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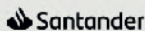


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Local products and gastronomy valuation for tourism and food sustainability in the Autonomous Region of Madeira

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Abstract

In small islands, trade-off faces continuous challenges due to insularity and reduced land availability for local crop production. Having climate change as a global issue impacting also on the Autonomous Region of Madeira, there is a need for adaptation regarding the management of coastal areas and land surface for food production, likewise housing and policy making.

The assessment of the relation between tourism and food sustainability in Madeira is important for understanding sustainable levels of production and needs for a wide-ranging nutrition.

Natural resources such as the Laurisilva of Madeira and the Atlantic Ocean are vital for biodiversity, granting local livelihood and motivation for visiting the Madeira islands. Food and Agriculture Organization of the United Nations presented as its main axes to invest for food sustainability: improving resource efficiency; take direct action to conserve, protect and improve natural resources; protect rural livelihoods and improve equity and social welfare; improve the resilience of people, communities and ecosystems, especially climate change and market volatility; and promote good governance for better sustainability of natural and human systems.

To attenuate impacts, the use of local and seasonal foods should therefore be encouraged, thereby reducing the energy, time, packaging and transport costs of food imports.

Foods with the lowest environmental impact correspond to foods for which is recommended a higher consumption, namely vegetables, fruit, whole grains and their derivatives and tubers. Thus, in the Autonomous Region of Madeira, we have many of these typical local products, such as bananas, passion fruit, wheat, corn, beans, potatoes, sweet potatoes, yams, among many other foods. In this way we value the cultural roots, the environment and we can contribute to the tourism, as these are increasingly determining factors for those visiting this region.

Keywords: Climate variation, food security and nutrition, local food, sustainability, tourism

Introduction

The sustainable use of natural resources

Water bodies and land surface are crucial for human activities, as they provide ecosystem services for livelihood and development. In the same way, natural resources are vital for biodiversity and carry tangible and intangible value. Today, anthropogenic activities contribute strongly to decreasing ice-free surface, impacting on rising of the water level in the oceans. Large areas are required for growing crops necessary to feed the world's population and produce vegetable oils and alternative energy sources to fossil sources. They are important for farming and raising cattle, giving an intensive use to the land and giving place to deforestation, therefore, decreasing biodiversity (FAO, 2017; 2018).

Temperature on earth was measured 1.41°C higher in the last twenty years in comparison to 1881-1900. The IPCC Special Report (2018) highlights the fact of the Paris Agreement not taking in

consideration the global earth temperature adjustments being above 2°C. Extreme weather conditions have been recorded and affected greatly for example the water availability, and land use. Food security is a hot topic relating needs for the nutrition of the worlds' population and pressure in the ecosystem. Soil is contaminated with excess of nutrients and global greenhouse gas emissions (GHG) are linked to deforestation (Schaeffer et al. 2015). Diets are linked to sustainability of food production and low level of gas emission and loss of habitat. Nevertheless, the global food trade carries impacts by overconsumption, food waste, waste management issues. In contrast, represents an opportunity for enhancement of policies related to land management and protection (Arneth et al., 2019)

Climate change has double effect on biodiversity. It changes productivity levels in cooler regions and becomes a chance to expand farming grounds on demand for new crops or raise livestock. Erb et al. (2016) highlighted that only up to 15% of the global woodland is free from use, concluding that humans give intensive use of it with deficient land management practices.

Nevertheless, new forests have been established and regulations have become tight enough so that “over the last 20 years deforestation has been decreasing from -8.3 million hectares per year in the 1990s to -5.2 million hectares per year in the last decade” (MDGs, 2012, p.46). South America, Africa and Oceania have been vigorously affected by constant fires in Australia, deforestation in Borneo and severe drought at drier latitudes, but programs to reforest certain areas in China, India and Vietnam have been in place in the last decade. The loss of environmental resources can have many causes when related to sustainable development it tends to be from the use of materials for the development of societies which generate impacts from CO₂ emissions.

Food production and consumption enable responses for mitigation of impacts from climate change and challenges linked to sustainable development. It is complex to address the related issues, but success actions involve funding mechanisms targeting cross-disciplinary educational programs directed to the population, likewise integrating sectoral governance (Arneth et al., 2019).

It is estimated that the actual food system provides supplies to approximately 200 million people (FAO, 2017). In the last 58 years, agriculture has been responsible for up to 60% of national GDP in several countries. The demand for water for agriculture is more than 100% and the activity uses greatly nitrogen fertilizers. Due to the continuous increase of the world's populations, the increment of 50% of food production will be necessary by 2050 (FAO, 2018).

Using local products in gastronomy

Food and Agriculture Organization of the United Nations presented as its main axes to invest for food sustainability: improving resource efficiency; take direct action to conserve, protect and improve natural resources; protect rural livelihoods and improve equity and social welfare; improve the resilience of people, communities and ecosystems, especially climate change and market volatility; and promote good governance for better sustainability of natural and human systems (FAO, 2014).

For a more sustainable diet, it is necessary, whenever possible, to buy food from local producers, as it encourages the practice of smaller-scale agriculture, with less environmental impact and respecting the balance of the ecosystem and biodiversity. Local food means a food produced in the vicinity having a short distribution chain. Consumption of these foods not only promotes the region's economy but minimizes the carbon footprint (Real & Carvalho, 2017).

On the other hand, fresh, local and seasonal foods have superior nutritional and organoleptic characteristics (such as taste), and by consuming proximity foods, we will also be promoting the local economy and reducing environmental and energy costs, and to conserve, protect and improve natural resources (Real & Carvalho, 2017).

Thus, encouraging the use of local and seasonal foods in the typical regional cuisine, reduces the energy, time, packaging and transportation costs inherent in food imports.

Foods with the lowest environmental impact correspond to foods for which higher consumption is recommended, namely vegetables, fruit, whole grains and their derivatives and tubers.

This study aims to identify local products consumed in the Autonomous Region of Madeira and provide clear understanding about tourism and food sustainability.

Methodology

For studying about local products and gastronomy in Madeira and sustainability in the Autonomous Region of Madeira, secondary sources were verified with focus on practices and different uses.

Findings/Results Discussion

Gastronomic products are part of the tourism offer and supports motivation for visiting the island. These is associated with the fact that agriculture has been developed since the XVI Century enhancing the special interest on the ecological value of the available water resources. The highland waterway *levadas* were built for channeling water from the Northern part of the island, where is more humid because of the higher amount of precipitation, to the southern part of the island where the climate is drier in comparison. They supply water for agriculture and plantations of sugarcane and at later stage to vineyards to produce Madeira wine (Quintal, 2010, 2011).

Such infrastructures are linked to tourism activity, allowing trekking along the circa 1400 km of length, crossing the landscape composed by terraces and accessing to local products growing in peculiar microclimates.

In the Autonomous Region of Madeira, due to its climate, it is possible to find many typical local foods, such as banana, passion fruit, wheat, corn, beans, potatoes, sweet potatoes, yams, among many other foods, of which it is possible to make regional dishes such as fried corn, boiled corn, tomato soup, wheat soup, passion fruit pudding, among many others, widely described in the recipes of typical regional cuisine (Camacho, 1992) (CSPSBRB, 2018) (Modesto, 2018) (Rodrigues, 2018).

With regional gastronomy, which values local products, we are not only contributing to food sustainability, protecting our environment, but also improving the tourism offer of this region. It is therefore necessary to preserve the local production of these foods, enabling the best conditions for their production, so that this environmental and tourist value is maintained.

Conclusions

Using local products in regional cuisine, we value the cultural roots, the environment and we can contribute to tourism in this region, as these are increasingly determining factors for those visiting the Autonomous Region of Madeira

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