fruit is collected on the ground after natural dehiscence and transported for sale fresh or sent to processing units or residences for processing. The fruit has edible pulp used in small and medium industries to produce ice cream, liquor, oil, and cosmetics (Araujo, 1995).

The pequi consumption as food is a culture of people of different Brazilian interior regions. When migrating to big centers, these people took along some of their eating habits. Thus, pequi currently finds a market in many large Brazilian cities (Batista & Sousa, 2019). The commercialization of pequi significantly impacts the economy of the country, moving approximately R$ 3.5 million annually, originating employment and representing a large part of rural workers and the annual income of small farmers (Hunter et al., 2015)

Baru is common in Cerrado areas and is a source of income for small farmers and agro-extractivists who live in this biome. The baru extraction has promoted income generation, autonomy, and self-esteem recovery by extractive family farmers. The people of the Brazilian Cerrado thoroughly use the baru. The sweet pulp is used to prepare liqueurs and jams and is consumed fresh, the chestnut yields flour is widely used in cooking, and the oil is also extracted from it.

The Cerrado cashew is widespread in popular medicine, and its accessory fruit is consumed fresh or processed into sweets, jams, liqueurs, juices, ice cream, popsicles, candied fruit, and other products (Belo et al., 2019; Silva et al., 2008). The Cerrado cashew nut (actual fruit) is still narrowly consumed. When roasted and peeled, the nut is considered a valuable delicacy for its taste and texture. The fruit is rich in energy, carbohydrates, lipids, proteins, minerals, and vitamins (Belo et al., 2019; Silva et al., 2008). Cerrado cashew nuts have more than 50% of fatty acids, comparable to traditional cashew nuts (Alves et al., 2016).

Buriti pulp can be consumed fresh, in juices, ice cream, sweets, or dehydrated. Its oil, extracted from the fruit pulp, has energetic and healing properties and is also the basis for cosmetics, besides being an efficient sunscreen. The heart of the palm can be used in salads, the sap of the stem can be used to produce wine, and from the stem, is obtained starch like sago (Cândido et al., 2015; Garcia et al., 2017). Some studies have shown that buriti has strong nutritional potential and can be considered a functional food.

The araticum (*A. crassiflora*) is an exotic fruit of Brazilian Cerrado that holds high nutritional and technological potential (Cardoso et al., 2013b) and is among the 20 most consumed species in the region (Arruda et al., 2016; Cavalcante et al., 2008). This fruit has attracted the attention of consumers and researchers because of its sensory features, such as color, flavor, and aroma, and particularly for its content of phenolic compounds, carotenoids, and ascorbic acid (Silva et al., 2014). The araticum is a large fruit, appreciated for its characteristic aroma, and presents good pulp production.

For the araticum, a substantial commercial, socio-economic, and medicinal value is attributed. This fruit is an alternative source of income for family farmers of the Cerrado region. Despite the great potential of the

fruits, only the native people consume araticum as fresh fruit or juices, ice cream, cakes, sweets, and jams (Arruda et al., 2015, 2016).

Bacupari has a yellow to orange-colored pulp when ripe, slightly acidic. The extracts of bacupari have been valued since antiquity due to their medicinal properties. The biological activities attributed to these extracts are quite diverse. For example, in popular medicine, it is used as a stimulant, appetite blocker, sedative, purgative, memory restorative, male contraceptive, antitumor, anti-bacterial, insecticide, chronic cough, headache, and others (Spivey et al., 2002). The bacupari pulp can be consumed fresh and processed, showing the potential for use as frozen pulps and elaborating sweets, ice cream, and jams. Mangaba is a fruit tree species native to Brazil and has social, economic, and cultural importance in the areas where it occurs. This fruit is exploited almost entirely in an extractive way (Soares et al., 2016).

Its pulp is the main product, consumed fresh or as raw material for manufacturing products. There is a possibility of making great use of mangaba to process products, such as sweets, jams, liqueurs, bottled juice, frozen pulp, and others. This exploitation is already verified, but most of these products are artisanal with regional commercialization without applying any industrial technology. Consequently, the species has aroused the interest of the industry and trade sectors (Ganga et al., 2010).

4 Food policies scenario

On September 15, 2006, the Brazilian Federal Government institutionalized the Decree n. 11.346, creating the National Food and Nutrition Security System to asseverate the human right to decent nutrition (Brasil, 2006). Some of the initial parts of the law affirm that:

- ‘The adoption of these policies and actions should consider environmental, cultural, economic, regional, and social dimensions’ (Article 2º, Paragraph 1º, np);
- ‘Food and nutrition security consists of everyone’s right to regular and permanent access to quality food, in enough quantity, without compromising the access to other necessities, based on health-promoting eating practices that respect cultural diversity, not forgetting environmental, cultural, economic, and the social sustainability’ (Article 3º, np);
- ‘The enlargement of access conditions to food by production, primarily using traditional and familiar agriculture’ (Article 4º, Item I, np);
- ‘Food and nutrition security embraces [...] the guarantee of the biological, sanitary, nutritional, and technologic quality of food, and its utilization, stimulating healthy eating practices and lifestyles that respect the ethnic and cultural diversity of the people’ (Article 4º, Item IV, np).

Thinking of the Cerrado, in the agribusiness expansion and the modernization of agriculture, promoted as positive to development (Klink & Machado, 2005), also leads to thinking about the transformation of local communities, traditional peoples, indigenous, and, consequently, in the mentions of the Decree n. 11.346 listed above. The Cerrado fruit production is entirely dependent on biome maintenance. In that case, the diffusion of agroforestry and the dismantling of environmental policies in Brazil seems to be an economic interest conflict that entails an obstacle to the valorization of the biome and its foods (Barbosa et al., 2021; Gori Maia et al., 2021). On the other hand, it is important to note that there will always be conflicts of interest. However, the way that the administration leads the problem changes according to the thinking line of the government. Considering the environmental policies of the actual government, it can be noted that they are different from the finished government. These implications directly reflect on the deforestation process, as well as on regional environmental policies (Kageyama & Santos, 2011).

To “[…] promote food and nutrition security, and income generation to traditional people and communities” (Brasil, 2018), one of the actions supported by the Brazilian Ministry of the Environment is the Local Productive Arrangements (LPAs). The LPAs have been established since the early 2000s as

> […] agglomerations of companies and enterprises, located in the same territory, which presents productive specialization, local governance, and ties of articulation, interaction, cooperation, and learning among them and other local actors such as government, business associations, credit institutions, teaching, and research (Brasil, 2018).

Although the concept refers to the theory of alternative networks to be an alternative form of the capitalist *modus operandi* based on market and hierarchy (Smith-Doerr & Powell, 2010), governance is still an essential element in legislating and coordinating collective actions in LPAs. Then, LPAs are in perfect harmony with the guidelines of the Decree n. 11.346. Brazil had, in 2015, 677 LPAs. The Cerrado, even occupying million km^2 (23%) of the Brazilian territory, has very few LPAs focused on fruit. We can mention only Pequi and Other Cerrado Fruit LPA (Minas Gerais state) and the Vale do Paranã Cerrado Fruit LPA (Goiás state) as the ones who work directly with fruit producers (Melo & Martins, 2020).

Besides LPAs, some isolated actions and propositions have been trying to draw attention to the importance of Cerrado fruit maintenance as a strategy for environmental and cultural preservation. These actions integrate, in different proportions, the organized civil society, entrepreneurs, researchers, and some government instances. There are projects, research, events, cooperatives, and associations in different locations of Brazil that call attention to the food diversity of Cerrado (Delgado et al., 2007; Rezende & Cândido, 2014).

Among the projects, it is possible to highlight the 'Cerrado and Pantanal Flavors: valuation of food plants of Pantanal and Cerrado', that search for promoting the improvement of Cerrado and Pantanal biome's foods. It is also possible to navigate the Cerratinga, a website supported by the Society, Population and Nature Institute (Instituto Sociedade, População e Natureza – ISPN), that congregates information about Cerrado and Caatinga biomes to "[…] act in the eco-social field, focused on the traditional people and communities, family farming, and their organizations" (Cerratinga, 2020).

Some events occurred in many Brazilian states, such as the Gastronomy of Cerrado Festival (Goiás, since 2013); the Cerrado Mineiro's Cultural and Gastronomy Festival (Minas Gerais, since 2015); the Flavors of Cerrado Festival (Brasília, since 2018); the Arraias Gastronomy Festival (Tocantins, since 2017); the Cerrado on the Plate National Festival (Brasília, São Paulo and Goiás, 2020); among others (Associação Goiana de Municípios, 2017; Maciel, 2018; Ferreira, 2019; Serviço Nacional de Aprendizagem Comercial, 2019; Cerrado no Prato, 2020).

Also, in 2016 a nonprofit cooperative center called Cerrado Central started to sell products from this biome at the Pinheiros Municipal Market in a special box called 'Biomes'. It is a strategy "[…] to strengthen and expand the production and marketing of native Cerrado products" (Peña, 2019). Cerrado Central also works on 'promoting the dissemination and insertion of sustainable use products in local, regional, and international markets; export of pequi to Japan, chestnut from baru to the United States of America and handicrafts of Golden grass for France' (Peña, 2019), supported by WWF-Brazil. Aside from the commercialization of products, these initiatives also bring a more significant interest to the Cerrado biome and attract the attention of a wide range of people. This new attention to domestic and international markets can be considered a promising scenario for Food Tourism development in Cerrado.

5 What about eating? Food Tourism as a value

In Brazil, the document that "[…] establish guidelines and strategies for the implementation of the National Tourism Policy" (Brasil, 2019c) is the National Tourism Plan (Plano Nacional de Turismo) – PNT), renewed every three to four years, which aims to outline the Federal Government's actions regarding the development of tourism activity in the country. The document has technical support from the Ministry of Tourism, EMBRATUR - Brazilian Tourism Institute, and the National Tourism Council (Brasil, 2019c). Many other public policies unfolded by its guidelines, but the PNT is the largest tourism design instance at the national level. The PNT does not specify local procedures but conducts decentralized tourism and regionalization management.

The 2018-2022 version of the PNT, entitled ‘More Job Places and Income’ (Brasil, 2019c), brings in its cover an image of tourism workers, representing some areas such as food, accommodation, and air transportation. Nonetheless, in the 161 pages of the document, the mention of words related to food occurs only eight times. If food can be a tourism motivation, as was highlighted in the first lines of this text, and the memorable experiences related to authentic cuisine have been gaining attention (Sims, 2009; Williams et al., 2014; Yeoman & McMahon-Beatte, 2016), the national tourism guidelines related to food/alimentation seems scarce. The terms 'food', 'culinary', and 'bar/restaurant' were considered in this search.

The subtopic that stands out is the ‘Initiative: To promote the local population integration to the productive tourism capacity and the Locally-driven (Community-based) Tourism Development’. This topic proposes that governmental instances (at federal, state, and local levels) encourage “[…] the development of new tourism activities that incorporate local production, culture, and regional cuisine aspects, as well as support and articulate actions to promote and enlarge the marketing channels for products associated with tourism [...]” (Brasil, 2019c, p. 124, emphasis added by the authors).

First, mentioning the concept of Locally-driven (Community-based) Tourism and its relation to Food Tourism is quite exciting. However, the guidelines are generic and generalist, just like the document. The most unsettling is the minute number of times that food/alimentation is mentioned in the document. It is not the objective of this work to draw a comparison between areas that permeate the tourism activity, but terms related to accommodation and transportation (both also represented in the workers’ image in the document cover) are mentioned in the texts 14 and 17 times, respectively—quantitatively much more than the eight times for food/alimentation.

This study understands food as a subject of many aspects, from a destination related to history, literature, economy, religion, social interactions, lifestyle, etc. From that, it is also necessary to remember that food is a key element in comprehending the culture and the heritage of a destination (Zahari et al., 2009). On the other hand, the rise in postmodernist cultural forms, the new organization of time and space, and the new understanding of capitalism entail a change in social organization (Harvey, 1990). The attention to regional cooking, focusing on maintaining traditions, heritage, and the knowledge of typical foods, could be characterized as a movement to challenge this XXI *modus operandi*.

In the Brazilian Cerrado, it is not different. The expansion of agribusiness has motivated transformation (Leão Pereira et al., 2019). Even though the PNDR, mentioned before, proposes itself to the “[…] reduction of inequalities in living standards between Brazilian regions and the promotion of equity in the access of development opportunities [...]” (Brasil, 2007, 2019a), there is some national generalization in the way of thinking about development: focused on economic aspects, at the expense of local traditions and culture, as well as the environmental and food diversity.

According to Barthes (2018), every time people buy food and/or eat it, they communicate with the world. The actions highlighted in the last topic, organized by civil society, entrepreneurs, researchers, and some government actors, emphasize this. Cerrado fruit maintenance as a critical element of Brazilian diversity and part of thousands of people’s lives and histories is only possible with new looks, attention, and practices. Integrating these isolated actions described before with the tourism production chain could be an alternative. The importance of articulation between infrastructure and food security, allies to information about regional particularities, and fruit potential could bring a promising scenario to the promotion of destination (Sims, 2009; Williams et al., 2014).

6 Prospects and challenges and conclusions

The social importance of Cerrado for the populations that survive from its natural resources has generated a demand for new ways to add value to products and traditional knowledge already explored by the communities that inhabit the biome. The native Cerrado fruits, considered exotic for the people outside this

region, present properties that make them attractive as a food source. However, most of them are not systematically studied and commercially available in more significant proportions, the use of the fruits of our biodiversity depends on knowledge and technology to promote the organization of all links in the production chain. One of the biggest challenges is adding value to this fruit and integrating it into income-generation activities sustainably, stimulating regional development.

It is possible to find some actions by the Brazilian government, organized civil society, and academics to draw attention to regional alimentation specificities and the value of these specificities. Even so, there is a particular mismatch in the scope of these actions and, consequently, in the Cerrado fruit visibility in markets beyond traditional and local ones, for example, in the alternative gastronomic market.

As traditional and cultural aspects are added to the Cerrado fruit alimentation practices, it would be possible to glimpse a promising scenario. Authenticity and ethnicity are critical elements to a tourism destination promotion and, consequently, to bring visitors. Once allied to the local productive chains and the cooperation between traditional communities, tourism can act as a regional development propulsor and highlight the importance of the Cerrado biome. The importance of articulation between the effectiveness of national food/alimentation public policies, civil society actions, and the actors related to the tourism activity of the region seems critical.

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References

Alves, A. M., Fernandes, D. C., Sousa, A. G. O., Naves, R. V., & Naves, M. M. V. (2014). Características físicas e nutricionais de pequis oriundos dos estados de Tocantins, Goiás e Minas Gerais. *Brazilian Journal of Food Technology*, *17*(3), 198-203. http://doi.org/10.1590/1981-6723.6013

Alves, A. M., Fernandes, D. C., Borges, J. F., Sousa, A. G. O., & Naves, M. M. V. (2016). Oilseeds native to the Cerrado have fatty acid profile beneficial for cardiovascular health. *Revista de Nutrição*, *29*(6), 859-866. http://doi.org/10.1590/1678-98652016000600010

Araujo, F. D. (1995). A review of *Caryocar brasiliense* (Caryocaraceae): An economically valuable species of the central brazilian cerrados. *Economic Botany*, *49*(1), 40-48. http://doi.org/10.1007/BF02862276

Arruda, H. S., Cruz, R. G., & Almeida, M. E. F. (2012). Caracterização química, funcionalidade e toxicidade do pequi. *Nutrição Brasil*, *11*(5), 315-319.

Arruda, H. S., Fernandes, R. V. B., Botrel, D. A., & Almeida, M. E. F. (2015). Frutos do Cerrado: Conhecimento e aceitação de *Annona crassiflora* Mart. (Araticum) e *Eugenia dysenterica* Mart. (Cagaita) por crianças utilizando o paladar e a visão. *Journal of Health & Biological Sciences*, *3*(4), 224-230. http://doi.org/10.12662/2317-3076jhbs.v3i4.168.p224-230.2015

Arruda, H. S., Botrel, D. A., Fernandes, R. V. B., & Almeida, M. E. F. (2016). Development and sensory evaluation of products containing the Brazilian Savannah fruits araticum (*Annona crassiflora* Mart.) and cagaita (*Eugenia dysenterica* Mart.). *Brazilian Journal of Food Technology*, *19*(0), e2015105. http://doi.org/10.1590/1981-6723.10515

Associação Goiana de Municípios – AGM. (2017). *5º Festival Gastronômico do Cerrado de Santo Antonio de Goiás.* Retrieved in 2020, December 15, from http://www.agm-go.org.br/noticia/727-5-festival-gastronomico-do-cerrado-de-santo-antonio-de-goias

Barbosa, L. G., Alves, M. A. S., & Grelle, C. E. V. (2021). Actions against sustainability: Dismantling of the environmental policies in Brazil. *Land Use Policy*, *104*, 105384. http://doi.org/10.1016/j.landusepol.2021.105384

Barthes, R. (2018). Toward a psychosociology of contemporary food consumption. In C. Counihan, P. Van Esterik & A. Julier (Eds.), *Food and culture* (pp. 13-20). New York: Routledge. http://doi.org/10.4324/9781315680347-2.

Batista, F. O., & Sousa, R. S. (2019). Compostos bioativos em frutos pequi (*Caryocar brasiliense* camb.) E baru (*dipteryx alata* vogel) e seus usos potenciais: Uma revisão. *Brazilian Journal of Development*, *5*(7), 9259-9270. http://doi.org/10.34117/bjdv5n7-120

Belo, A. P. M., Souza, E. R. B., Camilo, Y. M. V., Naves, R. V., & Vieira, M. C. (2019). Fenologia, biometria e precocidade de plantas de caju arbóreo do Cerrado (*Anacardium othonianum* Rizz.). *Ciência Florestal*, *29*(4), 1672-1684. http://doi.org/10.5902/1980509818841

Bolfe, E. L., Barbedo, J. G. A., Massruhá, S. M. F. S., de Souza, K. X. S., & Assad, E. D. (2020). *Desafios, tendências e oportunidades em agricultura digital no Brasil*. Retrieved in 2020, November 21, from https://www.alice.cnptia.embrapa.br/alice/bitstream/doc/1126283/1/LV-Agricultura-digital-2020-cap16.pdf

Brasil. Subchefia para Assuntos Jurídicos. (2006, setembro 18). Cria o Sistema Nacional de Segurança Alimentar e Nutricional – SISAN com vistas em assegurar o direito humano à alimentação adequada e dá outras providências (Lei nº 11.346, de 15 de setembro de 2006). *Diário Oficial [da] República Federativa do Brasil*, Brasília. Retrieved in 2020, December 15, from http://www.planalto.gov.br/ccivil_03/_Ato2004-2006/2006/Lei/L11346.htm

Brasil. (2007, fevereiro 23). Institui a Política Nacional de Desenvolvimento Regional – PNDR e dá outras providências (Decreto nº 6.047, de 22 de fevereiro de 2007). *Diário Oficial [da] República Federativa do Brasil*, Brasília. Retrieved in 2020, December 15, from http://www.planalto.gov.br/ccivil_03/_Ato2007-2010/2007/Decreto/D6047.htm

Brasil. Ministério do Turismo. (2018). *Arranjos Produtivos Locais - APLs.* Brasília, DF. Retrieved in 2020, December 15, from https://www.gov.br/produtividade-e-comercio-exterior/pt-br/assuntos/competitividade-industrial/arranjos-produtivos-locais-apl

Brasil. (2019a). Institui a Política Nacional de Desenvolvimento Regional – PNDR (Decreto nº 9.810, de 30 de maio de 2019). *Diário Oficial [da] República Federativa do Brasil*, Brasília. Retrieved in 2020, December 15, from http://www.planalto.gov.br/ccivil_03/_ato2019-2022/2019/decreto/D9810.htm

Brasil. Ministério do Meio Ambiente – MMA. (2019b). *Biodiversidade brasileira.* Retrieved in 2020, December 15, from https://www.mma.gov.br/biodiversidade/biodiversidade-brasileira

Brasil. Ministério do Turismo. (2019c). *Plano Nacional de Turismo 2018-2022: Mais emprego e renda para o Brasil.* Brasília, DF. Retrieved in 2020, December 15, from http://antigo.turismo.gov.br/images/pdf/PNT_2018-2022.pdf

Brendehaug, E., Aall, C., & Dodds, R. (2017). Environmental policy integration as a strategy for sustainable tourism planning: Issues in implementation. *Journal of Sustainable Tourism*, *25*(9), 1257-1274. http://doi.org/10.1080/09669582.2016.1259319

Cândido, T. L. N., Silva, M. R., & Agostini-Costa, T. S. (2015). Bioactive compounds and antioxidant capacity of buriti (*Mauritia flexuosa* L.f.) from the Cerrado and Amazon biomes. *Food Chemistry*, *177*, 313-319. PMid:25660891. http://doi.org/10.1016/j.foodchem.2015.01.041

Cardoso, L. M., Oliveira, D. S., Bedetti, S. F., Martino, H. S. D., & Pinheiro-Sant'Ana, H. M. (2013b). Araticum (*Annona crassiflora* Mart.) from the Brazilian Cerrado: Chemical composition and bioactive compounds. *Fruits*, *68*(2), 121-134. http://doi.org/10.1051/fruits/2013058

Cardoso, L. M., Reis, B. L., Rossi Hamacek, F., & Pinheiro Sant'Ana, H. M. (2013a). Chemical characteristics and bioactive compounds of cooked pequi fruits (*Caryocar brasiliense* Camb.) from the Brazilian Savannah. *Fruits*, *68*(1), 3-14. http://doi.org/10.1051/fruits/2012047

Cavalcante, T. R. M., Naves, R. V., Seraphin, J. C., & Carvalho, G. D. (2008). Diferentes ambientes e substratos na formação de mudas de araticum. *Revista Brasileira de Fruticultura*, *30*(1), 235-240. http://doi.org/10.1590/S0100-29452008000100043

Cerrado no Prato. (2020). *Cerrado no Prato Festival Gastronômico.* Retrieved in 2020, December 15, from https://cerradonoprato.com/festival-gastron%C3%B4mico

Cerratinga. (2020). *Quem somos.* Brasília. Retrieved in 2020, December 15, from http://www.cerratinga.org.br/quem-somos/

Cohen, E., & Avieli, N. (2004). Food in tourism. *Annals of Tourism Research*, *31*(4), 755-778. http://doi.org/10.1016/j.annals.2004.02.003

Delgado, N. G., Bonnal, P., & Leite, S. P. (2007). *Desenvolvimento territorial: Articulação de políticas públicas e atores sociais.* Retrieved in 2020, December 15, from https://bibliotecadigital.economia.gov.br/handle/123456789/375

Diniz, J. D. A. S., Barbosa-Silva, D., Sousa, C., Figueiredo, A. S., Wehrmann, M. E. S. F., & Costa, F. M. P. (2013). Adding value to Cerrado species as opportunity to insert family farming in different markets. In M. A. Conterato, P. A. Niederle, R. M. Triches, F. C. Marques & G. Schultz (Eds.), *Markets and family farming: Interfaces, connections and conflicts* (pp. 268-289). Porto Alegre: Via Sapiens.

Fernandes, D. C., Freitas, J. B., Czeder, L. P., & Naves, M. M. V. (2010). Nutritional composition and protein value of the baru (*Dipteryx alata* Vog.) almond from the Brazilian Savanna. *Journal of the Science of Food and Agriculture*, *90*(10), 1650-1655. PMid:20564449. http://doi.org/10.1002/jsfa.3997

Ferreira, L. (2019). *Criatividade e combinação de sabores marcam o III Festival Gastronômico de Arraias.* Retrieved in 2020, December 15, from https://portal.to.gov.br/noticia/2019/10/14/criatividade-e-combinacao-de-sabores-marcam-o-iii-festival-gastronomico-de-arraias/

Ganga, R. M. D., Ferreira, G. A., Chaves, L. J., Naves, R. V., & do Nascimento, J. L. (2010). Caracterização de frutos e árvores de populações naturais de *Hancornia speciosa* Gomes do cerrado. *Revista Brasileira de Fruticultura*, *32*(1), 101-113. http://doi.org/10.1590/S0100-29452010005000019

Garcia, L. G., Guimarães, W. F., Candido, E., Ribeiro, N., Salamoni, F., & Damiani, C. (2017). Geleia de buriti (*Mauritia flexuosa*): Agregação de valor aos frutos do cerrado brasileiro. *Brazilian Journal of Food Technology*, *20*, e2016043. http://doi.org/10.1590/1981-6723.4316

Gori Maia, A., Eusebio, G., Fasiaben, M. C. R., Moraes, A. S., Assad, E. D., & Pugliero, V. S. (2021). The economic impacts of the diffusion of agroforestry in Brazil. *Land Use Policy*, *108*, 105489. http://doi.org/10.1016/j.landusepol.2021.105489

Harvey, D. (1990). Between space and time: Reflections on the geographical imagination. *Annals of the Association of American Geographers*, *80*(3), 418-434. http://doi.org/10.1111/j.1467-8306.1990.tb00305.x

Homma, A. K. O., Menezes, A. J. E. A., Carvalho, J. E. U. C., & Matos, G. B. (2018). Manejo e plantio de bacurizeiros (*Platonia insignis* Mart.): A experiência no manejo e domesticação de um recurso da biodiversidade Amazônica. *Inclusão Social*, *12*(1), 48-57. Retrieved in 2020, December 15, from https://www.embrapa.br/busca-de-publicacoes/-/publicacao/1100286/manejo-e-plantio-de-bacurizeiros-platonia-insignis-mart-a-experiencia-no-manejo-e-domesticacao-de-um-recurso-da-biodiversidade-amazonica

Hunter, D., Burlingame, B., Remans, R., Borelli, T., Cogill, B., Coradin, L., Golden, C. D., Jamnadass, R., Kehlenbeck, K., Kennedy, G., Kuhnlein, H., McMullin, S., Myers, S., Moura de Oliveira Beltrame, D., Jorge da Rocha Silva, A., Saha, M., Scheerer, L., Shackleton, C., Oliveira, C. N. S., Termote, C., Teofili, C., Thilsted, S., & Valenti, R. (2015). *Biodiversity and nutrition.* Geneva: World Health Organistion, Secretariat of the UN Convention on Biological Diversity.

Instituto Brasileiro de Geografia e Estatística – IBGE. (2019). *Goiás: Panorama.* Retrieved in 2020, December 15, from https://cidades.ibge.gov.br/brasil/go/panorama

Jesus Silva, R., Garavello, M. E. P. E., Nardoto, G. B., Mazzi, E. A., & Martinelli, L. A. (2019). Urban access and government subsidies impact livelihood and food transition in slave-remnant communities in the Brazilian Cerrado. *Agronomy for Sustainable Development*, *39*(2), 24. http://doi.org/10.1007/s13593-019-0568-0

Kageyama, P. Y., & Santos, J. D. (2011). Aspectos da política ambiental nos governos Lula. *Revista Faac*, *1*(2), 179-192. Retrieved in 2020, December 15, from https://www3.faac.unesp.br/revistafaac/index.php/revista/article/view/67/31

Klink, C. A., & Machado, R. B. (2005). Conservation of the Brazilian Cerrado. *Conservation Biology*, *19*(3), 707-713. http://doi.org/10.1111/j.1523-1739.2005.00702.x

Leão Pereira, E. J. D. A., Ferreira, P. J. S., Santana Ribeiro, L. C., Carvalho, T. S., & Barros Pereira, H. B. (2019). Policy in Brazil (2016-2019) threaten conservation of the Amazon rainforest. *Environmental Science & Policy*, *100*, 8-12. http://doi.org/10.1016/j.envsci.2019.06.001

Leão, D. P., Franca, A. S., Oliveira, L. S., Bastos, R., & Coimbra, M. A. (2017). Physicochemical characterization, antioxidant capacity, total phenolic and proanthocyanidin content of flours prepared from pequi (*Caryocar brasilense* Camb.) fruit by-products. *Food Chemistry*, *225*, 146-153. PMid:28193408. http://doi.org/10.1016/j.foodchem.2017.01.027

Lima, A. (2006). Ouro do cerrado: Processamento industrial da polpa de pequi garante renda a agricultores na entressafra. *Revista Minas faz Ciência*, (27), 34-42.

Lira-Noriega, A., & Soberón, J. (2015). The relationship among biodiversity, governance, wealth, and scientific capacity at a country level: Disaggregation and prioritization. *Ambio*, *44*(5), 391-400. PMid:25480482. http://doi.org/10.1007/s13280-014-0581-0

Long, L. M. (2004). *Culinary tourism*. Lexington: University Press of Kentucky.

Maciel, J. (2018). Festival Sabores do Cerrado movimenta cenário gastronômico de Brasília. *Agência Sebrae de Notícias*. Retrieved in 2020, December 15, from http://www.df.agenciasebrae.com.br/sites/asn/uf/DF/festival-sabores-do-cerrado-movimenta-cenario-gastronomico-de-brasilia,7032fe22ae707610VgnVCM1000004c00210aRCRD

Melo, A. C. A., & Martins, P. T. A. (2020). Contribuição das áreas de proteção ambiental na conservação do Cerrado. *Revista de Geografia*, *37*(2), 53-71. http://doi.org/10.51359/2238-6211.2020.242444

Morais, R. A., Santos, A. L., Sousa, H. M. S., Silva Soares, C. M., Silva, D. L., & Souza Martins, G. A. (2020). Determinação dos compostos fenólicos totais em cascas de frutas encontradas no cerrado brasileiro. *Desafios Revista Interdisciplinar da Universidade Federal do Tocantins*, *7*(esp), 26-33. http://doi.org/10.20873/uftsupl2020-8493

Morais, R. A., Soares, C. M. D. S., Silva, R. R., Gualberto, L. S., Freitas, B. C. B., Carvalho, E. E. N., & Martins, G. A. S. (2022b). Formulation and evaluation of guapeva jam: Nutritional properties, bioactive compounds, and volatile compounds during storage. *Food Science and Technology*, *42*, e116321. http://doi.org/10.1590/fst.116321

Morais, R. A., Teixeira, G. L., Ferreira, S. R. S., Cifuentes, A., & Block, J. M. (2022a). Nutritional composition and bioactive compounds of native Brazilian fruits of the Arecaceae family and its potential applications for health promotion. *Nutrients*, *14*(19), 4009. PMid:36235663. http://doi.org/10.3390/nu14194009

Novaes, P., Molinillo, J. M. G., Varela, R. M., & Macías, F. A. (2013). Ecological phytochemistry of Cerrado (*Brazilian savanna*) plants. *Phytochemistry Reviews*, *12*(4), 839-855. http://doi.org/10.1007/s11101-013-9315-3

Oliveira, T. T. B., Morais, R. A., Marson, P. G., Teixeira, S. M. F., & de Souza Martins, G. A. (2020). Processing of fruits of the Cerrado in the form of integrals jellies. *Agrarian*, *13*(47), 130-140. http://doi.org/10.30612/agrarian.v13i47.8958

Peña, R. A. (2019). *Os frutos do Cerrado, disponíveis em São Paulo.* WWF-Brasil. Retrieved in 2020, December 15, from https://www.wwf.org.br/informacoes/noticias_meio_ambiente_e_natureza/?70724/Os-frutos-do-Cerrado-disponiveis-em-Sao-Paulo

Rezende, M. L., & Cândido, P. D. A. (2014). Produção e comercialização de frutos do Cerrado em Minas Gerais. *Revista de Política Agrícola*, *23*(3), 81-86. Retrieved in 2020, December 15, from https://seer.sede.embrapa.br/index.php/RPA/article/view/942/835

Schiassi, M. C. E. V., Lago, A. M. T., Souza, V. R., Meles, J. S., Resende, J. V., & Queiroz, F. (2018). Mixed fruit juices from Cerrado: Optimization based on sensory properties, bioactive compounds and antioxidant capacity. *British Food Journal*, *120*(10), 2334-2348. http://doi.org/10.1108/BFJ-12-2017-0684

Serviço Nacional de Aprendizagem Comercial – SENAC. (2019). *4º Festival de Cultura e Gastronomia do Cerrado Mineiro.* Retrieved in 2020, December 15, from https://www.mg.senac.br/Eventos/Paginas/-SenacM%C3%B3vel-estaciona-no-Festival-de-Cultura-e-Gastronomia-do-Cerrado-Mineiro--.aspx

Silva, E. P., Siqueira, H. H., Lago, R. C., Rosell, C. M., & Vilas Boas, E. V. (2014). Developing fruit-based nutritious snack bars. *Journal of the Science of Food and Agriculture*, *94*(1), 52-56. PMid:23794383. http://doi.org/10.1002/jsfa.6282

Silva, M. R., Lacerda, D. B. C. L., Santos, G. G., & Martins, D. M. O. (2008). Caracterização química de frutos nativos do cerrado. *Ciência Rural*, *38*(6), 1790-1793. http://doi.org/10.1590/S0103-84782008000600051

Sims, R. (2009). Food, place and authenticity: Local food and the sustainable tourism experience. *Journal of Sustainable Tourism*, *17*(3), 321-336. http://doi.org/10.1080/09669580802359293

Smith-Doerr, L., & Powell, W. W. (2010). Networks and economic life. In N. J. Smelser & R. Swedberg (Eds.), *The handbook of economic sociology*. Princeton: Princeton University. http://doi.org/10.1515/9781400835584.379.

Soares, A. N. R., Vitória, M. F., Nascimento, A. L. S., Ledo, A. S., Rabbani, A. R. C., & Silva, A. V. C. (2016). Genetic diversity in natural populations of mangaba in Sergipe, the largest producer State in Brazil. *Genetics and Molecular Research*, *15*(3), PMid:27706595. http://doi.org/10.4238/gmr.15038624

Sousa Júnior, J. R., Collevatti, R. G., Lins Neto, E. M. F., Peroni, N., & Albuquerque, U. P. (2018). Traditional management affects the phenotypic diversity of fruits with economic and cultural importance in the Brazilian Savanna. *Agroforestry Systems*, *92*(1), 11-21. http://doi.org/10.1007/s10457-016-0005-1

Spivey, A. C., Weston, M., & Woodhead, S. (2002). Celastraceae sesquiterpenoids: Biological activity and synthesis. *Chemical Society Reviews*, *31*(1), 43-59. PMid:12108982. http://doi.org/10.1039/b000678p

Superintendência do Desenvolvimento do Nordeste – SUDENE. (2019). *Plano Regional de Desenvolvimento do Nordeste.* Retrieved in 2020, December 15, from http://www.sudene.gov.br/images/arquivos/planejamento/PRDNE/PRDNE_v.06.12.2019_v2.pdf

Tocantins. Secretaria da Comunicação. (2020). *Governo do Tocantins destaca crescimento de 2,1% do PIB do Estado*. Retrieved in 2020, December 15, from https://www.to.gov.br/secom/governo-do-tocantins-destaca-crescimento-de-21-do-pib-do-estado/3qonigcx584z

United Nations. World Tourism Organization – WTO. (2019). *International tourism prospects.* Madrid: OMT.

Williams, H. A., Williams Junior, R. L., & Omar, M. (2014). Gastro-tourism as destination branding in emerging markets. *International Journal of Leisure and Tourism Marketing*, *4*(1), 1-18. http://doi.org/10.1504/IJLTM.2014.059257

Wondirad, A., & Ewnetu, B. (2019). Community participation in tourism development as a tool to foster sustainable land and resource use practices in a National Park Milieu. *Land Use Policy*, *88*, 104155. http://doi.org/10.1016/j.landusepol.2019.104155

Yeoman, I., & McMahon-Beatte, U. (2016). The future of food tourism. *Journal of Tourism Futures*, *2*(1), 95-98. http://doi.org/10.1108/JTF-12-2015-0051

Zahari, M. S. M., Jalis, M. H., Zulfifly, M. I., Radzi, S. M., & Othman, Z. (2009). Gastronomy: An opportunity for Malaysian culinary educators. *International Education Studies*, *2*(2), 66-71. http://doi.org/10.5539/ies.v2n2p66

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