ALEXANDRIA JEANNE WILSON

SISTEMAS DE CULTIVOS AGROECOLÓGICOS: DECOLONIALIDADE E RESISTÊNCIA

Dissertação apresentada à Universidade Federal de Viçosa, como parte das exigências do Programa de Pós-Graduação em Agroecologia, para obtenção do título de *Magister Scientiae*.

Orientadora: Irene Maria Cardoso

Coorientadora: Maria Alice F. C. Mendonça

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APROVADA: 29 de julho de 2021.

Assentimento:

Alexandria J Wilson

Alexandria Jeanne Wilson
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Irene Maria Cardoso

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Dedicado àqueles que perderam suas vidas durante a pandemia da COVID-19. Que possamos construir mundos melhores no rescaldo desta tragédia.

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BIOGRAPHY

Alexandria Jeanne Wilson, better known as Allie Wilson, was born on September 2nd, 1996, in Levittown, Pennsylvania, USA. Allie grew up in suburban New Jersey and demonstrated a passion for agriculture at an early age. She engaged in different agriculture focused groups in her youth which strengthened her desire to pursue a career in agriculture. In 2014, she began her undergraduate education at Iowa State University, majoring in Global Resource Systems with minors in Animal Science and Sustainability, hoping to develop her understanding of sustainable agriculture. Through her course of study, Allie researched and engaged with international agriculture in countries such as Costa Rica and Uganda, curious about how diversified agriculture across the world could lead to sustainability and food security. In 2017, as a part of her undergraduate thesis, she completed an internship with Professor Irene Cardoso, focusing on the Troca de Saberes event at the Federal University of Viçosa. This gathering and sharing of agroecological knowledge left a lasting impact on Allie, challenging her perceptions of conventional agriculture, agribusiness, and sustainability, while also introducing her to agroecology. After completing her undergraduate degree in the United States, she wished to return to Brazil to further her understanding of agroecology. Following this dream, Allie applied for the Federal University of Viçosa's Masters of Agroecology program and was accepted in 2019. Returning to Viçosa allowed Allie to open her eyes to the world around her and challenge the beliefs instilled in her by her upbringing in the United States.

RESUMO

WILSON, Alexandria Jeanne, M.Sc., Universidade Federal de Viçosa, julho de 2021. **Sistemas de cultivos agroecológicos: decolonialidade e resistência**. Orientadora: Irene Maria Cardoso. Coorientadora: Maria Alice Fernandes Correa Mendonça.

A colonização da América Latina foi uma invasão violenta que destruiu diversas cosmovisões e instituiu monoculturas não só nos cultivos, mas também nos pensamentos. Os efeitos da colonização continuam até hoje através de estruturas de modernidade e colonialidade, invalidando ainda mais diversas cosmovisões e instituindo práticas exploratórias expressas de forma singular na agricultura industrializada, chamada de moderna. Com este tipo de agricultura, sistemas intensivos de cultivo de monoculturas para satisfazer a procura dos mercados internacionais de mercadorias foram criados e que degradaram e desmereceram os sistemas de cultivo biodiversificados criados por povos indígenas e africanos que prezam pelas sinergias entre os seres não humanos, entre os seres humanos e entre os seres humanos e não humanos da natureza. As monoculturas promovidas pela agricultura industrializada desconectam os laços ancestrais e espirituais com à terra. No Brasil, uma das principais monoculturas produzidas para consumo de mercadorias é o café. As monoculturas de café na Zona da Mata de Minas Gerais foram intensificadas durante a Revolução Verde e causaram degradação ambiental e aumento da desigualdade social. Nas últimas décadas, a agroecologia e a agricultura camponesa encorajou a diversificação das cosmovisões e das práticas agrícolas que têm influência ancestral ou espiritual. Em resposta às questões criadas pela produção industrializada de café, camponeses, pesquisadores e técnicos de ONG juntaram-se para conceber sistemas agroflorestais para a região e estabelecer um forte movimento agroecológico. Esta dissertação objetivou entender como a ancestralidade e a espiritualidade camponesa contribuem para quebrar estruturas de colonialidade, identificar as características da ação decolonial presente nos sistemas agroflorestais e analisar como os temas de cooperação, natureza e biodiversidade e suas funções presentes através dos sistemas agroflorestais e podem fortalecer a resistência dos agricultores. Para alcançar estes objetivos, dados secundários foram analisados utilizando para isto boletins, denominados “Nossa Roça”, criados através de escrita

coletiva com agricultores agroecológicos na Zona da Mata. Identificou-se que os agricultores agroecológicos da Zona da Mata incorporam a sua ancestralidade, espiritualidade e religiosidade nas suas práticas agrícolas, permitindo-lhes resistir às estruturas coloniais tais como a pressão para utilizar agroquímicos e as percepções modernas da natureza. Através de ações e de suas cosmovisões, os agricultores agroecológicos da Zona da Mata resistem contra e quebram estruturas de colonialidade. Com estes atos físicos e epistemológicos, os agricultores agroecológicos semeiam as sementes da resistência e cultivam os seus próprios pluriversos, que, nesta pesquisa, foram considerados atos decoloniais. Identificou-se também que os agricultores agroecológicos utilizavam seus sistemas agroflorestais para se reconectarem com a natureza e aumentar a biodiversidade de seus agroecossistemas. As ligações com a cooperação, natureza e biodiversidade que os sistemas agroflorestais permitiram aos agricultores criar uma ruptura com as percepções coloniais e modernas. A concepção de sistemas agroflorestais na Zona da Mata poderia também apresentar-se como a materialização de um pluriverso.

Palavras-chave: Colonialidade. Sistemas Agroflorestais. Ancestralidade. Espiritualidade e Agricultura familiar

ABSTRACT

WILSON, Alexandria Jeanne, M.Sc., Universidade Federal de Viçosa, July, 2021. **Agroecological cropping systems: decoloniality and resistance**. Adviser: Irene Maria Cardoso. Co-adviser: Maria Alice Fernandes Correa Mendonça.

The colonization of Latin America was a violent invasion that destroyed diverse cosmovisions and instituted monocultures not only in the fields, but in thoughts as well. The effects of colonization continue to this day through structures of modernity and coloniality, further invalidating diverse cosmovisions and instituting exploitative practices uniquely expressed in industrialized, so-called modern agriculture. With this form of agriculture, intensive monoculture farming systems to meet the demand of international commodity markets were created that have degraded and devalued the biodiverse farming systems created by indigenous and African people that value synergies between non-human beings, between human beings, and between human and non-human beings in nature. Monocultures promoted by industrialized agriculture disconnected ancestral and spiritual ties to the land. In Brazil, one of the major monocultures produced for commodity consumption is coffee. Coffee monocultures in the Zona da Mata of Minas Gerais, Brazil, were intensified during the Green Revolution and caused environmental degradation and increased social inequality. In recent decades, agroecology and peasant farming have encouraged the diversification of cosmovisions and agricultural practices that have ancestral or spiritual influence. In response to the issues created by industrialized coffee production, peasants, researchers, and NGO employees came together to design agroforestry systems for the region and established a strong agroecological movement. This dissertation sought to understand how the peasant ancestrality and spirituality contribute to break structures of coloniality, identify the characteristics of decolonial action present in agroforestry systems, and analyze how the themes of cooperation, nature, and biodiversity and its functions present through the agroforestry systems and can strengthen the resistance of farmers. To achieve these objectives, secondary data were analyzed using bulletins, called "Nossa Roça" bulletins, created through collective writing with agroecological farmers in the Zona da Mata. It was identified that the agroecological farmers of the Zona da Mata incorporate their ancestry, spirituality

and religiosity into their agricultural practices, allowing them to resist colonial structures such as the pressure to use agrochemicals and modern perceptions of nature. Through actions and their cosmovisions, agroecological farmers of the Zona da Mata resist against and break structures of coloniality. Through these physical and epistemological acts, agroecological farmers sow the seeds of resistance and cultivate their own pluriverses, which, in this research, were considered decolonial acts. It was also identified that agroecological farmers used their agroforestry systems to reconnect with nature and increase the biodiversity of their agroecosystems. The connections to cooperation, nature, and biodiversity that agroforestry systems allowed farmers to create a break from colonial and modern perceptions. The design of agroforestry systems in the Zona da Mata could also present itself as the materialization of a pluriverse.

Keywords: Coloniality. Agroforestry Systems. Ancestrality. Spirituality.Family Agriculture.

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1. GENERAL INTRODUCTION

Latin America's colonization culminated in a violent invasion that still destroys and devalues pre-modern and mixed cultures and ontologies. Europe utilized modernity, their economic and epistemological project, to consolidate their Latin American colonization efforts. This instituted new eurocentric values as the only means of developing a nation, and further, the sole lens through which nations would understand the rest of the world (MIGNOLO, 2017).

European modernity is a geopolitical project that created a global ethnocentrism, where Europe placed itself as the center of a scientific, political, economic, and epistemological rationality. This was not just centered in illuminist ideas, but specifically, the fruit of riches and experiences accumulated since the Spanish and Portuguese colonization of Latin America (DUSSEL, 2000; MIGNOLO, 2017). In the 15th century, a center-periphery structure of the world system of power, of being, and of knowledge (QUIJANO, 2000) was established (DUSSEL, 2000). This structure was inaugurated by colonization, but has surpassed it in time and space, since these modern structures of power, thought, and knowledge still continue after the independence of colonized nations, thus understanding coloniality.

Thus, a European identity was created — a geo-historical identity (MIGNOLO, 2001) that, to exist and establish itself over time and space, destroys and disqualifies, even nowadays, other forms of cultural, political, and ontological organizations. This identity, to Quijano (2000), was structured essentially from the idea of "race". All colonized populations came to be denominated as indigenous, or mestizo, in relation to the European geo-historical identity. Colonized populations submitted to colonial Eurocentric capitalism, along with Eurocentrism, as a manner of knowing and understanding how the world functions (QUIJANO, 2000). This instrumentally capitalistic rationality, if not previously unknown, directly conflicted with the ways of life, the ontologies, and the cosmovisions of the indigenous peoples.

Epistemologically, the conflicts concentrated themselves in the (false) idea of separability between culture[1] and nature[2], as created by modern science[3] (BOURG, 1998; SHIVA, 1997, p. 60). Those who strongly doubt or critique this conception question this idea, by understanding an inseparability inherent to life (LATOUR, 1994; ULLOA, 2009; DESCOLA, 2015). For Latour, who focused his critique on modern science and not the European colonial project, *we have never been modern* because the supposed separation required for the precision and rigor of scientific methods is impossible, since culture and nature are inextricably linked. Modern science, in turn, places this as a prerequisite, and weakens itself by moving away from, and many times, invalidating pre-modern ontologies and cosmovisions that do not have this division.

Modernizing ideas and techniques particularly dominated agricultural knowledge. In Brazil, the first colonial/modern organization that broke up and dismantled the diversity and complexity of the pre-modern agricultural systems, developed by indigenous peoples, was the cultivation of commodities, firstly sugarcane and later coffee (SZMRECSÁNYI, 1990), soybeans and others. The instrumental capitalistic rationality negated not only their way of knowing, but also their systems' validity and utility (LITTLE, 2002). Despite this devaluation and invalidation of knowledge, there were also exchanges of knowledge and techniques in both directions, which ensured the survival of these colonizers in tropical environments (LITTLE, 2002).

In Brazil, the colonial commodity monoculture systems, characterized as agricultural enterprises, had a strictly commercial orientation (SZMRECSÁNYI, 1990), integrated into the inaugural globalizing capitalist system. Europeans established a new mode of engaging in agriculture, based on slave labor, on large plots of land and specialized cultivation for export – commodities. This colonial agriculture concept occupied the nation, in a violent form, and mostly overlapped economically and epistemologically to other pre-existing ways of farming, of which were spatially marginalized - around or away from the colonial farms (SZMRECSÁNYI,1990)- and

[1] For the purpose of this dissertation, culture will be defined as the collective language, beliefs, and institutions of a group of people (DESCOLA, 2015).
[2] While there are several different understandings of nature, as well as different contexts, in the context of this paper nature will be specific to the environment and peoples of the Zona da Mata of Minas Gerais.
[3] Modern science, in this context, refers to the western European concept of science, which usually focuses on being a neutral party, usually removing cultural or social context.

epistemologically- with the devaluing of pre-modern/traditional agricultural knowledge (SANTILLI, 2009; SOUZA, 2015).

The colonial pact breaking did not undo the modern mode of production inaugurated with colonization. On the contrary, the Eurocentric colonial/modern structures of power, of knowledge, and of being (QUIJANO, 2000) remained. After colonialism, modernity and coloniality continued repressing non-Eurocentric cosmovisions and epistemologies, and implanting Eurocentric designs of agricultural development, reinventing and strengthening themselves, especially in the middle of the 20th century with the industrialization of agriculture, also called modernization of agriculture, with new components and characteristics, among them, the technological package, known as the Green Revolution technologies, which included pesticides, fertilizers, mechanizations, inbreeded varieties and irrigation.

Foreign interests fueled the agricultural modernization in Brazil, producing agricultural commodities for the Global North. Scientists from the United States and Europe strengthened the use of technologies developed in the Global North to increase monoculture agriculture production yields (DEAN, 1989).

However, the traces of modernity are being revised by agroecology as a science, practice, and social movement (WEZEL, et. al, 2009; ABA, 2015) that critically imposes itself on modernization as a culturally and ecologically homogenizing and ethnocentric project. In response to systematic repression, peasant, indigenous, and agroecological movements advocated the prioritization and reestablishment of diverse cosmovisions and epistemologies in the Global South to develop a decolonial world (ESCOBAR, 2017; FIGUEROA-HELLAND, et al., 2018). Within these diverse epistemologies supported by the decolonial movement, there is a demand for non-anthropocentrism and a respect for nature, as proposed by agroecology.

Agroecology as a science values local knowledge and epistemologies, incorporating them to develop healthy and sustainable agrifood systems (ALTIERI; TOLEDO, 2011; WEZEL, et al., 2009). This contextualized science values ecological and non-anthropocentric processes, prioritizing the use of these natural ecological processes instead of using pesticides and other inputs. Thus, agroecology is used by some movements as an alternative to modern agriculture and as a form of living against capitalism and other products of coloniality (FIGUEROA-HELLAND et al., 2018; GREY; PATEL, 2015).

One of the principles of agroecology is diversity, which is decolonial due to its links to non-modern beliefs that encourage synergies between living beings within nature. In contrast to monoculture, diversified systems developed by peasants and indigenous people can perform a role in the dismantling of colonial monoculture and the development of a “decolonial” agriculture system.

Regarding agriculture, such ideas require the development of diverse agrifood systems that incorporate principles used in pre-colonial ancestral systems and creating new knowledge through these interactions, among them, agroforestry systems. Agroforestry systems are diversified agriculture systems and can be defined as a form of polyculture, in which at least two plant species interact biologically, at least one species is arboreal, and at least one species is managed for crop or livestock production (SOMMARIBA, 1992). These diversified agriculture systems resemble the agroforestry systems developed along thousands of years by indigenous peoples.

These agrifood systems incorporate multiple species of plants and trees to develop a system that can produce essential products such as food and medicine. Today many peasants utilize agroforestry systems to produce crops in a way that uses the land effectively and does not need chemical inputs. Agroforestry systems can play a role in dismantling colonial monoculture and developing a decolonial agricultural system.

In the Zona da Mata, some peasants involved in the agroecological movement have resisted the monoculture way of producing coffee, and, in the beginning of 1990s, agroforestry systems were revitalized, intercropping coffee with trees, including trees native to the Atlantic Forest (CARDOSO et al., 2001).

Brazil is the biggest producer of coffee in the world. The state of Minas Gerais is considered the biggest coffee producer (SIMÕES, 2010), and the Zona da Mata region is the second biggest coffee producer of Minas Gerais. Throughout the history of the country, coffee played a role in coloniality, reinforcing such eurocentric institutions as racism and capitalism. Coffee, an African crop originally cultivated in Latin America in colonized French Guiana, was introduced by rich landowners as a commercial crop, and later developed into an international empire (SMITH, 1985).

The production of coffee needed a high level of labor for planting and harvest. The system created to meet these demands exploited the work of enslaved Africans, indigenous peoples and, later, peasants, to produce coffee (FONT, 1987; TOPIK,

1999; LEMOS, 2017). The peasants would work as sharecropper, called *colonos*. Fueled by the work of enslaved Africans and indigenous peoples, this intensified production of coffee was developed to satisfy capitalist desires.

However, coffee was not always planted in a monoculture. Many farmers intercropped their coffee to survive and provide food for their families. In the beginning, the sharecroppers and family farmers could intercrop coffee with food plants, such as maize, beans, cassava, sweet potato among others, for food. With Green Revolution technologies, especially through the IBC (Brazilian Coffee Institute), that acted from 1952-1989, coffee was implemented in monoculture, particularly in the 1980s. However, the intercropping, nowadays, continues amongst some farmers.

In 1994, intercropping with trees, agroforestry systems, was implemented in a participatory way. The agroforestry systems were implemented in an agroecological partnership between the Rural Workers Unions (STRs), Center for Alternative Technologies of the Zona da Mata (CTA-ZM), a local non-governmental organization (NGO), and researchers from the Federal University of Viçosa (CARDOSO et al, 2001). The agroforestry systems reestablished planting techniques of pre-modern societies, and/or of indigenous peoples.

However, these agroforestry systems were not entirely free from traces of modernity. This is in reference to the perspectives of Little (2000) regarding the exchange of modern and pre-modern knowledge and techniques, and of Arce and Long (1999), on the agency capacity of local actors in the reinvention of hybrid processes – modernity and non-modernity. The knowledge exchange between peasants, technicians, and researchers was an encounter of agricultural knowledge fields from different places, with science on one side and the practical knowledge of farmers on the other.

Through science, expressed by technicians and researchers, we can identify a proposal to critically rethink the design of agroecosystems, ruined and devalued with the agricultural modernization of the 1970s. Even critically, the scientists used a structured body of scientific knowledge, with the rigor of modern science, with its instruments and methods, but in partnership with farming families who traditionally and currently redesign agroecosystems and localized development strategies, based on traditional practical knowledge, with a deep understanding of the ecological characteristics of local ecosystems (CARDOSO et al., 2001).

The agroforestry systems that produce coffee in the Zona da Mata can be analyzed through the lens of coloniality, with a political and epistemological perspective. Our assumption is that peasant practices and knowledge are not immune to miscegenation and hybridity (ARCE; LONG, 1999) of knowledge and ways of being and thinking.

Through their traditional ways of life, our objective was to identify whether family farmers resist Eurocentric capitalist systems of production and why they do so. Specifically, we aimed to understand how the peasant ancestrality and spirituality contribute to break structures of coloniality; to identify the characteristics of decolonial action present in agroforestry systems; and to analyze how the themes of cooperation, nature, and biodiversity present in the agroforestry systems are related to colonial thoughts.

2. THEORETICAL BACKGROUND

2.1 Colonization

The colonization, or invasion, of Latin America, which began 1492, was articulated by global capitalism, in a singular structure of agriculture production and extractivism of natural goods that never existed before (QUIJANO, 2000; ESCOBAR, 2017). The violent appropriation of natural resources benefited the privileged European society (QUIJANO, 2007). The riches of Europe, accumulated during the colonial era, were based on the transfer of natural resources from colonies to centers of imperial power (SHIVA, 1997). The European colonizers came to the continent and established a system of inequality based on racial and ethnic oppression. This was done through the systematic destruction of non-European cosmovisions.

Cosmovision is understood here as the narratives in which the beings of the world tell their own stories and, in narrating, manifest the deepest meanings of the world and of the human beings involved in it (JENKINS, et al., 2017). Cosmovisions are the way one looks at the universe, the way one looks at and sees oneself in the world, and assumes interrelationships with spirituality, nature, and human beings (HAVERKORT; MILLAR, 1992).

These cosmovisions are practiced in culture, where human beings use their worldview in their actions and interactions with the world. The worldview relates to

epistemology. Epistemology is science contextualized by cosmovisions. At its base, epistemology is a knowledge system that is a science of nature and the soul (YÜ, 2017). From this, worldview is based on how humans interact with nature and how it relates to their spirituality, a reflection of the soul. Epistemology uses worldviews to develop a form of science that reflect these values present in the cosmovisions.

The European colonizers despised pre-Columbian civilizations and massacred the indigenous people, their cultures and crops (SANTILLI, 2009). Europeans in Brazil, the Portuguese colonizers, focused on agricultural economic development, introducing new crops such as sugarcane (SANTILLI, 2009), and utilizing an abundance of the country's natural resources for crop production and exploitation of natural goods, with interests focused only on the colonizer (HALL, 1984; SATO, et al., 2014).

Colonizers utilized slave labor, of indigenous people and enslaved Africans, to exploit natural resources and make themselves as rich as quickly as possible (SANTILLI, 2009). Without the indigenous population meeting the labor demand of the newly created global capitalist market, colonizers enslaved and brought African people to Brazil, with the intention of attending to the global demand for commodities (HALL, 1984; QUIJANO, 2000; SATO, et al., 2014).

Thus, in the period of colonialism, from the 16th century to the beginning of the 19th century, the indigenous peoples of Brazil, with enslaved Africans, were enslaved and forced to work in monocultures, such as sugarcane and the extraction of rubber and minerals (SANTILLI, 2009; QUIJANO, 2007; MARCHANT, 1942;). With the system of slavery, enslaved African people were turned into commodities to serve the market and, along with the indigenous people, pushed into servitude with the intent to produce agricultural commodities (QUIJANO, 2000).

African people brought a lot to Brazil, including their cosmovisions and cultures. Although the colonizers tried to suppress the African worldview during slavery, the enslaved Africans resisted and preserved different aspects of their culture through culinary practices, dances, and religion, such as Candomblé and Umbanda, which heavily value the relationship between humans and nature. Candomblé was created through a mixture of African cultures and ceremonies adapted by enslaved Africans to continue practicing their religions in colonial conditions (SOUZA, 2015).

Umbanda was created by a mixture of African, Portuguese, and indigenous cultures and ceremonies adapted by enslaved Africans to continue practicing their

religions under colonial conditions (JORGE, 2013). The two religions are based on the orixás, essential aspects of their cosmovisions, and the practice of these religions were acts of resistance against the process of slavery (JORGE, 2013). Africans who were brought to Brazil also brought seeds, seedlings, and the way of cultivating and preparing food plants such as yams, okra, jiló, macassar beans, guando beans and red rice (SANTILLI, 2009). These foods and other plants play important parts in religious ceremonies and in African cosmovisions (SOUZA, 2015).

Indigenous planting systems are naturally diversified. For example, the Kayapós, a group of indigenous people of Pará and Mato Grosso, cultivated their food in super diversified agroforestry systems with food and medicinal plants. They had secondary natural forests that concentrate highly diversified natural resources to meet the needs of humans such as food, medicines, fibers, and wood (POSEY, 1987).

This management of secondary natural forest culminates in long-term production, because of the different growing cycles of the various plants present in the agroecosystem. The Kayapós developed an understanding of how to design an agroecosystem that attends the needs of each plant, such as the required light, and discovered how these plants interact with each other, determining associated plants (POSEY, 1987). It also has a focus on the balance between plants and animals in the system (POSEY, 1987).

The knowledge and culture of the indigenous peoples and Africans were devalued, an action which Shiva describes as the first level of violence (1997), as they were forced to produce agricultural crops that would generate income for the colonizers. The continued contempt for African and indigenous knowledge, among them those related to growing food in co-production with the environment, aimed at eliminating any thought different from that of the colonizer (FIGUEROA-HELLAND et al., 2018; QUIJANO, 2007; SMITH, 1999; SOUZA, 2015).

Contrary to the mode of production of indigenous and African peoples, the core of the European mode of production is characterized as exploitative, where nature was understood as a thing to dominate and exploit for the accumulation of capital and power. In the European cosmovision, land is considered private property (SANTILLI, 2009), because of this, the colonizers instituted an extractivist economic system that utilized nature as a resource to be exploited. There was a suppression of indigenous and African modes of production (QUIJANO, 2007; SOUZA, 2015).

However, the knowledge that was in the economic interests of the colonizer, such as agricultural cultivation techniques and mineral exploration, as was the case of sugar cane and gold mining were recognized and used by the colonizer. However, the non-anthropocentric conceptions of the nature of the indigenous peoples and Africans were de-valued by the anthropocentric economic conceptions of the colonizers (ESCOBAR, 2017), based on a "mystified image" of the colonizer and of the proposals of development of a “functional” society, through the domination and exploitation of nature with the objective of financial gain.

The mystification of the European cosmovisions turned into what Mignolo describes as the “zero-point” epistemology, which brings the idea that the eurocentric epistemology is universal and the only path to modernity (MIGNOLO, 2009). This, according to Shiva (1997), is inherently colonizing, because the dominant knowledge system blinds colonization by mystification.

Such conceptions brought the destruction of the original, diverse agrifood systems through deforestation, destroying the forests where indigenous peoples planted crops mixed with the fruits collected from the forests, (LEMOS, 2015, apud RAMOS, 2017; LEMKE; DELORMEIR, 2017) and implementing monoculture and slave-based agriculture, which concentrated power in the hands of powerful landowners (SANTILLI, 2009). This continued with post-colonization, particularly with the establishment of coffee plantations.

2.2 Post-Colonization

The cultivation of coffee began in Brazil in 1727, from French Guiana and spread from northern Brazil to the states of Rio de Janeiro and Minas Gerais (WATSON; ACHINELLI, 2008; SANTILLI, 2009). Coffee was originally planted on planes, but it was more productive in mountainous areas such as Rio de Janeiro and Minas Gerais (DEAN, 1989). The Portuguese colonizers preferred other crops, such as cocoa and tea (TOPIK et al., 2006), thus, Brazil only started growing coffee for export after its independence, in 1822 (TOPIK et al., 2006; WATSON; ACHINELLI, 2008). The monoculture production of coffee in Brazil was instituted to continue the project of the colonizers and leave Brazil dependent on imperialist countries (TOPIK, 1999).

When the production of coffee decreased in Rio, due to the degradation of the soil, coffee cultivation transferred to São Paulo, where the first “boom” of capitalist development in the form of coffee production in the plantations occurred (DEAN, 1989; FONT, 1987). The large-scale production of coffee in plantations was not a part of the national Brazilian identity, on the contrary, it was viewed as imperialist and latifundary (TOPIK, 1999). The coffee plantations dominated the landscape, absorbing the small farms between and under the cover of forests (SANTILLI, 2009).

The high production of coffee in these plantations, in the post-independence period, permitted the accumulation of capital and the emergence of the capitalist industry in the state of São Paulo and was crucial for the industrialization of Brazil (DEAN, 1989; FONT, 1987; TOPIK et al., 2010). Due to the intense need for Manpower for the production and Harvest of coffee under this intensified system, enslaved peoples were fundamental for the initial production of the crop (DEAN, 1989; TOPIK, 1999; TOPIK et al., 2010).

With the drop of production of sugar in the northeast of the country, the enslaved people who worked in the region were brought to the southeast to work in coffee production (SATO et al., 2014; TOPIK et al., 2010). Thus, in the 19th century coffee production increased due to a large, enslaved labor force and the exploitation of forests. The increase in coffee production led, after 1820, to a fall in its price, which stimulated consumption and global demand (TOPIK et al., 2006; WATSON; ACHINELLI, 2008).

When slavery was abolished at the end of the 19th century, the landowners pressured the government to provide a cheap labor force, which led the government to attract tens of thousands of European and Japanese peasants to work in coffee cultivation (DEAN, 1989; WATSON; ACHINELLI, 2008).

Within the coffee plantations, the immigrant peasants did not receive anything except for the permission to plant food crops intercropped with coffee and allow animals to graze on small pieces of land near the fields (TOPIK et al., 2006). This permitted the emergence of peasantry in the coffee fields of Brazil and the diversified cultivation of coffee (FONT, 1987), even though from the beginning coffee production created a system of inequality that denied the right to land to those who worked it.

2.3 Modernization of Agriculture

In Brazil, during the old republic, from 1889 until 1930, coffee was king of the economy, responsible for three-fourths of the exportation of the country at its peak (FONT, 1987). By the end of the 19th century, Brazil was the biggest coffee producer in the world, with the majority of the coffee produced exported to the United States of America (WATSON; ACHINELLI, 2008).

Coffee is originally from the forest understory, therefore from diverse natural systems. Initially, Brazilian farmers were still allowed to intercrop coffee with other crops, namely corn and beans, but European and American scientists that came to Brazil and trained Brazilian scientists condemned this form of planting, claiming of decreased productivity of coffee because of competition between crops for water, light, and nutrients (DEAN, 1989). In the capitalistic system instituted by the Europeans and Americans, the concept of symbiosis was substituted with competition, domination, and dispensability (SHIVA, 1997), which brought the incentivization of monocultures.

Diversified Brazilian coffee plantations were seen as underdeveloped and needed to be modernized based on the principles of "European scientific agriculture" in order to become productive and meet the market demand (DEAN, 1989; TOPIK, 1999). With this, monocultures were instituted as a modern form of cultivating coffee and many peasants were expelled from the land to create space for large coffee plantations (SANTILLI, 2009). These large plantations needed to expand to new lands, generally land that was occupied by indigenous people or peasants, because of the soil degradation created by the intensified planting system.

In order to “modernize” the monocultures, a technological package that became known as the Green Revolution was used, in a strong period of industrialization in Brazil.

2.4 The Green Revolution

As a way to strengthen the cultivation and export of coffee, political actions were necessary. Around 1945, the governments of Latin American countries that produced coffee intervened in the coffee market, through the creation of international organizations, such as the International Coffee Organization (ICO), and national, such

as the Brazilian Coffee Institute (IBC), created in 1952 (TOPIK et al., 2010). These organizations created international agreements to develop a stable market for coffee, such as the International Coffee Agreement (TOPIK et al., 2010).

During the 1950s, the price of coffee increased, and the government incentivized the production of coffee through public policies, especially in Minas Gerais (WATSON; ACHINELLI, 2008). These incentives were amplified in 1964, when the military dictatorship, as a part of their economic strategy, created ample alliances with latifundios and large international businesses to modernize and increase the agricultural productivity of the country (GOMES DE ALMEIDA, 2009). With these influences, the Brazilian state promoted the implementation and expansion of the Green Revolution with different public policies (PETERSEN et al., 2013).

As described by Shiva (1997) and Gomes de Almeida (2009), the Green Revolution consolidated a worldwide economic, political, and ideological hegemony that strengthened the ideological label of agribusiness as the only way to produce. The Green Revolution brought the expanded use of machines in agriculture and the introduction of inputs such as chemical fertilizers, pesticides, and modified seeds, produced by companies and organizations supported by the United States and other countries from the Global North (SHIVA, 1997). These inputs became known as the main components of the Green Revolution technology package.

These technologies were developed by the Global North for the Global South with the objective of creating an international market for the industrial inputs, including machinery, chemicals and hybrid seeds. Therefore, the technologies of the Green Revolution were introduced in agriculture to serve the interests of industry with the excuse of ending world hunger (BOTELHO et al., 2016; ITABORAHY et al., 2014; OLIVEIRA, 2013).

In Brazil, the Green Revolution expanded monocultures planted on a large scale. Such crops were produced to increase agricultural production for export (DELGADO, 2001; TOPIK et al., 2010). For this, among other things, the government expanded access to rural credit and technical assistance so that farmers could access Green Revolution technologies such as chemical fertilizers and pesticides (WATSON; ACHINELLI, 2008).

Specifically, in relation to coffee, during the 1970s, the Brazilian government supported different technologies for its cultivation, based on the technological package

of the Green Revolution, which led to a reduction in its production cost. In this period, the IBC acted to control coffee surpluses and maintain international prices, and supported, with technical assistance, the implementation of such technologies (WATSON; ACHINELLI, 2008). In addition, the ICO also maintained the international price of coffee (TOPIK et al., 2010), which contributed to increasing the exportation of coffee.

The Brazilian state continued to search for yet another way to control the production of coffee and strengthen it with the objective of preventing social unrest and the strengthening of socialist proposals, such as agrarian reform and peasant movements (TOPIK et al., 2010). Therefore, the intensification of coffee at this time was a way to control the Brazilian economy and society from the production of a large coffee crop, especially in areas like Minas Gerais.

The use of the Green Revolution technological package imposed an agriculture that suppresses different cultures and ways of life, such as those of peasants, quilombolas [4] and native peoples (BARBOSA; PORTO-GONÇALVES, 2014). The Green Revolution thus increased the displacement of the peasant cosmovision, started with colonization, which resulted in the loss of some rural cultures, of popular knowledge and the degradation of nature, through the use of pesticides, chemical fertilizers, heavy machinery, monocultures, hybrid (and later genetically) modified seeds, and the excessive use of water for irrigation. Along with this, there was a great displacement of people to urban centers, which de-characterized the rural environment and created severe social problems in cities (VON DER WEID, 2009; SANTILLI, 2009; PLOEG, 2010).

The technologies of the Green Revolution continue to be utilized and implemented in Brazil, furthering the environmental and social degradation associated with them (VENTURA, 2018). To worsen the situation, the technologies are now under the aegis of neoliberalism. Neoliberalism is the economic model established at the end of the 1980s that increasingly aims at freeing markets and empowers large multinational companies to exploit natural resources for commodity production.

Neoliberalism strengthened the European values instituted since the beginning of colonization in Latin America and deepened the agricultural model based on monocultures of commodities and the use of Green Revolution technological

[4] Quilombolas are descendants of Africans who escaped from slavery (VENTURA, 2018).

packages. Eurocentric scientific knowledge, supported by public agricultural development policies, expanded monocultures (WATSON; ACHINELLI, 2008) and left the region even more vulnerable to imperialism and neoliberal influence (DEAN, 1989; TOPIK, 1999; TOPIK et al., 2010).

Demand for commodities was intensified to meet the interests of countries such as the United States (HALL, 1984; OLIVEIRA; HECHT, 2016; SATO et al., 2014; TOPIK et al., 2010). The liberalization of markets and limiting the involvement of the government was incentivized by neoliberal forces such as the United States. A narrative promoted by developed nations is that developing nations obtain economic success through the liberalization of markets, claiming that producers would have a comparative advantage in agricultural commodities like coffee, which would allow them to supply the United States and other markets all year round (WATSON; ACHINELLI, 2008). The market competitiveness that results from this neoliberal strategy favors large-scale agriculture and generally disadvantages family farming (WATSON; ACHINELLI, 2008), especially peasant farming.

In the 1990s, the pressure of western capitalist institutions weakened national and international coffee agencies, as any level of state intervention was looked down upon by neoliberal economic theory (TOPIK et al., 2010), which lead to the extinction of the International Coffee Agreement (ICA). In the wake of neoliberalism, the IBC was abolished in the 1990s to prevent the Brazilian state from interfering with the coffee market (WATSON; ACHINELLI, 2008). With the collapse of the ICA came the collapse of price controls, shifting control from Latin American countries to European countries and the United States (TOPIK et al, 2010). With these actions, control of the coffee agroindustrial complex has shifted from Brazil to European countries and the United States, to where most of the coffee produced in Brazil is exported.

Neoliberalism instituted a new colonial era in Brazil, dominated by large corporations financed by foreign capital, acting as the new colonizers. With the support of the Brazilian government, multinational corporations, specifically linked to the agrarian sector, incite violence in traditional communities by buying ancestral lands, deforestation, mining, and the large-scale planting of monocultures (BARBOSA; PORTO-GONÇALVES, 2014; OLIVEIRA; HECHT, 2016; VENTURA, 2018). An example of this way of acting includes the use of land once belonging to quilombolas and other traditional peoples for the cultivation of eucalyptus, leading to the violent

eviction of these original peoples (VENTURA, 2018), amplifying the loss of land rights and the ruptures of ancestral cultures with the loss of their cosmovisions (SATO et al., 2014).

The Brazilian government also threatens indigenous communities by supporting multinational businesses in the production of agrochemicals that are utilized on a large scale in the production of raw goods, transformers into commodities, (FIRMIANO, 2012; VENTURA, 2018), as is the example of coffee monoculture. The agroindustrial complex, under the aegis of neoliberalism, became known as agribusiness, which can be considered a new form of colonization. According to Santilli (2009), for five centuries the agrarian elites have dominated rural Brazil, originally the colonizers and now agribusiness, creating green deserts of monocultures for the production of commodities for exportation.

With neoliberalism came the creation of agrifood empires and the creation of unsustainable agrifood systems. The agrifood empires are the large agribusinesses that consolidated and industrialized agrifood systems. They have a monopoly power over the processing, marketing and supermarket industries, thus giving control over the production, processing, distribution and consumption of food (PLOEG, 2009). These large businesses impose a global system of governance controlling the means of production and consumption of food (PETERSEN, 2011). The agrifood systems that these empires produce are not sustainable because they are deconsecrating nature for agricultural production, destroying the ecosystems in which agriculture is rooted, lowering the quality of food and the ways it is distributed (PLOEG, 2009).

To counteract the forces of neoliberalism, the decoloniality movement emerged in the Global South.

2.5 The Concept of Coloniality

What is assumed as a premise for this project is that the different colonial forces continue, in the form of neoliberalism and the narrative of modernity and coloniality, because today it recomposes the Eurocentric idea that Europe is the center of history and the universe established since colonialism (DUSSEL, 1993). Therefore, the concept of modernity, and parts of it such as the "zero-point" epistemology identified

by Mignolo, is a continuation of the systems and worldviews instituted during colonization.

From confronting the institutions and companies that support modernity and coloniality via actions such as the appropriation of ancestral lands (MIGNOLO, 2007) or the industrialization of food systems (FIGUEROA-HELLAND et al., 2018; PLOEG, 2010), decolonial movements have been instituted. These decolonial movements were constructed by leaders of indigenous movements, peasant movements, and academics (BRADLEY; HERRERA, 2016; GREY; PATEL, 2015; SALAZAR, 2015; SMITH, 1999; VENTURA, 2018). These movements are supported by Latin-American researchers that emphasize the theory of decoloniality or decolonialism and the theoretical and methodological perspective of pluriverses (ESCOBAR, 2003). The researchers formed this line of thought based on the different epistemologies existing in Latin America and their use against the ideologies of modernity and coloniality (BALLESTRIN, 2013; ESCOBAR, 2003; QUIJANO, 2000).

Quijano (2007) defined decoloniality as the liberation of the production of knowledge, reflection and communication from European rationality or modernity. Mignolo (2009) described decoloniality as a rejection of ideas and values created by the “point-zero” epistemology. Mignolo (2009) also emphasized the importance of the regeneration of life that must prevail over the production and reproduction of goods by the capitalist system and the affirmation of the epistemic rights of racially devalued people.

According to Escobar (2017), decoloniality is based in plurality, with the generation of or regeneration of spaces, cultures, and communities of peoples who were oppressed by the forces of coloniality (ESCOBAR, 2017). Decolonial movements support other cosmovisions such as the concept of “buen vivir" or the rights of nature, which were produced in Latin America by and for indigenous peoples, peasants, and other oppressed peoples in response to modernity or coloniality (ESCOBAR, 2011).

Latin American scholars argue that there is no such thing as a homogeneous universe or epistemology, such as the Eurocentric universe that values western cosmovisions and epistemologies, implemented in the minds of those who were colonized (BALLESTRIN, 2013; ESCOBAR, 2003; MIGNOLO, 2009; QUIJANO, 2000). In this thought, the process of leaving the capitalist totality cannot be a homogeneous transformation or continuous and from within, moreover, it needs to be

a heterogeneous system that acknowledges diverse universes, articulating elements of different existing systems (QUIJANO, 2000).

Vandana Shiva (1997), another researcher from the Global South that specializes in agriculture, involved with decolonial movements in the Global South, described modernity as a “monoculture of the mind”. In her book, “Monocultures of the Mind”, Shiva compared the Eurocentric modernity instituted by colonialism with the monoculture production of commodities for the Global North. She writes that, “dominant scientific knowledge produces a monoculture of minds, which creates spaces for local alternatives to disappear due to the monoculture of introduced plants that displace and destroy local diversity” (SHIVA, 1997, p. 12).

To combat the monocultures of the mind instituted by coloniality, a diverse set of cosmovisions are necessary. Instead of reinforcing eurocentric cosmovisions, the diverse cosmovisions that exist in the Global South must be adopted and prioritized to develop decolonial modernities and other futures that include the realities of the Global South. The diversity of cosmovisions is key to the liberation from colonial systems and presupposes the existence of diverse cropping systems.

2.6 Diversified Systems

Diversified agriculture is an originally ancestral practice, and in Brazil it is common among native peoples and traditional communities. As an inheritance of this agriculture, family farmers, particularly peasants, produce multiple crops in the same space. Commonly, commercial crops are mixed with various other edible, floristic or other species, developing a system with high biodiversity, in general, with the presence of trees, which allows us to define them as agroforestry systems. This biodiversity can determine the health and sustainability of an agrifood system and resilience and the resilience of agroecosystems when submitted to adverse situations (LOPES et al., 2013; PRONTI, 2018; SOUZA et al., 2010), thanks to the environmental and ecological equilibrium and produced when diversity is present.

Shiva (1997) affirms that such indigenous agroforestry practices are based on the sustainable and renewable maximization of all diversity, especially trees. Diversification, specifically that within traditional agricultural systems, aside from providing food sovereignty, also provides economic security, since it also lessens

farmers' dependency on the international farming input market and international commodity market (OLIVEIRA, 2013), all of this due to the benefits associated with biodiversity. Thus, it can be argued that because monoculture systems were designed from a colonial logic (SANTILLI, 2009) and the diversification of cultivation systems could be considered decolonial, since they remove the modern monoculture of the minds and of the fields, since the use of crops that allow different plants to be grown side by side also depends on a different way of thinking and relating to nature.

In agroecology, such diversified planting systems are essential, since it emphasizes the importance of producing food in a non-anthropocentric manner that values natural ecosystem services, or nature´s benefit, that occur within highly biodiverse environments (LOSS, 2007; SOUZA et al., 2010; TEIXEIRA et al., 2018). Peasants, who are intrinsically involved in social movements, including decolonial movements, are more likely to use agroecological practices since they are diversified and can be adapted to the needs of the farmer, such as food security and sovereignty and autonomy (ROSSET; MARTÍNEZ-TORRES, 2012; PLOEG, 2006).

The different ecological services that occur within highly diversified planting systems permit farmers to develop autonomy by reducing the need of external inputs and do not rely on agrochemicals (ALTIERI; TOLEDO, 2011; PLOEG, 2006). With this, the agroecological systems also reflect on the dedication of agroecological scientist to the worthiness of traditionally indigenous farming practices. Agroecology, as conceived in Latin America or from Latin America, can be considered decolonial, since its base is diversity, within the movement itself as well as the systems of planting (ALTIERI; TOLEDO, 2011; FIGUEROA-HELLAND et al., 2018).

In agroecological diversified coffee systems, coffee is used to strengthen peasant livelihoods and not to allow the coffee market to predominantly utilize them. These diversified systems can include the intercropping of coffee with trees, agroforestry systems, and have been adopted by peasant families (SOUZA et al., 2012; FERNANDES et al., 2014).

For the development of agroforestry systems, peasants use traditional knowledge articulated with scientific agroecological knowledge. Many tree, shrub, or herbaceous species intercropped with coffee in agroforestry systems are food species and contribute to the food security and sovereignty of peasants in the region and diversify the income of these families, leaving them less vulnerable to international

coffee market crises (PRONTI, 2018; SOUZA et al., 2010). Therefore, diversified coffee production contributes to the process of decolonialism.

Diversification, in agroforestry systems or other systems, can bring historical evidence of how family farming resisted the imposition of colonizers' methods, such as the technologies of the Green Revolution and the capitalist system. This resistance may be the result of the peasants' care for the family's food sovereignty and care for the land, which may be related to the peasant cosmovision.

2.7 Peasants and food sovereignty

There has always been a diversity of agriculture techniques within Brazil, among them peasant agriculture and agribusiness (SANTILLI, 2009). In Brazil, peasant agriculture has always been based on polyculture, and includes the crops such as corn and rice, mandioca, and fruits and vegetables (SANTILLI, 2009). Peasants use diversification as “seatbelts” to continue producing, protecting their ecological capital and to withstand adverse conditions (PLOEG, 2009).

Peasant agriculture is less dependent on international markets and the production of commodities but focus on the co-production of the human being with living nature (PLOEG, 2009). This creates a cycle of production and reproduction of ecological capital such as fertile land and heirloom seeds. Appreciation of ecological capital is important in the fight for autonomy, a determinant for peasant agriculture (PLOEG, 2009). The relationship of ecological capital and autonomy leads to a peasant way of life of greater respect for the land.

Social diversity is also important towards the fight for autonomy and in the resistance movements (SANTILLI, 2009). The peasants are involved in different resistance movements and are important to resisting social and political factors that are against human rights, the right to land, and that disrespect a way of life that respects the land. Generally, indigenous, traditional peoples, and peasants are the first and most dynamic social forces challenging the neoliberal transformation in Latin America by large agribusinesses (KAY, 2015).

Within these peasant resistance movements, some groups fight for their territories. This is not just a fight for land, but also for the acknowledgement of their identities and rights for the preservation of their places of life and work (WANDERLEY, 2009). It is also a struggle for the preservation of their cosmovisions since the struggle

also includes the search for an epistemological territory. Many of these territories are agroecological, where peasant farmers produce in decolonial agroecological systems, as they create forms of agricultures contrary to the agroindustrial system (VON DER WEID, 2009; FIGUEROA-HELLAND et al., 2018).

The struggle for territory involves the struggle for food sovereignty. The food sovereignty movement is diverse, built from multiple cosmologies (GREY; PATEL, 2015) and supports peasants in developing food sovereignty according to their cosmovisions. Originally, the movement for food sovereignty was led by Via Campesina, but nowadays other movements are supporting food sovereignty as well. Food sovereignty has an emphasis on justice, democratization and rights based rural development, proposing practices such as agroecology (KAY, 2015).

Food sovereignty composes the basic human right to food with agrarian reform, protection of natural resources, and access to culturally localized food, therefore production with cultural autonomy (FIGUEROA-HELLAND et al., 2018), for this the advocates of food sovereignty promote agroecology and diversified systems. The struggle for food sovereignty strengthens the struggle for local autonomy based on innovation networks among farmers. Therefore, the food sovereignty approach is an alternative to neoliberal approaches that believe that agribusinesses and the international market will end hunger (ALTIERI; TOLEDO, 2011).

This understanding of sovereignty presupposes an end to the globalization of hunger, which promotes the destruction of traditional and peasant agrifood systems and strengthens the food complex (FIGUEROA-HELLAND et al., 2018). Sovereignty challenges not only industrial food systems, but also the coloniality of organizations such as the World Bank, which supports such systems and permits the capitalistic "colonization" of agriculture through the as from the dissemination and encouragement of the use of the Green Revolution package (FIGUEROA-HELLAND et al., 2018).

Food sovereignty has become more popular over recent decades and can be considered a decolonial force, since the local production of food through diversified agrifood systems brings autonomy and is a continuous act against colonialism (GREY; PATEL, 2015; ROSSET; MARTÍNEZ-TORRES, 2014; SALAZAR, 2015; WALSH-DILLEY et al., 2016). The use of natural processes produced in biodiverse systems, such as the production of natural fertilizers and organic matter, allows farmers to

produce food to sustain their families and their communities (ALTIERI; TOLEDO, 2011) autonomously.

The valorization of diversity in the food sovereignty movement is shown with the support of local agricultural production, access to non-transgenic seeds, and the right of peasants to determine how and what food will be produced (GREY; PATEL, 2015).

2.8 Peasants in the Zona da Mata: Resistance via diversication of coffee systems

Coffee was introduced to the Zona da Mata at the beginning of the 19th century and was cultivated on farms with the labor of enslaved Africans (TEIXEIRA et al., 2018). Currently, Brazil is the largest coffee producer in the world and Minas Gerais is the Brazilian state with the highest production, being Zona da Mata the second region of Minas Gerais in coffee production (WATSON; ACHINELLI, 2008).

Coffee was originally cultivated by the rich landlords of the region (TEIXEIRA et al., 2018), but coffee has also recently turned into a peasant's plant. The system of production in large plantations had its weaknesses, including the fragmentation of elites that prevented the hegemonic and political power of the estates and the labor systems such as the *colonato* system (FONT, 1987).

This system needed cheap labor from immigrants and former enslaved people, who worked in all the intensive labor of coffee cultivation. Usually, those who served the farmers in this system would go out to produce coffee and diversified agri-food systems as peasants (FONT, 1987).

Coffee production was intensified in the Zona da Mata, first in the 1950s and then the 1970s (WATSON; ACHINELLI, 2008). The first intensification in the 1950s was due to the increase of coffee prices in the world market and the public policies that encouraged coffee cultivation (WATSON; ACHINELLI, 2008). In the 1970s, coffee production intensified again based on the technologies of the Green Revolution (SIMÕES, 2010).

The stimulus of coffee cultivation in the region was the result of the federal government's public policies, which aimed to restructure the Brazilian economy with

high production of cash crops to free the country from high foreign debt and inflation (TOPIK, 1999; WATSON; ACHINELLI, 2008).

Despite government incentives, many peasants of the region resist the use of Green Revolution technologies and continue producing coffee in a diversified form, many in agroforestry systems (CARDOSO; FERRARI, 2006; SOUZA et al., 2012). In diversified systems, coffee production is combined with the cultivation of other food crops, such as cassava, sweet potato, palm heart, corn, beans, taioba, yam, and papaya (ITABORAHY et al., 2014; OLIVEIRA, 2013), as well as trees, specifically native and fruit trees.

Part of this worldview that leads to the diversified cultivation in the area may be the heritage of the Puri people, the indigenous peoples of the Zona da Mata of Minas Gerais, who originally diversified agrifood systems (RAMOS, 2017). The Puri planted cassava, yams, sweet potatoes, and pumpkins and ate many fruits that naturally occurred in the forests, including guava, papaya, and coconut or nuts, such as sapucaia and pine nuts (LEMOS, 2015 apud RAMOS, 2017). These food plants contributed to the food security and sovereignty of the native peoples of the region.

As described by Shiva, these practices of diversified planting are products of knowledge passed from generation to generation (SHIVA, 1997). Therefore, the forms of diversification of coffee systems in Zona da Mata may have been inherited from traditional practices, but others are fruit of a more recent comprehension of agroecology.

At the end of the 1980s and 1990s, agroecology gained popularity in the region amongst the peasants who disagreed with monoculture systems and the use of pesticides (CARDOSO; FERRARI, 2006). With the insurgence of agroecology, family farmers intensified the diversification processes, of which allow us to understand that these networks are decolonial. Since then, networks of agroecological innovation have been created in the Zona da Mata that are strengthened by the peasant cultural identity of the Zona da Mata (OLIVEIRA, 2013). Nowadays, Zona da Mata is considered by law an Agroecological and Organic Agriculture Pole (Projeito de Lei 4.029).

Identifying the origins and characteristics of resistance, which in the Zona da Mata is expressed, amongst others, in the diversification of coffee, can contribute to understanding decolonial processes, to strengthening the identity and empowering peasants.

As described by van der Ploeg (2017), peasant agriculture has its roots in resistance that influences the diversified form of production that they utilize. These peasants have strong cultural identities, which contribute to the liberation of people from the oppressive systems of neoliberalism and colonization (RAMOS, 2017). Therefore, the production and cultural identity created from diversified coffee cultivation can contribute to the liberation of native and peasant peoples from the monoculture coffee production systems imposed by the colonizers.

The diversification of the coffee fields of the peasant family farmers in the Zona da Mata as a resistance to an intensified monoculture production system imposed in the region from the colonizers' point of view, can be analyzed through the lens of decolonialism to see if it has decolonial components. To do this, it is necessary to identify if family farmers resist the Eurocentric capitalist systems of production through their traditional ways of life and why they do so; if the coffee production systems used by peasants is revaluing the non-Eurocentric African and native peoples' wisdom; and if agroecology has, and how it has, contributed to the strengthening of the peasant identity in the region.

3. BREAKING COLONIALITY WITH AGROECOLOGY THROUGH ANCESTRALITY AND SPIRITUALITY

ABSTRACT

The colonization of Latin America was a violent invasion that destroyed diverse cosmovisions and instituted a monocultural way of thinking and cultivating. The effects of colonization continue to this day through structures of modernity and coloniality, further invalidating diverse cosmovisions and instituting extractivist practices such as industrialized agriculture. Monocultures promoted by industrialized agriculture have disconnected ancestral and spiritual ties to the land. In recent decades, agroecology and peasant farming have encouraged the diversification of cosmovisions and the valorization of agricultural practices that have ancestral or spiritual influence. This study aimed to understand how the peasant ancestrality and spirituality contribute to breaking structures of coloniality. A secondary data analysis was performed using bulletins created through collective writing with agroecological farmers in the Zona da Mata of Minas Gerais, Brazil, in order to analyze if themes related to ancestrality and spirituality are also related to resistance and break with coloniality and identify if this resistance could constitute a decolonial action. A matrix of systematization was created with three key themes, ancestrality, spirituality, and religiosity, and six transversal themes to facilitate the secondary data analysis, followed by an additional analysis utilizing ATLAS.ti 9, a qualitative analysis software. It was analyzed that agroecological farmers in the Zona da Mata incorporate their ancestrality, spirituality, and religiosity into their agricultural practices, allowing them to resist colonial structures such as the pressure to utilize agrochemicals and modern perceptions of nature. Peasants are thinking outside of the Eurocentric episteme and reconnecting with non-anthropocentric cosmologies and ontologies that were previously devalued during colonization. Through these actions and cosmovision, agroecological farmers in the Zona da Mata resist against and break down structures of coloniality. With these physical and epistemological acts, agroecological farmers are sowing the seeds of resistance and nurturing their own pluriverses, which could constitute as decolonial acts.

RESUMO

A colonização da América Latina foi uma invasão violenta que destruiu diversas cosmovisões e instituiu monoculturas de pensar e cultivar. Os efeitos da colonização continuam até hoje através de estruturas de modernidade e colonialidade, invalidando ainda mais diversas cosmovisões e instituindo práticas extrativistas, tais como a agricultura industrializada. As monoculturas promovidas pela agricultura industrializada têm desconectados os laços ancestrais e espirituais com a terra. Nas últimas décadas, a agroecologia e a agricultura camponesa encorajaram a diversificação das cosmovisões e das práticas agrícolas com influências ancestral ou espiritual. Esta pesquisa teve por objetivo compreender como a ancestralidade e a espiritualidade camponesa contribuem para quebrar estruturas de colonialidade. Foi realizada uma análise de dados secundários utilizando boletins criados através de escrita coletiva com agricultores agroecológicos na Zona da Mata de Minas Gerais, Brasil, a fim de analisar se os temas relacionados com ancestralidade e espiritualidade se relacionam também com a resistência e a ruptura com a colonialidade e identificar se esta resistência poderia constituir uma ação decolonial. Foi criada uma matriz de sistematização com três temas-chave, ancestralidade, espiritualidade, e religiosidade, e seis temas transversais para facilitar a análise de dados secundários, seguidos de uma análise adicional utilizando o software de análise qualitativa ATLAS.ti 9. Analisou-se que os agricultores agroecológicos da Zona da Mata incorporam a sua ancestralidade, espiritualidade e religiosidade nas suas práticas agrícolas, permitindo-lhes resistir a estruturas coloniais como a pressão para utilizar agroquímicos e as percepções modernas da natureza. Os camponeses pensam fora da episteme eurocêntrica e se reconectam com cosmologias e ontologias não-antropocêntricas que foram anteriormente desvalorizadas durante a colonização. Através destas ações e crenças, os agricultores agroecológicos da Zona da Mata resistem contra e quebram estruturas de colonialidade. Com estes atos físicos e epistemológicos, os agricultores agroecológicos semeiam sementes de resistência e cultivam seus próprios pluriversos, que podem se constituir como atos decoloniais.

3.1 Introduction

Latin American colonization consisted of a violent invasion that, to this day, continues to destroy and devalue pre-modern and miscegenated cultures and ontologies. When Portuguese and Spanish colonizers landed in the Americas in 1492, they physically dominated the land for commodity production, forced the assimilation of indigenous populations, and established a center-periphery dynamic placing Europe as the geopolitical center of the world (DUSSEL, 1993; QUIJANO, 2000; MIGNOLO, 2017).

The colonizers imposed a mystified image of their knowledge and culture, pushing it as the intellectual and cultural standard as well as the sole gateway to power (MIGNOLO, 2007; QUIJANO, 2007). Most of American indigenous peoples' knowledge, namely their ontologies and cosmologies, was deemed primitive, and would be replaced by Western ontologies and knowledge (QUIJANO, 2007; MIGNOLO, 2007; MIGNOLO 2009). However, their knowledge of natural resources, such as gold, mining, and agriculture, was considered to be economically useful and was expropriated by the colonizers (QUIJANO, 2007).

Stemming from colonization, modernity and coloniality are the continuation of the violence instituted during the colonization of the Americas. Quijano describes coloniality as the "colonization of the imagination of the dominated" (QUIJANO, 2007), which demonstrates that colonization, as a physical, political, and economic event, also impacted the knowledge produced and distributed amongst those who were colonized, thus creating the concept of coloniality. European colonizers expropriated from the colonized their knowledge, in areas such as agriculture and mining (QUIJANO, 2007). Coloniality is a process that continues beyond the actual act of colonization, and the transformed imagination discussed by Quijano remained even after colonization ended.

Coloniality established systems of inequality such as capitalism, globalization, global linear thinking, racism and patriarchy (QUIJANO, 2007; PINTO; MIGNOLO, 2016). It also aided in the constitution of the paradigm of modernity and or rationality, which makes the terms coloniality and modernity, often abbreviated as M/C, two sides of the same coin. Colonization gave birth to the modern era, giving power and influence

to the main imperial forces of the time, which were the Europeans. However, Mignolo has stated that coloniality is the worse side of modernity, due to the violent and dominant nature of coloniality (PINTO; MIGNOLO, 2016; MIGNOLO, 2007). Coloniality is still the most general form of domination today, since it has outlasted colonialism and has cemented itself not just through the action of colonization of lands, but the persistent colonization of the mind (QUIJANO, 2007).

Within the colonial/modern paradigm, modernity is a geopolitical project that created a global ethnocentrism, where Europe placed itself as the center of a scientific, political, economic, and epistemological rationality. This modern centrism is not just based in illuminist ideas, but also the fruit of experiences that were accumulated since the Spanish and Portuguese colonization of Latin American countries (DUSSEL, 1993; MIGNOLO, 2017).

In the 15th century, a center-periphery structures of the world system of power, of being, and of knowledge (QUIJANO, 2000) were established (DUSSEL, 1993). These structures, which were considered modern, were inaugurated by colonization, but have surpassed it in time and space. These modern structures of power, thought, and knowledge still continue after the emancipation of colonized nations, thus forming the understanding of coloniality. While the initial colonization was Eurocentric, perceptions of coloniality and modernity have moved over time based on what county, or geopolitical area, is considered the center of power and knowledge.

Through coloniality, a modern geo-historic identity was created (MIGNOLO, 2009) in which, to exist and establish itself over time and space, destroys and disqualifies, even today, other forms of cultural, political, and ontological organizations. This identity, to Quijano (2000), was structured essentially from the idea of “race”. All colonized populations came to be to be denominated as indigenous, or mestizo, in relation to the European geo-historical identity. In addition to the mystified image coloniality placed upon western European knowledge, coloniality instituted racial social classifications imposed by Eurocentric world powers onto those who were colonized (QUIJANO, 2007). The racial classifications further mystified western knowledge and claimed that those who were not European were not knowledgeable, thus, they must succumb to western ideals.

The colonization of “the New World” attempted to stomp out not only the cultural practices of the indigenous people but also of the Africans, who were brought to the

Americas through slavery. Spirituality, religion, and cosmovisions of indigenous and enslaved Africans were disregarded, yet some resisted against the European cultural hegemony and passed on their knowledge and practices to the next generation. The resistance led to the mixing of their spiritual beliefs with that of the Europeans, creating distinct religions such as candomblé and umbanda (SOUZA, 2015). These groups of religions, although they resist the cultural and religious hegemony present in Brazil, are strongly marginalized today (NOBRE, 2018).

Indigenous people and Africans have suffered and continue to suffer under structures of M/C. They were, and continue to be, discouraged from nourishing their ancestral links through spiritual practices or engaging with nature. Colonized populations were submitted not only to colonial capitalism, but also to eurocentrism as a manner of knowing and understanding how the world functions (QUIJANO, 2000). This instrumentally capitalistic rationality, previously unknown, conflicts with the ways of life, ontologies, and cosmovisions of the indigenous and African peoples (IKUENOBE, 2014).

The coloniality of knowledge established by colonizers discriminated against any non-European epistemes, classifying these African and Indigenous cosmovisions, for instance, as “savage” and “underdeveloped” (NOORGARD et al., 2018; MIGNOLO, 2007). As the colonizers of the Americas established these racial classifications, they marginalized and diminished African and Indigenous ancestral practices and ideals and provoked an epistemological genocide (DUSSEL, 1993). Through structures and institutions of modernity/coloniality, those who were colonized had their links to their ancestors systematically broken and devalued in order to create a homogenous society that adhered to the mystified image of Eurocentric thought, creating what has been called, “A monoculture of the mind” (SHIVA, 1997).

Since modernity and coloniality focus on diminishing the cosmovisions and values of non-modern cultures, presented and preserved through ancestral and spiritual beliefs and practices, understanding, and respecting them could go against colonial and modern structures, thus serving as potential acts of resistance (ESCOBAR, 2011; MIGNOLO, 2009). Understanding and respecting the existence of other cosmovisions goes against the modern/ colonial developmentalism that believes that there is a way of knowing that surpasses and imposes itself over all others because it is the only really valid one (RADOMSKY, 2011).

In Latin America, one movement that not only acknowledges different cosmovisions, but also embraces them, is agroecology (ALTIERI; TOLEDO, 2011; LARANJEIRA et al., 2019). Throughout the world, especially in Latin America, agroecology prioritizes local knowledge and cosmovisions for the creation of contextualized knowledge of agriculture and local food systems (ALTIERI; TOLEDO, 2011; DUNFORD, 2017; ROSSET, 2021). In Brazil, agroecology encompasses diverse cosmovisions including those of peasants, quilombolas, and other traditional communities that exist throughout the country. Peasant agriculture, which plays a strong role in agroecology, strengthen these alternative visions, of a pluriverse where different cosmovisions coexist and communicate (ESCOBAR, 2012).

The diversity of cosmovisions of peasant agriculture manifests in different forms and contexts. However, its manifestations are revealed in the inseparable relationship between nature and society, in which aspects of culture, such as ancestry are included. For peasants, nature and society are on the same level and there is a deep respect for the land. This relationship is the base for peasant resistance and autonomy (PLOEG, 2009) and sustains a way of seeing and being in the world. As a science, movement and practice, agroecology's relationship with peasant agriculture has strong links with their cosmovisions (LARANJEIRA et al., 2019; PETERSEN et al., 2013).

From the respect and recognition of the peasant cosmology and traditional peoples, such as indigenous peoples and quilombolas (Afro-Brazilians whose ancestors freed themselves from slavery), agroecology understands the need to develop scientific knowledge in a contextualized manner and in articulation with traditional and folk knowledge, recreated in daily life and marked by the histories and cosmovisions of each people (LARANJEIRA et al., 2019). Although structures of M/C systematically attempted to marginalize and repress different cosmovisions and spiritualities, peasant agriculture has managed to preserve, revitalize, and, in some cases, reform ancestral and spiritual practices in Latin America.

In response to systematic repression, peasant and agroecological movements advocate for the prioritization and reestablishment of diverse cosmovisions and epistemologies in the Global South to develop a decolonial world (ESCOBAR, 2017; FIGUEROA-HELLAND et al. 2018).

Peasant agriculture is diverse and based in different cosmovisions (ALTIERI; TOLEDO, 2011), and, along with other socio-political movements and organizations

across Latin America, have been strengthening alternative visions, advocating for a pluriverse in which different cosmovisions can communicate and coexist (ESCOBAR, 2012).

As a science, movement, and practice (WEZEL, et.al, 2009; ABA, 2015), agroecology's relationship with peasant agriculture has strong links to their cosmovisions (LARANJEIRA, et al., 2019; PETERSEN et al., 2013). From the respect and recognition of peasant cosmology and of traditional peoples, such as indigenous people and quilombolas, agroecology understands the need to develop scientific knowledge in a contextualized form and in articulation with the traditional and folk knowledge, recreated in everyday life and marked by the histories and cosmovisions of each people (LARANJEIRA, et al., 2019).

In Brazil, agroecology has its roots in the alternative movements to modern agriculture and as a form of living against capitalism and other products of coloniality (FIGUEROA-HELLAND et al., 2018; GREY; PATEL, 2015). Within the Zona da Mata, located in the state of Minas Gerais, Brazil, an agroecological base was established by peasant farmers, academics, activists, and non-governmental organizations to reinforce agroecology (CARDOSO et al., 2001; CHARÃO-MARQUES et al., 2017).

The Zona da Mata is culturally diverse, and the peasantry is composed in a hybrid and mixed form, with African, indigenous, and European descendants. Across the Zona da Mata, agroecological farmers have been engaging in actions and projects that have revitalized the connections between peasant farmers and their ancestral and spiritual practices, teachings, and agriculture techniques (CARDOSO et al., 2001; BOTELHO et al., 2016).

One of the cosmovisions and ancestries that were revitalized and recognized was the cosmovisions of the Puri people, the original inhabitants of the Serra da Mantiqueira, which covers part of the Zona da Mata of Minas Gerais (PACHAMAMA, 2020). Agroecological peasant movements such as the Land Conquest and the creation of the Escola Familia Agricola Puri of Araponga are some of the many ways the Puri ancestrality and spirituality were manifested amongst the farmers in the region (CAMPOS, 2006; ZANELLI, 2009). This revitalization of Puri cosmovisions, as well as others, amongst farmers in the agroecological movement in the Zona da Mata could be considered a form of breaking with coloniality/ modernity structures.

Peasant practices and knowledge are not immune to miscegenation and hybridity (ARCE; LONG, 1999) of knowledge and ways of being and thinking. Even so, the question is: how do agroecological peasant practices resist structures of coloniality/modernity? Have ancestrality and spirituality contributed to break structures of coloniality?

The general objective of this chapter is to understand how the peasant ancestrality and spirituality contribute to breaking with structures of coloniality. Specifically, the objective is to i) analyze if themes relate to ancestrality and spirituality are also related to resistance and break down with coloniality and identity and ii) if this resistance could constitute a decolonial action.

3.2 Methodology

The research area was the Zona da Mata of Minas Gerais, Brazil (Figure 1), which is a region located in the southeast of the state that is known for its coffee production. The Zona da Mata is mountainous, located in the Atlantic Forest biome, the 5th hotspot of biodiversity on the planet (MYERS et al., 2000). The climate of the region is tropical, with a median temperature of 19 ºC, a dry period of 3 to 4 months per year, and an annual precipitation varying between 1,200 to 1,800 mm (GOLFARI, 1975).

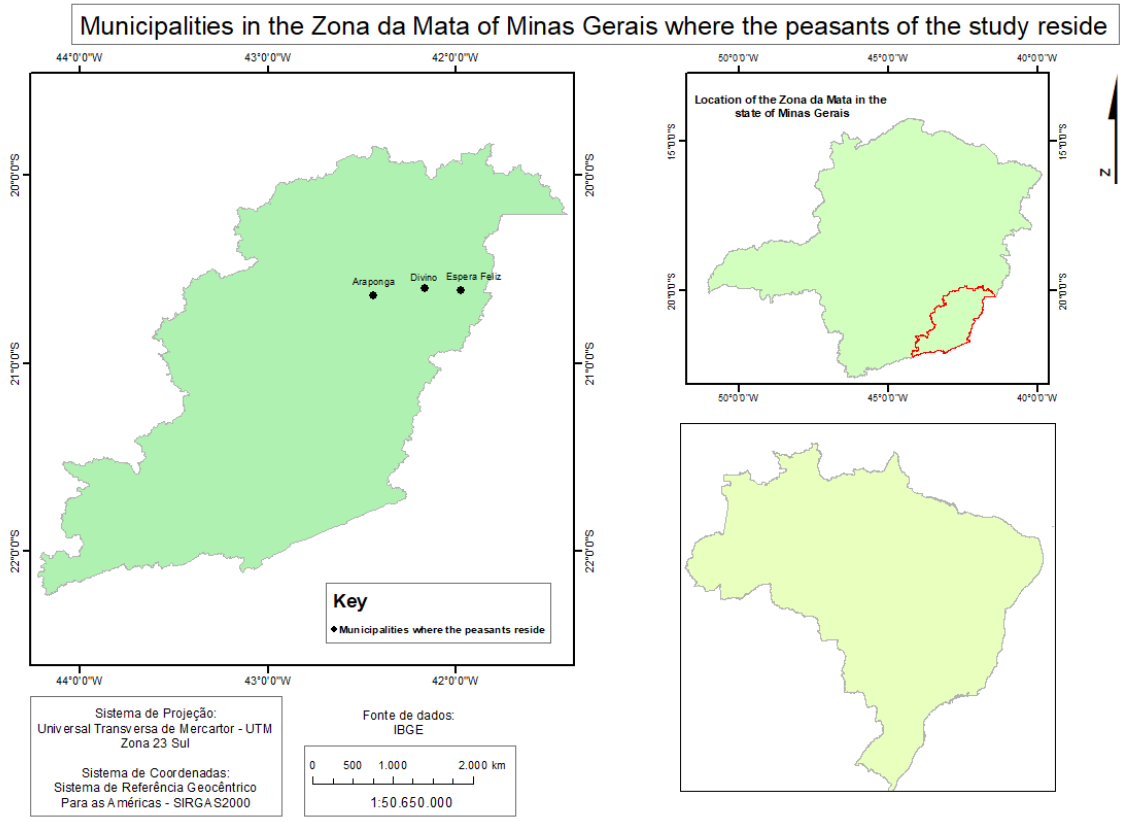

Figure 1- Zona da Mata of Minas Gerais and the municipalities where the peasants of the study reside.

Due to the inability to complete fieldwork *in situ* because of safety concerns and constraints associated with the global COVID-19 pandemic, the methodological base of this study consists of a secondary data analysis of bulletins created with farmers through collective writing.

With the research questions in mind, a matrix of systematization of these bulletins was created (SOUZA et al., 2012) and three key-themes were selected: ancestrality, spirituality, and religiosity. Six transversal themes were also selected: nature, biodiversity and its functions, cooperation/ solidarity/ synergy (referred to as cooperation), gender and generation, political engagement and decoloniality/coloniality.

According to several authors (ESCOBAR, 2018; MIGNOLO, 2017; RADOMSKY, 2011), ancestrality and spirituality are important to the resistance against and breaking with colonialism. Ancestrality focuses on the ancestral connection that influences the struggles of the day and continues through the words of elders, stories, and traditions (LISIFREY et al. 2013 *apud* ESCOBAR, 2018).

Religiosity was selected because of its connection with spirituality, considering that spirituality can manifest through religion (FALLOT, 2008). Spirituality is a means by which an individual or group communicates with what they can consider sacred (BOFF, 2001), which goes beyond the institutionalization of religiosity. With this understanding in mind, religiosity and spirituality were separated in order to determine how the spirituality of peasant farmers manifested itself outside of religion.

Nature was chosen as a theme in order to understand the relationships and perceptions farmers had with the land and nature. Biodiversity and its functions were a theme in the analysis used to identify how and why farmers chose to produce in biodiverse manners. While biodiversity and nature are intertwined in several ways, the two themes were separated to explore how biodiversity relates to nature, such as how biodiversity serves nature. While nature itself has several definitions based on cultural context and understanding, biodiversity is somewhat more easily defined, focusing primarily on the diversity of species that exist in an environment and how these species interact.

The bulletins mentioned biodiversity in the form of plant biodiversity, promoted through seed sharing and other activities, as well as animal biodiversity, demonstrated through the wildlife present in the agroecological agroecosystems. During the agroecological exchanges there is a specific part of the event related to seeds and biodiversity since it is the cradle of biodiversity.

Cooperation was analyzed to determine how actions of cooperation, solidarity, and synergy were present amongst the farmers in the Zona da Mata. Gender and generation were chosen as a theme in order to identify how women and children are involved in agroecology within the Zona da Mata. Political engagement was analyzed to identify how and why farmers became involved in political movements. Finally, coloniality/decoloniality was used to identify how coloniality was present in the document base as well as how agroecological farmers in the Zona da Mata were resisting modern/colonial structures.

The matrix of systematization was organized with the three key themes in the column and the six transversal themes in the rows. In the cells of the matrix, which were the cross between a row and column, multiple questions were elaborated upon in order to understand the relationships between the different themes. The matrix served as a guided to search the themes in the bulletins. The relation between the key

themes and the transversal themes were presented and discussed. Although transversal, due to the research questions, an overall discussion regarding how coloniality and/or decoloniality related to all the identified themes were presented. The full matrix is presented in Appendix 1 and the questions in Appendix 2.

The bulletins – Nossas Roças

The bulletins were created by the Center for Alternative Technologies of the Zona da Mata (CTA-ZM), and they are called “Nossa Roça”, “Nossa Roça Tecnologia Social”, “Nossa Cultura na Roça”, “Nossa Pesquisa na Roça”, and “Raizes da Terra” were the base of the research. When needed, the four bulletins were referred together as Nossa Roça series. These bulletins were chosen for the secondary data analysis due to their proximity to farmers. These documents were elaborated by the Center for Alternative Technologies of the Zona da Mata in partnership with the Federal University of Viçosa and other organizations.

Nossa Roça is a bulletin series created to systematizes de experiences of farmers with agroecology in the Zona da Mata. These bulletins are about the way farmers became involved in the agroecological movement in the Zona da Mata, different agroecological farming practices used and the cosmovisions regarding agroecology of the farmers. This series is made up of 43 individual bulletins, spanning from the year 2003 to 2017, with the majority of them describing the stories of farmers in the Zona da Mata of Minas Gerais and few of Espirito Santo, a neighboring state of Minas Gerais.

Staff from CTA-ZM and professors and students from UFV collaborate with farmers to produce these bulletins by visiting their property, and talking to them about their history, forms of cultivations, organizations etc. Through this collaborative writing process, farmers have a direct say in the information that is published, allowing them to be a part of the knowledge production. Their names are used, the general location of their property is addressed, and their views are not as sterilized as they might be under a normal scientific writing process, all with their explicit consent.

The farmers directly communicate their lived experiences and bring their perspectives to create a contextualized science. Before publishing, the famers read and approved the bulletins. Therefore, bulletins were based on experiences, and

elaborate in collaboration with family farmers who participate in the agroecological movement and produce in agroforestry systems in the Zona da Mata of Minas Gerais and surrounding areas.

Nossa Tecnologia Social is a bulletin series regarding different technologies used by famers in the Zona da Mata. There are 11 bulletins in this series, spanning from the year 2012 to 2020. Technologies such as agroforestry systems, biodigestors, and participatory certification programs are discussed in a way that clearly communicates how these technologies were created, as well as the benefits o or disadvantages of them, as is the case of the bulletin discussing transgenic crops. Staff from CTA and from UFV work with farmers and organizations such as STR identify these technologies, describe how they work, and produce this informational bulletin to share with other farmers.

Nossa Cultura na Roça is a two-part series from 2016 and 2018 that describes different cultural events that occur within the Zona da Mata. The two bulletins describe different religious and cultural festivities, the history behind the celebrations, and ceremonial procedures. These bulletins were created in collaboration with event participants, community organizers, UFV and CTA-ZM staff.

Nossa Pesquisa na Roça is a communicative bulletin with 11 editions from 2011 to 2019 based on research carried out by post-graduate students from the Federal University of Viçosa in cooperation with agroecological peasant farmers in the Zona da Mata. In this series, the results of the research are communicated to the farmers.
Raízes da Terra is a bulletin with 6 editions devoted to sharing the experiences and stories of women agroecological farmers in the Zona da Mata.

These publications were produced in 2016 and discuss the different trainings and collaborative projects available to women within the agroecological movement and those interested in agroecology. Women within the groups presented in the series collaborated with CTA staff and UFV students to write about their experiences and the histories of their groups.

In total, 71 bulletins of the five series were initially individually read and had specific quotations identified related to the themes of the matrix by two researchers. Said quotations were then separated from the bulletins and organized based on the themes and questions they pertained to. Using this material, individual topic syntheses

were created in order to discuss the dialogues present in the Nossa Roça series. To access the bulletins, see the links in Appendix 3.

An analysis was also performed utilizing the ATLAS.ti 9 qualitative analysis software. The Nossa Roça series was re-read by a researcher in search of more quotations pertaining to the themes of interest. All the quotations identified by the researchers were coded into the software based on the question and themes they corresponded with.

Sentences that corresponded to the theme of ancestrality were coded as “Ancest” and their pairing, for example, “Ancestrality and Biodiversity”, in order for the software to quantify how many times these themes and their pairings appeared in our analysis. Once entered into the system, the software noted the number of times each theme was mentioned, number of times each pairing occurred, which bulletins had certain pairings, and whether there were any themes or theme pairings that dialogued with other themes or theme pairings.

Data analysis completed on ATLAS.ti 9 generated a Sankey diagram that demonstrated the relationships among the nine themes, identified which documents these themes were found in, and where answers for or theme questions were found in the analyzed documents.

After coding and analyzing these documents, themes and quotations related to how the ancestrality, spirituality, and religiosity of the peasant farmers were identified and expanded upon through a synthesis. These three themes were chosen because our goal is to understand how ancestrality and spirituality in the Zona da Mata could break with structures of coloniality. Religiosity was included because it can express spirituality. The identified themes and subjects were discussed and supporting evidence was included.

Each pairing for ancestrality, spirituality, and religiosity was analyzed by the researchers and conclusions were drawn based on the pairings.

To reinforce and clarify points identified through the bulletin analysis, additional literature regarding the agroecological movement in the Zona da Mata was consulted and utilized in the discussion. Literature such as articles, reports, master’s dissertations, and doctoral theses were used in order to reinforce the analysis.

3.3 Results and Discussion

3.3.1 Key Themes: ancestrality, spirituality and religiosity

Ancestrality

The data analysis utilizing ATLAS.ti showed (Figure 2) that ancestrality was one of the most prominent themes present in the Nossa Roça series, as demonstrated by the multiple citations presented and analyzed during the study. In the bulletins there were 54 citations of ancestrality, either directly cited by the farmers or otherwise detailed within the bulletin. Ancestrality was one of the most common themes present in the Nossa Cultura na Roça, and Nossa Roça 21, 31, and 37.

The main themes that best expressed a relation to the theme of ancestrality were nature, biodiversity and its functions, gender and generation, religiosity, cooperation, political engagement, spirituality, and decoloniality/ coloniality. The strongest connection identified in the bulletins was between ancestrality and nature, with 36 citations. The second strongest relation to the theme of ancestrality was biodiversity and its functions, which overlapped with ancestrality in 16 citations.

The third and fourth themes with the strongest relations with ancestrality were gender and generation (15 citations) and religiosity (11 citations). The themes with the least amount of interaction with ancestrality were cooperation, political engagement, and spirituality, with cooperation presenting with 3 citations, political engagement with two citations and spirituality and decoloniality/coloniality only having one citation each.

Spirituality

Spirituality was one of the least mentioned themes in the analysis (Figure 2), with only 25 different citations. Although spirituality had a subtle presence in the documents analyzed, it was present and expressed clearly through quotes provided by farmers as well as written into the bulletins. The main bulletin series that demonstrated the farmers' links to spirituality were Raizes da Terra, Nossa Pesquisa

na Roça, and Nossa Roça. Spirituality was heavily present in Nossa Roça 40, Nossa Roça 31, and Nossa Roça 41.

The main themes that presented a correlation to spirituality included nature, biodiversity and its functions, cooperation, political engagement, religiosity, gender and generation, decoloniality/coloniality, and ancestrality. Nature had the largest connection to spirituality by far, with 18 citations connecting the two themes. Biodiversity and its functions presented as having the second largest connection, with 6 citations present. Cooperation presented with 4 citations, political engagement presented with 3 citations, and religiosity and gender and generation presented with 2 citations. Decoloniality/ coloniality and ancestry presented with one citation each.

Although ancestrality and spirituality only presented with one citation between each other in the ATLAS.ti evaluation, the two subjects were both discussed in several Nossa Roças, namely Nossa Roça 40, 36, 35, 31, 25, 24, and 21, as well as Nossa Pesquisa na Roça 11. Nossa Roça 31 presented the strongest connection between the two themes.

Religiosity

Religiosity can manifest spirituality; thus, it was analyzed (Figure 2) in order to determine if the agroecological farmers' religious expression influenced their perception of coloniality and/or broke with it. There were 38 citations of religiosity present in the documents analyzed. The most citations of religiosity were present in Nossa Cultura na Roça 1 and 2, Nossa Roça 32 and Nossa Roça 33.

The three themes that overlapped the most with religiosity were nature, cooperation, and ancestrality, with nature presenting with 14 citations, cooperation presenting with 12 citations, and ancestrality presenting with 11 citations. The themes that overlapped the least with religiosity were biodiversity and its functions, spirituality, gender and generation, political engagement, and decoloniality/coloniality. Biodiversity and its functions presented 3 citations with religiosity, spirituality and gender and generation presented with 2 citations each, and political engagement and decoloniality/coloniality presented with 1 citation each.

The relation of ancestrality, spirituality and religiosity

The three themes, ancestrality, spirituality and religiosity were analyzed together to see where the themes overlapped in the bulletin series. As demonstrated by Figure 2, the three themes overlapped within Nossa Roça 31, Nossa Roça 35, Nossa Roça 36, Nossa Roça 40, and Nossa Roça Tecnologia Social 6. Ancestrality and religiosity heavily overlapped in the two Nossa Cultura na Roça bulletins and presented some interactions in Nossa Roça 11, Nossa Roça 19, Nossa Roça 32, and Nossa Roça 33. Religiosity and spirituality overlapped in Nossa Roça Tecnologia Social 3. Spirituality and ancestrality overlapped in Nossa Roça 21, Nossa Roça 24, Nossa Roça 25, and Nossa Pesquisa na Roça 11.

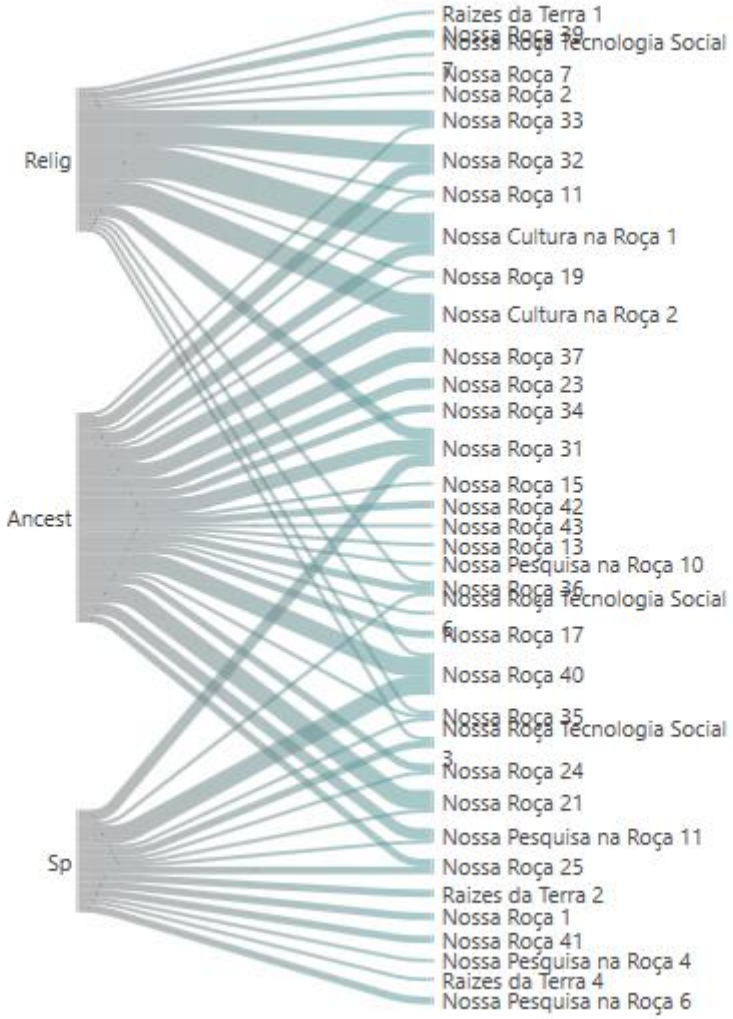

Figure 2- Sankey diagram of the themes ancestrality (Anc), spirituality (Sp) and religiosity (Relig) present in the present in the Nossa Roça series analyzed regarding the agroecological movement in the Zona da Mata of Brazil. The thickness of each line determines the number of coded examples present in each bulletin, the thicker the line, the more examples present.

Ancestrality and Religiosity

Based on the documents reviewed, religion can help respect ancestrality by preserving history and incorporating historical events into religious ceremonies in order to honor ancestors who were previously systematically abused by society. A prime example of this was the *Congado* described by Nossa Cultura na Roça 2 (2018). The Festa de Congado worked within two spheres, the church and *congo*, to reenact and honor the memory of enslaved Africans. This ceremony memorializes the liberation of enslaved people, thus embracing Afro-Brazilian ancestrality through a religious ceremony.

Our analysis also showed that ancestors influence religious options and practices through their involvement with faith-based movements and participation in different religious ceremonies. Movements such as the Movimento da Boa Nova (MOBOM) (SILVA, 2010) and the CEBs supported farmers in the region throughout the years in multiple different capacities. With these faith-based groups, farmers felt connected and supported, as well as learned about how to lead with the land and raise their children.

Due to this involvement, religious movements in the Zona da Mata influenced the religious practices and options of future generations. In addition to the movements themselves, participation in individual religious ceremonies, such as Ash Wednesday or the Festa do Rosário (feast for Our Lady of the Rosary - the protector of the enslaved people), also influenced religious options and practices.

One anecdote from a farmer described how, as a child, he never went to Ash Wednesday due to his father's different interpretation of the bible. Since this ancestor did not take his children to participate in this ceremony, the future generation of that family may not view that particular religious practice, as necessary. As for the Festa do Rosário (LEITE, 2019), the representation of and respect for Afro-Brazilians freed from slavery makes this particular celebration important to those who attend the event. Those who participate in this celebration encourage their children and future

generations to engage in the celebration, thus making the practice a tradition that is continued on.

As demonstrated throughout the discussion of the *Congado* and Festa do Rosário, religious ceremonies can honor ancestors and their struggles, thus re-strengthening ancestral ties. With the Congo, oral traditions are passed on that celebrate the liberation of enslaved Afro-Brazilians and the redemption of “the convicts for the love of Our Lady of the Rosary".

The continuation of these oral traditions through religious events allows for participants to re-create and strengthen ancestral links. Now, the documents analyzed primarily discussed how the religious institution, which in this context is the Catholic Church, strengthened ancestral ties through religious ceremonies and practices, especially for Afro-Brazilians. Afro-Brazilian religious such as Candomblé and Umbanda were scarcely mentioned in the documents analyzed, only briefly mentioned in Nossa Cultura na Roça 1, so the study was unable to determine how those specific religions may or may not contribute to the strengthening or weakening of ancestral links.

As mentioned in the beginning of the document, there is a strong relationship between religiosity and spirituality and the themes were only separated for the document analysis to determine if spirituality appeared outside of religiosity, however it is difficult to completely separate the two.

Ancestrality and Spirituality

Although there was only one explicit connection between Ancestrality and Spirituality in the documents analyzed, due to the separation between religiosity and spirituality for this analysis, the two themes heavily intertwine. Generally, spirituality reflects ancestral values through cosmovisions, creation stories, and ceremonial practices. In the Zona da Mata, ancestral heritages can manifest themselves in spirituality and beliefs through traditional ceremonies celebrated, such as the Festa do Rosário. During these festivities, ancestral stories and traditions are shared and passed on from generation to generation. Spiritual understandings of these events are also shared with participants.

It was difficult to completely separate religiosity from spirituality and the two subjects were separated in the analysis in order to determine if spirituality was present in ways other than religious expression. The purpose was to identify how farmers may identify or manifest their spirituality outside of a religious context.

Spirituality and Religiosity

While in the Zona da Mata there is a strong interconnection between religiosity and agroecology (BOTELHO et al., 2016). we sought to determine where spirituality may differ from religiosity and where the two may interact.

In the Zona da Mata, spirituality can differ from religiosity through the different organization and understandings. Religiosity was usually demonstrated through the participation in groups such as the CEBs or other religiously aligned unions, which presented spirituality through a religious lens, and spirituality was more fluid and present in the way farmers discussed their relationship with nature.

Through a spiritual lens, farmers discussed how they had to respect mother earth and how, in return, the earth would care for them. From a religious lens, farmers would discuss how the CEBs influenced their participation in the agroecological movement or how God inspired their work. However, one way to interpret how someone's spirituality perceives human-nature interactions is how they perceive God in nature (BOTELHO et al., 2016). God can also be perceived from the perspective of religion or the relationship with nature, which will be explored later in the chapter.

3.3.2 Relation of ancestrality with the transversal themes

Ancestrality and Nature

Some of the connections found between ancestrality and nature were the caring for the land, appreciation of the rural way of life, and memories of the land.

Numerous farmers discussed how their land was passed down to them from generation to generation, usually from their parents or grandparents, and just how

difficult it was for their elders to obtain this land. The importance of conquer the land was expressed by Portuguese and Spanish descendants, however, there was an extra significance when descendants of Afro-Brazilians and indigenous peoples conquered their piece of land. Nossa Roça 31 (2014) proclaimed, “In the shadow of Pedra Redonda in Araponga/MG, at the end of the 1960s, a descendant of slaves and Puri and father of ten children… conquered his piece of land”. To the farmers, their land was conquered, not in a way similar to the glorified domination of land by colonizers, but as peasant families fighting for their right to land. Thus, elders who fought with such ardor to conquer the land believed that it was vital to pass the land and the opportunities it presented, onto their descendants.

With this in mind, farmers also described how much their ancestors valued the land and concentrated on caring for it. Adequately caring for the land was seen as a way for to guarantee a good life for their descendants. This was expressed in Nossa Roça 23 (2010), which stated, “A son of Portuguese and Spanish descendants, the mother and father (of the farmer) were very worried about the future of their seven children. With much work, they were able to acquire sufficient land, around 21 acres, to distribute amongst their children”.

The passing of fertile land to the next generation took precedence, since presenting their children and grandchildren with land would give them a good rural life. The farmers explained that their ancestors valued rural life and perceived it as a promising future for their children, provided that the soil is fertile and able to offer opportunities for the next generation. By protecting nature through caring for the land, ancestors guaranteed a prosperous future for their offspring.

Farmers in Nossa Pesquisa na Roça 11 (2019) explained this thinking, stating, “In the settlement, plants are growing, children are being born, and renewing our hope in the construction of a more just and solidary present!”. The farmers also present with a biocultural memory of the land that connects their ancestrality to the natural environment. They communicated stories and memories of the land, expressing how their ancestors described the landscape from the previous years. One family featured in Nossa Roça 17 (2009) demonstrated this memory with the land, with the bulletin explaining, “The family remembers with nostalgia the time when the region had more woods and springs, because the more time passes the more the landscape of the region changes.

The wetlands are dry, the streams are silted up, and the forests are destroyed. For this reason, (the farmer) and his family try to use means of production that cause the least possible impact. What is necessary is to guarantee the survival of the family." These memories were inheritances for the farmers, permitting them to not just understand the history of the land, but providing them a path for the future as well. Describing the health or destruction of the landscape demonstrates how farmers need to approach nature and create a healthier bond between humans and the natural environment.

These descriptions provided by the farmers echo the observations of Van der Ploeg, whose work with peasant agriculture consistently connects the relationship peasants have between themselves and nature, such as the key aspect of peasant agriculture of co-production with nature (2010; 2009). This co-production with nature allows farmers to interact with nature as an evolving system, that can be recharacterized to provide for peasant families through agroecological farming, rather than a static entity that farmers must work around.

As demonstrated by the farmers in the Nossa Roça series, the co-production with nature created by agroecological farmers in the Zona da Mata allows farmers to pass on stronger, more fertile, and more stable agroecosystems to the next generation. The access to land, and the struggle agroecological farmers in the Zona da Mata faced to attain this land, also demonstrates a key aspect of the peasant experience.

Access to land is a key peasant struggle that can provide peasant families with autonomy and the possibility for progress, through the creation of and reproduction of rural livelihoods that abandon the relations of dependency and marginalization created by industrial agriculture (PLOEG, 2009). Farmers in the Nossa Roça series (Nossa Roça 23, 2010; Nossa Pesquisa na Roça 11, 2019) discuss this autonomy and progress, expressing their desires to create a sustainable environment for themselves and their children, developing an agroecological property that gives them autonomy and allows them to co-produce with nature.

Some relations and concepts previously mentioned were translated into ancestral practices and vice-versa. The farmers, as expressed in the Nossa Roça series, maintained their relationships with nature, involving themselves in seed saving, planting diverse crops- regardless of their economic value, and practicing agroecology. In Nossa Pesquisa na Roça 11 (2019), this connection between ancestrality and seeds

was described. The bulletin explains, “These seeds have memory, because they remind us of our parents' habit of planting them, of the tastes and habits related to them. This memory further stimulates the settlers to go to places, fairs, and the homes of acquaintances in the hope of retrieving each one” (Nossa Pesquisa na Roça 11, 2019).

Many farmers discussed how they and their ancestors guarded seeds. One farmer in Nossa Roça 21 described how his father, who was his “great inspiration”, preserved “an infinity of seed varieties” with the intention to pass them on to the next generation (Nossa Roça 21, 2010). With this practice, past generations saved a multitude of seed varieties to pass them on to future generations. Practice of seed saving can be considered an ancestral contribution towards the protection of nature. Today, seed saving continues in the Zona da Mata and has been expanded through events such as Troca de Saberes and agroecological exchanges meetings (ZANELLI et al., 2015).

Troca de Saberes is an annual event at the Federal University of Viçosa in which agroecological farmers across the region reconvene to share their knowledge, exchange seeds, discuss topics such as peasant identity, engage in political demonstrations, and construct agroecological knowledge (LOPES et al., 2013). With this guarding of various seed cultivars over the years and caring for them, elders actively preserved the natural biodiversity of the Zona da Mata, thus, protecting the region from genetic biodegradation which has increased in the last few decades.

Besides the preservation of seeds, farmers discuss how their predecessors planted biodiversity though plants that are not traditionally lucrative in the region. For example, one farmer discussed how his father planted tobacco, which is not a valuable crop in the region, simply because he liked the plant (Nossa Roça 23, 2010). Since his father always planted tobacco, the farmer continued this tradition and planted it in the middle of the coffee fields, where he discovered that the plant diminished the amount of pest infestations.

Whether the father knew of this aspect of the plant is unclear, but the motivation of the farmer to utilize this crop is clearly connected to tradition. He also discussed how his father planted crops such as sugarcane, sweet potato, and cassava to create animal ration (Nossa Roça 23, 2010). By creating this animal ration, the farmer is presenting a reciprocal relationship with nature, giving the animals a natural feed made

from local plant, rather than processed food made from commodity grains such as corn and soybeans. This demonstrates the care presented through a traditional practice such as producing homemade feed.

Finally, one of the most impactful quotes of the analysis demonstrated how some of the farmers perceived agroecology as a way to maintain a relationship between nature and ancestrality. A farmer with one of the most biodiverse agroforestry systems in the Zona da Mata expressed that, to him, “agroecology is not a new thing, but a reclaim of good things that have been lost” (Nossa Roça 21, 2010). This is a testament to how agroecology incentivizes farmers to revive traditional agricultural practices within the region, in order to re-establish a healthy and reciprocal relationship with nature.

One farming family in the series were described as the "holders of knowledge passed down from generation to generation" (Nossa Roça 37, 2016) and used this knowledge for agroecology and alternative medicine. Alternative medicine has been empowered and strengthened within agroecology. Several reports throughout Brazil discuss how communities are resisting hegemonic modern structures by utilizing folk knowledge of traditional medicinal plants (MAIA, et al., 2016; BRITO et al., 2020).

The use of medicinal plants was originally practiced by indigenous peoples and then expanded through the contributions of enslaved Africans during the colonial period (MAIA et al., 2016). In a study in Pará, participants explained the use of medicinal plants is present in the region due to the transmission of traditional knowledge from generation from generation but has been diminishing due to the “high adherence to pharmaceutical products” in recent years (MAIA et al., 2016). Other farmers in the Zona da Mata discussed how they do not use pharmaceutical products and only rely on medicinal plants and alternative medicine.

These farmers and other who preserve knowledge regarding traditional planting techniques, caring for animals and practicing alternative medicine connects them to nature and their ancestors, simultaneously preserving the human-nature connection and protect nature from harmful agricultural practices. They are not dependent on new technologies that harm the environment, because they are able to use their knowledge and understanding to have a productive harvest without pesticides or chemical fertilizers.

This understanding of traditional agricultural knowledge also demonstrates the value of biodiverse production, not just for human consumption, but also for the well-being of the environment. The farmers who were previously mentioned who produced in agroforestry systems that utilized crops, such as tobacco or sugarcane, determined uses for these plants that negated the need for external inputs such as animal ration or agrochemicals (Nossa Roça 23, 2010; Nossa Roça 40, 2016).

The use of these inputs has disconnected farmers from nature (PLOEG, 2010), so planting and utilizing crops maintains these connections with nature. This ties into the discussion of alternative medicine, since, in addition to breaking with the production and use of chemical inputs for agricultural purposes, it breaks with the pharmaceutical industry, which is heavily intertwined with the production of pesticides and other chemical inputs (SHIVA, 1997).

On a more general note, ancestors transmitted the value of caring for nature. Families expressed in the bulletins a great desire to care for nature and protect the land, a value that was transmitted to them from generation to generation. While observing how previous generations lead on with the land, the agroecological farmers determined how they would farm the land- in a manner that would care for nature or work against it.

Several farmers explained that they were impressed by the strong relationship that their parents or grandparents created with the land, thus this became an example to them and was passed on. In Nossa Roça 26 (2016), the care and respect for nature that the agroecological farming family had been praised. The bulletin states, “Caring for nature is an indispensable part of the family philosophy. After all, it is she who will provide all the necessary good” (Nossa Roça 20, 2016).

One daughter of agroecological farmers in the region in Nossa Roça 25 (2011) said, “I am proud of my parents and the way they deal with the land.” Families that presented a tradition of caring for the land and respecting nature focused on the protection of forests, bodies of water, animals, and other aspects of nature, engaged in agroecological production due to its lower environmental impact and cooperation with ecosystem services.

This desire to respect the land and reconnect with the teachings of their ancestors lead the farmers to engage with agroecology. As one farmer stated,

“"Agroecology is not something new, but a rescue of good things that have been lost" (Nossa Roça 21, 2010).

Therefore, as demonstrated by the connections identified in the literature analyzed, in the context of the Zona da Mata, ancestrality contributes to the protection of nature. This is demonstrated by how farmers and their elders have been encouraging the continuation of traditional planting and animal rearing techniques that have a lower environmental impact, along with emphasizing the importance of the preservation of this traditional knowledge and utilization of alternative medicine.

Ancestrality and Biodiversity and its functions

As previously stated, biodiversity appears in several ancestral teachings and inheritances. Many farmers discussed how their parents saved seeds or planted crops that were not produced for the commodity market, and through these actions, their ancestors protected nature through biodiversity. They encouraged younger generations to plant different crops for traditional medicine, homeopathy, or consumption.

Some of these inherited practices, such as the aforementioned planting of tobacco in coffee fields, unintentionally served as pest management or fertilization, benefiting both the farmer and the environment. The continued use of these practices prevented younger generations from using pesticides and other environmentally damaging farming inputs and techniques.

We also observed distinct ancestral links between the family's history and the crops they cultivated. Crops that are not traditionally commodified in the region, such as lettuce and beans, were passed down from generation to generation through seed saving to continue their cultivation. One farmer in the Nossa Roça 42 (2016), shared the story of a lettuce cultivar that had been in his family for generations: they had brought this particular seed from Italy to Brazil over 200 years ago and have cultivated it ever since. “It’s a seed that my family brought when they came from Italy, about 200 years ago” (Nossa Roça 42, 2016).

The cultivation of this lettuce demonstrates just how deep the ancestral relation between farmers and their crops can go. This family could have instead bought other lettuce seeds and cultivated common cultivars in the region; however, their ancestral link with this lettuce from Italy motivates them to keep planting it today. Other farmers told of how they had lost different plants over the years, and then rediscovered the seeds at regional farming events such as Troca de Saberes (Nossa Roça 37, 2016).

Relationships between humans and the crops they choose to cultivate go beyond market value: there is also a biocultural memory between farmers and the plants (TOLEDO; BARRERA-BASSOLS, 2008). Farmers could easily choose to plant common regional substitutes for the crops that they enjoy, however the ancestral and cultural relationship held between humans and certain plants can be so strong that farmers may choose to guard seeds to ensure this plant survives for future generations TOLEDO; BARRERA-BASSOLS, 2008).

Biodiversity in the form of cultivation of certain crops allows for farmers to re-connect with their ancestors and re-vitalize plants that would have otherwise been lost due to monoculture production and biodiversity erosion.

This then leads into the discussion as to what the ancestors' memories about biodiversity are. Memories identified through our analysis regarding biodiversity and ancestrality focused on either seed saving or the amount of forested area in the region. Farmers discussed their memories of how their ancestors saved “an infinity of varieties of seeds” (Nossa Roça 21, 2010), which as a result encouraged them to engage in biodiversity protection techniques such as seed saving.

The previous discussion regarding the Italian lettuce cultivar also touches upon the ancestral memories associated with biodiverse crops, since this particular seed literally grew alongside this family for 200 years as they laid down roots in Brazil (Nossa Roça 42, 2016). Another farmer described how he “… always dreamed of being able to live on and from the land, and his eyes light up when he comments that he was influenced by the teachings of his father, a great *mateiro* (a connoisseur and astute explorer of native trees).” (Nossa Roça 40, 2016). Through his father’s influence, the farmer aimed to create a biodiverse property that would allow him to live solely off the land.

Memories of how the landscape originally looked in the Zona da Mata also reflects how ancestors perceived biodiversity. A farmer discussed how he and his

family remember how the landscape originally had more forest cover and watersheds (Nossa Roça 17, 2009). This memory of the region's original biodiversity, and the effects of the ongoing biodegradation of the Zona da Mata, lead the family to consider their relationship with nature and their role in protecting biodiversity (Nossa Roça 17, 2009). Memories that were elaborated upon above, as well as the ancestral practices that were passed down from ancestors, influenced farmers and their families to choose biodiversity.

Ancestrality and Gender and Generation

Based on the "Nossa Roça" series, the knowledge and practices shared between and with women and children was caring for homegardens as well as the use of medicinal plants and homeopathy. In the bulletins, the farmers told their stories regarding their interactions with diverse medicinal plants, their uses, and how their knowledge of these plants were sourced from their ancestors. Caring for the homegardens also was a habit that was saved by previous generations and passed on to children and grandchildren.

The knowledge of medicinal plants and homeopathy is primarily used by women to assure the health and wellbeing of their families (Nossa Roça 21, 2010; Nossa Roça 37, 2016). They also use homeopathy for plants, soil, water and animals. Multiple women expressed how they utilized their knowledge of traditional medicinal plants to care for the health of their families and, in some cases, their neighbors and the surrounding community.

Some of the women interviewed implied that this knowledge was inherited from previous generations. A farmer in Nossa Roça 21 (2010) explained that, because of her knowledge of medicinal plants, her family has not used pharmaceuticals in more than twenty years. She also mentions how some plants were used by the elders, demonstrating how her understanding of these plants was an inheritance from previous generations.

Another family expressed how their multigenerational family passed on teachings regarding caring for specific crops and the general care of the homegarden. The family explained the importance of the garden, how the garden produced significant amounts of food for the family and helped in the generation of income when

the husband fell ill and was unable to provide for the family. The granddaughter of the family, who was raised by both her mother and her grandparents, worked in the garden with her mother and grandmother for auto consumption and the generation of income for the household (Nossa Roça 37, 2016).

The women are responsible for the homegardens, which are their domain for experimentation and how they care for the wellbeing of the family. Homegardens provide food, medicine, and income to individual households as well as the agroecological community. The women keep track of the value of what they were growing in their homegardens in an agroecological notebook, which was developed especially for this purpose. With this tool, women were able to quantify how much produce they were growing in their homegardens, calculate the estimated value of said produce, and demonstrate the value these gardens add to the family (OLIVEIRA, 2015; VALDIVIESO, 2017). The importance of homegardens was communicated through a Nossa Roça Tecnologia Social bulletin that communicated the findings of the several research projects that came from the Agroecological Notebook program (OLIVEIRA, 2015; VALDIVIESO, 2017).

Some learnings inherited of older generations, mentioned in the analyzed literature, were the use of medicinal plants and the desire to work with the land. One farmer referred to the medicinal plants as “utilized by the elders” (Nossa Roça 21, 2010), demonstrating how the use of medicinal plants can be a form of revitalization of past knowledge from generation to generation.

Along with knowledge of traditional plants and their uses, a more ideological leaning inherited from older generations is the desire to work on the land. Throughout the Nossa Roça series, farmers and their children expressed their desire to work with the land. Some children explain that their desire to work with the land is based in their observation of how their parents interacted with the land. The stories of love and resistance from their parents inspired the children to continue their parents’ legacies and to practice agroecology on the land. Many families also passed on their passion for the land and nature, which will be expanded upon in the relation between ancestrality and nature.

Ancestrality and Cooperation

To determine which actions or conducts of solidarity and cooperation that are inherited from ancestors and to see if there are any ancestral links or values of cooperation inherited from the ancestors. In our analysis, it was observed that some farmers participated in groups such as farmers unions and cooperatives under the influence of parental teachings, some farmers expressed in the bulletins the unity and desire of the family to work with regional organizations, such as the Rural Workers Union (STR).

The analysis of the “Nossa Roça” series do not necessarily communicate the influence of ancestors beyond the grandparent level, but it is probable that the grandparents were influenced by other ancestors. This value of cooperation might only be described in more recent generations, such as parents and grandparents, due to how recently agricultural cooperatives and other groups were created.

Beyond the question associated with ancestrality and cooperation that focused on ancestral inheritances, there were actions of cooperation and solidarity that occurred within the region that were significant and set the stage for the agroecological movement’s prosperity within the Zona da Mata. Actions such as the Land Conquest of Araponga (ALVES, 2006), which was a collective action amongst peasant farmers in Araponga who bought land and redistributed it amongst themselves, demonstrated the cooperation and solidarity amongst farmers within the agroecological movement.

Several of the farmers involved in the Land Conquest continue to be involved within the agroecology and participated in the Nossa Roça series. Other smaller actions described, which were also discussed in the synthesis for themes such as nature, biodiversity and its functions, and gender and generation, include seed exchanges amongst farmers, sharing knowledge regarding agroecological practices, and participation in events such as Troca de Saberes.

One of the most impactful cooperative actions that regularly occur within the Zona da Mata are the *Mutirões*, or exchange days (Nossa Roça 4, 2004). In Espera Feliz, agroecological farmers have been participating in exchange days since 1999 in which farmers work together to complete farming tasks collectively, such as planting and harvesting the fields (Agroecologia em Rede, 2007). The group, originally composed of 8 people, spread throughout the community, and consisted of more than 40 members at its peak.

Facilitated with the support of the local STR, farmers who participated in this exchange would go to a property, assist the family with a task such as coffee harvesting, and exchange knowledge of agroecological practices (Agroecologia em Rede, 2007). Several farmers greatly benefitted from this system, as described in Nossa Roça 4 (2004), and the importance of mutual respect amongst those involved was emphasized.

The bulletin states, “Mutirão service pays off, helping small farmers who can't afford to hire people to work. But if there is no understanding in the group, the work does not work. There has to be mutual respect and solidarity among the companions” (Nossa Roça 4, 2004).

Ancestrality and Political Engagement

The relationship between ancestrality and political engagement is an area of interest due to the relatively recent ability of farmers in Brazil to actively participate in the political sphere. Before the military dictatorship of 1964, the Catholic Church, peasant social movements and the state attempted to engage in agrarian reform, yet that effort was cut short due to the military coup that established an authoritarian regime (HOUTZAGER, 2001). At the end of the military dictatorship, especially the beginning of the 1980s, the rural worker’s movement emerged with the assistance of the CEBs (Christian Base Communities).

These communities were especially supported by Liberation Theology, which presents an understanding of society through the interpretation of Christian teachings as keys of liberation from oppression (BOFF; BOFF, *apud*, VAN DEN BERG, et al., 2019). Based on the Liberation Theology of the Catholic church, CEB’s were created in the region and heavily focused on encouraging political engagement (HOUTZAGER, 2001) and caring for nature, as a creation of God, thus entering the resistance to oppression in the region. Supported by CEBs, organizations such as the Rural Worker´s Unions were reorganized after the end of the dictatorship (HOUTZAGER, 2001). Sons and daughters of those involved with these organizations, inherited the political engagement of their parents.

In our analysis, when young farmers explained why they entered political and social movements, normally they cited the influence of their parents (Nossa Roça 33,

2016). Several farmers discussed how their families were involved with organizations that engaged in political actions, whether it was a religious organization such as the CEBs or the rural worker's union. Their parents were some of the initial members of these organizations, which inspired them to continue their parents' legacies. The participation of families in these organizations and political movements instills a value for political engagement within the next generation.

This movement of reorganization of the unions also had an influence on alternative agriculture, which was the basis of agroecology. During the 1980s, after the military dictatorship transitioned out of power and social movements were allowed to form, the alternative agriculture movement was spearheaded by social movements, CEBs, farmers unions such as the STR, non-governmental organizations, and agronomists (VILLAR et al., 2013). Through the political influence and cooperation present between the different rural workers unions and CEBs, alternative agriculture evolved into today's agroecological movement. Many of the farmers who participated in the Nossa Roça series entered rural workers unions in the 1980s and 1990s, so they were some of the original members that created the agroecological movement in the Zona da Mata.

One young farmer described that his family was always involved with the syndicate movements because his father was extremely critical of agrochemicals (Nossa Roça 25, 2011). The father-in-law of the farmer, on the other hand, was not described as being involved with the syndicate movements or other forms of political engagement. He did not approve of agrochemicals either, however he ended up using pesticides and fertilizers at the insistence of the agricultural technicians who visited his fields. This explanation given by the farmer demonstrates the importance of the connection with political movements to resist the use of agrochemicals. Social engagement and networks are important for the strengthening of principles through the collective identification of common objectives (CASTRO, 2008).

This ancestrality influences farmers to engage in farmers groups such as farmer's syndicates, amplifying their voices collectively and giving them the force to fight against the influence of agribusinesses, mining companies, and the use of agrochemicals in the region. Parents who were politically active and engaged with organizations such as MST, CTA, or STR, pass these values onto their children, which the children then pass onto the next generation.

3.3.3 Relation of spirituality with the transversal themes

Spirituality, Nature, and Biodiversity and its functions

"Perceiving and strengthening the spirit through nature." This was one of the criteria defined by the farmers of Araponga-MG to frame a rural property as agroecological (CARNEIRO, 2013).

Due to the overlapping themes and actions between spirituality's relationship with nature and biodiversity, the two themes were discussed together. Humans use spirituality to understand their relationship with nature. Depending on the spiritual belief, nature is viewed as either a force that humans are a part of, and therefore must respect; or, as a force working against humans that must be resisted fight (BOTELHO et al., 2016).

One participant working in homeopathy described her interaction between homeopathic solutions created with plants as inspired by her relationship with God, demonstrating that she sees God in nature. The farmer in Nossa Roça 41 (2016) explained, "It was God who inspired all of this work". She explained how the agroecological management for the farm began with her, after she studied alternative medicine through the local Father, who was in contact with practitioners from Rondônia and Italy (Nossa Roça 41, 2016). Through her religious background, she made the relationship between homeopathy with God and nature.

Some beliefs, values and sentiments associated with nature that the literature analysis expanded upon focused on respecting nature and understanding how it communicates with human beings. Several farmers demonstrated a profound respect for nature, and thus focused on caring for it. One farming family's respect for nature, and the resulting care expressed for it, was expressed in the Nossa Roça bulletin as, "The sense of belonging to the natural and spiritual elements is intense; the land is blessed by God and cared for by the farming family … who together express their love for life in every corner of the property" (Nossa Roça 40, 2016).

One farmer explained how, out of this respect and desire to care for nature, he would bring the wild animals found in the neighbor's coffee plantations to his property,

where he allows wild animals to live in peace and provides them with extra fruits and vegetation to eat (Nossa Roça 25, 2011).

Regarding the wildlife residing on the property, his family understands that there is more than enough good food for all. This perspective, which views the environment as a place of abundance and not scarcity, opposes the Eurocentric belief that the world runs on resource scarcity, and human beings must fight against nature to have such resources as nutritious food (KIMMERER, 2020).

This also relates to the discussion of cooperation, since it demonstrates the cooperation that exists between human beings and nature. The spiritual perspective viewing nature as a place of abundance allows for us to care both our human brothers and sisters, and our animal and plant communities (KIMMERER, 2020).

We also observed how some farmers care for nature by incorporating agroecological techniques that utilize ecosystem services and protect the environment. Rather than engaging in potentially harmful practices, such as burning the land and using chemical fertilizers or pesticides, the farmers might instead use green manure or manual weeding. One farmer even explained that it was simply easier to engage in these practices that nurture and cooperate with nature than to fight against it, describing how trees in agroforestry systems are easy to manage because “we have nature in our favor” (Nossa Roça Tecnologia Social 3, 2015).

In several bulletins it was noted the key value of observing and listening to nature. As in most relationships, respect and communication go hand-in-hand. To fully respect and care for their environment, farmers observed and deciphered what nature communicated to them. One farmer explained that in order to establish an agroecosystem in equilibrium, one must look to nature to determine the design (Nossa Roça 31, 2014).

Observing key environmental resources, such as sunlight, soil quality, and water availability, allows agroecological farmers to determine how to best utilize and conserve these resources and identify potential ecosystem services. When farmers observe these aspects and understand how nature communicates with human beings, they can establish conclusions regarding the health of their agroecosystem. One farmer used his understanding of nature and observational skills to determine that his property was a place of life. He stated,

"...The observation of nature helps to organize a more balanced system. In our property we have 100% pure air, scientifically proven and bioindicated by the pink lichens found on the trees. We have life since we have an abundance of water and water is life" [5] (Nossa Roça 31, 2014).

Through an open channel of communication and respect, farmers have enhanced their agroecosystems and established balanced systems that serve as a place of life—not just a means to gain profit.

Finally, the value of respecting nature also translates into understanding the responsibility human beings have with nature- due to us being a part of nature (GLEISSMAN et al., 2019). As with communication and observation, responsibility plays a key role in respect. One has a responsibility to those they wish to respect. This responsibility may require you to observe your actions more closely, to take note of nonverbal signals, and to try and understand things that you may not have previously paid attention to.

For the agroecological farmers in the Zona da Mata, this responsibility can present as monitoring the waste produced on the property (Nossa Roça 25, 2011), or the quality of the water on the property (Nossa Roça 31, 2013; Nossa Roça 41, 2016). Based on material from Nossa Roça 25, 31, and 41, agroecological farmers take on the responsibility of understanding nature and treating it well by minimizing waste produced, recycling, and observing natural resources such as water.

The relationship between spirituality and biodiversity and its functions mirrors that of spirituality and nature. As presented in the discussions by the farmers, their spiritualities view the maintenance of biodiversity and its functions as a way to protect nature. This presents through their actions such as seed saving and providing space and resources for the wildlife present on their property.

Spirituality contributed to the maintenance of biodiversity by the farmers by providing them with a spiritual understanding of the interconnectedness of nature. In the Nossa Roça series it was possible to observer the strong understandings of how biodiversity promoted synergy within the agroecosystem, and the way they detailed this presented in a more spiritual way.

[5] The rase in quotations refer to a translation of the Nossa Roça bulletins from Portuguese to English by the dissertation author.

Rather than describing this interaction as solely mechanical, in a scientific way, farmers discussed how different members of the ecosystem, such as insects and other plants, interact with each other and benefit each other. One example was of how a farmer described how spiders in his agroforestry system control the coffee drill insect and how bees and wasps control the coffee leaf miner, or how the biodiversity of the plants in his system prevents parasite infestations. He explained, “The air that runs between the coffee plants fights against coffee rust; the spiders control the coffee drill and the wasps and bees control the coffee leaf miner. Where there is a wide range of plant diversity the parasites do not attack as much, these plants are antibiotics” (Nossa Roça 31, 2014).

Therefore, spirituality can also contribute to the conservation of biodiversity. The farmer’s description of how each plant and even the smallest insect performs a vital role in the agroecosystem contributes to the conservation of this biodiversity. Another farmer also expressed his spiritual understanding of the importance of utilizing biodiversity.

From his perspective, biodiversity is used to protect the land and preserve it for future generations, explaining that “whatever you do to the earth today, it will respond tomorrow or the day after” (Nossa Roça 1, 2003). His view demonstrates a spiritual belief that nature is a divine entity, exemplifying how agroecological farmers in the Zona da Mata are embedded within the divine nature. As explained by Botelho, Cardoso & Otsuki (2016), this embeddedness nurtures the farmer’s personal and practical knowledge, enabling them to care for the land with love. The desire to care for the land with love can fuel the conservation of biodiversity. Living and producing in a way that protects biodiversity allows the land to reciprocate the love and goodwill presented through those acts of conservation.

Some farmers explained their feelings and beliefs regarding the choice to plant in a biodiverse way. One farmer expressed how activities such as exchanges bring him knowledge regarding sustainable management, seedlings, seeds, as well as dreams for his property. This cooperation between humans and nature could also present as a potential spiritual connection between human beings and nature. According to the Nossa Roça report, the farmer “likes to tell us that with the exchanges we take and bring back a lot of knowledge, sustainable management techniques, seedlings, seeds, and, of course, many dreams” (Nossa Roça 36, 2016).

The seeds and seedlings were shared during the exchange meetings with participation of families involved in the agroecological movement, representing “the increasingly strong will to cultivate the land in a responsible way and with respect for nature” (Nossa Roça 36, 2016) by those involved. The seeds shared among those who wanted to increase the biodiversity of their land, either diversifying their agroforestry system or starting the agroecological transition of the land.

Besides planting method, there are other ways to increase biodiversity in their properties, just allowing plants growing naturally (CARNEIRO, 2013). The farmer believed that trees and other plants that sprout in the coffee field spontaneously were better than planting them. Rather than forcing something into nature and expecting it to grow, the farmer understands that nature has its own will and desire. What is meant to grow will grow, there is no need to force a plant into the ground and hope it grows. If nature wills it, it will grow and flourish. According to one farmer, "if a tree sprouts in the coffee field it is because it will be good for it" (Nossa Roça 36, 2016).

This then brings us to the question of how spirituality contributes to the functions of biodiversity. Understanding the importance of inter-species cooperation and synergy has presented as a spiritual connection between humans and nature, especially based on the way farmers describe this cooperation in the literature. This echoes deep ecology thinking which emphasizes the importance of reconnecting oneself to the natural world and community of natural species (NAES, 1989, *apud* BOTELHO et al., 2016).

Another way that spirituality contributes to biodiversity and its functions is the concept of a “good life” or quality of life. Several farmers in the bulletins discussed the belief that living amongst nature in rural areas brings a better quality of life (Nossa Pesquisa na Roça 4, 2013; Nossa Roça 24, 2010; Nossa Roça 35, 2016). Rather than the conventional and colonial, perception of rurality focused on monoculture production, farmer have expressed their love for biodiversity on their property.

Farmers discussed the importance of biodiverse plant and animal life for their quality of life throughout the series, with one farming family explaining (Nossa Pesquisa na Roça 4, 2013) that the biodiverse plants on their property bring them joy. They explained that a diversity of plants is more pleasant for them to live in, since the leaves and flowers decorate the fields and bring joy. By bringing joy and a better quality of life, as proposed by the spiritual beliefs of the farmers, peasants are encouraged to

promote biodiversity on their land and support the functions of biodiversity to attract more plants and wildlife.

Spirituality and Cooperation

The actions of women who followed their dreams in the cooperative (Raízes da Terra 1, 2016; Raízes da Terra 2, 2016), can be anchored in spirituality. By participating in movements and groups that focus on a common goal or dream, participants are empowered to follow that dream to the fullest with the assistance of others in the cooperative.

To some academics, activists, and indigenous peoples in decolonial or post-colonial spaces, dreaming can be a manifestation of spirituality. As described by Ailton Krenak (2019), dreaming is a "discipline related to our formation, to our cosmovision, to the traditions of different peoples who approach dreams as a path towards learning, self-knowledge, and awareness of life, and the application of that knowledge in our interaction with the world and other people." This is not limited to the physical action of going to sleep and dreaming, this can also include practical planning and manifestation, such as Dragon Dreaming (CROFT, 2014).

In addition to the acts of cooperation and solidarity amongst humans, spirituality can present as a way to understand the acts of cooperation, solidarity, and synergy between humans and nature. A study completed by Botelho, Cardoso, and Otsuki (2016), discussed how the cosmology of agroecological farmers suggests that the farmers' expression of reconnecting themselves with the surrounding nature renders agroecology a "deep" experience, echoing aspects of deep ecology. Deep ecology focuses on emphasizing how human beings are one of many species, fully embedded in the ecosystem, and should not have control over the natural environment. To embrace deep ecology thinking, it is important to reconnect the self to the community of natural species and to change one's way of life in relation to the social world (NAES 1989, *apud* BOTELHO et al., 2016).

Agroecological farmers in the Zona da Mata are reconnecting themselves (spirituality) to this community of natural species by creating synergies and cooperation with nature. One example of this is in Nossa Roça 40 (2016), when a farmer's agroecological property was described to have "positive energy that flowed through

the land". According to the farmer, this positive energy is because of the protection and cooperation between aspects of nature, in this case mango trees and açaí trees, and the people who live on the property.

This energy is then also fueled by the will and spiritual beliefs surrounding cooperation and solidarity of the farmer, who would sing music "inspired by the stories of the resistance of peasants" (Nossa Roça 40, 2016). The valuing of the dreams of the farmers, as well as the spiritual understandings of the cooperation, solidarity, and synergy between humans and the land, demonstrates the connection between the themes of spirituality and cooperation.

Spirituality and Political Engagement

"And since not every dream comes true without a struggle, the husband and wife joined other landless farming families" (Nossa Roça 1, 2003). In this quotation from the Nossa Roça series, the connection between a dream, the manifestation of spirituality, motivated political engagement. The farmer described dreaming for land and producing on the land, demonstrating his spiritual side through this dream, then realizing that in order to achieve this dream, he must engage with other farmers without land and engage politically.

While this particular quote referred to the experience of one farmer, several peasant farmers in the Nossa Roça series emphasized how their dreams motivated them to engage in political and social movements associated with agroecology. The struggles they face, whether they were originally landless workers or if they had degraded land after years of monoculture production, ignited their passions and fueled by their dreams, motivated them to enter the political sphere by engaging with organizations such as the STR. Dreams allowed these farmers to manifest what they desired, leading them to unions and other politically active groups and families.

For many farmers, whose experiences are described in the Nossa Roça series, agroecology and the STR were instruments for the realization of their dreams. Through the agroecological movement, farmers were able to engage with others who had similar dreams as them, giving them a collective power to execute their wills and manifest their dreams into reality. STR and other political groups gave farmers a political voice that allowed them to build the framework for their dreams, advocate for

their collective interests, and leverage their power in the political sphere in a way that permitted them to realize their dreams.

Spirituality and Gender and Generation

Regarding the presentation of spirituality and its connection to the theme of Gender and Generation, women in the Raízes da Terra bulletins discussed how their dreams of creating their own business, creating healthy, nutritious breads that were free of agrochemicals. Their spirituality, presented in their dreams of creating this business, manifested in the creation of a cooperative that sells agroecological goods.

The women in this group, who are agroecological farmers, shared their story as to how they used their dreams to motivate them, create a collective model, and encourage other “dreamers” to join them in this journey. Their dreams, both collective and individual, inspired them to meet, collaborate on different products, and eventually, lead to them reaching their goal.

At the end of the Raízes da Terra bulletin, one woman explained, "We go through difficulties and problems because running after our dreams is not easy, we always encounter obstacles. But we are not discouraged! On the contrary, we became stronger so that our dream could finally start to come true. We continue to achieve our goals, including, every day, other dreamers to walk with us” (Raízes da Terra 2, 2016).

While women appear throughout the bulletins, especially in the Raízes da Terra bulletins, most of the farmers discussing their experiences for the Nossa Roça bulletins are men. Women are mentioned in the Nossa Roça series and have several of their opinions and experiences presented in the bulletins, most of the farmers who share their experiences and have direct quotations present in the material are men. With this in mind, future Nossa Roça bulletins could emphasize the voices and stories of the women farmers who have contributed greatly to the agroecological movement of the Zona da Mata.

Spirituality and Decoloniality/ Coloniality

Spirituality presented itself as contributing to decolonial thought in the Zona da Mata by encouraging farmers to reconsider colonially instituted concepts, such as

wealth. Through the colonial institution of capitalism, we have been taught that wealth is accrued through exploitation- exploitation of the land, of nature, and of each other (ESCOBAR, 2003; HALL, 1984).

However, some farmers in the Zona da Mata have expressed an understanding based in spirituality that goes against this preconceived notion of wealth. Farmers in the agroecological movement do not view wealth through economic gain and exploitation, rather, they find wealth through pleasures such as having clean air to breathe, land to live on, and food for all to eat. As one farmer proudly proclaimed, "Look at the abundance of food...I am a millionaire!" (Nossa Pesquisa na Roça 6, 2014).

By instilling the belief that wealth does not have to result from exploitation, as capitalism has led society to believe, and to come from a place of abundance rather than scarcity (KIMMERER, 2020), this spiritual belief can contribute to thought that breaks with coloniality/ modernity. Capitalism is an inherently colonial concept that was created as a result of colonialism (MIGNOLO, 2007) and breaking away from capitalistic mindsets, such as the need for exploitation, and appreciating life outside of economic gain could break with colonial mindsets, thus presenting as potentially decolonial.

3.3.4 Relation of religiosity with the transversal themes

Religiosity, Nature, and Biodiversity and its functions

One example of a potentially decolonial action that was executed due to religiosity present in the literature was the emergence of seed banks in the Northeast of Brazil during the 1970's, as described in Nossa Roça Tecnologia Social 7 (2017). In this bulletin sent out to farmers to describe the importance of seed saving and the impacts of transgenic seed, they describe how, with the support of the Catholic church, peasant farmers (Nossa Roça Tecnologia Social 7, 2017). These seed banks were the beginning of a resistance to the Green Revolution, which was being promoted at that time.

Similar to spirituality and its relationship to nature and biodiversity, there was overlap between religiosity's relationship to these two topics. Because of this, the two themes were combined in the results and discussion as well.

The way people in the region see and relate with nature is heavily influenced by religious organizations, such as the PJR (Rural Youth Ministry Union), MOBOM (Good News Movement), and CEBs that have strong influence of Liberation Theology. These organizations heavily preached the importance of biodiversity. Since the beginning of their establishment in the mid-1970s, the CEBs have focused on utilizing practical solutions that allow diversified and productive farming without the use of agrochemicals and without increasing land erosion (Nossa Roça Tecnologia Social 3, 2015).

In Nossa Roça 2, a farmer described how the PJR encouraged those involved in the group to not only engage in discussion, but also strengthen the group through actions that promoted biodiversity, such as planting fields for seed production and creating teaching plots (Nossa Roça 2, 2003). Through the PJR and CEBs, peasant farmers in the Zona da Mata were encouraged to use their religious understanding to value biodiversity and promote it within the region.

In addition to the influence of religious groups, farmers perceived some plants as religious symbols on their land. In Nossa Roça 36 (2016), farmers described how their ancestors demarcated their land based on the presence of a fern. Known as Cross Wood, the fern was seen as a cross on the land that grew naturally. One of the ancestors was evangelical and did not have the cross as a religious symbol, thus that ancestor would keep the lower parts of the land where there were not as many ferns. The presence of this biodiversity and a religious connection with the plant determined which farmer would keep a certain part of the land.

The faith and religiosity of the farmers incorporated into their relationship with nature is present through the stories they have shared in the Nossa Roça series. Their religion influenced their relationship with nature greatly. Whether it was through the teachings of the bible, the collective actions and lessons associated with the CEBs, or their personal religious rituals with nature, agroecological farmers in the Zona da Mata use their religiosity to understand and be involved with nature.

Several farming families openly described their properties as a place for God, a place blessed by God, or where His will is done. A farming family in Divino who were featured in Nossa Roça 32 (2016) have a sign at the entrance of the property declaring: “Agroecological Property: Here God's will is done”. Another property that was featured in the Nossa Roça series was described as “land blessed by God and cared for by the

peasant family... who together express their love for life in every corner of the property" (Nossa Roça 40, 2016).

One family described how that on December 4th, Saint Barbara's day, the father makes a big bamboo cross and places it in the middle of the fields to protect them from the winds, lightning, and thunder on stormy days (Nossa Roça 32, 2016). In the same Nossa Roça, the woman of the house discussed how she uses the stars, and the religious names for them that her grandmother taught her, influenced her relationship with nature and the cosmos. She explained how she observed the constellations, such as Orion, Taurus, and Pleiades, known to her as the Chapel of Heaven, Our Lady's Mantle, and the Seven Marys, respectively.

With the woman of the house's understanding of the stars and the presence of God in their land, the farmers "harvest the sun with the protection of God and under the gaze of the stars (Nossa Roça 32, 2016). These families and others who were involved in the Nossa Roça series saw God in their land and believed that they needed to care for it in order to respect God.

Many farmers in the Nossa Roça series discussed how their involvement with movements such as MOBOM, CEBs, and PJR influenced their understanding of nature through their teachings on religion and nature (Nossa Roça 31, 2014; Nossa Roça 31; Nossa Roça 32, 2016). Within the community of São Geraldo, religious meetings with the CEBs were held directly within nature, with celebrations occurring under a tree and using a termite mound as an altar (Nossa Roça 32, 2016).

The land where these celebrations occurred was eventually donated for the building of a church as a result of community action. One farmer in Nossa Roça 31 (2014) discussed how his involvement with the MOBOM and with the activities of the CEBs influenced not only his work with the land, but also and the education of his children. In Nossa Roça 33 (2016), a family described how a CEB initiative, known as the Agroecology Train, visited their community and discussed rural issues. The family described how the Agroecology Train's visit allowed them to participate in a CEB plenary, a monthly meeting of the different religious study groups in the community.

They described how several neighbors gathered in their home to read the Bible and discuss the passages read, relating it to their reality in the countryside. Participants sat in a circle, expressed themselves and sang religious songs about life in the countryside and social problems (Nossa Roça 33, 2016).

Through this event, the family was able to discuss scripture and the relationship between their religion and the caring for and protection of nature. In Nossa Roça 39 (2016), a young agroecological family farmer in Feliz Lembrança discussed how a prayer circle created by the local youth ignited several changes in the community, meeting local needs and reinforcing the importance of respecting nature and caring for the environment. He described, “From the meetings we started to put into practice the experience of prayer (action time), all together and each one making a commitment, the group did the 1st concrete action: we collected all the garbage from the community and in the same action making the families of the community aware of the importance of continuing the project" (Nossa Roça 39, 2016).

The farmer then went on to describe the different community action groups created through this initiative, encouraging those in the community to engage in acts such as clearing fields (instead of using agrochemicals) and clearing of trash in the area.

Farmers in Nossa Roça 33 (2016) also incorporated gospel teachings into their understanding of the use of agrochemicals. During one meeting, the day's reading talked about a blind man who was healed and could see again. The farmers related the blindness to selfishness, to the use of agrochemicals that poison the land, and to the lack of care for the environment (Nossa Roça 33, 2016).

In this sense, to see again symbolized for them to deal with the land in an agroecological way, valuing the wisdom of nature. They discussed examples of those who "are blind” because they go to church, listen to the gospel, but then throw agrochemicals on the land. The agroecological farmers in this group affirmed that they needed to determine where other families that are no longer "blind", that is, they don't use agrotoxins, are so that they joined the agroecological movement of the community (Nossa Roça 33, 2016).

One farmer who was once “blinded” by the use of agrochemicals and heavy machinery described the lifechanging moment that led him to an agroecological management technique. While operating a microtractor, the farmer suffered an accident that caused him to lose one of his legs, requiring treatment for two years (Nossa Roça 7, 2005). Reflecting on this event, the farmer himself said: "God writes straight with crooked lines," since it was during this period when he realized the needed to change his ways, respect nature, and stop using agrochemicals or tractors on the

land (Nossa Roça 7, 2005). Through this traumatic event, the farmer was able to “see” and used his religious interpretation of the event to change his management style and transition into agroecology.

Religiosity and Cooperation

Religiosity was heavily intertwined with actions of cooperation, solidarity, and synergy within the Nossa Roça series. Cooperation amongst farmers was essential for the creation and maintenance of religious groups such as the CEBs, MOBOM, and PJR, which heavily preached the importance of cooperation within their groups and outside of their groups.

As mentioned previously, several farmers cited their involvement with religious cooperative organizations such as the CEBs, MOBOM, and PJR as the reason for their involvement with the agroecological movement in the Zona da Mata, as well as the formation of their peasant identity (Nossa Roça 33, 2016; Nossa Roça 35, 2016). Nossa Cultura na Roça 1 (2016) discussed the history and impact of the CEBs in several municipalities across the Zona da Mata.

This bulletin described how male and female farmers organized themselves into unions in the 1980s, based on the work of the CEBs. The cooperation of the CEBs then led farmers to join other cooperative organizations such as the STR, CTA, and partner with institutions such as UFV (Nossa Cultura na Roça 1, 2016). (Nossa Cultura na Roça 1, 2016). One farmer cited the impact of religious cooperative involvement, stating, “The first time that I went (to a PJR meeting), I came back wanting to make the biggest revolution” (Nossa Roça 33, 2016). Religious cooperative organizations also created a sense of autonomy amongst their communities, as described in Nossa Roça 39 (2016).

With this autonomy, communities have been able to determine for themselves and seek outside organizations to act in processes of social development. This autonomy was created by community education, an understanding of the responsibility of caring for the land, and the spirit of fellowship strengthened by religiosity (Nossa Roça 39, 2016).

In addition to religious cooperative movements, religious events, such as the feasts and celebrations mentioned in Nossa Cultura na Roça 1 and 2, perpetuate the

value of cooperation and solidarity. Raízes da Terra 1 (2016) explained how these religious events are also some of the first areas of cooperation in farming communities. One of the women's groups in the agroecological network explained that their first collective commercialization experience occurred during a religious party in the city (Raizes da Terra 1, 2016).

Participants of religious events, such as feasts, parties, and other celebrations, do so out of solidarity, as described in Nossa Cultura na Roça 1 (2016) and Nossa Cultura na Roça 2 (2018). Those who attend and organize these events are not paid for their contributions, rather, their time, work, and products are donate in favor of a "collective and solidary organization" (Nossa Cultura na Roça 1, 2016). Religious feasts and celebrations require a lot of effort and mobilization in order for these events to take place (Nossa Cultura na Roça 2, 2018), which encourages the importance of cooperation and solidarity amongst participants.

In the Nossa Cultura na Roça 2 bulletin regarding the Congado´s feast, the importance of the concentration and collective participation of community members was reinforced, emphasizing how this impacts the sociability of the community network, using these events to invite and arrange visits to other communities and parties (Nossa Cultura na Roça 2, 2018). Religious celebrations in the Zona da Mata have provided cooperation and solidarity amongst agroecological farmers. As so eloquently stated in Nossa Cultura na Roça 1 (2016), "Therefore, whoever comes to share this moment should come prepared to meet a community of farmers who work with Agroecology and its history, inserting themselves in this cultural universe and strengthening the flag of Folk Culture."

Some of these feasts and parties were the catalyst for cooperative formations. Nossa Roça 19 (2009) described how during a Christmas Novena in 1995, participants created a proposal to have religious meetings every Sunday. These meetings lead to grassroots formation by the Rural Worker's Union with the church (Nossa Roça 19, 2009). Through this cooperation between the church and this union, agroecology continued to spread throughout the Zona da Mata.

Even the work of religious individuals has led to strong networks of religion-based agroecological cooperatives within the Zona da Mata. A female farmer, who shared how her allergy to agrochemicals lead her to agroecology, described how she

shared her revelation with members of the community though her faith (Nossa Roça 32, 2016).

This farmer has always been religious and committed to her local church. This commitment and dedication to this church lead to the foundation of the São Geraldo community, where she is the coordinator and thus always discusses issues related to agriculture, environment, and agroecology (Nossa Roça 32, 2016). Through her dedication to spreading the word of agroecology with her community, this farmer used her religion and religious network to encourage other farmers in the community to transition into agroecology, rather than continuing to work with harmful agrochemicals.

Religiosity and Gender and Generation

Women and children were often present in the discussions of religiosity. They were present and played key leadership roles in religious organizations such as the CEBs and PJRs, which will be expanded upon in the religiosity and cooperation section.

In regards to how women pass on or preserve religion, one activist within the agroecological movement in the Zona da Mata described how his aunts were guardians of Afro-Brazilian culture (Nossa Cultura na Roça 1, 2016). He explained that one of his aunts was a *benzedeira*, a traditional folk-medicine healer, who had a strong connection with the Terreiro, an Afro-Brazilian house of worship. While Afro-Brazilian religions such as Candomblé and Umbanda are quite common in the Zona da Mata, this was the only mention of an Afro-Brazilian religion in the bulletins.

Religiosity and Political Engagement

The religious organizations, based on the Liberation Theology of the Catholic church, such as CEBs lead to a strong political engagement (HOUTZAGER, 2001) in the region. Together, religiosity and political engagement, within the Zona da Mata have been essential for the success of the agroecological movement. Rural workers and peasant farmers found not only a religious home in the CEBs, but they also found a deeper understanding of how their religion connects to political engagement. CEBs were particularly involved in land rights and peasant rights in the region, encouraging

their parish members to collectively organize against large famers (fazendeiros) who were infringing upon their rights, which lead to the formation of the STR, the Rural Workers Union (VAN DEN BERG, et al., 2019; HOUTZAGER, 2001).

This was elaborated upon in Nossa Cultura na Roça 1 (2016), which discussed how the CEBs, and the cooperatives built and supported through them, such as the STR, were viewed as a threat to the large farmers. Leaders from this movement questioned the existing power dynamics- which led to the persecution of political leaders and those who joined the union (Nossa Cultura na Roça 1, 2016). Although they were threatened, the union in the defense of rural workers' rights and in the construction of Agroecology in the region.

Religiosity and Decoloniality/ Coloniality

While several interactions between religiosity and other themes could be considered decolonial, such as the religious interpretation of human interactions and connections with nature and biodiversity, this section focused purely on how certain acts of religiosity, as described before, can be considered decolonial, such as Liberation Theology. The action of the seed banks, started in 1970´s with the support of the Catholic Church, as described in Nossa Roça Tecnologia Social 7 (2017), is a good example of a potentially decolonial action that was executed due to religiosity.

These seed banks have multiplied over the years and are now responsible for the preservation and revitalization of several food plant species, such as corn and beans. Within the Zona da Mata, CTA-ZM has partnered with organizations such as the STR to encourage seed exchanges and the preservation of heirloom seeds throughout the region (Nossa Roça Tecnologia Social 7, 2017).

By preserving these seeds, encouraging the continuation of biodiversity, increasing food sovereignty and autonomy of peasant farmers, and refusing to utilize transgenic seeds created by large corporations to put trademarks and intellectual property rights on life (SANTILLI, 2012; SHIVA, 1997), this could be considered a decolonial act.

With this logic in mind, the farmers also refuse to utilize agrochemicals produced by large corporations. Rather than utilizing harmful agrochemicals that eliminate the biodiversity, agroecological farmers rely on the biodiverse plants and ecosystem

services provided by said biodiversity to create synergies within the agroecosystem, rather than competition. By refusing to buy agrochemicals, farmers are refusing to support these agribusinesses or participate in this international market.

3.3.5 Breaking with colonialism through agroecology

From the analysis of the bulletins as well as other complementary literature, registered in dissertations, articles, reports, and doctoral theses, we can indicate that agroecological farmers in the Zona da Mata present active links to their interactions with themes such as ancestrality, spirituality, biodiversity and its functions, gender and generation, nature, political engagement, religiosity, and cooperation. The connection between farmers' ancestrality, spirituality and religiosity impacted their understanding of nature, biodiversity and its functions, political engagement, and cooperation. The links demonstrated by the farmers both in their actions and their cosmovisions often go against the colonial/ modern mindset.

The prominent presence of ancestrality in the Nossa Roça series provided evidence as to how farmers within the agroecological movement of the Zona da Mata are reconnecting to their ancestors and are revitalizing values, practices, and knowledge. Parents communicate their cosmovisions, such as a deep respect for nature and desire to care for it, as well as traditions, including seed saving, utilizing medicinal plants instead of pharmaceutical medicine, and planting diverse crops in their agroforestry systems. The deep respect for nature that has been passed down from ancestors to the current farming generations actively goes against the colonial mindset that views nature as a thing to be dominated and controlled by human desires (PORTO-GONÇALVES; LEFF, 2015).

Along with the respect for nature, the protection and cultivation of heirloom seed species also breaks with modern science's desire to limit biodiversity and patent seeds (PORTO-GONÇALVES; LEFF, 2015; SANTILLI, 2012). This also ties into the rejection of agrochemicals, which are also pushed onto farmers to limit biodiversity and create an economic dependence on agroindustrial products (SANTILLI, 2012; PLOEG, 2009). The cultivation of the landrace seeds and producing food without pesticides also demonstrates how food sovereignty has been achieved by some farmers. The refusal to incorporate harmful chemical inputs and transgenic seed, produced by large

agribusinesses, is a form of actively fighting against these colonial/ modern institutions (PLOEG, 2009). Food sovereignty has been considered a decolonial act by some academics (GREY; PATEL, 2015; FIGUEROA-HELLAND et al., 2018), could supplement the argument that the farmers are engaging in decolonial actions.

Modernity and coloniality exist to break down diversity and create a homogenous universe (ESCOBAR, 2003). Farmers, according to the information in the Nossa Roça bulletins, demonstrated a wide array of ancestries and were remarkably diverse. By appreciating the diverse ancestries that are present in the Zona da Mata by revitalizing and valuing practices, knowledge, and teachings passed on from generation to generation, agroecological farmers are reconnecting to aspects of life that coloniality attempted to sever, such as a human connection to nature and the creation of cooperation and solidarity.

Some farmers described their European ancestrality, hailing from Spain, Portugal, and Italy (Nossa Roça 23, 2010; Nossa Roça 42, 2016). Other farmers in the Nossa Roça series mentioned their African heritage, such as farmers in Nossa Roça 36 (2016), Nossa Cultura na Roça 1 (2016), and Nossa Cultura na Roça 2 (2018). One of the farmers who participated in the series identified as Puri, the native people of the region, and described how their conquest of land was a proud moment (Nossa Roça 31, 2014).

Puri ancestrality was particularly present in the Nossa Roça series. Within the past few decades, there has been a resurgence movement amongst the Puri in the Zona da Mata (BARBOSA, 2005; RAMOS, 2017) that is particularly influenced by the agroecological movement. Led by indigenous activists, students, and professors from UFV, the Puri resurgence movement in the Zona da Mata has been supported by and fundamental to the agroecological community in the region. Those involved in this resurgence bring forth new ideas and cosmovisions regarding what being Puri means, not only revitalizing their culture and ancestral beliefs but also creating futures that allow for indigenous innovation and growth.

Farmers who did or did not mention their Puri ancestrality demonstrated a deep respect for the land, nature, and seeds, which are prominent aspects of the Puri cosmovision (PACHAMAMA, 2020). Even those who did not explicitly state that they have Puri ancestry presented with a potential link to the Puri cosmovision. While indigenous ancestry may not always be explicitly mentioned by farmers, indigenous

cultures are rooted in the way of life of the more miscegenated rural populations (FIGUEIREDO, 2018), which can explain as to why those who did not directly express Puri ancestry presented these links to the Puri cosmovision.

The farmers in Araponga in particular presented with an awareness of their Puri ancestrality and cultural links (BARBOSA, 2005; RAMOS, 2017). In Araponga, through a participatory methodology with CTA-ZM, UFV, and the STR, farmers pointed out the criteria to be agroecological. Among the criteria, they stated that agroecological farmers must assume the Puri culture (CARNEIRO, 2013).

In the criteria, the farmers presented links to ancestrality and spirituality, echoing some of the sentiments present in the Nossa Roça series, with the first two principles being “Agroecology is life and one must respect all forms of life”, and "Realizing and strengthening the spirit through nature" (CARNEIRO, 2013).

Other areas of focus in this criterium included caring for trees, leaving plants and trees to grow naturally, not just planting them, but letting them grow naturally, as well as caring for domestic and wild animals “with love”. The final value presented as a criterion for an agroecological property was to assume the Puri culture (CARNEIRO, 2013), which further emphasizes the importance of the revitalization and resurgence of Puri ancestrality and spirituality within the region.

While the revitalization of cultures that became marginalized and devalued under the colonial/modern ontology could present as an action that breaks with coloniality on its own, through their re-appropriation of nature and re-territorialization of their cosmovisions (PORTO-GONÇALVES; LEFF, 2015), the farmers in the Zona da Mata also utilized their ancestral, spiritual and religious practices, knowledge, and understandings to break away from coloniality in other ways, both physical and epistemological.

The physical manifestations, such as the preservation of seeds, refusing to use agrochemicals, and increasing biodiversity on their property, coincided with the independence and autonomy of farming families. The autonomy was demonstrated through the use of medicinal plants rather than pharmaceuticals or the utilization of biodiverse planting methods in order to avoid the use of agrochemicals. Neoliberal projects and institutions created by the state and the international markets, such as the IBC (Brazilian Coffee Institute), often pushed farmers to participate in unsustainable

and monoculture-focused farming practices (TOPIK et al., 2010), obliging them to buy products sold by the corporations.

Multiple farmers described in Nossa Roça bulletins how they were approached by the IBC and encouraged to use fertilizers and pesticides in order to intensify their coffee production (Nossa Tecnologia Social Na Roça 3, 2015; Nossa Roça 14, 2009). This echoes what farmers interviewed in OLIVEIRA (2013) expressed, who also suffered economically and physically due to the technology and agrochemicals pushed onto farmers by the IBC.

Public policies and financial projects related to the Green Revolution imposed upon these farmers often lead them down a path of dependency that made them rely on the international markets (PLOEG, 2010). Through the agroecological movement and the social organizations that compose it, farmers who were formerly dependent on these projects entered a transitional phase that allowed them to re-connect with the land, diversify their property, and, eventually, gain autonomy from these institutional projects.

Thus, the particular form of autonomy, as demonstrated in the bulletin series, breaks from coloniality and modernity, since the agroecological farmers are freeing themselves from a potential dependence on products from institutional projects such as the Green Revolution or from established corporate oligarchies such as the pharmaceutical industry.

Since pharmaceutical companies often work hand-in-hand with agrochemical companies, as is the case of Bayer and Dow, refusing to use either agrochemicals or pharmaceuticals gives farmers the authority to care for themselves utilizing ancestral knowledge through biodiversity and the use of traditional plants. This is one example of how communities are re-signifying and reconfiguring old concepts, such as autonomy, that were previously introduced through a colonial lens (PORTO-GONÇALVES; LEFF, 2015).

Autonomy is also a key piece of the peasant identity and farming (PLOEG, 2010), which allows farmers to control how they farm the land, rather than being held up to the standards of international corporations and markets.

The physical actions practiced by agroecological farmers in the Zona da Mata, regarding the refusal to utilize agrochemicals and refusal to buy pharmaceuticals, could present as acts of “a resistance of the third kind” to colonial/modern institutions

(PLOEG, 2007; VAN DEN BERG et al., 2019). In the Zona da Mata, Van den Berg et al. (2019) described how several agroecological farming practices presented as forms of resistance. The authors explain how actions such as diversified planting methods that allow farmers to abstain from the use of agrochemicals and other products of agribusiness are acts of resistance of a third kind, since the farmers are adjusting their production practices, distancing themselves from neo-liberal markets, and focusing on values of reciprocity and solidarity (VAN DEN BERG et al., 2019).

The actions of the agroecological farmers emerge as a strategic orientation towards autonomy that reevaluate production and distribution tactics in order to reduce dependency on agribusinesses (PLOEG, 2007).

Besides the physical actions presented in the Nossa Roça series, farmers demonstrated how their perception of nature may break with the modern/colonial perception of nature and the role of humans in it. Nature was strongly related with ancestrality and spirituality throughout the study and farmers consistently connected the three. The different perspectives demonstrated in the Nossa Roça series regarding ancestrality, spirituality, and nature reflect some non-eurocentric perspectives discussed by scholars pertaining to how nature and culture interact, and how this relationship can translate into conflicts with modernity (ULLOA, 2009; ESCOBAR, 2012).

Since some main aspects of culture include ancestrality and spirituality, how these two themes interact or perceive nature can determine how people interact with nature. For peasants, nature and society are on the same level and a profound respect exists for the land, such as fertile soil, clean water, and other elements of nature. This culture of respect and co-production with nature is the base for peasant autonomy and resistance (PLOEG, 2009) and sustains a way to see and be in the world.

Compared to the colonial concept of nature, which focuses on the economic productivity and value of nature, the peasant and agroecological perception of nature presented by the farmers in this study goes against this understanding. Farmers consistently viewed nature not as a resource to be exploited for economic gain, but a complex system that humans are a part of and must care for (Nossa Roça 25, 2011).

This also reflects what previous researchers have found in the Zona da Mata, in which farmers perceive agroecology not only as a technical approach, but also a social and political movement that emphasizes a “transformative epistemology”

focused on principles such as solidarity and respect for nature (VAN DEN BERG et al., 2019).

Regarding the spiritual and religious understanding of nature, peasant farmers in the agroecological movement based most of their work on the land to their religious interpretation of nature and the roles of humans within it, different of the Eurocentric Christian perspective views nature as something that existed separately from culture and the human condition (PINTO; MIGNOLO, 2016; ESCOBAR, 2012; ULLOA, 2009). This perspective, perpetuated from biblical teachings that can be interpreted as a commandment to utilize and tame nature, was spread through European colonization and coloniality.

Interestingly enough, within the context of the agroecological farmers in this study, there is a different perspective regarding God and nature that was formed through Liberation Theology and dispersed through the CEBs (BOTELHO et al., 2016). Liberation Theology was abandoned by the church and accused by Pope John Paul the Second of being Marxist (KIRK, 1985), but its influence still resonates among the agroecological farmers.

For many of the farmers in the study, they explicitly referred to their catholic background as their motive for planting in an agroecological way, allowing them to care for nature and strengthen a spiritual connection with the land. Other farmers did not mention God, nor necessarily perceive God in nature, but rather viewed nature as a system that humans have a duty to protect.

We can indicate that the cosmovision of the agroecological farmers in the Zona da Mata, has a strong catholic influence, but within the conceptual framework of the Liberation Theology, expressed via CEBs. Their cosmovision also presents strong influences of their ancestors' spirituality. Moreover, agroecology gives famers an understanding as to how the food system can function in a way that reinforces the needs and aspects of their cosmovision that were previously ignored by the industrialized food system.

Through agroecology, farmers are rejecting the use of monocultures, embracing biodiversity, preserving parts of their ancestral heritage through actions such as seed saving, and connecting with nature in a non-anthropomorphic manner that presents a spiritual link. This cosmovision can break with colonial concepts and epistemologies (VAN DEN BERG et al., 2019; BOTELHO et al., 2016).

The connections that agroecological farmers in the Zona da Mata are creating with their ancestors and their knowledge could present as decolonial, since farmers are connecting to their spiritualities through their interactions with nature through agroecology. The roots of these farmers are strengthened, they feel empowered to work through adversities that emerge from colonial institutions, such as the mining industry that continues to threaten the region, or the constant push for the use of monocultures and pesticides (Nossa Roça 42, 2016).

Although the connections between the agroecological movement in the Zona da Mata and the importance of spirituality and ancestrality are present, more research must be completed in order to develop a more in-depth understanding of just how deep these connections are. Afrocentric spiritualities and religions, such as Candomblé and Umbanda, were notably absent from the literature series.

Although both religions are present in the region, and present in the agroecological movement itself, there was little to no mention of the impact of these two common Afrocentric religions in the area. In order to determine if and how these religions, as well as the Afro-Brazilian experience and identity, contribute to ancestral links, as well as their overall impact on agroecology in the Zona da Mata, more research and projects must be developed.

3.5 Conclusions

The agroecological farmers of the Zona da Mata have utilized ancestrality, spirituality (in connection with religiosity) to re-plant themselves in traditional knowledge and practices. Peasant ancestrality as well as spirituality contributed to the breaking with structures of coloniality through their interactions with nature, commitment to biodiversity, engagement with political movements against colonial institutions, and dedication to cooperation and solidarity. Farmers have been able to resist modern/ colonial institutions and their products, such as the use of agrochemicals and monocultures, by utilizing agroecological alternatives such as seed saving, agroforestry systems, and ecosystem services.

In the Zona da Mata, peasants are thinking outside of the Eurocentric episteme and reconnecting with non-anthropocentric cosmologies and ontologies that were previously devalued during colonization. Through these actions and beliefs,

agroecological farmers in the Zona da Mata resist against and break down structures of coloniality. With these physical and epistemological acts, agroecological farmers are sowing the seeds of resistance and nurturing their own pluriverses, which could constitute as decolonial acts.

4. AGROFORESTRY SYSTEMS AS FORMS OF RESISTANCE

ABSTRACT

Agriculture is an area of knowledge dominated by the ideas and techniques brought by colonization. Because of this, monoculture systems were created to satisfy the demand of international markets for agricultural products, turned into commodities. The diversified cultivation systems created by indigenous and African peoples, which valued the synergies within nature and between humans and nature, were degraded and undervalued. With this, monocultures, such as the coffee plantations in the Zona da Mata of Minas Gerais, Brazil, were intensified during the Green Revolution and caused environmental degradation and increased social inequality. In response to the issues created by monocultural coffee production, peasants, researchers, and NGO employees came together to design agroforestry systems for the region. This study aimed to identify how the agroforestry systems present as a potential decolonial action and analyze how the themes of cooperation, nature, and biodiversity and its functions present through the agroforestry systems and can strengthen the resistance of farmers. A secondary data analysis of bulletins was created. These bulletins, known as “Nossa Roças” were created through collective writing with agroecological farmers, and were used in order to analyze how cooperation, perceptions of nature, and understanding of biodiversity and its functions play out among agroecological farmers. The agroecological farmers utilized their agroforestry systems to reconnect with nature and increase biodiversity within the agroecosystems. Farmers cooperated amongst themselves, with farmers organizations, and with nature itself, to establish planting systems, such as the agroforestry systems, that grant them autonomy and the capacity to reconnect with nature. The connections with cooperation, nature, and biodiversity that agroforestry systems allowed farmers to create, break with colonial and modern perceptions of nature and create synergies that were previously undervalued. The design of agroforestry systems in the Zona da Mata could also present as the materialization of a pluriverse.

RESUMO

A agricultura é uma área do conhecimento dominada pelas ideias e técnicas trazidas pela colonização. Por isso, foram criados sistemas de monocultura para satisfazer a demanda de mercados internacionais por produtos agrícolas, transformados em mercadoria. Os sistemas de cultivo diversificado criados pelos povos indígenas e africanos, que valorizavam as sinergias dentro da natureza e entre o homem e a natureza, foram degradados e desvalorizados. Com isso, monoculturas, a exemplo dos cafezais na Zona da Mata de Minas Gerais, Brasil, foram intensificadas durante a Revolução Verde e causaram degradação ambiental e aumento da desigualdade social. Em resposta aos problemas criados pela produção em monocultura de café, camponeses, pesquisadores e funcionários de ONG se juntaram para conceber sistemas agroflorestais para a região. Esta pesquisa visou identificar como os sistemas agroflorestais se apresentam como uma ação com potencial decolonial e analisar como os temas de cooperação, natureza e biodiversidade e suas funções se apresentam através dos sistemas agroflorestais e podem reforçar a resistência dos agricultores. Uma análise de dados secundários, registrados em de boletins foi realizada. Estes boletins, denominados “Nossas Roças” foram criados através da escrita em cooperação com agricultores/as agroecológicos/as na Zona da Mata, a fim de analisar como a cooperação, as percepções da natureza e a compreensão da biodiversidade e das suas funções se apresentam entre os agricultores agroecológicos. Os agricultores agroecológicos utilizam seus sistemas agroflorestais para se reconectarem com a natureza e aumentar a biodiversidade dentro dos agroecossistemas. Os agricultores cooperaram entre si, com organizações de agricultores, e com a própria natureza, para estabelecer sistemas de cultivos, a exemplo dos sistemas agroflorestais, que lhes concedessem autonomia e capacidade de se reconectarem com a natureza. As ligações com a cooperação, natureza e biodiversidade que os sistemas agroflorestais permitiram aos agricultores criar, rompem com as percepções coloniais e modernas da natureza e criam sinergias que anteriormente eram subvalorizadas. A concepção de sistemas agroflorestais na Zona da Mata pode também se apresentar como a materialização de um pluriverso.

4.1 Introduction

With colonization, agriculture was dominated by the ideas and techniques brought by colonizers. In Brazil, the cultivation of commodities, firstly sugarcane and later coffee (SZMRECSÁNYI, 1990), was the first colonial activity that broke up and dismantled the diversity and complexity of the agricultural systems, developed by indigenous peoples. In order to fuel the capitalistic model of agriculture imposed by the colonizers, indigenous peoples were forced into slavery and, when the exploited indigenous peoples were unable to maintain the production needs of the newly inaugurated system, the colonizers brought enslaved Africans to the Americas to produce more commodities, who then became the majority of the enslaved workforce (HALL, 1984; SZMRECSÁNYI,1990).

The instrumental capitalistic rationality negated not only the way of knowing of indigenous and the newly arrived African peoples, but also the validity and utility of their systems (LITTLE, 2002). Indigenous and African cultures were stigmatized, and colonizers systematically attempted to belittle and exterminate the non-European knowledges and cultures. Despite this devaluation and invalidation of knowledge, the colonizers could not survive in the tropical environments without the local knowledge and, therefore, there was also appropriation of knowledge and techniques when it was of interest to the colonizers (LITTLE, 2002).

In Brazil, the knowledge and culture of indigenous peoples were mixed with the knowledge and culture of the enslaved African people. However, the knowledge and culture of both were despised, an action that Shiva describes as a first level of violence (1997), as they were forced to produce agricultural crops brought by and according to the colonizer's techniques to generated income and food for the colonizers. The continued disregard for African and indigenous knowledge, including that related to growing food more adapted the environment, was intended to eliminate any and all thinking different from that of the colonizer (FIGUEROA-HELLAND et al., 2018; QUIJANO, 2007; SMITH, 1999; SOUZA, 2015).

Unlike the mode of production of African and indigenous peoples, the core of the European mode of production was characterized as exploitative, where nature was understood as a resource to dominate and exploit in order to gain capital and power. In the European worldview the land is understood as private property (SANTILLI, 2009), because of this the colonizers instituted an extractivist system that used nature

as a resource to be exploited. With this worldview, the indigenous modes of production (QUIJANO, 2007) were suppressed, and African modes of production were not accepted (SOUZA, 2015), unless when of interest to the colonizer, such as specific agricultural techniques and mineral exploitation, for instance the cultivation of sugar cane and gold mining.

The colonizers reinforced their anthropocentric conceptions of nature and created a “mystified image” of European knowledge (QUIJANO, 2007) that connected these commodified conceptions of nature, the domination and exploitation of it, to the development of a functional and modern society (ESCOBAR, 2017).

Since the beginning of the colonization, in Brazil, the commodity monoculture systems, characterized as agricultural enterprises, had a strictly commercial orientation (SZMRECSÁNYI,1990), integrated to the globalizing capitalist system that was being inaugurated. A new mode of engaging in agriculture was established, based on slave labor, on large tracts of land and specialized cultivation for export – commodities. This new agriculture occupied the nation, in a violent form, and mostly overlapped economically and epistemologically to other pre-existing ways of farming, of which were spatially marginalized - around or away from the colonial farms (SZMRECSÁNYI, 1990)- and epistemologically- with the devaluing of pre-modern/traditional agricultural knowledge (SANTILLI, 2009; SOUZA, 2015).

Such conceptions have led to the destruction of the original diverse food systems, especially due to the destruction of forests where native peoples planted crops mixed with the fruits collected from the forests, (LEMOS, 2015, *apud* RAMOS, 2017; LEMKE; DELORMEIR, 2017) and the implementation of monoculture and slave-based agriculture, which concentrated power in the hands of powerful landowners (SANTILLI, 2009), which continued after colonization.

The end of colonization, the physical and epistemic domination, did not undo the inaugurated colonial mode of production. On the contrary, the Eurocentric colonial structure – of power, of knowledge, and of being (QUIJANO, 2000) remains, after reinventing and strengthening itself, especially with the industrialization of agriculture, already in the middle of the 20th century, with new components and characteristics. The industrialization of agriculture was called modern.

After colonialism, modernity and coloniality continued repressing non-Eurocentric cosmovisions and epistemologies and implanting Eurocentric designs of

agricultural development, utilizing the modern/industrial technologies, known as Green Revolution package. Green Revolution technologies refers to the synthetic fertilizers, herbicides, pesticides, mechanization, irrigation systems, and transgenic seeds developed by large agribusinesses, creating a technological package (ALTIERI; TOLEDO, 2011). As described by Shiva (1997) and Gomes de Almeida (2009), the Green Revolution consolidated a global economic, political, and ideological hegemony that strengthened the ideological label of agribusiness as the only way to produce.

These technologies developed by the Global North for the Global South aimed to create an international market for the products of the industry. Therefore, the technologies of the Green Revolution were introduced in agriculture to serve the interests of the industry, with the excuse of ending world hunger (BOTELHO et al., 2016; ITABORAHY et al., 2014; OLIVEIRA, 2013).

The use of the technological package of the Green Revolution imposes an agriculture that suppresses different cultures and ways of life, such as those of peasants, quilombolas (Afro-Brazilians whose ancestors freed themselves from slavery) and native peoples (BARBOSA; PORTO-GONÇALVES, 2014).

The green revolution thus displaced the peasant worldview, which resulted in the loss of rural cultures, popular knowledge, and the degradation of nature, from the use of pesticides, chemical fertilizers, heavy machinery, monocultures and improved seeds, and the excessive use of water for irrigation. In addition, there has been a large displacement of people to urban centers, which has de-characterized the rural environment and created serious social problems in the cities (VON DER WEID, 2009; SANTILLI, 2009; PLOEG, 2010).

In Brazil, the Green Revolution expanded monocultures by implanting them on a large scale. These intensified crop production systems aimed to increase agricultural output for export (DELGADO, 2001; TOPIK et al., 2010). For this, among other things, the government expanded access to rural credit and technical assistance in the 1970s so that farmers could access Green Revolution technologies, such as chemical fertilizers and pesticides (WATSON; ACHINELLI, 2008). This modernization of agriculture in Brazil was fueled by foreign interests to produce agricultural commodities for the Global North. Scientists from the United States and Europe utilized their influence and encouraged the use of technologies developed in the Global North to increase monoculture agriculture production yields (DEAN, 1989).

One of the intensified monocultures produced for exportation in Brazil is coffee, which has led the country to be the biggest producer of coffee in the world. Throughout the history of the country, coffee played a role in coloniality, reinforcing colonial institutions such as racism and capitalism. Originally found in diverse forest understories, coffee was first cultivated in Latin American in colonized French Guiana, introduced by rich landowners as a commercial crop, and later developed into an international empire (SMITH, 1985).

Initially, farmers in Brazil were allowed to intercrop coffee with other crops, namely corn and beans, but under the Green Revolution conception, European and American scientists that came to Brazil and trained Brazilian scientists, condemned this form of planting under the allegation that it would diminish the productivity of the coffee due to the competition (DEAN, 1989) between the plants for water, light, and nutrients. The diversified Brazilian coffee fields were viewed as underdeveloped and that needed to modernize under the principles of “European scientific agriculture” to become productive and attend market demand (DEAN, 1989; TOPIK, 1999).

In the capitalistic system instituted by the Europeans and Americans, the concept of symbiosis was substituted with competition, domination, and dispensability (SHIVA, 1997), which brought the incentivization of monocultures. Symbiosis is a form of cooperation, which is a form of resistance since it breaks with the individualism incentivized by capitalism.

Monocultures were instituted as way to break symbiosis or cooperation among plants, forming this modern way of growing commodity crops such as coffee and many peasants were forced off the land to make way for the large coffee farms (SANTILLI, 2009). The so-called modern agriculture, also understood as intensified planting systems, led to erosion and land degradation, creating the need of new land, expanding the plantations, generally, to land that was occupied by indigenous people or peasants. Increasing demand and expansion lead to an increased need for manpower to achieve production goals.

The intensified coffee production required a high level of labor for planting and harvest. The coffee production that was, in the beginning, fueled by the work of enslaved Africans and indigenous peoples, continued to be developed with the intensified monoculture production to satisfy capitalist desires, nowadays with the exploitation of the work of peasants (FONT, 1987; TOPIK, 1999), especially in hilly

regions where mechanization is not possible, such as the Zona da Mata of Minas Gerais.

In Brazil, the state of Minas Gerais is considered the biggest producer of coffee (SIMÕES, 2010) and in Minas Gerais, the region of Zona da Mata is considered the second biggest producer. In the Zona da Mata, coffee is commonly cultivated in monoculture or, in the case of family farmers, intercropped with annual crops, such as maize and beans. However, peasants have cultivated coffee using agroforestry systems since the 1990s, with trees native to the Atlantic Forest (CARDOSO et al., 2001).

Agroforestry systems can be defined as a form of multiple cropping, in which at least two plant species interact biologically, at least one species is arboreal, and at least one species is managed for crop or livestock production (SOMMARIBA, 1992). Agroforestry systems are a type of diversified agriculture systems that incorporate multiple species of plants and trees to develop a system that can produce essential products such as food and medicine (SOMMARIBA, 1992).

The agroforestry systems were part of a broader agroecological action in the region. Agroecology is understood a science, practice, and movement (WEZEL, et. al, 2009; ABA, 2015) that prioritizes local knowledge and epistemologies (ALTIERI; TOLEDO, 2011) that breaks with colonial/ modern conceptions of agriculture such as the culturally and ecologically homogenizing and ethnocentric project of industrialized agriculture. Agroecology values ecological and non-anthropocentric processes, prioritizing the use of natural ecological processes instead of using pesticides and other inputs in order to develop healthy food systems. Thus, agroecology is considered an alternative to modern agriculture and as a form of living against capitalism and other products of coloniality (FIGUEROA-HELLAND et al., 2018; GREY; PATEL, 2015).

The agroforestry systems were implemented from an agroecological partnership between the Rural Worker Unions, Center for Alternative Technologies of the Zona da Mata (CTA-ZM), a local non-governmental organization (NGO), and researchers from the Federal University of Viçosa (CARDOSO et al., 2001). This exchange between peasants, technicians, and researchers was an encounter of fields of knowledge about agriculture from different places, with science on one side and the practical knowledge of the farmers on the other.

From the science presented by technicians and researchers, we can identify a proposal to critically rethink the design of agroecosystems that were ruined and devalued with the agricultural modernization of the 1970s. With the influence of scientists and technicians, farming families have composed, and still compose, the process of redesigning the agroforestry systems based on traditional practical knowledge, with a deep understanding of the ecological characteristics of local ecosystems (CARDOSO et al., 2001).

Agroforestry systems, introduced to the Zona da Mata, reestablished planting techniques of pre-modern societies, and/or of indigenous peoples. However, not entirely free of the traces of modernity, by taking as a reference, the perspectives of Little (2000) regarding the exchange of modern and pre-modern knowledge and techniques, and of Arce and Long (1999), on the agency capacity of local actors in the reinvention of hybrid processes – modernity and non-modernity. Some of the links to modernity could include the coffee grown within the system, since coffee was originally introduced as a commodity crop to benefit rich landlords and consumers in the Global North, or the low use of chemical fertilizers that some farmers incorporate into their agroforestry systems (SOUZA, et al., 2012).

The traces of modernity present in the processes of redesigning diverse agroecosystems with coffee in the Zona da Mata are constantly revised by agroecology. The development of diverse food systems based on the principles used in pre-colonial ancestral systems, among them agroforestry systems, can be considered as a response to systematic repression to the peasant and indigenous people.

As a response, agroecological movements advocate the prioritization and reestablishment of diverse cosmovisions and epistemologies in the Global South to develop a decolonial world (ESCOBAR, 2017; FIGUEROA-HELLAND et al., 2018), which includes diversified food systems. Within these diverse epistemologies supported by the decolonial movement, there is a demand for non-anthropocentrism and a respect for nature, as in diversified food system, such as the agroforestry systems.

Agroforestry systems resemble the agriculture systems developed along thousands of years by indigenous peoples. Indigenous planting systems are naturally diversified. The Kayapós, a group of indigenous people of North of Brazil, cultivated

their food in super diversified agroforestry systems with food and medicinal plants. They had secondary vegetation that concentrated highly diversified natural resources to meet the needs of humans such as food, medicine, fiber, and wood (POSEY, 1987).

This management of secondary natural forest peaks production in the long term, because of the different crop cycles of the various plants present in the agroecosystem. The Kayapós developed an understanding of how to design an agroecosystem that met the needs of each plant, such as light requirements, and discovered how these plants interacted with each other, thus determining the associated plantings (POSEY, 1987). It also had a focus on the balance between plants, crop plants, and animals in the system (POSEY, 1987).

Therefore, agroforestry systems can perform a role in the dismantling of colonial monoculture and the development of a “decolonial agriculture system”. Nowadays, many peasants utilize agroforestry systems to produce crops in a way that uses the land effectively, preserves biodiversity, and does not need chemical inputs (FERNANDES et al., 2014).

In agroecological diversified coffee systems, such as in agroforestry systems, coffee is used to strengthen peasant livelihoods, not allowing the coffee market to predominantly utilize them. For the development of agroforestry systems in the Zona da Mata, peasants use traditional knowledge articulated with scientific agroecological knowledge.

Many tree, shrub, or herbaceous species intercropped with coffee in agroforestry systems are food species and contribute to the food security and sovereignty of peasants in the region and diversify the income of these families, leaving them less vulnerable to international coffee market crises (SOUZA et al., 2010). Therefore, diversified coffee production contributes to the process of decolonialism, particularly because of two aspects: the inter-species cooperation created through diversification and the use of peasant knowledge.

Diversification, in agroforestry systems or not, can bring historical evidence of how family farming resisted the imposition of colonizers' methods, such as the technologies of the Green Revolution and the capitalist commodity production system. This resistance may be the result of the peasants' care for the family's food sovereignty and care for the land, which may be related to the peasant worldview. This can also be linked to the empirical understanding that diversification brings autonomy and

resilience to peasant farmers, through the production of ecological capital and allowing farmers to diversify the markets they are involved in (PLOEG, 2009). Without autonomy and resilience, farmers can compromise the social reproduction of the families.

Although present in the Zona da Mata and in many other regions of Brazil, diversified systems are still a form of resistance, because the technologies of the Green Revolution continue to be supported under the aegis of neoliberalism, which empowers large multinational companies to exploit natural resources for commodity production and deepen the environmental and social degradation associated with them (VENTURA, 2018).

Under neoliberalism, modern scientific knowledge, supported by public policies for agricultural development, keep supporting the expansion of monocultures (WATSON; ACHINELLI, 2008) and leaving the country even more vulnerable to imperialist and neoliberal influences (DEAN, 1989; TOPIK, 1999; TOPIK et al., 2010). Identifying the origins and characteristics of resistance, which in the Zona da Mata is expressed, among others, in the diversification of coffee, can contribute to understanding decolonial processes, to strengthening the identity and empowering peasants.

As described by van der Ploeg (2017), peasant agriculture has its roots in resistance that influence the diversified form of production that they utilize. These peasants have marked cultural identities traits, which contribute to the liberation of peoples from the oppressive systems of colonization and, more recently, of neoliberalism (RAMOS, 2017). Therefore, the production and cultural identity created from the diversified cultivation of coffee, can contribute to the liberation of the original peoples and peasants from the monoculture coffee production systems imposed by the colonizers.

The decolonial components of diversification of the coffee fields of the peasant family farmers in the Zona da Mata, understood as a form of resistance to an intensified monoculture production system imposed upon the region from a colonial perspective, can be analyzed through the lens of decolonialism. With this lens, agroforestry systems can be analyzed with a political and epistemological perspective. Therefore, the agroforestry systems can be used to identify whether family farmers resist modern capitalist systems of production and why they do so.

The general objective of this chapter is to understand how the agroforestry systems of the Zona da Mata are used as forms of resistance to the conventional coffee production model. Specifically, the objective is to i) to identify the characteristics of decolonial action present in agroforestry systems and ii) to analyze how the themes of cooperation, nature, and biodiversity present in the agroforestry systems are related to colonial thoughts.

4.2 Methodology

Due to the inability to complete fieldwork because of safety concerns and constraints associated with the global COVID-19 pandemic, the methodological base of this study consists of a secondary data analysis.

A matrix of systematization was created (SOUZA et al., 2012) and three key-themes were selected: nature, biodiversity and its functions and cooperation/ solidarity/ synergy (referred to as cooperation). These three themes were the most prevalent subjects present in the document base relating to agroforestry systems in the Zona da Mata.

Nature was chosen as a theme in order to understand the relationships and perceptions farmers had with the land and nature. While biodiversity and nature are intertwined in several ways, the two themes were separated to explore how biodiversity relates to nature, such as how biodiversity serves nature and also to deepen the identification of how and why farmers chose to produce in biodiverse manners. In addition to these two themes, cooperation was analyzed to determine how actions of cooperation, solidarity, and synergy were present amongst the farmers in the Zona da Mata.

The matrix of systematization was organized with the three key themes in the column and rows. In the cells of the matrix, which were the cross between a row and column, a series of questions were elaborated upon in order to understand the relationships between the different themes. The matrix served as a guided to search the themes in the literature. The relation between the key themes and the transversal themes were presented and discussed. The matrix was the base to discuss how coloniality and/or decoloniality related to all the identified themes were presented.

The bulletins – Nossas Roças

The bulletins were created by the Center for Alternative Technologies of the Zona da Mata (CTA-ZM), and they are called “Nossa Roça”, “Nossa Roça Tecnologia Social”, “Nossa Cultura na Roça”, “Nossa Pesquisa na Roça”, and “Raizes da Terra” were the base of the research. When needed, the four bulletins were referred together as Nossa Roça series. These bulletins were chosen for the secondary data analysis due to their proximity to farmers. These documents were elaborated by the Center for Alternative Technologies of the Zona da Mata in partnership with the Federal University of Viçosa and other organizations.

Nossa Roça is a bulletin series created to systematizes de experiences of farmers with agroecology in the Zona da Mata. These bulletins are about the way farmers became involved in the agroecological movement in the Zona da Mata, different agroecological farming practices used and the cosmovisions regarding agroecology of the farmers. This series is made up of 43 individual bulletins, spanning from the year 2003 to 2017, with the majority of them describing the stories of farmers in the Zona da Mata of Minas Gerais and few of Espirito Santo, a neighboring state of Minas Gerais.

Staff from CTA-ZM and professors and students from UFV collaborate with farmers to produce these bulletins by visiting their property, and talking to them about their history, forms of cultivations, organizations etc. Through this collaborative writing process, farmers have a direct say in the information that is published, allowing them to be a part of the knowledge production.

Their names are used, the general location of their property is addressed, and their views are not as sterilized as they might be under a normal scientific writing process, all with their explicit consent. The farmers directly communicate their lived experiences and bring their perspectives to create a contextualized science. Before publishing, the famers read and approved the bulletins.

Therefore, bulletins were based on experiences, and elaborate in collaboration with family farmers who participate in the agroecological movement and produce in agroforestry systems in the Zona da Mata of Minas Gerais and surrounding areas.

Nossa Tecnologia Social is a bulletin series regarding different technologies used by famers in the Zona da Mata. There are 11 bulletins in this series, spanning

from the year 2012 to 2020. Technologies such as agroforestry systems, biodigestors, and participatory certification programs are discussed in a way that clearly communicates how these technologies were created, as well as the benefits o or disadvantages of them, as is the case of the bulletin discussing transgenic crops. Staff from CTA and from UFV work with farmers and organizations such as STR identify these technologies, describe how they work, and produce this informational bulletin to share with other farmers.

Nossa Cultura na Roça is a two-part series from 2016 and 2018 that describes different cultural events that occur within the Zona da Mata. The two bulletins describe different religious and cultural festivities, the history behind the celebrations, and ceremonial procedures. These bulletins were created in collaboration with event participants, community organizers, UFV and CTA-ZM staff.

Nossa Pesquisa na Roça is a communicative bulletin with 11 editions from 2011 to 2019 based on research carried out by post-graduate students from the Federal University of Viçosa in cooperation with agroecological peasant farmers in the Zona da Mata. In this series, the results of the research are communicated to the farmers.
Raízes da Terra is a bulletin with 6 editions devoted to sharing the experiences and stories of women agroecological farmers in the Zona da Mata.

These publications were produced in 2016 and discuss the different trainings and collaborative projects available to women within the agroecological movement and those interested in agroecology. Women within the groups presented in the series collaborated with CTA staff and UFV students to write about their experiences and the histories of their groups.

In total, 71 bulletins of the five series were initially individually read and had specific quotations identified related to the themes of the matrix by two researchers. Said quotations were then separated from the bulletins and organized based on the themes and questions they pertained to. Using this material, individual topic syntheses were created in order to discuss the dialogues present in the Nossa Roça series. To access the bulletins, see the links in Appendix 3.

An analysis was also performed utilizing the ATLAS.ti 9 qualitative analysis software. The Nossa Roça series was re-read by a researcher in search of more quotations pertaining to the themes of interest. All the quotations identified by the researchers were coded into the software based on the question and themes they

corresponded with. Sentences that corresponded to the theme of ancestrality were coded as “Ancest” and their pairing, for example, “Ancestrality and Biodiversity”, in order for the software to quantify how many times these themes and their pairings appeared in our analysis. Once entered into the system, the software noted the number of times each theme was mentioned, number of times each pairing occurred, which bulletins had certain pairings, and whether there were any themes or theme pairings that dialogued with other themes or theme pairings.

Data analysis completed on ATLAS.ti 9 generated a Sankey diagram that demonstrated the relationships among the nine themes, identified which documents these themes were found in, and where answers for or theme questions were found in the analyzed documents.

After coding and analyzing these documents, themes and quotations related to how the ancestrality, spirituality, and religiosity of the peasant farmers were identified and expanded upon through a synthesis. These three themes were chosen because our goal is to understand how ancestrality and spirituality in the Zona da Mata could break with structures of coloniality. Religiosity was included because it can express spirituality. The identified themes and subjects were discussed and supporting evidence was included.

Each pairing for ancestrality, spirituality, and religiosity was analyzed by the researchers and conclusions were drawn based on the pairings.

To reinforce and clarify points identified through the bulletin analysis, additional literature regarding the agroecological movement in the Zona da Mata was consulted and utilized in the discussion. Literature such as articles, reports, master’s dissertations, and doctoral theses were used in order to reinforce the analysis.

4.2.1 The emergence of agroforestry systems in the Zona da Mata

Farmers in the Nossa Roça series described how they struggled under the intensified monoculture system of coffee production for many years (Nossa Roça 2, 2003; Nossa Roça 11, 2006; Nossa Roça 14, 2009; Nossa Roça 15, 2009; Nossa Roça Tecnologia Social 3, 2015). Originally, most farmers planted in polycultures, usually planting corn, beans, rice, and other crops alongside their coffee. Some farmers even intercropped with trees (CARDOSO et al., 2001). However, with the

Green Revolution´s technologies, monoculture was imposed as the modern way of cultivating, especially coffee.

Coffee was first produced as a cash crop in the Zona da Mata beginning in the early 19th century (TEIXIERAS et al., 2018), but lost its presence in the region until the 1970s (WATSON; ACHINELLI, 2008). In Nossa Roça 11, a farmer described how coffee production diminished at a point of time, recalling, “But time passed and coffee disappeared from the region for a while, until the bank and the IBC [Brazilian Coffee Institute] started to encourage the planting (of coffee), which was no longer doing so well” (Nossa Roça 11, 2006).

Institutions in the region, namely IBC, pressured farmers to utilize agrochemicals and plant coffee in a monoculture system, making coffee, again, the main source of income for most farmers in the Zona da Mata (Nossa Roça Tecnologia Social 3, 2015). The IBC was instituted to control coffee surpluses and maintain international prices, while, together with rural credit, supporting the implementation of Green Revolution technologies (WATSON; ACHINELLI, 2008).

One farmer who participated in the Nossa Roça series discussed how, in 1992, when he received financing for his land, he was forced to utilize agrochemicals at the demands of the bank (Nossa Roça 15, 2009). Another farmer in Nossa Roça 14 (2009) described how he too took a loan out with the support of IBC for his first coffee plantation and was required to use fertilizer and other agrochemicals, which later caused the coffee bushes to become too heavy due to the excess of fertilizer. Farmers were told that the pesticides and fertilizers pushed onto them by the IBC were beneficial to the land and their coffee production. According to one bulletin, “The poison was called medicine, so it deceived the farmer, because he thought that the product would not harm his health” (Nossa Roça Tecnologia Social 3, 2015).

Farmers discussed how their finances were intertwined with projects involving the IBC or other extension services, as described in Nossa Roça Tecnologia Social 3 (2015). By accepting the financial assistance from the bank, farmers were required to have monthly inspections of the property by IBC technicians and inspectors who demanded farmers to utilize the prescribed technological package (Nossa Roça Tecnologia Social 3, 2015).

Besides the obligatory use of agrochemicals, the IBC significantly altered the way farmers in the region produced coffee and, as a result, their entire production

practices. If financed by the bank, farmers were only allowed to produce coffee in a monoculture system, thus severely limiting the biodiversity of the fields. Farmers originally would plant coffee crops uphill and intercrop coffee, among others with corn and bean crops. The intercropping allows them to grow additional crops to feed their families. One farmer in Nossa Roça 11 recounted how, as a teenager, he remembered planting corn, beans, rice, and sugar cane in between the lines of coffee (Nossa Roça 11, 2006).

According to Nossa Roça Tecnologia Social 3 (2015), due to these mandates from the IBC, farmers halted their production of corn, beans, and rice on their properties and instead began to buy the staple foods they originally grew on their own land from the markets. Although planted in line, the farmers were heavily encouraged to weed due to competition between them with coffee, which left the soil bare and suffering from erosion.

The use of Green Revolution technologies pushed on peasant farmers by the state specifically though the IBC, as well as other governmental institutions, caused significant environmental damage in the region, specifically due to the increased use of agrochemicals, fertilizers, heavy weeding and loss of food security and the region has suffered soil degradation and significant loss of biodiversity (SOUZA, et al., 2012; CARDOSO, et al., 2001).

Farmers who participated in the Nossa Roça bulletins took note of these negative impacts, with one farmer in Nossa Roça 27 explaining, “We have observed that one of the biggest problems of air, soil, waterways, springs, and groundwater pollution is the use of pesticides. In addition to contaminating food and compromising the health of the workers who apply them, pesticides cause enormous environmental devastation, contaminating rivers, seas, and the water we drink, killing fish, birds, and animals that used to be abundant in the rural areas and that we can hardly find anymore” (Nossa Roça 27, 2012).

Due to these negative impacts presented by the Green Revolution technologies in the region, which became even more pronounced during the coffee crisis of the early 1990’s (Nossa Roça 2, 2003), farmers searched for an alternative system to provide for their livelihoods, in opposition to this monoculture form of production. In searching for alternatives, farmers worked in cooperation with the Rural Workers Union, the Christian Base Communities (CEBs), the Center for Alternative Technologies of the

Zona da Mata (CTA-ZM) and some professors and students from UFV who disagreed with the industrialization of agriculture and the Green Revolution, and started debates that encouraged the various agroecological production experiences in the region, including the creation of agroforestry systems tailored for coffee production (Nossa Roça Tecnologia Social 3, 2015).

The agroforestry systems were implanted using Participatory Rural Appraisal (PRA) techniques, aiming to ensure the participation of all those involved. PRA techniques and other participatory methodologies were chosen and incorporated by CTA-ZM staff, UFV researchers, and other partners. With PRA, farmers were able to work with CTA staff and UFV researchers to identify beneficial trees in coffee production systems and later lead to the design of agroforestry systems in the Zona da Mata (CARDOSO et al., 2001).

Later, a participatory systematization of the experience with agroforestry systems were carried out. For that, participatory techniques, some from PRA, were incorporated into a series of workshops, where participants engaged in the creation of a historical calendar, matrix of option and criteria, as well as a weighting matrix (SOUZA et al., 2012).

Agroforestry systems reinforced the recognition by the farmers of the need to diversify production in order to survive during those challenging times. Cooperation between the peasant farmers and these organizations was vital to implant agroforestry systems. Reflecting upon this planning period, those who participated in Nossa Roça 2 (2003) stated, “In fact, the actions only happened because, instead of the discouragement and isolation that are common in times of difficulties, the people decided to get together to find a way out.”

Efforts to increase the number of agroforestry systems in the region continue through the cooperation of agroecological farmers, unions, and CTA. The Nossa Roça bulletins themselves serve as outreach material for farmers to use to communicate the benefits of agroforestry systems, encourage agroecological transition through agroforestry systems, and offer technical assistance.

The majority of the Nossa Roças tell the stories of farmers in the Zona da Mata who produce through agroforestry systems, while Nossa Pesquisa na Roça 1 (2011), Nossa Pesquisa na Roça 4 (2013), Nossa Roça Tecnologia Social 3 (2015), and

Nossa Roça Tecnologia Social 6 (2016) offer specific technical knowledge regarding agroforestry systems in the region.

With this understanding of how agroforestry systems came to be in the region, how agroforestry systems relate to the three key themes (cooperation, nature, and biodiversity and its functions) will be examined. The interconnections between these three themes within the Nossa Roça series will also be examined.

4.3 Agroforestry Systems: The Connection Among Nature, Biodiversity, And Cooperation

4.3.1 Agroforestry Systems And Nature

Agroforestry systems are designed to imitate natural ecosystems and to produce goods in a way that protects nature by restoring and preserving nature (VALDIVIESO, 2017). Diversified systems, such as agroforestry systems, display a clear respect for nature because it allows farmers to produce in cooperation with nature, a theme that was highly prevalent throughout the Nossa Roça series (Nossa Roça 12, 2006; Nossa Roça 23, 2010; Nossa Roça 25, 2011, Nossa Roça 38, 2016).

One farmer who participated in the Nossa Roça Bulletin shared her perspective on this, explaining “When man throws poison on the land, I think he doesn't think, because the ecological balance is wonderful… The [agroforestry system] is viable for promoting soil protection and diversity, in our case it also served to contain the soil that invaded the house in times of flooding, and also for soil protection and diversity” (Nossa Roça 38, 2016).

Through these diversified agroecosystems, farmers are able to maintain their coffee production levels, as well as other goods, such as food and wood, while simultaneously bettering the land and respecting natural resources. One farmer in Nossa Roça 12 described how this environmentally conscious form of farming not only benefited the surrounding environment, but also allowed the family to meet their material needs. The bulletin elaborates, “...with the improvement of the environment on the property (soil quality, biodiversity, water) they are able to produce everything the family needs” (Nossa Roça 12, 2006). Nossa Roça 38 stated that farming family interact with nature, or work in partnership with nature, within their farming system

using homeopathy on animals and in agriculture, applying it on the map or by spraying (Nossa Roça 38, 2016).

Farmers planting coffee in agroforestry systems are generally agroecological. Agroecology demonstrates an explicit respect for nature. As it was joyfully proclaimed in Nossa Roça Tecnologia Social 3 (2015), “Agroecology is working on the land respecting nature and people!” Farmers who are involved with the agroecological movement of the Zona da Mata and that plant in agroforestry wished to plant with nature, something that the conventional model of production did not permit them to do. However, as informed in Nossa Pesquisa na Roça 6 (2014), to have autonomy to cultivate the land in an agroecological way with agroforestry systems, they so greatly desired, they need to own the land.

The bulletin explains, “The conquest of the land was a great joy for all the settlers because it gave them the autonomy and freedom to plant what they wanted, how they wanted, and when they wanted” (Nossa Pesquisa na Roça 6, 2014). This also places emphasis on the need for agrarian reform, because without the right to land, peasants do not have the autonomy to practice agroecology and put their respect for nature into practice through agroecological cultivation techniques. In the specific case of Araponga, one municipality of Zona da Mata, without the land conquest, farmers would not have had the opportunity to engage in agroecology due to a lack of land and, as a result, a lack of autonomy. The Land Conquest was a process to own land through an autonomous and creative way developed by the family famers (VAN DEN BERG, et al., 2019)

This deep respect for nature is embedded into the farmer’s cosmovision, which then presents itself in their production practices. One agroecological producer in Nossa Roça 25 described how serious his respect for nature is, explaining that, “being a good famer is more than just an obligation” and that being a good famer is “to produce while respecting nature” (Nossa Roça 25, 2011).

This particular farmer transitioned into agroecology due to this respect for nature after previously planting in a conventional way. Another farming family profiled in Nossa Roça 34 also demonstrates how they were able to plant in a way that honored and respected nature. Another farmer discussed his perspective, in which respecting nature was the key to prosperity, beyond potential profit or materialistic ideas of success. In the bulletin, the farmer states, “It seems that this is the secret of prosperity”.

And, in this way, taking care of nature, working, planting, there are people who are very happy, like this farmer, who reported: "Look at the abundance of food... I am a millionaire!" (Nossa Pesquisa na Roça 6, 2014).

Agroforestry systems are also utilized by farmers to protect nature by restoring natural resources. Nossa Roça 9 profiled a farming family whose land was previously degraded due to conventional farming practices. Once the family transitioned into agroecology and began producing coffee in agroforestry systems, the quality of the land greatly improved. In the bulletin, the farmer explained, "When he started experimenting [with agroforestry], there was no water on the land, it only came with the recovery of the area. Today the water is enough for him and his neighbor" (Nossa Roça 9, 2005).

Farmers who participated in Nossa Pesquisa na Roça 6 (2014) also discussed how, by protecting nature and using agroecological management techniques, the soil of their property improved. The bulletin states, "Those who are taking good care of their soil, trying to keep it covered, removing cattle from eroded areas, planting trees, are more satisfied with the results of the land, managing to improve the quality of the soil and produce more" (Nossa Pesquisa na Roça 6, 2014).

The most explicit discussion of this protection of nature and restoration of natural resources was presented by a female farmer who was featured in Nossa Roça 38. In the bulletin, she proclaims, "It is part of my survival, for the world to survive it has to be through agroecology, because it depends on the protection of nature to have life in the soil, to have water and our own life" (Nossa Roça 38, 2016).

4.3.2 Agroforestry Systems and biodiversity

Agroforestry systems in the Zona da Mata provide farmers the opportunity to drastically increase the biodiversity present within their cropping systems. Rather than just producing coffee, or coffee and staple crops such as corn and beans, as was produced in the original coffee systems in the region, agroforestry systems incorporate a multitude of different trees, shrubs and herbaceous plants alongside coffee (CARDOSO et al., 2001; SOUZA et al., 2010).

Farmers who plant in agroforestry systems and participated in the Nossa Roça series described the use of a series of trees in their systems, the most common

including inga, papaya, avocado, banana, and jackfruit, just to name a few (SOUZA et al., 2010).

One couple that participated in Nossa Roça 28 described how they have started “taking care of the land” through the institution of biodiversity within their agroforestry system. The couple explained, " We have pupunha, juçara palm heart, ipê, persimmon, conde, pear, quince, chestnut, jackfruit, blackberry, mango, avocado, persimmon, carambola, yacon, orange, banana, lemon, lime, tangerine, eight varieties of beans, arrowroot, which is used to make polvilho, and potatoes, which we have preserved the seed in the family for 30 years. The potato will be sold for school meals!" (Nossa Roça 28, 2012).

Another farming family in Nossa Roça 1 (2003) described how they have experimented with over 74 varieties of trees on their farm, determining which ones created better synergies with the coffee plant. The farmer also explained that when the soil is in good condition for coffee, it is also good for fruit trees (Nossa Roça 1, 2003), presenting these additional plants as bioindicators of soil health. Farmers view the diversity instituted into their systems as a way to care for the land, an idea which will be explored further in the discussion regarding nature and biodiversity within the agroforestry systems.

Along with the biodiverse plant life supported by the agroforestry systems, several wildlife species appear within the system. Since a variety of fruits are produced on the land and agrochemicals are not used, many farmers described the abundance of wildlife present within their agroforestry systems. In Nossa Roça 43, one female farmer discussed how her agroforestry system attracts wildlife, explaining, "There are a lot of things to eat. We have a lot of competitors, there are no plums left.

There is no fruit left, the birds knocked down the jabuticaba trees. We have to leave them; they don't know how to plant. Jacu comes in two, three, maritaca comes in flocks, from five hundred up, knocks everything down. Competitors are the animals and birds. You work without poison, and all these beings appear. With poison, you drive them away, scare away birds” (Nossa Roça 43, 2017). Another family discussed how they view the animals who enter their biodiverse systems.

In Nossa Roça 42 (2016), they explain, “In addition, another satisfaction for the family is being able to count on visits from their neighbors, the monkeys, pacas, armadillos, and jacupembas, who come by from time to time to thank them for

everything they have done and are doing in defense of life" (Nossa Roça 42, 2016). One farmer featured in Nossa Pesquisa na Roça discussed how he originally planted avocado trees in his field to protect the soil. Now he has an abundance of avocados, enough to sell several boxes and provide avocados to surrounding wildlife.

These farmer testaments demonstrate how trees are essential in attracting biodiversity and creating an agroecosystem that maintains diverse species of wildlife. As discussed by Perfecto et al. (2009), the maintenance of shade trees in coffee production systems brought back associated biodiversity to formerly monoculture coffee systems, including migratory birds, insects and other wildlife. As agroecological farmers in the Zona da Mata can attest, the incorporation of trees into their agroecosystem creates a habitat for a plethora of organisms, all while providing a sustainable livelihood for farmers. With this understanding, it is clear that without trees, there is no sustainability, because the trees attract the associated biodiversity, above and below ground (PERFECTO et al, 2009).

Agroforestry systems also allow farmers to produce in areas under restrictive legislation that do not allow for conventional agricultural production. In Nossa Roça 28 (2012), the bulletin discusses how the biodiversity present within agroforestry systems allow for the agroecosystem to produce coffee and act as environmental conservation systems under different pieces of legislation, specifically the Forest Code[6] (OLIVEIRA et al., 2008) and the Bolsa Verde Program (a program intended to pay for environmental services). Under the Forest Code, family farmers are allowed to use preservation areas as production areas, as long as the production does not harm nature. Under this definition, it was determined that agroecological production, including agroforestry system coffee production, can occur on this land and not violate the code (Nossa Roça 28, 2012).

4.3.3 Nature and biodiversity and its functions in agroforestry systems

In the agroforestry systems of the Zona da Mata, the increased biodiversity within the systems serves as a way to care for nature. Rather than utilizing agrochemicals or engaging in other agricultural practices that degrade natural resources such as the soil, the uses of several biodiverse plants and insects allows for

[6] This refers to Federal Law n.º 4.771, which instituted the Brazilian Forest Code of September 15th, 1965.

the maintenance of a healthy and productive agroecosystem, both for the farmer and the organisms that inhabit the agroforestry system. Some of the main themes discussed by agroecological farmers related to nature and biodiversity and its functions within agroforestry systems include the use of trees, such as *Inga sp.* (REZENDE et al., 2014), to provide organic matter and structure to the soil, cutting weeds instead of completely removing them from the agroecosystem, the incorporation of green manure, planting several plants in consortium with coffee, and the use of plants as soil bioindicators (ZEPPELINI et al., 2009).

One of the native trees specie incorporated into agroforestry systems in the Zona da Mata is Inga. In Nossa Pesquisa na Roça 1 (2011), two farmers discuss how the Inga tree benefits their agroforestry system as well as their land overall. Both of the farmers discussed how the Inga helps create more complex organic matter for the soil, preventing this matter from breaking down easily by slowing the consumption of the matter by organisms and slowing the release of the nutrients into the soil (Nossa Pesquisa na Roça 1, 2011).

This slower release of nutrients allows for the organic matter to remain in the soil for a longer period of time, keeping the soil richer for a longer period of time and preventing soil erosion (Nossa Pesquisa na Roça 1, 2011). Another benefit of Inga that was described by farmers in Nossa Pesquisa na Roça 3 (2012), was its ability to help control harmful insects such as the coffee fruit borer and the coffee leaf miner bugs. Through this research, completed with farmers who have Inga in their agroforestry systems, it was determined that planting Inga trees amongst coffee bushes is an environmentally friendly way to naturally control insects that harm coffee (Nossa Pesquisa na Roça 3, 2012).

This technique provides food for the natural enemies and allows for environmental balance. Rather than utilizing agrochemicals that limit the biodiversity of the agroecosystem and actively harm the environment, farmers are able to utilize biodiverse planting techniques in agroforestry systems to manage pests while maintaining a healthy and biodiverse agroecosystem (XAVIER, 2009; REZENDE et al., 2014).

Several other trees have also shown beneficial to the agroforestry systems, including banana, avocado, and papaya trees (DUARTE, 2007). According to Nossa Pesquisa na Roça 1 (2011), the nutrients taken from the soil by these trees are

returned through the organic matter they produce through their leaves. In Nossa Roça 1 (2003), this is explored further in a discussion about how banana trees return potassium to the soil, giving back to the earth.

The farmer who was featured in this bulletin expressed that he “considers it very important to produce and conserve organic matter, especially for small producers who have difficulties in buying inputs. According to him, the soil organic matter becomes humus and helps the coffee to develop” (Nossa Roça 1, 2003). With this belief in mind, 30% of this farmer’s property is forest. Another farmer in Nossa Roça 14 echoes this sentiment, explaining that, “He has observed that the trees and banana trees protect the soil and provide nutrients for the plants” (Nossa Roça 14, 2009).

Along with providing nutrients through the creation of organic matter, several farmers recognized how this organic matter also prevents soil erosion, a prominent problem in the region due to years of coffee monoculture production. In Nossa Roça 8 (2005), the farming family described how, before planting trees and establishing an agroforestry system, the land suffered significant erosion and other damages that lead to the loose of soil quality.

This was also confirmed by FRANCO et al. (2002) studying the soil erosion in the agroforestry systems in the region. With the introduction of trees into the production system, the soil was reclaimed, and more coffee was produced. Another farmer discussed how planting banana trees within his agroforestry system assisted with maintaining solid moisture as well (Nossa Roça Tecnologia Social 6, 2016).

Another biodiverse planting technique mentioned in Nossa Roça 10 (2005) and Nossa Roça 23 (2010), was pruning weeds instead of weeding them. Farmers who participated in these Nossa Roças explained that the common practice of weeding, pulling the whole plants out of the ground, and eliminating them from the agroecosystem is actually a harmful practice to the land. In Nossa Roça 10, it explains that, when the weeds are pruned instead of weeding, the soil is covered with the pruned weeds, which makes for fresher soil, more organic material, and less erosion. With this logic, the weed functions as green manure (Nossa Roça 10, 2005; Nossa Roça 23, 2010).

Multiple farmers in the Nossa Roça literature emphasized the use of green manure for the increasing of soil fertility and organic matter present in the soil (Nossa Roça 17, 2009; Nossa Roça 19, 2009). Other plants than weed, including lab-lab,

velvet beans, pigeon pea and jack bean are commonly used as a green manure, due to the great amounts of organic material they create (Nossa Roça 19, 2009).

While providing organic material to the soil, green manures are also utilized as a form of weed control. In Nossa Roça 17, the participating farmer discussed how a common pest, a broom weed, can be managed through the planting of green manures, since they compete with the broom and accelerate the improvement of the soil.

In addition to green manure, one farmer in Nossa Roça 15 (2009) described how termite mounds can serve as a natural fertilizer. The farmer noticed that the coffee bushes near the termite mounds “were looking vigorous”, which was also noted by other farmers in the region. Termite mounds have shown to be beneficial for plant growth and may assist in the stabilization of ecosystems facing the effects of climate change (BONACHELA, et al., 2015). This is another interesting example of how biodiverse life that would otherwise be exterminated in a conventional coffee system can actually contribute to the production of the crop, and even contribute to nature-protecting actions such as adding organic material to the soil.

Using plants as bioindicators of the soil quality has also presented as a way for farmers to understand the quality of the soil in a natural way. In Nossa Roça 1 (2003) and Nossa Roça 13 (2006), farmers explicitly mention how they observe the biodiversity present within their system as an indicator of the health of the soil. Nossa Roça 1 (2003) elaborates upon this, stating, “As the area was bare, they started to manage the weeds and plant other species of both grass and trees. In the area there was a lot of white broom, silk grass, and marsh grass, and with the management, plants such as common sowthistle and even the bidens alba, which in the beginning was devoured by aphids, gradually appeared.

Then came tropical burnweed, Colombian waxweed, Gale of the wind and João-leite. The appearance of these plants indicated the decrease in soil acidity and the increase of the conditions for planting soybeans and beans”. Besides indicating the quality of the soil, these “weeds” also helped in the improvement of the soil quality. In Nossa Roça 13 (2006), the farmer describes planting pigeon pea to improve the soil, later acknowledging that, through indicator plants, he can tell that the soil has improved a lot.

Finally, planting coffee in consortium with other plants was presented as a traditional planting method, key to agroforestry systems, that could preserve natural

resources such as soil. All of the Nossa Roça bulletins described at least some sort of planting in consortium, with varying degrees of biodiversity. Nossa Pesquisa na Roça 11 (2019) explained the importance of this form of planting, stating, “Many of these seeds are planted together in a consortium, a traditional practice that maintains and diversifies the food and nutritional base, attracts animals, conserves the soil, and produces biodiversity and landscape by resembling forest succession systems. This biodiversity is what guarantees the production of healthy food, without poison.”

In practice, this diversified form of planting creates a natural planting system that is full of beautiful biodiversity. As described by a farmer in Nossa Roça 25 (2011), planting in consortium can start off small, as was the case of this farmer who originally began planting banana trees alongside the coffee bushes. As time went on, he planted other plants in the field and throughout the property, planting ornamental plants such as orchids and fruit trees, including pitanga and cacao (Nossa Roça 25). This then even expanded to “nature plants”, vegetables, and medicinal plants. By planting this huge biodiversity of plants, the farmers are preserving additional plant species, attracting additional wildlife to the agroecosystems, and conserving soil.

Some of the other benefits linked to biodiversity were also spiritual, with farmers identifying biodiversity as a gift from the divine. One impactful example of this was spoken by an agroecological farmer, stating:

“Coffee is not God; before coffee we planted everything, we planted sugar cane, manioc, Chinese yam…” (OLIVEIRA, 2013).

The farmer identifies the coffee monocultures in the region as a man-made invention, that monocultures do not occur naturally and thus are not from God. Agroecological farmers in the Zona da Mata have a biblical comprehension in which monoculture is not a Divine creation, since in nature, plants grow together. With this understanding, they choose to honor the Divine and plant in diversified agroforestry systems that allow them to grow coffee to support their livelihoods, while also planting diverse crops to honor natural biodiversity. Planting in a biodiverse way reconnects farmers with this spiritual understanding of nature and agriculture, which has also been passed down from generation to generation, also reconnecting them to their ancestrality (BOTELHO et al., 2016).

4.4 Agroforestry systems and cooperation

4.4.1 Cooperation among people and organizations

As mentioned at the beginning of the chapter, cooperation was essential to the establishment of agroforestry systems in the Zona da Mata. In addition to the establishment of these systems throughout the region, several forms of cooperation have occurred within the agroforestry systems themselves.

One area of cooperation relating to the agroforestry systems explained in the Nossa Roça series was the technical knowledge offered through technical and scientific organizations and between farmers. The influence of groups such as the union, CTA, and UFV have encouraged farmers to avoid the use of harmful pesticides (Nossa Roça 17, 2009; Nossa Roça 31, 2014). As highlighted in Nossa Roça 31 (2014), conversations between farmers and CTA staff strengthened the resistance to use pesticides amongst agroecological farmers. Innovative ideas brought forward by CTA and other farmers that provided ecofriendly alternatives to chemical inputs led farmers to not only avoid the use of agrochemicals, but also expand their horizons and "awaken to something beyond just not using 'poison'" (Nossa Roça 31, 2014).

As a process of learning together, there are, among others, agroecological farmer exchanges, cultural events, courses, and agroecological schools established to encourage cooperation and knowledge exchange between farmers and organizations such as the union and CTA (Nossa Pesquisa na Roça 11, 2019). One of these events is called the Intercâmbios Agroecológicos that have been carried on in the region since 2008 (ZANELLI et al., 2008). These events significantly contribute to the exchange of ideas, agroecological techniques, and spirit of cooperation amongst farmers producing agroecological coffee through agroforestry systems (Nossa Roça 40, 2016).

A farmer who participated in Nossa Roça 8 (2005) detailed how his participation in meeting, discussions, and farm visits through agroecological organizations has taught him a lot. Now that farmer teaches other farmers and CTA staff about his agroforestry system. The agroecological farmers' exchanges are organized in partnership with the unions, CTA and UFV.

Several studies have been done by students of UFV, as exemplified by the 11 Nossa Pesquisa na Roça. The partnerships between agroecological farmers and CTA

with UFV were essential to developing agroecology in the Zona da Mata as it is observed nowadays. This collaboration throughout the years with the CTA, the farmers' organizations and with the farmers themselves allowed the understanding of many processes and helped raise the visibility of agroecology in Zona da Mata.

Cooperation between researchers and students from UFV with peasant farmers in the Zona da Mata allowed for multiple collaborative projects and experiments that strengthened the bond between the humans involved in these projects and the agroecosystems they worked so hard to nurture and design (CARDOSO; MENDES, 2015). Researchers and students from UFV continue to work with peasant farmers to strengthen agroecology within the region. The contributions of UFV demonstrates the importance of science towards strengthening agroecology, which is possible particularly in public institutions and needs the support of public policies, which have become devalued under the current government administration.

Another cooperative effort that occurs with farmers working in agroforestry systems is the certification of organic and agroecological coffee, an effort that was explored in Nossa Roça 3 (2003). This Nossa Roça bulletin details the creation of the Strategic Plan for Agroecological Coffee (abbreviated as PEC) in order to identify potential weaknesses in production, determine potential areas of improvement in agroecological coffee production as well as processing and commercialization, and to determine inclusive strategies to work on the problems discussed (Nossa Roça 3, 2003).

Discussing this process, the bulletin named the several cooperative organizations involved, detailing, “The articulation around the certification process generated a working group with the objective of establishing joint certification and commercialization strategies for organic coffee from family agriculture and counts on the participation of the following entities: Regional Association of Rural Workers of Zona da Mata, CTA-ZM, ADS/CUT (Solidarity Development Agency/ United Workers Central), Alternative Technologies Exchange Network, Organization of the People who Struggle (OPL), Biodiversitas Foundation, Farmer’s Union of Simonésia, Association of Small Producers of Campestre, Sapucaí Advisory Center and Sapucaí Organic Products Certification Association” (Nossa Roça 3, 2003).

Through this participative process, agroecological family farmers determined that they wished to get their coffee certified as organic, in order to insert their products into the niche organic market.

Along with the PEC certification process, cooperative organizations have helped farmers who grow in agroforestry systems sell some of the fruits and vegetables in multiple markets, including governmental initiatives such as PAA (Food Acquisition Program) and PNAE (National School Feeding Program). Throughout the Nossa Roça series, agroecological farmers detailed their participation in these programs as a way to diversify their income and sell the fruits and vegetables grown on their property (Nossa Roça 25, 2011; Nossa Roça 41, 2016; Nossa Roça Tecnologia Social 10, 2020). For example, the agroecological farming family featured in Nossa Roça 41 (2016) discussed how their involvement in several agroecological cooperative groups allowed them to enter new and diversified markets in their region.

The bulletin elaborates, “The family participates in the Association of Small Farmers of the XV and in the Venecian Association of Agroecology...”. The association has a sales point in town, which they call the "organic shop", where the family sells their products. Through the association, the family also commercializes coffee. The family also sells through institutional markets, such as the Food Acquisition Program (PAA) and the National School Feeding Program (PNAE) and sells directly to consumers who come to the farm” (Nossa Roça 41, 2016).

The community built through the agroecological farmers planting in agroforestry systems creates their own local and sustainable markets, creating systems of support that allow agroecological farmers to enter these markets with the assistance and guidance of their peers.

The collective caring for each other and the land was a value expressed by multiple farmers involved in the Nossa Roça series. One of the most impactful cooperative actions that regularly occur within the Zona da Mata are the *Mutirões*, or exchange days, a specific type of mutirão (Nossa Roça 4, 2004). In Espera Feliz, agroecological farmers have been participating in exchange days since 1999 in which farmers work together to complete farming tasks collectively, such as planting and harvesting the fields (Agroecologia em Rede, 2007).

The group, originally composed of 8 people, spread throughout the community, and consisted of more than 40 members at its peak. Facilitated with the support of the

local union, farmers who participated in this exchange would go to a property, assist the family with a task such as coffee harvesting, and exchange knowledge of agroecological practices (Agroecologia em Rede, 2007). “Mutirão service pays off, helping small farmers who can't afford to hire people to work. But if there is no understanding in the group, the work doesn't work. There has to be mutual respect and solidarity among the companions” (Nossa Roça 4, 2004).

Farmers also expressed the value of caring for each other outside of the Mutirões. One farmer expressed this in Nossa Roça 31 (2014), stating, "We each have our own crops, but we work the land together, swapping days. Also, we barter our produce and so we don't have to buy almost anything." The cooperative energy between agroecological farmers growing in agroforestry systems expands into the local communities. By valuing collective actions of cooperation, farmers have been able to claim significant victories, such as the victories described by a farmer in Nossa Roça 39 (2016). He explains, "the greatest victory was our social, human, religious, and political growth. To recognize the value of the other, of the struggle, and the capacity we have to do good things for the good of all, and to have as a consequence a happy and human community, distinguishing technological goods from human values".

Finally, the most important example of cooperation was the Land Conquest that occurred in Araponga since the 1980’s (ALVES, 2006; VAN DEN BERG et al., 2018, 2019). Also known as the Joint Land Acquisition Movement, this conquest of land was led by peasant farmers in Araponga who, under the influence of the Christian Base Communities (CEBs) and local unions, cooperated together to communally purchase land and re-distribute it amongst themselves (VAN DEN BERG et al., 2019).

Landless workers and poor sharecroppers who were dissatisfied with their dependence on landlords sought to gain their own land and plant in an environmentally friendly manner (VAN DEN BERG et al., 2018). Fueled by this desire, peasants came together to pool their financial resources, and bought the land collectively-redistributing the land amongst themselves and creating a communal sense of responsibility for the land (ALVES, 2006; VAN DEN BERG et al., 2018). The peasant farmers of Araponga worked in cooperation to gain the land, enter a process of re-peasantization, and create a community focused on treasuring the land and autonomy (VAN DEN BERG et al., 2018).

4.4.2 Cooperation and nature in agroforestry systems

Similar to cooperation and biodiversity in agroforestry systems, Nossa Roça documents presented how farmers demonstrated a deep connection between cooperation and nature. Within agroforestry systems and the communities there are a strong sense of i) cooperation with nature, ii) cooperation in the promotion of practices that do not harm the environment by famers organizations and iii) cooperation with others to support the engagement with nature.

Agroecological farmers emphasize working in partnership with nature, rather than fighting against it with agrochemicals. This partnership is present in such farming practices as homeopathy or in the introduction of additional plants into their agroforestry system. In Nossa Roça 38 (2016), the farming family used their time and energy to engage in homeopathy, rather than harm their soil and water with agrochemicals. The bulletin states," They work in partnership with nature, using homeopathy on animals and in agriculture... They use florals and teas for the family and the animals. (The farmer) emphasizes that she gets good results with the use of homeopathy and the E.M. (efficient microorganisms) in the property and gives an example of application in the seriguela (aiguela), which started to produce more showy and tasty fruits after the administration of the E.M. in the plant" (Nossa Roça 38, 2016).

A farmer featured in Nossa Roça 12 (2006) also discussed this partnership with nature. By improving his property's environment—specifically the soil quality, soil coverage, water quality, and manure—he and his family could produce everything they needed. This allowed the family and the property to function sustainably and autonomously. The farmer's choice to cooperate with nature, rather work against it, brought his family harmonious coexistence with nature. As the bulletin explained: "It brings more autonomy! Today they don't use any chemical products to take care of the family or the animals. The quality of life has increased a lot!" (Nossa Roça 12, 2006).

Agroecological farmers protect nature by not using agrochemicals. For that, local unions assist them in collaborating with nature and treating their property differently. Several Nossa Roça bulletins demonstrate how this cooperation between farmers and their organizations encouraged them to leave environmentally harmful production practices behind and embrace agroecological practices in their place

(Nossa Roça 14, 2009; Nossa Roça 17, 2009; Nossa Roça 31, 2014; Nossa Roça 40, 2016).

In Nossa Roça 14, the bulletin details how through the cooperation between UFV, the local union, and CTA, several meetings were held to promote agroecological management. The family featured in this Nossa Roça described how these meetings drew them in and encouraged them to take care of the land in an alternative way. These meetings led the farming family to leave more trees on the farm, incorporate organic fertilizers into their production, and cut weeds instead of pulling them out of the ground. With these changes encouraged by organizations the farmer noted, "…that from then on the land improved a lot, requiring less and less chemical fertilizers.

Another significant change was in production, as the family, encouraged to have a little of everything, began to produce a diversity of other products in addition to coffee" (Nossa Roça 14, 2009). The farmer who participated in Nossa Roça 31 (2014) also described a similar process between their production practices and the influence of CTA. The farmer originally resisted the use of pesticides, but this resistance was strengthened through interventions coordinated by CTA. Besides discouraging farmers from engaging in the use of agrochemicals, the cooperative events held by these organizations presented new technologies to agroecological farmers that not only assist in pest management and soil fertility, but also maintain the health of the land. Meetings, interventions, and conversations between farmers and cooperative organizations throughout the Zona da Mata have allowed farmers to treat nature in a different, more environmentally conscious manner.

"And it was through the partnership with CTA, that we started working to improve the health of our land, diversifying our system by planting banana trees and trees in consortium with coffee." Rather than forcing a crop onto the land and disregarding the negative impact it might have on the agroecosystem, farmers in the Zona da Mata are flexible and work with diversified crops to find a suitable plant or group of plants to grow in co-production with their coffee crop.

As previously demonstrated in the quote from the farmer in Nossa Roça 31 (2014), CTA's programs with farmers provide the technical assistance to find potential biodiverse solutions with agroecological farmers, demonstrating how cooperation between farmers and technical support groups can also promote biodiversity as a way to better manage the land. In the Zona da Mata, cooperative organizations such as the

union and CTA have played a vital role in the maintenance of biodiversity within the local agroecosystem by introducing agroforestry systems, or even just the term agroforestry system or agroecology, to peasant farmers in the region. The farming family who participated in Nossa Roça 37 (2016) discussed how they were already working from an agroecological perspective but that “they just didn’t know that it was the name”.

They explained that they already had trees present in their coffee production system, however, after their participation with CTA and the Women’s Movement of the Zona da Mata, they worked to intensify the biodiversity present in their property and strengthen their coffee agroforestry system. The family credits their participation in these groups as what allowed them to better organize their planting techniques as well as opening the door to possibilities such as agroecological fairs and several courses. The bulletin specifically states, “This participation of the family in the union opened possibilities for fairs and training courses in agroecology and environment, sustainable management and conservation of native seeds, in addition to ensuring access to the Rural My House, My Life Program, through which they were able to improve their housing” (Nossa Roça 37, 2016).

A couple featured in Nossa Roça 34 (2016) detailed the importance of CTA and their local family farm workers union (Sintraf) for the agroecological transition of their property, specifically the agroecological exchanges organized between agroecological farming families and communities, in partnership with Sintraf.

Another agroecological farming family described how a cooperative project regarding agroforestry systems, the “Reflorestar” (Reforest) project, that was monitored and funded by a state organization (INCAPER – Capixaba Institute for Research, Technical Assistance and Rural Extension), permitted them to learn more about agroforestry systems and presented three experimental plots that allowed them to understand the different variations of agroforestry systems they could create (Nossa Roça 38, 2016).

Besides presenting the importance of biodiversity through agroforestry systems and demonstrating different agroforestry systems, CTA and various farmers unions promoted the maintenance of biodiversity by assisting farmers in entering governmental school feeding programs such as the National School Meals Program (PNAE) and the Food Acquisition Program (PAA). Several farmers in the Nossa Roça

series who worked within agroforestry systems participate in these programs (Nossa Roça 25, 2011; Nossa Roça 34, 2016; Nossa Roça 40, 2016) in order to sell the fruits and vegetables grown on their land and gain additional income. The programs encourage farmers to plant without agrochemicals, so agroecological family farmers in particular benefit from these programs.

Farmers who plant in agroforestry systems in the Zona da Mata also cooperate with each other to engage with nature. Understanding the synergies within the community, discussing the relationship between themselves and nature, and utilizing them to meet local need has been a recurring process throughout the agroecological communities in the region. In Nossa Roça 32 (2016), two agroecological farming families discussed how they work together to engage with the land and nature. The bulletin states, “their families were neighbors, and since they were children, they both helped with the farming, and it is on this basis that they learn new things and share their knowledge in the community, in the agroecological exchanges, and for their five children, four of whom are already married and are also agroecological family farmers” (Nossa Roça 32, 2016).

Another family that was a part of Nossa Pesquisa na Roça 10 (2016), described how their desire to move to the countryside and engage in agroecology was fueled by their wish to be in contact with nature. In the bulletin, it details, “In this place they could become independent, that is, run their own plot: work for themselves and on their own land, plant and take care of what is theirs, receive and aggregate their family members, be in contact with nature and in a peaceful place, "away from the bad things in the city"” (Nossa Pesquisa na Roça 10, 2016).

Families involved in the land conquest detailed in Nossa Pesquisa na Roça 6 (2014) also displayed a similar desire, saying, “having a piece of land also meant having a home, a "safe corner" to unite and to gather the family, where the children can play, where there is silence, security, nature and fruit in the window” (Nossa Pesquisa na Roça 6, 2014). Agroecological farmers, their families, and their communities expressed a collective desire to live closer to nature and engage with it through agroecological practices, such as coffee production in agroforestry systems.

4.4.3 Cooperation with biodiversity in agroforestry systems

The interrelation between cooperation and biodiversity within agroforestry systems was presented throughout the Nossa Roça series. The synergies created by agroforestry systems and the cooperation needed to create and maintain these agroecosystems occurred not just between farmers and cooperative organizations such as CTA or the union, but also between farmers and non-human species present within their agroforestry systems. Cooperative organizations also played a key role in encouraging biodiversity within the systems, by presenting technical knowledge as to what biodiversity integrates well into agroforestry systems as well as government programs that allow farmers to gain income from this biodiversity.

Nossa Roça 28 (2012) discusses the understanding of biodiversity amongst agroecological farmers in the Zona da Mata. In this bulletin, the traditional understanding of biodiversity is discussed-a system that encompasses non-human beings such as plants and animals, as well as soil, air, and water. This definition is then challenged, writing, "…we cannot forget that the human being can and must live in harmony with the environment, which is why we talk about sociobiodiversity, which is the woman, man, and child helping to create and respect the diversity that exists in every corner of this planet" (Nossa Roça 28, 2012). The farmers who were featured in this bulletin, the majority of whom were women and referred to as the guardians of biodiversity, continued to challenge this perception of biodiversity and diversity in general. During the farm visits that were detailed in this bulletin, it was explained that "Living with diversity is giving and receiving from nature. We realized during our visits to the properties that the more we plant, the richer the animals, the soil, and the air we will have. Many plants are born without the need to plant" (Nossa Roça 28, 2012).

The cooperation present in the agroforestry systems is not just between humans, as cooperation is usually perceived, rather, it is an interspecies cooperation promoted through biodiversity. In Nossa Roça 10 (2005), the bulletin describes the plant diversity present within the agroforestry system, including bushes such as joão-leite, picão and caruru. When discussing other plant species present, a direct connection is made between the benefit of these diverse plants and caring for wildlife. The bulletin states, "There are plenty of banana and papaya trees, which attracts many forest animals like the jacu, rabbit, and quati. There is even a palm tree planted by the jacu" (Nossa Roça 10, 2005). A family in Nossa Roça 14 also explained how they viewed the increased presence of birds and other wildlife in their agroforestry system,

writing, “In the family system, the birds are company, not a plague! There you can find toucans, tanagers, thrush, finches, woodpeckers, among others. The "chau", which was almost extinct in the region, has come back to decorate the property” (Nossa Roça 14, 2009).

Rather than try to prevent wild animals from entering their fields, as is the goal of conventional coffee production in order to prevent a potential production loss, agroecological farmers welcome the presence of wild animals in their agroforestry systems, understanding that the presence of these animals brings more life and biodiversity to their system, as demonstrated by the remark regarding a jacu bird planting a palm tree (jussara) on the property. This is another example of how some of the plants present in agroforestry systems grew without being planted by humans.

Another family who participated in the Nossa Roça series detailed how the native trees growing in their agroforestry system provide not only fruit for birds and bees, which are recognized as beneficial not only to the native forest but also the coffee agroforestry system, but also provide shade for the family while they are working as well as food and medicinal plants for them (Nossa Roça 36, 2016). In this bulletin, the farmer reminds the reader “that nothing is bush, everything is good for something!” (Nossa Roça 36, 2016).

Both of these agroecological farmers, along with several others who were featured in the Nossa Roça series (Nossa Roça 2, 2003; Nossa Roça 12, 2006; Nossa Roça 24, 2010; Nossa Roça 25, 2011) demonstrate how humans can benefit from biodiversity in several aspects while also providing food and shelter to wildlife. The interspecies cooperation that occurs through the promotion of biodiversity allows farmers to interact with nature within their agroforestry systems in a way that does not diminish the production of coffee, which is the common misconception perpetuated by those who produce in monoculture systems, rather, these interactions benefit all those, human and non-human, who rely on the agroforestry system for their livelihoods.

One female farmer describes the importance of inter-species cooperation to preserve biodiversity, stating, “When man throws poison on the land, I think he doesn't think, because the ecological balance is wonderful. In the first year here on the property the passion fruit didn't bear fruit, so we planted daisies and sunflowers to attract the bumblebee. The agroforestry system is viable for promoting soil protection and diversity, in our case it also served to contain the soil that invaded the house in times

of flooding, and also for soil protection and diversity"(Nossa Roça 38, 2016). She directly relays the benefits of the biodiverse agroforestry systems, presenting how the system created ecological balance on the property and preserves natural resources such as soil.

Farmers in the Nossa Roça series also reflected upon how through biodiversity they were able to understand what the land needed or how to better lead with the land. A farmer who participated in the creation of Nossa Roça 31 (2014) explained, "By observing the land we know when it is poor. For this reason, we stopped planting corn in the middle of the coffee, because corn requires weeding during the rainy season, which causes a lot of soil erosion.

Another biodiverse farming method that demonstrated the cooperation with biodiversity was the production of organic inputs. One family featured in Nossa Roça 40 (2016) presented how a meeting with a cooperative organization taught them how to produce EM (Efficient Microorganisms) and biofertilizer. The family explained that these two technologies are essential in their management system, "…both in pest and disease control and in maintaining soil fertility and structure that ensure biodiversity. The production of biofertilizer has been expanded and the family will begin to market the product" (Nossa Roça 40, 2016).

The bulletin explains benefits of the exchanges, stating, "Many fruits have been harvested in this process. With the agroecological practices and hard work, the family's quality of life has increased, production has become more diversified, and the soil is increasingly strong and productive!" (Nossa Roça 34, 2016).

4.5 Coloniality and/or decoloniality

In the document analysis, farmers recounted their stories of how they were disenfranchised by political policies enacted by organizations, namely the IBC. The pressure from the Green Revolution model, personified in several cases by IBC, combined with the struggles farmers faced during the 1990 coffee crisis and the work initialized by the farmers unions, CEBs, and CTA in order to find an alternative form of agriculture lead farmers in the region to organize around what is called nowadays agroecology, and in that time alternative agriculture.

The IBC was one of many modernization programs pushed by the Brazilian government in order to intensify agricultural production in the country (WATSON;

ACHINELLI, 2008). The military dictatorship wanted to “modernize” agriculture by increasing the production of commodity crops throughout Brazil (HOUTZAGER, 2001). With this action, the dictatorship actively upheld and promoted modern/colonial systems of oppression and economic projects, not only through political and ideological domination, but also through the intensified production of monoculture crops. This was done not only to benefit the state and national bourgeoisie of Brazil, but also for the benefit of international markets that serve the imperial core (WATSON; ACHINELLI, 2008; HOUTZAGER, 2001).

Rather than continuing to produce coffee in the intensified monocultural manner that was pushed upon farmers by the state, peasant farmers in collaboration with organizations and academics from UFV in order to discuss alternative forms of agriculture that did not use Green Revolution technologies. Intercropping with trees was not common, in the recent years, within the region until this cooperative effort was formed (CARDOSO et al., 2001).

By re-introducing trees into previously degraded land in the Zona da Mata, through an indigenous planting system, agroforestry systems can serve as a form of resistance to colonially instituted planting techniques and to break with colonial perceptions of what the “right” and “modern” form of cultivating is, disrupting the information and practices introduced by scientists from the Global North (DEAN, 1989).

This re-introduction of biodiversity, resistance to exploitative planting systems, and rejection of modern development standards, could present as a form of political ecology, which focuses on the emancipation practices of peoples, such as indigenous peoples and peasants, engaged in struggles for the reinvention of their identities and the re-appropriation of their bio-cultural territories (PORTO-GONÇALVES; LEFF, 2015). The resistance was developed because of the understanding by farmers of the negative impacts created by monoculture systems and its technological package, shown through their remarks on how pesticides have harmed them (Nossa Roça 34, 2016; Nossa Roça 36, 2016), as well as their understanding of biodiversity.

Moreover, as demonstrated through the Nossa Roça series, agroforestry systems allowed for the farmers to reconnect with nature in a way that monocultural systems do not permit. Increasing biodiversity within their planting systems allowed then to benefit and to be aware of forms of cooperation between humans as well as

human-nature cooperation, different to the colonial perception of nature, which views nature and humans as separate entities and competitors (ESCOBAR, 2018).

Agroforestry systems also grant more autonomy to the farmers in several ways. The farmers, as expressed in the bulletins, were less dependent on the market to buy external inputs, to sell their products and to buy food. The diversity of the plants present in the agroforestry systems increased the quality of the soil and decreased the vulnerability of the plants to pest and diseases. Agroforestry systems allowed farmers to grow food for auto consumption as well as participate in diverse markets. Rather than relying solely on the export coffee market, farmers participate in local and regional agroecological fairs, as well as governmental programs such as PAA and PNAE. Rather than the constricting design of monoculture coffee production that renders farmers increasingly vulnerable to market fluctuations, agroforestry systems allow for income diversity.

The respect and recognition of farmers, expressed through participatory methodologies, could be considered anti-colonial also through knowledge, because it denies what colonial science values, the supremacy of modern scientific knowledge. This can also be a form of autonomy, specifically epistemic autonomy, that does not require verticalized technical assistance that educational and research institutions are so fond of.

The autonomy granted to farmers through agroforestry systems also presents as decolonial. Considering that modern/ colonial institutions work to take away power from those who were colonized, the re-establishment of power and control to the colonized breaks with these institutions. As emphasized by Escobar (2018), with the neoliberal pressure to delocalize, autonomy presents as a counternarrative (ESCOBAR, 2018), since it allows communities to rely upon themselves and their resources to survive within their own context. Autonomy, in Portuguese, *autonomia,* can also reject neoliberalism, capitalism, and other modern institutions, and encapsulates the importance of cooperation and inter-existing- which Escobar claims is a design for the pluriverse (2017).

4.5.1 Agroforestry systems and pluriverses

As described by Escobar, the product of territorial struggles and cultural differences are entire worlds (ESCOBAR, 2018). The territorial struggles of peasant farmers in the Zona da Mata against coffee monocultures lead to the creation of agroforestry systems. Considering that the agroforestry systems were products of that response, created through collaborative design amongst peasant farmers, academics, farmers unions, and CTA, it could be argued that these cultivation systems are a materialization of a pluriverse.

Within agroforestry systems, many worlds fit. The commodity coffee crop can be produced in the same area as papaya trees, insects and microorganisms survive, and wildlife thrive. This design was created with farmers to not only meet the needs of their families, the need to produce coffee for income, the production of nutritious and pesticide-free food, but also those of the environment around them, re-establishing biodiversity and connecting with nature.

In the framework of the Epistemologies of the South, created by Santos (2014) and elaborated upon by Escobar (2018), the emphasis is of “thinking otherwise” and creating a space that reengages with the diverse forms of knowledge held by those who are excluded from, or unable to explain their experiences to, academic Eurocentric knowledge (ESCOBAR, 2018). The designing of agroforestry systems in the Zona da Mata accomplished this by utilizing indigenous planting models that encouraged polycultures and planting within the forest (RAMOS, 2017; LEMOS, 2016) and by engaging in participatory development and research with peasant farmers to adapt these agroforestry systems to the needs of the peasant farmers (BOTELHO et al., 2016; CARDOSO; FERRARI, 2006; CARDOSO, 2001).

Throughout the Nossa Roça documents, it is clear that agroforestry systems created a place where peasant farmers can interact with nature, to recreate bonds and relationships with non-human species as well as natural resources such as soil and water, as well as resist the monoculture model of coffee production that was pushed upon the region through institutions such as the IBC. This place is where farmers see not only their world and the desires and political ontology that make it, but also acknowledge and make space for the worlds of the wildlife, microorganisms, and insects present in the diversified agroecosystem.

Understanding the cooperation between farmers, academic institutions, political organizations, and nongovernmental organizations, that facilitated the creation and

maintenance of these agricultural systems in the Zona da Mata, it could be said that agroforestry systems are the materialization of a pluriverse that was created through the political ontology and epistemologies of peasants from the region.

Political ontology is situated in the defense of territories and ecological-ontological struggles, when considering ontology focusing on how a particular world is, or ontology as a field of study concerned with the interrelations among worlds (ESCOBAR, 2018). Environmentally harmful monoculture coffee production, as well as the harm caused to peasant farmers, pushed farmers in the Zona da Mata to find an alternative to this production style.

Agroforestry systems was understood as an alternative to the world of intensified monocultures and agrochemicals that also lead to the breaking of the nature/ culture divide for most peasant farmers. Farmers used agroforestry systems to interact with nature, preserving and increasing biodiversity within these systems to provide not only for themselves, but the non-human species surrounding them. Escobar also mentions that political ontology in Latin America has emerged in opposition to large-scale extractivist operations, which includes the monocultural production of commodity crops.

Escobar's concept of the pluriverse, which references designs imagined by indigenous and peasant movements such as the Zapatistas, breaks with coloniality/ modernity's creation of the false belief that only one homogenous universe exists, that there is only one "right" way of living, being, and developing (ESCOBAR, 2017). By encouraging the development of different realities, communities are allowed to build within their own contexts, reject institutions such as capitalism, and engage in cultural and ecological transitions that can reconnect humans with nature (ESCOBAR, 2017; 2018).

4.6 Conclusions

The implementation and maintenance of agroforestry systems in the Zona da Mata present as a form of resistance to the conventional coffee production systems pushed onto farmers through state institutions. Agroforestry systems mirror the natural agroecosystems that were created by indigenous peoples and existed during pre-colonial times.

Even though these systems may have crops that were originally cultivated outside of Brazil, agroforestry systems nurture these plants and creates an ecosystem with synergy amongst the diverse set of crops. Crops that originated from Africa, as is the case of coffee, the Americas, and Europe thrive within agroforestry systems. The agroforestry systems could reflect upon the hybridization of the Brazilian people, who also are influenced by African, Native, and European peoples and cultures.

The cooperative relationship between farmers and the agroforestry systems, connecting between nature and biodiversity, presents a decolonial perspective- based not in the idea that humans own nature and that they must control it, rather, that humans play a part in nature and must respect it. The cooperation between farmers and social organizations came together to develop these highly diversified agroecosystems in order to preserve nature and biodiversity, while actively resisting Green Revolution technologies, with its package and intensified monocultures. The resistance to these technologies and valorization of peasant epistemologies through agroforestry systems could allow these unique agroecosystems to present as a materialization of a pluriverse, where the political ontology of the peasant farmers of the Zona da Mata is encouraged to grow.

Through the preservation of nature and biodiversity offered through this system, there are no monocultures of the mind or the field. While agroecological farmers are making great strides in the region, there is still a great need for more agroecological farming in the Zona da Mata and all the benefits agroforestry systems bring to farmers and the surrounding ecosystem.

5. FINAL CONSIDERATIONS

Through their traditional ways of life, our general objective was to identify whether family farmers resist Eurocentric capitalist systems of production and why (or how) they do so. Agroecological farmers in the Zona da Mata of Minas Gerais demonstrated several forms of resistance to these systems of production and elaborated upon their reasoning in the bulletins analyzed during this study.

The specific objectives of the research were to understand how the peasant ancestrality and spirituality contribute to break structures of coloniality; to identify the characteristics of decolonial action present in agroforestry systems; and to analyze

how the themes of cooperation, nature, and biodiversity present in the agroforestry systems are related to colonial thoughts. Three dimensions were identified as decolonial, the relationship between ancestrality, spirituality, and nature; the cooperation amongst farmers and between farmers and nature, clearly expressed in the biodiversity and cooperation present in the agroforestry systems.

The intrinsic relationship between culture and nature was expressed in the cosmovisions and spirituality of the farmers, focusing on the love for the land, the water, and for biodiversity. Peasant farmers in the agroecological movement in the Zona da Mata consistently discussed how their ancestrality impacted their relationship with nature. They learned from their parents and grandparents how to care for the land and the importance of loving the land- forgoing the modern beliefs that regard nature as a static resource to be exploited for capitalist consumption. From these teachings, farmers turned to agroecology, due to its biodiverse farming practices that connect to spiritual beliefs.

Nature and the land were viewed as a gift from God, and farmers demonstrated their love and appreciation for said gift through the biodiversity they nurtured within their agroecosystems. Through the cosmovision of the farmers in the Zona da Mata, farmers are part of nature and must work in cooperation with it. Agroecological farmers work in tandem with nature by observing the land, determining what agroecological management techniques could assist with areas of concern such as soil quality and water quality, and interacting with the diverse species that inhabit their agroecosystems. These links to ancestrality and spiritual teachings lead farmers to break with modern notions of nature and culture through agroecology.

The cooperation amongst the farmers and between farmers and nature present in the study was identified as a decolonial dimension. Agroecological farmers demonstrated a deep respect for cooperation amongst themselves, as demonstrated through the participation of farmers in local unions, cooperatives, and exchanges. This cooperation between farmers grants them autonomy, giving them the power and choice to refuse the use of agrochemicals and be selective of the markets they participate in.

Farmers work together to establish alternative markets, exchange agricultural techniques that meet local needs, and meet the labor requirements that agroforestry systems and other agroecological farming systems need. Modernity and coloniality

consistently attempt to separate humans from nature, reinforcing this idea that humans are above nature and that it is a stagnant entity that should be utilized as a capitalistic resource.

The expression of cooperation within the biodiversity present in the agroecosystems of peasant farmers, where relationships of co-production are established, also presented as a form of resistance to modern structures. In the Zona da Mata this is strongly expressed in the agroforestry systems, where farmers utilize their knowledge of respect for nature, to establish a biodiverse agroecosystem that can produce coffee without agrochemicals and produce enough food to provide for themselves and the other living beings on the property.

Within their agroforestry systems, farmers focus on working in co-production with nature planting diverse crops and valuing the benefits that biodiversity provides, such as increasing biomass production to protect the soil and nutrient cycling, improving water infiltration and decreasing erosion and improving biological control. These benefits allow farmers no to use agrochemicals, which they refuse. This relationship of co-production with nature that occurs within agroforestry systems once again refutes the modern interpretation of nature as something that must be fought against, and instead instills a value of cooperation between humans and nature through biodiversity.

These identified decolonial dimensions discussed in this research demonstrate how the work of agroecological farmers in the Zona da Mata are cultivating livelihoods outside of the modern norm, creating a space in the pluriverse that breaks with modern and colonial perceptions through respect for nature, the management of biodiversity and cooperation.

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Appendix 1: Question Matrix									
	A	**E**	**C & S**	**R**	**DEC/CO**	**BIO**	**N**	**ENP**	**G & G**
A		Quais e como as heranças ancestrais se manifestam na espiritualidade e nas crenças?	Quais ações/condutas de cooperação/ solidariedade são heranças de antepassados?	Como a religião auxilia no respeito à ancestralidade? Como os antepassados influenciam nas opções e práticas religiosas? Como e por que a religiosidade contribui para o rompimento ou fortalecimento dos laços da ancestralidade?	Quais ações decoloniais ou coloniais remetem à ancestralidade? Como e por que a ancestralidade potencializa as ações decoloniais ou coloniais?	Qual a relação entre ancestralidade e biodiversidade? Por que a biodiversidade se relaciona com a ancestralidade? Quais as memórias dos antepassados sobre biodiversidade? Como e por que as funções da biodiversidade se relacionam com a ancestralidade? (Preservar memoria) quais as influências/contribuições familiares na escolha pela biodiversidade?	Quais as relações e conexões entre ancestralidade e natureza? quais as concepções/relações com a natureza remetem a práticas ancestrais e vice-versa? Por que e como a ancestralidade contribui para a proteção da natureza?	Como e por que a ancestralidade influencia no engajamento político? Quais ações e ou condutas de engajamento político são heranças das formas de agir e se relacionar dos antepassados?	Quais saberes/práticas/brincadeiras mulheres e crianças guardam dos seus antepassados? Quais ensinamentos são heranças das gerações mais velhas? Quais plantas ou outros cultivos são relacionados com ancestralidade (na ZM)? Como a ancestralidade se manifesta no cuidado com as crianças?
E			Quais as ações de cooperação, solidariedade, sinergias se ancoram na espiritualidade? Como e por que a espiritualidade favorece essas ações?	Em que espiritualidade e religião se diferem?	Como e por que a espiritualidade pode contribuir para o decolonialismo?	Como a espiritualidade contribui para a manutenção da biodiversidade? Por que a espiritualidade contribui para a conservação da biodiversidade e vice versa? quais as crenças e sentimentos se relacionam com a escolha da biodiversidade? e pela opção pela biodiversidade? como a espiritualidade atribui funções à biodiversidade?	Qual é a função da espiritualidade na relação entre ser humano e a natureza? Como percebem deus na natureza? quais crenças, valores e sentimentos são associados à natureza?	Como e por que a espiritualidade motiva o engajamento político? Quais as ações do engajamento político tem relação e fortalecem a espiritualidade?	Como a espiritualidade se manifesta nas ações e saberes das mulheres e das crianças? Como e por que a espiritualidade é mais presente/cuidada na vida das mulheres?
C & S				Como e por que a religião motiva,	Como e por que cooperação,	Como a cooperação ou solidariedade contribui para a manutenção da	Como e por que a cooperação e solidariedade	Como e por que CeS fortalecem e motivam o engajamento	Qual o papel das mulheres na criação e manutenção de laços de

				fortalece ou possibilita ações de cooperação, solidariedade, sinergia?	solidariedade e sinergia manifestam princípios decoloniais? Como o colonialismo se manifesta na ausência de CeS?	biodiversidade? Como o entendimento das relações sinérgicas contribui para a opção pela biodiversidade? quais as ações de cooperação/solidarieda de fortalecem a opção pela biodiversidade?	fortalecem relacionamentos do ser humano com a natureza? quais ações de cooperação/solidarieda de remetem à relação com a natureza?	político? (e vice-versa)	cooperação/solidariedade? Como isso é transmitido às crianças? Como as mães e avós transmitem para as crianças as relações de CeS? Como as mulheres e crianças criam sinergias na comunidade agroecológica? Como a compreensão de CeS das mulheres aparece na compreensão e nas falas das crianças?
	A	**E**	**C & S**	**R**	**DEC/CO**	**BIO**	**N**	**ENP**	**G & G**
R					Como o colonialismo ou o decolonismo se manifesta nas expressões religiosas?	O que a religião influencia a relação com a biodiversidade? quais os ensinamentos da religião sobre biodiversidade? Como a religião atribui funções à biodiversidade? Quais e como as ações/concepções da religião incentivam ou fortalecem a opção pela biodiversidade?	Como e por que a religião influência o relacionamento do ser humano com a natureza? quais as concepções de natureza na religião? Quais as falas sobre natureza remetem às concepções religiosas?	Como e por que a religião pode fortalecer o engajamento político? Quais as ações e apoio da religião levam ao engajamento político?	Quais percepções/sentidos/conceitos são atribuídos às mulheres e às crianças na religião? Como e por que as mulheres são as guardiãs das práticas/ conhecimentos religiosos? (olhar nas questões de cima o que pode ser colocado aqui)
DEC/CO						Como e porque a biodiversidade contribui para o pensamento decolonial? Como o decolonialismo favorece a manutenção da biodiversidade? Como o pensamento decolonial alterou o entendimento das funções da biodiversidade?	O qual é o papel da natureza em movimentos decoloniais? Qual é o relacionamento entre colonialidade e natureza? quais as concepções de natureza associadas a ações decoloniais?	Como e por que o engajamento político pode ser um ato decolonial? Como e por que o engajamento político fortalece o decolonialismo?	Como e por que o decolonialismo e o colonialismo se reflete nas relações de gênero e nas relações geracionais? Como e por que o decolonialismo e o colonialismo honra ou não as mulheres e crianças? Como e por que o decolonialismo e o colonialismo empodera ou não as mulheres?
BIO							Como a biodiversidade preserva a natureza? Como e quais funções de biodiversidade beneficiam a natureza?	Qual a relação entre engajamento político e biodiversidade? Como e por que o engajamento político ou a alienação	Como mulheres e crianças compreendem a importância da biodiversidade no seu cotidiano? Como as mulheres e os jovens protegem e promovem funções

								influenciam o manejo da biodiversidade? Quais são as ações de engajamento político que conservam a biodiversidade? Como e por que o engajamento político permite compreender ou não as funções da biodiversidade? Quais politicas públicas e leis (refletidas nas falas e nas ações de agricultores) contribuem para ações de proteção da biodiversidade?	biodiversos? Quais ações/ condutas de funções da biodiversidade são potencializadas pelas gerações? Como e por que os cuidados com alimentação e saúde se refletem nos cuidados com a natureza e a biodiversidade? Qual o papel de mulheres e crianças na manutenção da biodiversidade?
	A	**E**	**C & S**	**R**	**DEC/CO**	**BIO**	**N**	**ENP**	**G & G**
N								Qual a representação de natureza presente nas lutas políticas? Quais ações políticas contribuem para a proteção da natureza?	Qual a representação de natureza das mulheres e crianças? Como as mulheres e jovens interagem com a natureza? Como e por que jovens e mulheres cuidam da natureza? Como a culinária contribui para a proteção da natureza? Como os cuidados com a saúde contribuem para a relação com a natureza?
ENP									Como e por que mulheres e crianças se envolvem ou podem se envolver nas lutas políticas? Qual o engajamento de mulheres e crianças nas lutas políticas? Qual é a importância do engajamento político das mulheres e crianças?
G&G									

Appendix 2: Questions from the Matrix

Ancestralidade e Gênero e Geração

1. Quais saberes/práticas/brincadeiras mulheres e crianças guardam dos seus antepassados?
2. Quais ensinamentos são heranças das gerações mais velhas?
3. Como a ancestralidade se manifesta no cuidado com as crianças?

Ancestralidade e Engajamento Político

1. Como e por que a ancestralidade influencia no engajamento político?
2. Quais ações e ou condutas de engajamento político são heranças das formas de agir e se relacionar dos antepassados

Ancestralidade e Natureza

1. Quais as relações e conexões entre ancestralidade e natureza?
2. Quais as concepções/relações com a natureza remetem a práticas ancestrais e vice versa?
3. Por que e como a ancestralidade contribui para a proteção da natureza?

Ancestralidade e Biodiversidade e suas funções

1. Qual a relação entre ancestralidade e biodiversidade?
2. Por que a biodiversidade se relaciona com a ancestralidade?
3. Quais as memórias dos antepassados sobre biodiversidade?
4. Como e por que as funções da biodiversidade se relacionam com a ancestralidade?
5. Quais as influências/contribuições familiares na escolha pela biodiversidade?

Ancestralidade e Decolonialidade/colonialidade

1. Quais ações decoloniais ou coloniais remetem à ancestralidade?

2. Como e por que a ancestralidade potencializa as ações decoloniais ou coloniais?

Ancestralidade e Religiosidade

1. Como a religião auxilia no respeito à ancestralidade?
2. Como os antepassados influenciam nas opções e práticas religiosas?
3. Como e por que a religiosidade contribui para o rompimento ou fortalecimento dos laços da ancestralidade?

Ancestralidade e C&S&S

1. Quais ações/condutas de C&S&S são heranças de antepassados?

Ancestralidade e Espiritualidade

1. Quais e como as heranças ancestrais se manifestam na espiritualidade e nas crenças?

Espiritualidade e Gênero e Geração

1. Como a Esp se manifesta nas ações e saberes das mulheres e das crianças?
2. Como e por que a espiritualidade é mais presente/cuidada na vida das mulheres?

Espiritualidade e Engajamento Político

1. Como e por que a espiritualidade motiva o engajamento político?
2. Quais as ações do engajamento político tem relação e fortalecem a espiritualidade?

Espiritualidade e Natureza

1. Qual é a função da espiritualidade na relação entre ser humano e a natureza?

2. Como percebem deus na natureza?
3. Quais crenças, valores e sentimentos são associados à natureza?

Espiritualidade e Biodiversidade e suas funções

1. Como a espiritualidade contribui para a manutenção da biodiversidade?
2. Por que a espiritualidade contribui para a conservação da biodiversidade e vice versa?
3. Quais as crenças e sentimentos se relacionam com a escolha da biodiversidade? e pela opção pela biodiversidade?
4. Como a espiritualidade atribui funções à biodiversidade?

Espiritualidade e Decolonialidade/colonialidade

1. Como e por que a espiritualidade pode contribuir para o decolonialismo?

Espiritualidade e Religiosidade

1. Em que espiritualidade e religião se diferem?

Espiritualidade e C&S&S

1. Quais as ações de C&S&S se ancoram na espiritualidade?
2. Como e por que a espiritualidade favorece essas ações?

C&S&S

C&S&S e Gênero e Geração

1. Qual o papel das mulheres na criação e manutenção de laços de cooperação/solidariedade?
2. Como isso é transmitido às crianças?
3. Como as mães e avós transmitem para as crianças as relações de CeS?
4. Como as mulheres e crianças criam sinergias na comunidade agroecológica?

5. Como a compreensão de CeS das mulheres aparece na compreensão e nas falas das crianças?

C&S&S e Engajamento Político

1. Como e por que CeS fortalecem e motivam o engajamento político? (e vice-versa)

C&S&S e Natureza

1. Como e por que a cooperação e solidariedade fortalecem relacionamentos do ser humano com a natureza?
2. Quais ações de cooperação/solidariedade remetem à relação com a natureza?

C&S&S e Biodiversidade e suas funções

1. Como a cooperação ou solidariedade contribui para a manutenção da biodiversidade?
2. Como o entendimento das relações sinérgicas contribui para a opção pela biodiversidade?
3. Quais as ações de cooperação/solidariedade fortalecem a opção pela biodiversidade?

C&S&S e Decolonialidade/colonialidade

1. Como e por que cooperação, solidariedade e sinergia manifestam princípios decoloniais? Como o colonialismo se manifesta na ausência de CeS?

C&S&S e Religiosidade

1. Como e por que a religião motiva, fortalece ou possibilita ações de cooperação, solidariedade, sinergia?

Religiosidade e Gênero e Geração

1. Quais percepções/sentidos/conceitos são atribuídos às mulheres e às crianças na religião?
2. Como e por que as mulheres são as guardiãs das práticas/ conhecimentos religiosos?

Religiosidade e Engajamento Político

1. Como e por que a religião pode fortalecer o engajamento político?
2. Quais as ações e apoio da religião levam ao engajamento político?

Religiosidade e Natureza

1. Como e por que a religião influência o relacionamento do ser humano com a natureza?
2. Quais as concepções de natureza na religião?
3. Quais as falas sobre natureza remetem às concepções religiosas?

Religiosidade e Biodiversidade e suas funções

1. O que a religião influencia a relação com a biodiversidade?
2. Quais os ensinamentos da religião sobre biodiversidade?
3. Como a religião atribui funções à biodiversidade?
4. Quais e como as ações/concepções da religião incentivam ou fortalecem a opção pela biodiversidade?

Religiosidade e Decolonialidade/colonialidade

1. Como o colonialismo ou o decolonismo se manifesta nas expressões religiosas?

Decolonialidade/colonialidade e Gênero e Geração

1. Como e por que o decolonialismo e o colonialismo se refletem nas relações de gênero e nas relações geracionais?
2. Como e por que o decolonialismo e o colonialismo honram ou não as mulheres e crianças?
3. Como e por que o decolonialismo e o colonialismo empoderam ou não as mulheres?

Decolonialidade/colonialidade e Engajamento Político

1. Como e por que o engajamento político pode ser um ato decolonial?
2. Como e por que o engajamento político fortalece o decolonialismo?

Decolonialidade/colonialidade e Natureza

1. O qual é o papel da natureza em movimentos decoloniais?
2. Qual é o relacionamento entre colonialidade e natureza?
3. Quais as concepções de natureza associadas a ações decoloniais?

Decolonialidade/colonialidade e Biodiversidade e suas funções

1. Como e porque a biodiversidade contribui para o pensamento decolonial?
2. Como o decolonialismo favorece a manutenção da biodiversidade?
3. Como o pensamento decolonial alterou o entendimento das funções da biodiversidade?

Biodiversidade e suas funções e Gênero e Geração

1. Como mulheres e crianças compreendem a importância da biodiversidade no seu cotidiano?
2. Como as mulheres e os jovens protegem e promovem funções biodiversos?
3. Quais ações/ condutas de funções da biodiversidade são potencializadas pelas gerações?

4. Como e por que os cuidados com alimentação e saúde se refletem nos cuidados com a natureza e a biodiversidade?
5. Qual o papel de mulheres e crianças na manutenção da biodiversidade?

Biodiversidade e suas funções e Engajamento Político

1. Qual a relação entre engajamento político e biodiversidade?
2. Como e por que o engajamento político ou a alienação influenciam o manejo da biodiversidade?
3. Quais são as ações de engajamento político que conservam a biodiversidade?
4. Como e por que o engajamento político permite compreender ou não as funções da biodiversidade?
5. Quais políticas públicas e leis (refletidas nas falas e nas ações de agricultores) contribuem para ações de proteção da biodiversidade?

Biodiversidade e suas funções e Natureza

1. Como a biodiversidade preserva a natureza?
2. Como e quais funções de biodiversidade beneficiam a natureza?

Natureza e Gênero e Geração

1. Qual a representação de natureza das mulheres e crianças?
2. Como as mulheres e jovens interagem com a natureza?
3. Como e por que jovens e mulheres cuidam da natureza?
4. Como a culinária contribui para a proteção da natureza?
5. Como os cuidados com a saúde contribuem para a relação com a natureza?

Natureza e Engajamento Político

1. Qual a representação de natureza presente nas lutas politicas?

2. Quais ações políticas contribuem para a proteção da natureza?

Engajamento Político e Gênero e Geração

1. Como e por que mulheres e crianças se envolvem ou podem se envolver nas lutas políticas?
2. Qual o engajamento de mulheres e crianças nas lutas políticas?
3. Qual é a importância do engajamento político das mulheres e crianças?

Appendix 3: BULLETINS ANALYZED FOR THE STUDY

Nossa Cultura na Roça

- Nossa Cultura na Roça 1
- Nossa Cultura na Roça 2

Nossa Pesquisa na Roça

- Nossa Pesquisa na Roça 1
- Nossa Pesquisa na Roça 2
- Nossa Pesquisa na Roça 3
- Nossa Pesquisa na Roça 4
- Nossa Pesquisa na Roça 5
- Nossa Pesquisa na Roça 6
- Nossa Pesquisa na Roça 7
- Nossa Pesquisa na Roça 8
- Nossa Pesquisa na Roça 9
- Nossa Pesquisa na Roça 10
- Nossa Pesquisa na Roça 11

Nossa Roça

- Nossa Roça 1
- Nossa Roça 2
- Nossa Roça 3
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- Nossa Roça 31
- Nossa Roça 32
- Nossa Roça 33
- Nossa Roça 34
- Nossa Roça 35
- Nossa Roça 36
- Nossa Roça 37
- Nossa Roça 38
- Nossa Roça 39
- Nossa Roça 40
- Nossa Roça 41
- Nossa Roça 42
- Nossa Roça 43

Nossa Roça Tecnologia Social

- Nossa Roça Tecnologia Social 1
- Nossa Roça Tecnologia Social 2
- Nossa Roça Tecnologia Social 3
- Nossa Roça Tecnologia Social 4
- Nossa Roça Tecnologia Social 5
- Nossa Roça Tecnologia Social 6
- Nossa Roça Tecnologia Social 7
- Nossa Roça Tecnologia Social 8
- Nossa Roça Tecnologia Social 9
- Nossa Roça Tecnologia Social 10
- Nossa Roça Tecnologia Social 11

Raizes da Terra

- Raizes da Terra- Mulheres e Agroecologia em Rede 1
- Raizes da Terra- Mulheres e Agroecologia em Rede 2
- Raizes da Terra- Mulheres e Agroecologia em Rede 3
- Raizes da Terra- Mulheres e Agroecologia em Rede 4

- Raizes da Terra- Mulheres e Agroecologia em Rede 5
- Raizes da Terra- Mulheres e Agroecologia em Rede 6