Multifunctionality of agriculture: a Brazilian perspective[1]

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Abstract

Earlier international studies on multifunctional agriculture question rural development and show a new direction to rural areas. This approach is conceptualised as a counter to larger industrial agriculture and integrates social, economic, environmental preservation, productive and cultural values to sustain farming communities among traditional farmers. Brazilian researchers have previously argued for a four-pillar model of rural development to be incorporated to the concept of multifunctional agriculture. This paper presents a framework to investigate this theoretical approach. It presents a Brazilian case study among the Quilombola community of Mandira-Brazil and how it fulfils the four-pillar model. Results show exemplary protection of their cultural and biophysical territory and recognition of their traditional ways by the State, the ability to sustain livelihoods over time, but keeping the youth engaged is a challenge. The case study reveals unique Brazilian lenses towards the approach.

Keywords: Multifunctionality of agriculture; quilombolas.

Multifuncionalidade da agricultura: uma perspectiva brasileira

Resumo

Estudos internacionais sobre agricultura multifuncional questionam o desenvolvimento rural e mostram uma nova direção para as áreas rurais. A abordagem é conceituada como um contraponto à agricultura de larga escala, industrial e integra valores sociais, econômicos, de preservação ambiental, valores culturais que sustentam as comunidades agrícolas entre os agricultores tradicionais. Pesquisadores brasileiros defendem um modelo de desenvolvimento rural baseado em quatro pilares que devem incorporar o conceito de agricultura multifuncional. Este artigo apresenta uma estrutura para investigar essa abordagem teórica. Apresenta um estudo de caso brasileiro realizado na comunidade quilombola Mandira e como ela se integra ao modelo de quatro pilares da multifuncionalidade da agricultura. Os resultados mostram uma proteção ambiental exemplar de seu território cultural e biofísico e o reconhecimento de suas formas tradicionais pelo Estado, a capacidade de sustentar os meios de subsistência ao longo do tempo, mas manter os jovens engajados é um desafio. O estudo de caso revela uma olhar inédito sob a abordagem da multifuncionalidade da agricultura.

Palavras-chave: Multifuncionalidade da agricultura; quilombolas.

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Multifuncionalidad de la agricultura: una perspectiva brasileña

Resumen

Estudios internacionales han mostrado una nueva dirección para las zonas rurales, a multifuncionalidad de la agricultura. El enfoque es conceptuado como un contrapunto a la agricultura de larga escala, industrial e integra valores sociales, de preservación ambiental, valores culturales que sostienen las comunidades agrícolas. Los investigadores brasileños defienden un modelo de desarrollo rural basado en cuatro pilares que deben incorporar el concepto. Este artículo presenta una estructura para investigar este enfoque teórico. El estudio se realizó en comunidad quilombola Brasilena. Resultados muestran una protección ambiental de su territorio cultural y biofísico y el reconocimiento por el Estado, la capacidad de sustento de los medios de subsistencia a lo largo del tiempo, pero manter los jóvenes en él es un desafío. El estudio de caso revela una perspectiva brasileña sobre el enfoque de la multifuncionalidad de la agricultura.

Palabras clave: Multifuncionalidad de la agricultura; quilombolas.

Introduction

Ideally, a less industrial production system can enhance a more integrated approach to landscape management. Multifunctional agriculture is considered as an alternative to the current, dominant production-first, industrial model of agriculture. Drivers of rural land use change are linked to restructuring agriculture in response to aggressive neoliberal agendas (DIBDEN ET AL, 2009; HOLMES, 2006). Various terms identify the multifunctional importance of agriculture, such as: multifunctional agriculture, multifunctional agricultural systems, multifunctional landscapes, multifunctionality of agriculture and multifunctionality of agroecosystems. The term has been applied in practice and public politics in different countries (BELLETTI ET AL, 2002; BATIE, 2003; HYYTIÄ and KOLA, 2005; REIG, 2005; DOBBS and PRETTY, 2008; MORGAN ET AL, 2010; ARGENT 2011; WILSON, 2008). The term was used at the Conference on Environment and Development of Rio de Janeiro (UNCED) in 1992 and widely propagated during the conference of the Ministers of Agriculture of the Organization for Economic Cooperation and Development (OCSE, 1998). Much of international literature on multifunctional agriculture focuses on agri-environmental payment schemes. In Europe for example, much land is designated as protected area (HODGE and BONN, 2018). In the Netherlands and Germany for example, multifunctional landscape policies were directed to conservation of biodiversity through protection of agricultural landscapes on small-scale family farms (BEILIN ET AL, 2012). This is the case in Spain as well (REIG, 2005). For example, French and Italian governments promote the diversification of farming activity (LAPKA and CUDLI NOVA, 2007) using such schemes. Japan has a rich tradition of valuing cultural landscapes. Agri-environmental payment

schemes (BJØRKHAUG and RICHARDS, 2008 and DOBBS AND PRETTY) are common in European literature and practice, but very incipient in Brazil considering its vast territory.

Within the Common Agricultural Policy (CAP), multifunctionality has taken on a significant role from the 2007-2013 planning period, and has gained further attention in the present planning period (2014-2020), which has faced the theme of the enhancement of the functions that agriculture performs (SCHIMMENTI ET AL, 2017). The Sicily Rural Development Program (RDP) 2014-2020 is an example (REGIONE SICILIANA, 2014). Daugbjerg and Swinbank (2015) note that the process of reforms of the European agricultural policy has been continuous and constantly reforming for over thirty years. Multifunctionality is seen in some countries as an analytical framework to recognize many services that farms provide to their surrounding communities and society (BARBIERI and VALDIVIA, 2010). It has implications for conserving nature, maintaining people in rural areas, promoting agritourism, organic farming and the production of relatively high quality and region-specific products (VAN DER PLOEG ET AL., 2000). Multifunctional agriculture is presumed to have emerged as an important policy logic to stabilize commodity production while encouraging amenity-based development and the production of ecological services.

Meanwhile, the theoretical perspective is commonly referred to as multifunctionality of agriculture in Brazil. The Brazilian perspective of multifunctional agriculture has a strong social concern by focusing on aspects like maintenance of rural activities, well-being and rural livelihoods. The book Além da Produção (MALUF and CARNEIRO, 2003) presents a holistic interpretation of the term multifunctionality of agriculture, focusing on the Brazilian reality. In it, ideas of food production combined with the increase of farmers' income to overcome poverty are connected to social and cultural well-being. Its authors proposed four main pillars as a frame for multifunctional agriculture. These are described below:

1. Socioeconomic reproduction of families: the main issues addressed are the sources of employment and income for members of rural households, the conditions of stay in the field, the practices of sociability, installation conditions of youth and issues concerning the succession of family units.
2. Promoting food security of society and individual rural families: it covers the production for selfconsumption of households and also commercial food production, as well as the technical and productive options for farmers and the main channels of commercialization.
3. Maintenance of the social and cultural fabric: This field refers to preserving and improving the conditions of life of rural communities, taking into account the processes of elaboration and legitimacy of social identities and promoting social integration.

4. Preservation of natural resources and rural landscape: this dimension is in reference to the use of natural resources, and the relationship between economic activities and the landscape and biodiversity conservation.

There are four distinct scopes that Brazilian literature locates as central to understanding multifunctionality and they involve the role or place of the rural family, territory, society and public policy (CAZELLA ET AL, 2009). In this paper the investigation focuses on the scope of the rural family since the research was undertaken among families of small scale farmers. The study reflects many of the contestations found in the literature on rural communities and it is an example of both social and ecological interaction within a protected area and about the cultural survival of a traditional farming community. The main purpose of this paper is to adapt the four pillars of multifunctionality proposed by Carneiro and Maluf (2003) in a schematic way thus, creating a framework to analyse its consistency towards the theoretical approach.

The paper introduces background literature on the theoretical approach of multifunctional agriculture throughout the world. The Brazilian lenses towards multifunctionality of agriculture is presented, rural Brazil is discussed, the case study is analyzed and conclusions follow.

Introducing the case study

The case study is a traditional population, Quilombolas, who are descendants of the Brazilian slavery period. It comprises a total of 23 families, the community is located at Vale do Ribeira region of São Paulo state. Mandira territory (2.054, 65ha) is communal land owned by Quilombolas (ITESP, 2002) living in the area for approximately 143 years. After abolition in 1888, slave descendants were immersed in a cycle of oppression, land access prohibition and marginalization. Mandira patriarch, an ex-slave, inherited land from a white half-sister. Land conflicts occurred in the past, and forced many members to sell their land and leave the territory. Recently, in 2007, the Brazilian National Policy for the Sustainable Development of Peoples and Traditional Communities recognized the "remnants of quilombos" as a particular group and through a public policy initiative, assured them of land tenure. The remanents of Mandira community have been given land tenure (SÃO PAULO 2002; ITESP, 2002) and are recognized as a traditional population receiving some government support and projects.

Mandira community are co-managers of governmental protected area called Mandira Extractive Reserve (MER). The Atlantic forest of the region is designated an Atlantic Forest Biosphere Reserve (DIEGUES, 2007). There are approximately 1.2 million

hectares of forests; 190,000 acres of; 30,000 hectares of mangroves and 200 km of coastline cut by a complex of beaches, estuaries, islands and forest. Much of this territory is under legal protection because of its important biodiversity, cultural, speleological and archaeological heritage. The State Park Jacupiranga borders the right bank of Mandira River. The community's land is a buffer zone to the aquatic area (1.175 ha.) that became the MER. It is intertwined with the Federal Environmental Protection Area Iguape-Peruíbe-Cananéia and the State Park Lagamar of Cananéia and State Park of Ilha do Cardoso. Mandira people have been granted long-term usufruct rights to natural resources that they collectively manage. MER is not inhabited, neither used for logging purposes

In the 1980's this region's mangroves were being exploited through unsustainable practices putting at risk the whole ecosystem. Many locals used to extract oysters directly from the mangrove and sell them for little return. In 1994 the government launched a regional project of oyster cultivation assisted by researchers and the Fisheries Institute of the State of Sao Paulo. It aimed for sustainable practices related to oyster farming, including managing cultivation directly in the mangrove, and the empowerment of fishermen who were being pressured by large competing enterprises. There was also the creation of a cooperative which would improve the oyster market value, COOPEROSTRA. Economic activities are based on oyster cultivation, traditional farming and tourism managed collectively. Visitors are school groups, university students, researchers and people interested in the Quilombola culture. Since the 1990s oyster cultivation is the main economic activity of the community. In 2002 the cooperative received the Equatorial Initiative prize from the United Nations, international recognition for its sustainable use of the environment.

A Country of diversity

The impetus for massive export drives agricultural activity in Brazil and is the dominant focus for public policies (CAZELLA ET AL, 2009). Brazil has been a major goods exporter of coffee, orange juice, soybean, sugar, tobacco, paper and cellulose, and meat (FAVARETO and TRENTINI, 2011:4). In 2004 it became a leader in exports where one fifth of the meat sold internationally originates from Brazil and is commercialized to 180 countries (BRAZILIAN MINISTRY OF AGRICULTURE, 2015). Coffee, for example, is exported to Germany, USA, and Italy at 32% of the world market.

In Brazilian rural space there is a great disparity between small and large farm holders. The fact is important to understand how Mandira people are inserted in the agricultural Brazilian context. The national average area of a family farm is around 26 ha. (BUANAIN, 2007). On the other hand, the average size of a large farm is around 433 hectares. Large farm holders represent only 15.6% of the total establishments in Brazil

(IBGE, 2006). Large farm holders occupy more area and employ less people. European agricultural holdings, for example, indicate that historical patterns of occupation and landscapes are diverse and are smaller in comparison to Brazil. Also, historically Brazilian large farm holders have been receiving more credit and subsidies through directed public policies.

As an example, in 2012/2013 the Agricultural Plan provided approximately R$ 115 billion Reais for entrepreneurship on large farms and R$ 18 billion Reais for small farm holders' entrepreneurship even though, there is a larger number of small farms (JORNAL O ESTADO DE S. PAULO, 2014). The Agricultural Census of 2006 recorded 5, 2 million small farm holdings (which vary in size from 5 to 100 ha to in Brazil depending on the state), 40% of them measuring 5 ha. During that time, small farmers represented 84% of all Brazilian rural holdings (BRASIL, 2018). Importantly, family farming is of great social and economic importance to the country including the production of (87%), cassava crops, (70%) beans, pig farms (59%), and milk production (58%), among others. Small farm holdings are very productive and responsible for growing more than 50% Brazilian food products (BRASIL, 2018). Recent Studies show that nowadays small scale agriculture is also responsible for the production of commodities (CONTERATO, 2008; BAZOTTI, 2016).

Brazilian rural dynamics may be interpreted based on the Demographic Census (IBGE, 2010) which identified 81% of the Brazilian population living in urban areas in the year of 2000, and by 2010 this percentage increased to 84%. Factors that may be part of this depletion may include the government's lack of incentive for greater investment in public policies, of the territorialization of agribusiness and devaluation of peasant identity among others (DE ARAÚJO ET AL, 2018). The reports of the Project "Rururbano" elaborated from studies in Brazilian rural areas between 1981 and 1999 indicate that families who are dedicated exclusively to agricultural activities are decreasing rapidly, accompanied by a growth of families engaged in non-agricultural activities since the mid-1980s (GRAZIANO DA SILVA, 2002). Consists of modern agriculture based on commodities linked to agribusiness. There are also a set of nonagricultural activities related to housing, leisure, industrial activities and services, and new agricultural activities stimulated by niche markets. In short, the rural areas in Brazil have undergone changes.

Nontheless, these changes may re-inform a multifunctional perspective of agriculture. As an example, communities associated with the regional network of small farm holders in Santa Catarina State (MORUZZI and LACERDA, 2008). In 1996, the association of ecological farmers (AGRECO) encountered significant challenges in rural spatial dynamics relating to their production activities, processing and marketing of organic food. The Association Acolhida na Colônia in Santa Catarina State implemented a set of activities for the maintenance of families in the rural areas by valuing farming activities and encouraging

agritourism (MORUZZI and LACERDA, 2008). The agritourism circuit covers about 80 municipalities in the territory of Encostas da Serra Geral of Santa Catarina State, the landscape is valued aesthetically and for productivity, and there is collective effort to reduce environmental impacts. The association maintains reforestation practices through local associations and their institutional arrangements. According to Moruzzi and Lacerda (2008), multifunctional values are evidenced in the conservation of natural systems, the recovery of degraded areas, reduction of pesticide use, and healthy eating. The improvemet in farmers' economic well-being is associated with maintaining a variety of rural activities, and encouraging and reinforcing knowledge exchange due to agritourism. A more recent study (NAVAS and KANDIKADAN, 2017) contains a social analysis of multifunctionality of agriculture. Another example, the rural settlement of Monte Alegre-SP examined by Gavioli and Baptista Costa (2011) identifies agriculture creating benefits beyond agricultural production by promoting territorial cohesion, food security maintenance, and conservation of agricultural biodiversity which embody a reconstruction of a rural way of life.

Some academic production about the theme is identified in Brazil, mostly in the impetus of propagating the perspective among other scholars and the engagement of some academics among international research groups. There is some impetus in academic circles to identify the skill base associated with perpetuating multifunctional agriculture and encourage interest in re-asserting a 'stepping stone' towards a different social order. The perspective though, fits perfectly for the Brazilian reality because of the social disparities in rural areas, the large amount of rural family holdings which are economically threatened by large enterprises and the lack of environmental control in rural areas. It also may counter the increasing global trend to migration for urbanization, dispossession from land, and land-grabbing of territory by other nation-states.

Material and methods

The investigation occurred in the years of 2011, 2012 and 2013. In 2011 there were 4 different data collections, three different periods in 2012 and one week in 2013. There were telephone interviews in 2015. Fieldwork was also undertaken in Cananéia city and regional surroundings, interviews at Ilha do Cardoso State Park and trips to other Quilombola communities in the state of Bahia and state of São Paulo. The author lived in Mandira with one family for a week allowing a closer understanding of their daily routines. Overall the work included a total of 60 days in Mandira community. There are 23 families living in Mandira and all of them were interviewed.

Thematic analysis was utilized to create categories based on the four pillars of multifunctionality of agriculture elaborated by Maluf and Carneiro (2003) discussed in the

book entitled Para Além da Produção. The research involved interviews and questionnaires which investigated how multifunctional agriculture occurs in Mandira.The methods used were semi-structured interviews, field diary notations, ethnographic observation (DIEGUES, 1998) and participant observations. These methods were guided by existing anthropological studies (DIEGUES, 1998; DURHAM, 2004; CARNEIRO CUNHA, 2009). Four major questions based on each of the 4 pilars of multifunctionality of agriculture (MALUF and CARNEIRO, 2003) became a main framework for interviews, data search, notations and observations.

An example follows,

Question	Pillar
What are the indicators of socioeconomic reproduction within the families?	1.Socioeconomic reproduction of families
How are social and cultural fabrics being maintained and how are these issues associated with multifunctionality?	2.Maintenance of the social and cultural fabric
What is relevant as 'food security'?	3.Territory's capacity to grow its own food and commercialize products ('food security')
What are the practices that collaborate with preservation of nature?	4. Preservation of Nature

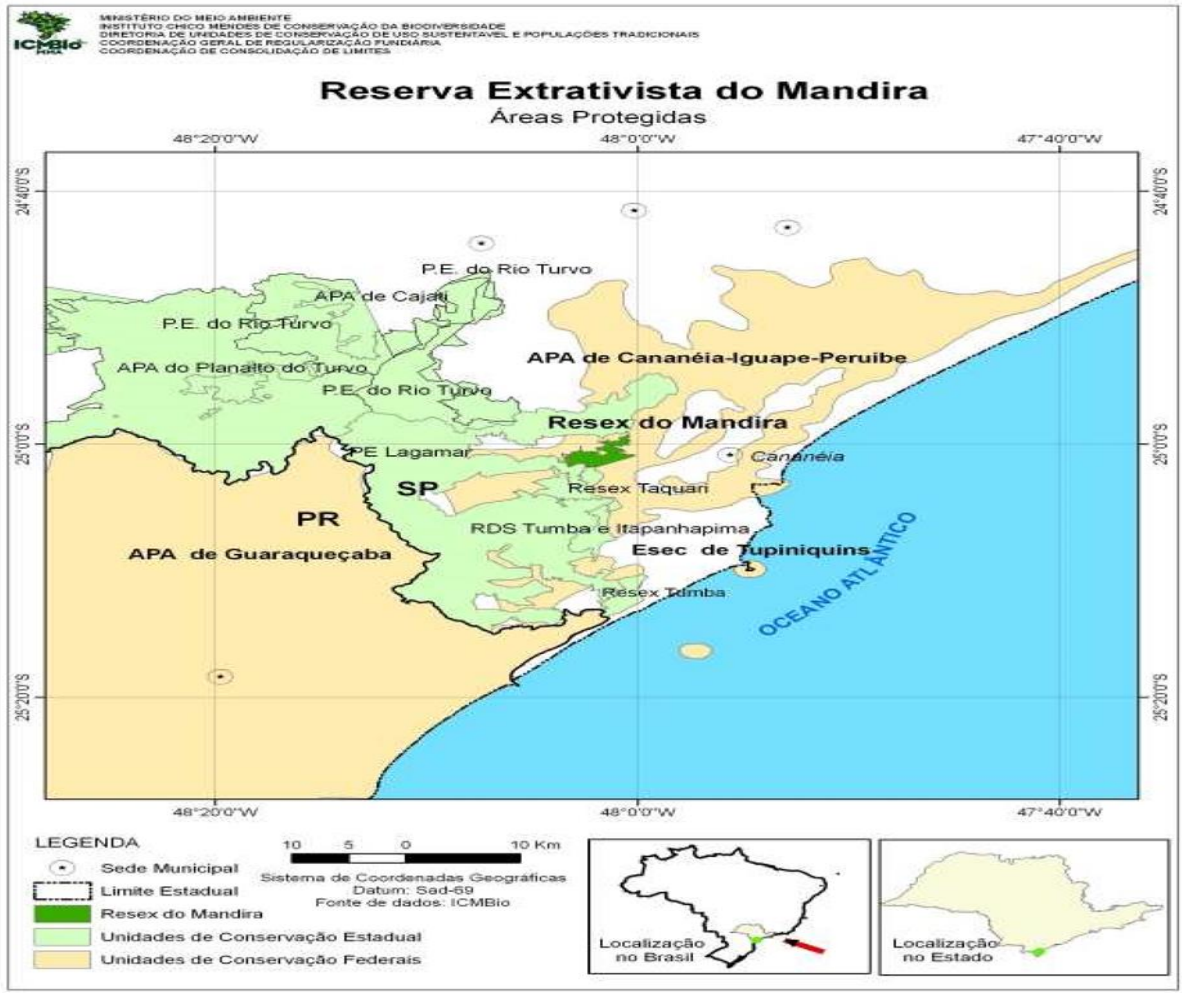
Questions included aspects of identity, territoriality, feelings of belonging, capital, sources of income, management of natural resources, everyday activities, collective organization, social interaction, activities performed by adults, children and juveniles, environmental preservation, religion and celebrations, eating habits, and commercialization of products. Most community members were interviewed in their homes and this step permitted to observe their household practices and daily routines. Some were interviewed while performing their daily activities. Local views and opinions about everyday life within the community and the logic of cooperation were noted in order to triangulate ideas and discussions.

Field observation captured data on work schedules, family ties, religious ceremonies, eating habits, community's organization, and interaction with tourists and students. Some further observation occurred where the researcher collected data through face-to-face interactions and participation in everyday tasks. For example, the author joined families in a day routine of oyster cultivation. Chats while preparing lunch for tourists, cleaning-up activities after tourists' departure and by participating in the group work of

making an artesanal curtain. There were many days of participative encounters with Mandira members. The research also involved meetings with the Extractive Reserve manager, meeting with the president of Mandira Association, chats with the ex-president and ex-members of the Oyster Cooperative. Oficial meetings with the Management Board of the Extractive Reserve Mandira which gathered public municipal/state officers, federal government and community members were attended were attended. Intense research occurred along three years.

Thematic categories for each different theme. Then they were analyzed alongside with specific literature for each pillar. There was literature review over the themes: territory, identity, social coherence and ecology (DIEGUES, 2001; BEGOSSI AVILA-PIRES 2003; SANTOS, 2000 AND CARNEIRO CUNHA, 2009). Initially the data was organized and separated. Then, data was coded according to each of the four Brazilian pillars of multifunctional agriculture (CARNEIRO and MALUF, 2003).

Figure 1: Extractive Mandira Reserve. Management



Source: Brazilian Ministry of Environment, 2011.

Results

The results are an analysis of the thematic framework ellaborated which tested the theoretical approach of multifunctionality of agriculture discussed by Maluf and Carneiro. Each of the four pillars corresponds to a theme that is explored with data and literature review. Parts of interviews are displayed along the results to reinforce de discussion over each pillar of the framework. The author believes it is important to show resident's viewpoint since it adds information and emphasizes elements related to the specific pillar being theoretically discussed.

The pilar of Maintenance of the social and cultural fabric in the Brazilian context, incorporates the idea of preserving and improving the living conditions of rural communities, and it also takes into account the processes of social identity formation through territory and subsequent social coherence (CARNEIRO and MALUF, 2003). It is embodied in the maintenance of the social and cultural fabric and multifunctional activities/agriculture of the communities. This investigation utilizes the interpretation of territory that is basis of work and residence, an arena for struggle among competing interests, but may also be the locus of possibilities for solidarity. Reflecting on this perspective, Mandira people engage in various kinds of cooperative work when the community receives tourists that correspond to the spirit of affirming and maintaining territory. Trails must be cleaned and tourist groups have to be guided by community members. There is a group of women who take turns in cooking activities and preparation of meals. Another group of women manufacture handcrafts and art products and manage the souvenir shop and store together. As an example part of an interview is shown below to demonstrate how the work is performed.

> *We take turns in the cooking team. Each different visiting group has a different cooking team except for the head cook. It is the same menu; we all know how to fry a fresh fish, rice, beans, oyster, salad, juice. (Interview female, age:47years, 2012)*
> *These curtains are part of our collective effort. We have new orders, so we get together to get things ready. Some of our products have been exhibited in fairs and exhibitions. We have made tons of cloth bags for sail and curtains. (Interview female, age:37 years, 2012).*

Mandira people are traditional land farmers, but in 1997 oyster cultivation became a new activity. The oyster cooperative unites members by providing direction around common objectives and results. Members must work together in the commercialization and distribution of oysters to restaurants along São Paulo's coast. They have to maintain all infrastructure associated with the reception, depuration and the packaging of the mollusks for the implementation of the cooperative project. This project included cultural exchanges between

government workers, researchers, and other professionals. In such way, oyster cultivation is an economic activity introduced in Mandira and it provides more jobs and financial opportunities to residentes. Interviewees showed to be very satisfied about being part of the oyster cooperative. These farmers perceive the importance of maintaining Mandira's agricultural practices. Interviews follows:

> *Be it today or in the future generation, our land is maintained, we continue our living way, that the culture of our community does not dissipate. [..] We want to show people to have respect for the traditional culture, the way we live. (Interview: female, age:19 years,2013)*.
> *Nowadays it is important to have public recognitions as Quilombola, yes; it reinforces our connection, our culture. Our way of living, the way of working, of producing, this is the culture of being quilombola. The seed is preserved, [...] the way of processing the products. Interview: male, age:45 years, 2013).*

Their comments indicate they value Mandira culture in relation to a connection with the land and agriculture. Interviews revealed that agriculture is a cultural activity, a 'heritage producer' and it relates ethnographic aspects, social identities, and cultural manifestations (DAUGSTADA ET AL, 2006) of importance to the whole group. Agriculture fundamental to their lives in the form of celebrations, food choice and connection with the land. Sabourin (2008) refers to agriculture performing cultural functions. It also promotes social coherence (CARNEIRO and MALUF, 2003). An example of social coherence is associated with the celebration of religious heritage. The majority of residents are Catholic and during all interviews respondents answered that the Santo Antonio celebration is the most important event of the year. This event celebrates crops and agriculture. Residents unite to celebrate this festival by having special food, folk music and dance. Other than this aspect, many of the families get together in the community's church to celebrate other special ceremonies and sing traditional repertoires. Some have been recorded and transmitted on national TV news.

Within the Mandira population seven people explained how they enjoy travelling and participating in fairs, events, and festivals associated with demonstrating Mandira cultural events. Many families enjoy visiting other quilombola communities in Brazil. Some members participated in national quilombola events. Many members mentioned that exchanging ideas about their culture with other Quilombolas and tourists is also very important. The three families who sell their products in the local organic market mentioned the importance of meeting other farmers through the regional agro-ecology network, creating new networks among people from diverse places. Many families enjoy visiting other quilombola communities in Brazil. Some members have participated in national quilombola events.

> *I have travelled to Bahia State and met other Quilombolas. We share ideas about our communities and the quilombola culture. Interview: male, age:50 years, 2012.*
> *I enjoy talking to different people (visitors), learning new things. (Interview: male, age:33 years, 2012.)*
> *I have travelled to tons of places and farms to exchange ideas of agroforestry systems. (Interview: male, 45 years, 2013.)*

Despite agriculture not being the center of activity for 19 of the Mandira traditional land-owning families for the last decade, it is critically important to their lives in the form of celebrations, food choice and connection with the land.

The pillar of Socioeconomic reproduction of families relates to income, job security, maintenance of people in the rural area, and retention of young people in the field (CARNEIRO and MALUF, 2003). In Mandira four families farm, two families are crab and clam collectors and 17 families have revenues from oyster commercialization. All families earn at least what is as equivalent to a monthly minimum wage. There isn't unemployment; all Mandira residents have activities related to farming, fishing or oyster cultivation or tourism, sometimes more than one activity. These are the means to achieve income or subsistence, guaranteeing job security.

> *Here we live well, there is food, fish, and oysters, and sometimes we plant. Interview: male, 2012. There is job for everyone, for those who want to work there is free mangrove to grow oysters.(Interview: male, 34 years, 2011.)*
> *We have improved our lives after the oyster cooperative. Oyter prices have gone up.(Interview: male 27 years, 2013.) Oyster commercialization has added to our monthly revenues. We are having extra money in the end of the month. (Interview, male 26 years, 2012).*

One of the important criteria central to the Brazilian multifunctional perspective is the maintenance of people in their rural area, to avoid a rural exodus which can lead to urban social, economic and environmental problems; and to maintain rural culture. Adams et al (2012) in research among various quilombola families in Vale do Ribeira Region (SP) noted that 37% of people over 25 years old migrate to cities. Of the 23 Mandira families researched from 2011-2013, five families have siblings over twenty-one years of age. These families' youngsters have moved from the community to nearby cities. Still in 2015, three community members married and had children, creating new Mandira families which are willing to stay in the territory. Importantly, all juveniles interviewed wished to continue to live in the community. If there are job opportunities in the community or surrounding areas, then the city is less attractive. In Mandira's case, agriculture and oyster farming is not sufficient to sustain or retain young people in the field, no matter its potential markets. Rather, tourism has been attracting a few young families to stay in the territory.

The pillar of the Capacity of territory to grow its own food and commercialize products. According to Carneiro and Maluf (2003), multifunctional agriculture enables food consumption, commercial food production, marketing channels, productive technical options and healthier eating. This pillar includes food utilization, affordability and availability. In relation to Mandira families, in the past raditional crops in Mandira were cassava, sweet potato, sugarcane, beans, corn, rice, coffee, pumpkin and cucumber (CARDOSO, 2008). Life was based on agriculture. After some government imposed agricultural prohibitions and the advent of the oyster cultivation project providing cash income, most of the families diminished their farming practices. Nowadays, a few fruit trees, herbs and some vegetables are grown by the majority of the population. Natural, herbal teas which many times replace the purchase of medicines are grown in their local gardens. Chickens are grown by several families. Meat is purchased in markets or stores. Oysters were eaten with more frequency in the past; nowadays there is priority to sell them because there has been less production as the river warms due to climate change. Therefore, oysters are consumed locally only on special occasions. Rice and beans are the two other main food sources among Mandira families. Fish is part of all Mandira residents' daily protein intake and it has always been. The majority of the 19 Mandira families said: There is fish, rice and beans every day. Sometimes we eat chicken or meat.

Four families are fully dedicated to farming the land and they don't cultivate oysters. They grow a variety of food products such as: manioc, bread, tangerines, bananas, lettuce, cabbage, chicken, manioc, beans, carrot, palm heart, honey, tangerines, onions and also raise animals, pigs, chicken, cattle. These four farming families have access to a variety of products that are not part of the daily diet of the remaining families who have smaller orchards. These families have primary access to a more diversified and healthy diet. They have a richer diet with milk, vegetable, fruit and egg consumption. They also grow rice and beans, which are the two other main elements of daily dietary intake of Mandira people considered by Brazilian nutritionists as a complete, healthy food combination.

Also, three families grow various food products that are sold at the weekly Cananéia organic market.

> *[…] our family harvests good quality products not only for subsistence; we sell in the city market. Here we have a diversity of production, bananas, pupunha, there is an agroforest with coffee, Juçara palm heart, and we have lots. I work with an orchard and apiculture. Some fruits are turned into alcoholic beverages, liquors. We also have chicken, turkey, different bird species. (Interview, 37 years, 2013).*

In the community products are harvested without the use of pesticides, because they are prohibited in Mandira territory since it is an area of preservation. Water for irrigation

comes directly from natural springs or surrounding areas of the Extractive Reserve. Food is free of chemicals, which makes the diet healthy and pure. The Brazilian perspective of multifunctional agriculture follows Holmes (2006) principles of the land providing a central medium through which all aspects of life are mediated and economic considerations are merely part of a holistic relationship. Likewise, agriculture, oyster farming and fishing in Mandira enable the ability of the territory to afford healthy food.

Products are also commercialized through the Cananéia Network as well. This network stimulates practices of solidarity and social justice. In this case, there is food commercialization and marketing channels (CARNEIRO and MALUF, 2003) in Mandira. Another aspect of multifunctionality is the process of depuration and packaging of oysters by Mandira members. Consumers are informed of the product's origin—adding to the sense of local identity and establishing a brand among consumers associated with a conservation area and traditional people. Interviews during 2011 and 2013 reveal that all the community members consider the oyster project as a satisfactory form of diversification of their labor. Oyster farming is a further diversification of farming activity note in defining multifunctional agriculture. Multifunctionality therefore includes access to natural resources such as oysters and food products, healthy food, commercialization of products and Cananéia Network.

The pillar Preservation of Nature was analysed as follows. It considers that the region includes the Biosphere Reserve of the Atlantic Forest (DIEGUES, 2007). It is a green belt of biodiversity and cultural heritage, due to the existence of traditional and indigenous communities, many of whom have lived in these remote areas for several decades. According to Diegues (2001) there is historical evidence of Brazilian traditional fishery populations preserving the biodiversity of coastal ecosystems. Diegues (2001) states that in different countries the exclusion and expropriation of local communities who once occupied protected areas has led to increasingly severe ecological and social impacts. Begossi (2003) and Diegues (2001) describe a continuing and harmonious coexistence between nature and traditional Brazilian populations. Mandira people are an example. They were instrumental in the creation of the Extractive Reserve in 2002 (MER) and this may be considered an extension of their relationship to the territory around them. They struggled with the government for 13 years for the creation of the MER in order to guarantee the preservation of nature (MMA, 2010). Mandira people have a tight relationship with nature and a sense of belonging to the territory.

The population is responsible for ensuring that other people do not enter the reserve and withdraw natural resources or cause ecological impact, as Mandira people are the only ones to have legal permission to fish, cultivate oysters and utilize the natural resources of the MER. The extraction of oysters, clams and crabs are government controlled and respects reproductive cycles and the animals' mature size for commerce. The community's careful

cultivation of the oyster is an action that demonstrates their concerns to preserve biodiversity since the mollusk continues to reproduce while being cultivated, thus, contributing to the reproduction of the species in the mangrove.

Also, in the past years, at least six families have been voluntarily planting Juçara palm trees, (Euterpe edulis) in the forest. This native tree of the Atlantic forest was once threatened by extinction basically because of the commercialization of palm heart. Mandira residents know the importance of preserving the tree and its importance for the lives of many birds and other forest animals. The population has a thorough knowledge of natural resources, the breeding seasons of species and a timetable within which to integrate and background the various uses of these ecosystems. Families state that agro-ecology practices help them understand more about nature's processes and preservation. Interviews and field observation reveal their respect for nature and the preoccupation of creating fewer residues, waste products and making best use of natural resources.

Discussion

The community has been recognized by Brazilian society and government to be a traditional population playing an important role in preserving the environment. Therefore, taking into consideration the interviews and field work, environmental preservation is a reality in Mandira community. Holmes (2006) states that agriculture has always produced a wide range of services, it is historically multifunctional and for "traditional owners and subsistence societies seeking to maintain their culture, occupying land continues to be founded on embedded, intrinsic multifunctional values". Agriculture and oyster farming are providing well-being for the Mandira population as evidenced through the socioeconomic reproduction of families. Adults over 40 years of age are able to reside in the rural area and maintain their traditional celebrations, rural lifestyle, their contact with nature and their social relations. Religious celebrations, as well as, the Quilombola culture reflect this connection with agriculture. Agriculture in Mandira contributes to sustaining ethnicity, managing resource utilization and building farming knowledge (DAUGSTADA ET AL, 2006), and this in turn, contributes to maintaining local culture.

Agriculture is partially fulfilling the capacity of the territory to produce its own food, and certainly demonstrating that the members could do it at a larger scale if they wished to do so. In the past, production from the land provided enough food for the residents, but the community is satisfied with the oyster project as a form of diversification of their labor. It is associated with quality food provision is taking place at four rural holdings. Oyster farming incentives have diversified the options for income generation within the local economy and also led to a diminishing of farming among most families of the case study. But this has not

undermined the overall local production system because some families maintain cultivation of local food for themselves and the local market. The community's cultural background reinforces the importance of managing the land and MER and traditional agricultural practices associated with small sized holdings and culturally important foods for future generations.

The case shows the complexity of this everyday enactment, with diversity of responses within and among families and their involvement with agriculture and oyster culture. In relation to the four pillars defined by Carneiro and Maluf (2003), the Mandira case study reveals: Staple products like rice and beans, which were planted in the past, can be planted collectively. Some families may join the existing organic network Rede Cananéia and this would increase the community's resilience capacity. The advantage to the Mandira community is that they can always resume farming if they stay connected to the land and river and that is partly because they have maintained the protected area as part of their territory. The MER contributes to a multifunctional landscape because people have diversified their activities and it sustains their local production. Interestingly, the agricultural families appear to be a buffer for the rest of the community, and their capacity to engage in diverse activities associated with the land and river is a benefit to the community as a whole.

Conclusion

For future studies, social elements discussed should be also verified with indexes and quantitative data. Mandira case study demonstrates multifunctional agriculture as part of their daily livelihood repertoire and provides the impetus and diversified income which keeps them in the rural area. An agriculture visibly connected to the environment, quality of food, fair trade, and maintenance of traditions. This specific Brazilian case study contributes to emergent debates in rural development since it reflects global rural trends.

The methodology was elaborated as part as a doctoral thesis. The Brazilian perspective towards the theoretical approach has been quite diferent from studies worldwide. This study suggests that multifunctional agriculture can support social concerns and also cultural heritage aspects. The Brazilian approach to multifunctionality of agriculture emphasizes the social function of agriculture where people are encouraged to stay in rural areas perpetuating traditional activities, their social ties and growing their own food. This study reafirms how agriculture may contribute to the production of regional products, promotion of agritourism, and agroecological practices. The aliance of preservation values and ecological practices dimishing the pressure of agriculture over the environment. In such way, agriculture performing social and ecological functions. It was very important to evaluate

the four pillars of multifunctionality of agriculture in a schematic way within a framework of analysis which allowed testing the theoretical approach.

References

ADAMS, C et al. Diversifying Incomes and Losing Landscape Complexity in Quilombola Shifting Cultivation Communities of the Atlantic Rainforest (Brazil). **Human Ecology: An Interdisciplinary Journal.** 2012

ARAUJO, A et al. Juventudes camponesas: protagonizando esperanças, emancipando sujeitos. **Revista NERA,** Presidente Prudente, v. 21, set. -dez. 2018, 16-133 p.

ARGENT, N. Trouble in Paradise? governing Australia's multifunctional rural landscape. **Australian Geographer**, 42:2, 2011, 183-205.

BARBIERE, C. A., VALDIVIA, C. Recreation and agroforestry: Examining new dimensions of multifunctionalityin family farms. Journal of Rural Studies, 2010, 465-47 p.

BATIE, S.The Multifunctional Attributes of Northeastern Agriculture: A Research Agenda. **Agricultural and Resource Economics Review** 32/1, 2003.

BEGOSSI, A., AVILA-PIRE, F. Latin America and Brazil: biodiversity and indigenous peoples. **Environment, Development and Sustainability**, v. 5, 2003, 179-195 p.

BJORKHAUG and RICHARDS. Multifunctional agriculture in policy and practice? A comparative analysis of Norway and Australia*.* **Journal of Rural Studies,** 2008, 98-111 p.

BRASIL. CONSTITUIÇÃO BRASILEIRA: 2006.

BRASIL. Diretrizes para Visitação em Unidades de Conservação / Ministério do Meio Ambiente. 2006.

BRASIL. Ministério do Meio Ambiente. Plano de Manejo do Mandira. 2010

BRASIL. Ministério do Desenvolvimento Agrário. Programa Rural na Agricultura Familiar. Portal da Cidadania, 2010.

Brazilian Ministry of Agriculture. Internacional. http://www.agricultura.gov.br Access: July, 2015.

BUANAIN, A. **Agricultura, Instituições e Desenvolvimento Sustentável Agricultura Familiar e Inovação Tecnológica no Brasil: Características, Desafios e Obstáculos.** Campinas: Unicamp, 2007.

CARDOSO, T.A. **A construção da gestão compartilhada da Reserva Extrativista do Mandira, Cananéia, SP**. Tese (Doutorado em Ciências) - Programa de Pós-graduação em Ecologia e Recursos Naturais, Departamento de Hidrobiologia, Universidade Federal de São Carlos, São Carlos,130 p., 2008.

CARNEIRO, M.J. Ruralidade: novas identidades em construção. **Anais XXXV Congresso da Sociedade Brasileira de Sociologia e Economia Rural**, Natal. Agosto 1997.

CARNEIRO, M. J. e MALUF, R. (orgs). **Para Além da Produção, multifuncionalidade e Agricultura Familiar.** Rio de Janeiro: Maud. 2003

CAZELLA, A. et al. **Agricultura familiar: multifuncionalidade e desenvolvimento territorial no Brasil.** Rio de Janeiro: Mauad X, 2009.

COTRIN et al. **Rev. Fac. Agron. La Plata**, v. 116, 61-72p.

DAUGSTADA, K. et al Agriculture as an upholder of cultural heritage? Conceptualizations and value judgements—A Norwegian perspective in international context**. Journal of Rural Studies**, 2006, V. 22, 67–81 p.

DAUGBJERG, C., SWINBANK, A. Designing Durable Policy Reforms: Gradual Layering in the EU's Common Agricultural Policy over Three Decades. Workshop: Design and Non-Design in Policy Making: When and How Policy Design Matters, 2015.

DEGUIGNET et al. United Nations List of Protected Areas. UNEP-WCMC: Cambridge, UK,2014.

DIRIMANOVA,V. 2011. Multifunctional Agricultural and its Impact on Rural Development in North Eastern Bulgaria. **Journal of Sciences**, Plovdiv, Agricultural University of Plovdiv, Bulgaria, Vol 9, 60-63 p.

DIEGUES, A.C.S. **The Myth of Untamed Nature in the Brazilian Rainforest**. Editora Hucitec: São Paulo,1998.

DIEGUES, A.C.S. **Deforestation and Livelihoods in the Brazilian Amazon.** Editora São Paulo: São Paulo.1997.

DIEGUES, A.C.S.Traditional fisheries knowledge and social appropriation of marine resources in Brazil. Mare Conference: People and Sea, Amsterdam: Aug/Sept,2001.

DIEGUES, A.C.S.Marine Extractive Reserve in Brazil : A challenge for sustainable use of coastal/marine resources in Tropical Countries. Keynote speech at Wiomsa, Durban-South Africa,2007.

DOBBS, T. and PRETTY, J. Agri-Environmental Stewardship Schemes and "Multifunctionality". **Ecological Agricultural Economics**, 2008, 765 – 775 p.

DURHAM, E.**A dinâmica da cultura: ensaios de antropologia**. Editora Cosac Naify: São Paulo, 2004.

GAVIOLI, F., COSTA, M. As Múltiplas Funções da Agricultura Familiar: um estudo no assentamento Monte Alegre, região de Araraquara (SP). **RESR**, vol. 49, nº 02, 2011, 449-472 p.

ERNEST, R., 2005. The Spanish Approach to the Multifunctionality of Agriculture: a survey of the Literature. Roczniki Akademii Rolniczej w Poznaniu – CCCLXV.Department of Applied Economics II of the University of Valencia, 2005.

ESTADÃO. http://www.estadão.com.br Espaço Economia &Negócios. Acess: Feb, 4, 2013.

FAVARETO, A., Trentini, F. 2001. Changes in the Brazilian Rural Panorama and their Implications. Commission II. National Report –Brasil_. XXVI European Congress and Colloquium of Agricultural Law. Bucharest, 2001, 21-24 September.1-16p.

GRAZIANO DA SILVA, J.et al. O que há de Realmente Novo no Rural Brasileiro. **Cadernos de Ciência e Tecnologia.** 2002.

GRAZIANO DA SILVA, J. et al. **El nuevo mundo rural brasileño**. vol. 1, Alasru:México, 2005, 47-68p.

Holmes, J. Impulses towards multifunctional transition in rural Australia: Gaps in the research Agenda. **Journal of Rural Studies**, Penrith. v. 22, 2006, 142-160p.

IBGE, 2010. http://censo2010.ibge.gov.br/noticias-censo?id=3&idnoticia=1766&t=censo-2010-populacao-brasil-190-732-694-pessoas&view=noticia

IPEA. www.ipea.gov.br. 2000.

JAN DOUWE VAN DER PLOEG et al. Rural Development: From Practices and Policies towards Theory**. Sociologia Ruralis**, 2000, Vol 40, Number 4.

HYYTIA, N., KOLA, J. Citizens' attitudes towards multifunctional agriculture. Department or Economics and Management.99th seminar of the European Association of Agricultural Economists, Denmark, 2005, August 24-27.

LAPKA, M., CUDLI NOVA, E. The emerging role of post-classical approaches in agriculture and their possible application: Case from Nove´ Hrady, Czech Republic. **Ecosystems and Environment**, 2007, 373–382p.

MARTINS, M.R.; CONTERATO, M.A., 2013. Ruralidades e ação coletiva através do turismo: construindo o desenvolvimento rural. Revista Brasileira de Ecoturismo, São Paulo, v.6, n.1, 269-284p.

MORGAN, A. et al. Agricultural multifunctionality and farmers' entrepreneurial skills: A study of Tuscan and Welsh farmers. **Journal of Rural Studies**, 2010, 116–129p.

MARQUES et al. **Rev. Cult. Ext. USP**: São Paulo, v. 18, 13-23 p.

MARQUES P.E.M, P. Lacerda, T. Agricultura Orgânica, Representação Territorial e Reprodução Social da Agricultura Familiar. Revista Ruris: Centro de Estudos Rurais. 2008 V. 2 n. 2, 242p.

KANIKADAN, S.; SILVA, R. O desenvolvimento como liberdade na comunidade quilombola do Carrasco no município de Arapiraca (AL). **Revista NERA**, 2017, v. 20, p. 273-293p.

Rural Development Programme – Sicilia; acessível em : http://www.psrsicilia.it/bozzapsr/avvioconsultazionevas/Programma_di_Sviluppo_Rurale_Sicil ia-2014-2020%20-22_luglio-2014.pdf**,** 2014.

REIG, E. The Spanish Approach to the Multifunctionality of Agriculture: a survey of the Literature. Roczniki Akademii Rolniczej w Poznaniu – CCCLXV from Department of Applied Economics II of the University of Valencia, 2005.

SABOURIN, E. Renovação dos instrumentos de desenvolvimento e extensão rural: reflexão sobre métodos e políticas públicas. **Sociedade e Desenvolvimento Rural,** 2008, V2. Num.1.

SANTOS M. **Por uma outra globalização - do pensamento único à consciência universal.** São Paulo: Editora Record, 2000.

WILSON, G.A. From 'weak' to 'strong' multifunctionality: conceptualising farm-level multifunctional transitional pathways. **Journal of rural studies** v. 24, Issue 3, Jul, 367–383p.

SCHIMMENTI et al. **Rivista di Economia Agraria**, Anno LXXI, n. 1 (Supplemento). Firenze University Press, 2016.

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