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Itinerant Agriculture and Food Sovereignty: agricultural scenario in the modern world

Rosenil Antônia de Oliveira Miranda[1]
Universidade Federal de Mato Grosso

Maria Corette Pasa[2]
Universidade Federal de Mato Grosso

ABSTRACT

The expansion of agribusiness in Brazil challenges the future of traditional agricultural systems. This article intends to identify processes by which traditional farmers maintain agricultural diversity on the frontier of monocultures in the Brazilian Midwest, with ethnobotanical records of agricultural practices and agrobiodiversity with 86 quilombolas farmers in Baixada Cuiabana, resulting from production in spaces derived from cutting agriculture and burns. The crops are configured as islands of agrobiodiversity designed among cerrado fields, forests and fallow land, with the ingenious combination of cultural practices and production and conservation of creole and hybrid seeds in the face of the advance of capitalist agriculture. In these relatively stabilized territories, active agriculture is not yet threatened by commercial agricultural expansion or by the extraterritorial process of cultural disqualification. Valuing traditional territories are basic conditions to encourage farmers to continue conserving agrobiodiversity in a dynamic and cultural way over time and achieving the desired food sovereignty.

Keywords: Crop diversity; swidden fallows; agrodiversity; quilombola culture; Mato Grosso.

Agricultura Itinerante e Soberania Alimentar: cenário agrícola no mundo moderno

RESUMO

A expansão do agronegócio no Brasil desafia o futuro dos sistemas agrícolas tradicionais. Este artigo pretende identificar os processos pelos quais os agricultores tradicionais mantêm a diversidade agrícola na fronteira das monoculturas no Centro-Oeste brasileiro, com registros etnobotânicos de práticas agrícolas e agrobiodiversidade com 86 agricultores quilombolas na Baixada Cuiabana, resultantes da produção em espaços derivados da agricultura de corte e queimadas . As lavouras configuram-se como ilhas de agrobiodiversidade desenhadas entre cerrados, florestas e pousios, com a engenhosa combinação de práticas culturais e

[1] Magister. UFMT. MT. State of Mato Grosso Secretary of Education. SEDUC. Cuiabá, Mato Grosso, Brazil 78060- 11 900.Av. Fernando Corrêa da Costa, 2365. Bairro Boa Esperança. Cuiabá, MT, Brasil, 78068-600.ORCID: https://orcid.org/0000-0002-8607-4283. Lattes: http://lattes.cnpq.br/0000000000000000000. E-mail; rosenilantonia@gmail.com

[2] Doctor. UFSCar. São Carlos, SP. Environmental & Forest Science Post-Graduate Program. Department of Botany & Ecology. Federal University of Mato Grosso. UFMT. Cuiabá, Mato Grosso. Av. Fernando Corrêa da Costa, 2365. Bairro Boa Esperança. Cuiabá, MT, Brasil, 78060-900. ORCID: https://orcid.org/0000-0001-5304-5294.
Lattes: http://lattes.cnpq.br/0000000000000000000. E-mail: pasaufmt@gmail.com.

produção e conservação de sementes crioulas e híbridas frente ao avanço da agricultura capitalista. Nesses territórios relativamente estabilizados, a agricultura ativa ainda não está ameaçada pela expansão agrícola comercial ou pelo processo extraterritorial de desqualificação cultural. A valorização dos territórios tradicionais são condições básicas para estimular os agricultores a continuarem conservando a agrobiodiversidade de forma dinâmica e cultural ao longo do tempo e alcançando a almejada soberania alimentar.
Palavras-chave: Diversidade de culturas; pousio roçado; agrodiversidade; cultura quilombola; Mato Grosso.

Agricultura Itinerante y Soberanía Alimentaria: escenario agrícola en el mundo moderno

RESUMEN

La expansión de la agroindustria en Brasil desafía el futuro de los sistemas agrícolas tradicionales. Este artículo tiene como objetivo identificar los procesos por los cuales los agricultores tradicionales mantienen la diversidad agrícola en la frontera de los monocultivos en el Medio Oeste brasileño, con registros etnobotánicos de prácticas agrícolas y agrobiodiversidad con 96 agricultores quilombolas en Baixada Cuiabana, resultantes de la producción en espacios derivados de la agricultura de corte y quemaduras. Los cultivos se configuran como islas de agrobiodiversidad diseñadas entre campos de cerrado, bosques y baldíos, con la ingeniosa combinación de prácticas culturales y de producción y conservación de semillas criollas e híbridas ante el avance de la agricultura capitalista. En estos territorios relativamente estabilizados, la agricultura activa aún no se ve amenazada por la expansión agrícola comercial ni por el proceso extraterritorial de descalificación cultural. Valorar los territorios tradicionales son condiciones básicas para incentivar a los agricultores a seguir conservando la agrobiodiversidad de manera dinámica y cultural en el tiempo y logrando la deseada soberanía alimentaria.
Palabras clave: Diversidad de cultivos; barbechos rotatorios; agrodiversidad; cultura quilombola; Mato Grosso.

INTRODUCTION

The local knowledge of traditional peoples is intrinsically associated with the promotion of autonomous practices that favor the habits and food safety of a large part of the world's population. The Food and Agriculture Organization of the United Nations, much of food and the protection of people's livelihoods are dependent on the sustainable management of various biological resources for food and agriculture in the world today (FAO, 2016; 2009). In this sense, the management system associated with the preservation of natural resources is fundamental for the conservation of biodiversity.

In Brazil, traditional communities occupy areas of native vegetation, where they cultivate a wide diversity of species and plant varieties through small-scale agriculture. Many of these communities practice a form of agriculture that dates back to the Brazilian pre-colonial period (before 1500 AD), which is characterized by high inter and intraspecific diversity of cultivated species (PERONI and MARTINS, 2000). The designation Afro-descendant comprises two words, “Afro” which refers to Africans, and “descendant”, which comes from generations, therefore meaning “the descendants of Africans” (MUNANGA, 2004). According to Salas et al. (2004), more than 13 million people from Africa were traded as slaves between the Old and New Worlds, mainly to the Americas. Today, the descendants of this movement inhabit various parts of Brazil, as well as Europe and other continents outside Africa. Quilombolas are traditional descendant groups of Afro-Brazilians who identify themselves as such, with their own history, including African ancestors and an identity related to historical resistance to oppression (ÁVILA et al., 2015).

Since Ethnobotany is the science that studies the integration of human beings with plant resources (Caballero, 1979), we can say that traditional rural populations, working for years in the same ecosystem, promote common and similar knowledge about their management and about use of plants. Focused on these cultural practices of agricultural management. Pasa (2021) the Ethnobotany makes a biocultural reading of the variety of foods produced by the populations, which will help in understanding the interaction of human populations with geographic areas of vegetation and native flora, as well as areas of agricultural mosaics and the practical experiences in these environments.

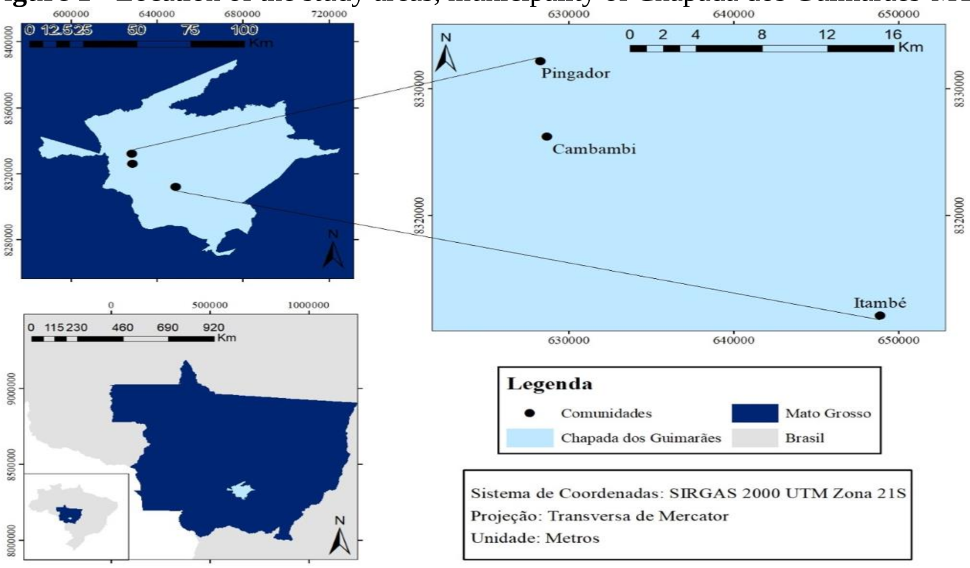
Quilombola communities depend on the environment as primary source of resources, especially forests, expressing ethnobotanical knowledge about the use of natural resources in their daily lives (Miranda et al., 2020), whit intracultural characteristics and socioeconomic, particularities cultural historical and ancestry. Ao evaluating the itinerant agriculture of these traditional Mato Grosso communities, we aimed to investigate the potential of their practices in contributing to the food security of families of small farmers in the Chapada dos Guimarães National Park, MT e guiding questions illustrate current trends and future scenarios of the shifting agriculture in the modern world: 1) does agricultural diversity serve food sovereigntyand contributes to the maintenance of local creole and hybrid varieties? 2) Is local itinerant agriculture threatened by monocultures, which operate on other spatial and temporal scales? 3) are agroforestry systems predominantly practised in today's world?I 4) Are agricultural practices similar in rural communities on other continents?

MATERIALS AND METHODS

Study sit

In the study areas, a set of gardens was investigated in the traditional territories of three quilombola communities in the state of Mato Grosso, Brazil. The data were compiled in the rural agricultural communities Cambambi, Itambé and Pingador, belonging to the municipality of Chapada dos Guimarães, in the central-south region of the state of Mato Grosso (15°10'653”S“ and 55°44'870”W) (Figure 1).

Figure 1 - Location of the study areas, municipality of Chapada dos Guimarães-MT.



Fonte: Mariana Budnik Chinikoski. 2022.

According to the Köppen classification, it has the Tropical Climate of Savanna (Aw), with an average temperature between 22.5º and 23.0º C, a maximum of 29.4º to 30.0º C and a minimum of 17.4º to 18.1º C (IBGE, 2010). Total rainfall ranges from 1650 to 1900 mm per year with five dry months, with a water deficit of 100 to 200 mm between May and September and an excess of 800 to 900 mm between November and April (MMA, 2009). The vegetation cover is the same as in the Cerrado biome and with different phytophysiognomies, among which are Semideciduous Forest, Riparian Forest, Cerradão, Cerrado, Campo Sujo, Campo Limpo and Campo Cerrado Rupestre (MMA, 2009). The main source of livelihood for families is slash-and-burn agriculture and family labor for growing beans, corn, bananas, cassava, sweet potatoes, pumpkins, among others. The majority of the population has two to three productive agricultural gardens and others in fallow and of medium size The local landscape displays a mosaic pattern where the reading of the landscape associated with the interviews allowed us to characterize the ethnolandscapes in forests, agricultural lands, agroforestry backyards, fields and pastures. The forests cover a considerable part of the area and consist of three major variations: undisturbed natural forest, semi-forest agricultural systems and secondary forests, derived from fallow management.

Ethnobotanical inventory

We compiled data from primary and secondary sources. Primary sources include direct observation information and personal communication with local farmers. Secondary data originally obtained through the application of ethnobotanical techniques, such as semi-structured and open interviews (Minayo, 1994; 2007), participant observations, guided tours and oral histories (MEIHY, 1996).

For statistical analysis, we Applied fidelity level (FN), correction factor (FC) and the relative frequency of use of each cited species (Pcup%), which express the consensus of uses of forest resources and allow evaluating the relative importance of each species, according to FRIEDMAN et al., (1986); PHILLIPS & GENTRY (1993a) and PHILLIPS (1996).

The studies were conducted in accordance with the Declaration of Helsinki and approved by the Research Ethics Committee CEP – Saúde – UFMT, under CAAE Opinion No. 03646018.9.0000.8124. Ethnobotanical data, sociocultural and farmer time in the Frame 1.

Frame 1 - Characteristics of the communities studied.

Communities	Farmer's profile	Number/families/ people	Farmer/time (years)
Cambambi	Quilombola/Black	45 (120)	<70
Itambé	Quilombola/Indigenous	80 (150)	<70
Pingador	Quilombola/Black	29 (94)	60
Total		**154/364**	

Source: Authors' collection. 2022.

Cambambi (CC) 50 km away from the city of Chapada dos Guimarães, characterized as a traditional remaining quilombola community. The name is due to the "hill" and "hills" present in the surroundings of the community, occupied by blacks who fled the slave system of the masters' farms, in search of shelter and hiding, "these hills represent a journey in the imagination, firstly because they are an exotic place and second by the stories that are told about them" (AMORIM, 2013). ***Itambé*** community is located 30 km from the city of Chapada dos Guimarães and was recognized in 2005 by the Palmares Cultural Foundation as a Quilombola Remnant. ***Pingador*** (CP) belongs to the Água Fria District, 51 km away from the city of Chapada dos Guimarães, and is home to a population that has lived there for over 60 years.

The botanical identification followed Lorenzi and Matos (2008), Lorenzi (2002), and the APG IV (APG IV, 2016) classification system, while names the database of Flora of Brazil (floradobrasil.jbrj.gov.br) and the Missouri Botanical Garden (http://mobot.mobot.org/W3T/Search/ vast.html) and agronomists from Empaer/MT. Data on plant uses, types of uses, parts used, dosages and health related categories, such as medicines, food, mystical, and religious were based on the literature (AMOROZO, 2013; ALBUQUERQUE; HANAZAKI, 2006; PASA *et al*., 2019; PASA, 2021).

Results

Sociocultural characteristics

A total of 96 people were interviewed, of which 52.0 % were female. Mostly women stayed in the residence taking care of the house and children at all of the localities.The men carried out subsistence farming activities in the fields and foresters to collect fruits and seeds in the property's forests. The age of the interviewees ranged from 40 to 112 years. Knowledge about the production and management of Creole seeds was predominantly held by older people. Young people sometimes stayed in the communities, because help was needed in the cultivation of subsistence crops, such as family labor. Most members of the community possess incomplete elementary education. The predominant religion is Catholic, followed by religions with African influence, such as traditional beliefs practiced on the continent. The economic activities of the communities studied it strongly includes the cultivation of subsistence crops, with families providing the workforce. The communities had records of the sharing of rural work among neighbors, friends and relatives - a practice called "mutirão" in Brazilian communities. The activities of the joint efforts do not imply economic costs for those who benefit from the services because they are shared based on camaraderie.

In the communities studied, the areas of family ownership are: 1. *swiddens* - constitutes the space prepared by the hand of man and representing a niche culturally arranged to house small-scale agriculture plantations; 2. *home gardens* - where mainly medicinal and gastronomic species are grown and are located close to homes, in order to facilitate the acquisition of food and medicines, which are prepared mainly by women; 3. *gardens and backyards* - are essential resource sites for the rural populations of these communities and represent a space for the cultivation of native species; 4. *forests* - forest areas with native species and the collection of forest products is another source of food for families. Agricultural production in areas with extensive human intervention, characterized by cultivated/domesticated species, called swiddens, include the largest source of food for families' subsistence. The main subsistence crops are obtained from a plot in a farm landscape and include the plants *Manihot esculenta*, *Musa* sp., *Carica papay*a *Zea may*, *Ipomoea potatoes*, *Sacch*arum sp., *Cucurbita* sp., *Punica* sp., *Gossypium* sp., *Citrus* sp., *Senna occidentalis*, among others.

Culturally they exercise the agro-extractive system, through the combination of itinerant agriculture, called coivara or "stump", which consists of the deforestation of a small portion of forest that, after burning the dry vegetation, is ready to be cultivated. The roça de "toco" constitutes the basis of the regional agricultural system, as it is particularly productive, especially during the long period of drought, functioning as a repository of agrobiodiversity on a regional scale. The intense cultivation of annual species lasts an average of three to four years, after fallow, which allows natural revegetation and soil regeneration. Remaining forest species of successional or invasive stages are tolerated in the gardens, such as pequi (*Caryocar brasiliense*), lixeira (*Curatella americana*), babassu (*Orbignya phalerata*), passion fruit (*Passiflora edulis*), genipapo (*Genipa americana*), chico-magro or mutamba (*Guazuma ulmifolia*), bocaíuva (*Acrocomia aculeata*), castor bean (*Ricinus communis*), among others. They highlight the importance of maintaining connectivity between forest fragments due to their ability to control pollinators, pest predators, food and water. The size of the itinerant swiddens varies from one to three bushels, with a bushel equivalent to 2.4 hectares. For agricultural management they use a hoe, plow, sickle and machete. There is no heavy mechanization that can remove propagules, roots and rhizomes, which compromise the process of regeneration of native vegetation during fallow, and favoring the regrowth of native vegetation and soil refertilization. They use biological fertilizers [...] to sow in the soil without poison [...] Weed control occurs by pulling and weeding even before flowering. The social organization is based on kinship relationships and the strength of family labor and uses the seed bank itself as a way of valuing and perpetuating cultural agriculture. The report describes the history and trajectory of rural work:

> [...] I started working in the fields when I was seven years old, I helped my parents make firebreaks on the edge of the fields before burning, I helped to clear out stumps (pick up stumps) after the fire, plant, weed, watch the birds so as not to eat the crops... at that time, we used to jump early, we went to the countryside, there was the ranch to prepare the food. The whole day in the countryside, when we came home at night tired to dance, sometimes we would ride the horse and come back on foot, because the animal brought the groceries. There were times when I got home I would pound (pillar) rice in the mortar to eat, then, dad made a munjolo in the countryside, then it got better, because mom went to the ranch earlier and took care of the rice that the munjolo was pounding (pilando) and we continued to work in the fields.(Mr. R.S.A, 67 years old).

Creole varieties

The creole seeds that circulate are genetic and cultural heritage for this quilombola population, with significant significance for the in situ conservation of plant resources, autonomy and food security. Creole varieties represent around 85% of the available stock and conservation occurs through selection, processing and storage "... Creole seeds have over 50% more nutrients than conventional ones, they are superior..." As a conservation strategy they make homemade preparations based on biofertilizers such as teas made from *Equisetum arvense*, *Matricaria recutita* and *Nicotiana tabacum*. They use the creole and hybrid seed bank obtained from native species selected by domestication. Hybrid seeds are the result of crossing pure varieties kept for several generations. Empiricism is expressed through knowledge and agricultural practices by mentioning plants that can be grown close and those grown far away, resulting from the effect of cross or non-cross pollination. The main autogamous and allogamous families cultivated in the communities are Fabaceae, Poaceae, Euphorbiaceae, Musaceae, Convulvolaceae, Solanaceae, Bromeliaceae, Cucurbitaceae and Discoreacaeae. The species circulating in the communities account for the varietal diversity (n=30), as it is the basis of food sovereignty, traditionally used by these quilombola populations, namely: pumpkin, black bean, white corn, purple corn, red corn, wedge corn, striped corn, kale, sweet potato, beans, corn, pepper, tomato, among others, as shown in Frame 2.

Table 2. Creole varieties. Chapada dos Guimaraes. MT. 2021.

Family	Ethnovarieties	C	I	P
Fabaceae				
Cajanus cajan (L.) Huth	Bean guandu; Bean andu	P	P	P
Vigna unguiculata (L.) Walp.	Bean -de-corda	P	P	P
Arachis hypogaea L.	Peanut avermelhado	P	0	P
Poaceae	**Ethnovarieties**			
Zea mays L.	Corn-catete	P	P	P
	Corn-caiano	P	P	P
	Corn-cunha	P	P	P
Euphorbiaceae	**Ethnovarieties**			
Manihot esculenta Crantz	Cassava bacairi	P	P	P
	Cassava liberata	P	P	P
	Cassava camanducaia	P	P	P
	Cassava aipim	P	P	P
	Cassava branquinha	P	P	P
	Cassava cenoura	P	P	P
	Cassava cacau	P	P	P
	Cassava seringueira	P	P	P
	Cassava India	P	P	P
Musaceae	**Ethnovarieties**			
Musa sp.	Banana roxa	P	P	P
Musa acuminata Colla	Banana maçã	P	P	P
Musa sapientum L.	Banana-da-terra	P	P	P
Musa sp.	Banana nanica	P	P	P
Convulvolaceae	**Ethnovarieties**			
Ipomoea batatas (L.) Lam.	Potato-doce-branca	P	P	P
	Potato-doce-roxa	P	P	P
Solanaceae	**Ethnovarieties**			
Capsicum sp.	Pepper-do-reino	P	P	P
Capsicum frutescens L.	Pepper malagueta	P	P	P
Capsicum chinense Jacq.	Pepper bode	P	P	P
Bromeliaceae	**Ethnovarieties**			
Ananas comosus (L.) Merr.	Pineapple perola	P	P	P
	Pineapple castelo	P	P	P
Discoreacaeae	**Ethnovarieties**			
Dioscorea sp.	Cará branco	P	P	P
	Cará roxo	P	P	P
Cucurbitaceae				
Cucurbita moschata Dusch.	Pumpkin	P	P	P
Citrullus lanatus (Thunb.) Matsum. & Nakai	Watermelon	P	P	P

Legend: Communities: **C** = Cambambi; **P** = Pingador; **I** = Itambe. **P** = Present; **0** = Absent.
Source: Authors' collection. 2022.

Due to cross-pollination the plantation must be at least 400 m away from other crop(s). The planting is done with five to six grains in the hole, with a depth of 3 to 5 cm and with a spacing of 0.50 m between the holes. Germination occurs between 6 and 7 days and harvest between 3 and 4 months. For every 1,000 seeds selected, 600 to 700 are viable, resulting from good ears, good stuffing, good grain quality and uniform alignment of rows on the ear. The maize production of 600 individuals yields an average of 300 ears of good quality (equivalent to 40 kg of seeds). They don't shoot the kernels off the cob because they are genetically said to be viable. However, the upper and lower tips are different in the shape of the grains, a fact that influences the maturation of the grains. For a virtuous production cycle, they use strategies such as in situ conservation (on farm) and do not plant late, because it can influence the quality of both the grains and the ear. In the cycle of 130 to 140 days, the height is 2.40 m (on average), which is a satisfactory standard for the local population. They also emphasize that reducing the height of the plant can interfere with the mulching or maturation of the ears, with a high chance of being exposed to greater humidity and to the attack of fungi and caterpillars, compromising the development and viability of the grains. For the conservation of the creole seeds they always harvest at the right time and after the grains are dried. Drying consists of spreading the corn on a tarpaulin for 4 to 5 days, sometimes in the sun, sometimes in the shade and turning the seeds over for uniform drying. The dry seeds are placed in a PET bottle at a temperature of 38° and 40°. After three days, the seeds are removed from the PET bottle and returned to room temperature. Finally, the dried seeds are packed again in PET bottles and placed horizontally (lying down) on the shelf, away from sunlight. Under these conditions, control of sunlight, temperature (never higher than 50º) and air humidity, it is possible to keep the seeds viable for five years, with vigor and good appearance. The harvest is calculated by the number of ears harvested. On average, they harvest 300 ears in each field, which multiplied by the weight of each ear (180 gr) is equivalent to 54 kg of corn. Annual production per family varies from 50 kg to 160 kg (Figures 2 and 3).

Figure 2 - Cob with 180 grams/433 grains

Figure 3 - Cob with 227 grams/547 grains

Source: Authors' collection. 2022.

For *Manihot esculenta*, planting occurs at the beginning of the rainy season (September/October), when humidity and temperature are essential for sprouting and rooting. Holes 10 cm deep accommodate the branches in a horizontal position, facilitating the development of roots. The spacing between the holes will depend on the fertility of the soil, size, variety, type of production and cultural practices. Generally, spacing 0.80 x 1.50 m between rows and 0.50 x 1.00 m between plants, single rows. And 2.00 x 0.60 x 0.60 m, double rows. In small crops the spacing is narrower, making it easier to cover the ground more quickly, and thus making it difficult for weeds to develop. The cultivated ethnovarieties are camanducaia and liberata (Figure 4). The difference between the two is in stem diameter, flavor and higher yield. Camanducaia preference.

Figure 4 - Cassava ethnovarieties. Chapada dos Guimarães. MT.

Source: Authors' collection. 2022.

The cultivar arrangements are: a-polyculture: banana, papaya, cassava, sugar cane, watermelon, pumpkin, yam, taro and peanut, called mosaic; b-monoculture: only cassava or only corn; c-intercropping: row of corn between two rows of cassava, spacing between rows of 1.0 m and distance between individuals from 0.20 m to 0.40, ensuring development due to stem and foliar ramifications. Also consortium with beans and yam; corn, peanuts and bananas; sugarcane, sweet potato and papaya, as reported:

> [...] we cultivate the fields as we learned with parents, plant them close to each other, you have to know how to plant... you can't plant beans on the same day you plant corn... first plant the beans after about 40 days you can plant the corn. The beans with corn cumbina, one helps the other in the growth, beans need the corn to roll and the corn needs the beans for shade. I plant a lot of things, corn, manioc, corn, bananas, sugarcane, papaya, sweet potatoes, squash, yams, yams... ixi can plant a lot of bucado. Rice planting is more difficult, in the past I used to weep needle rice, catete, catetão, catetinho, he is more affected by planting, he has to have good soil to harvest well". (Mr. O.P.L. 75 years old).

Arachis hypogeae of great economic value in the region planting between September and November, considered a short cycle cultivar (90 to 100 days) and spacing between 80 to 90 cm between rows, with two seeds per hole, depth of 0.5 cm . In Cambambi and Pingador, cultivation is more intense due to cultural conservation, they identify the seeds as: large (less than 100 grains/in 100 grams), medium (100 to 200 grains/in 100 grams) and small (more than 200 grains /in 100 grams).

M. pariadisiaca cultivation begins in October, through the propagation of the dark part of the rhizome of the seedlings and the preparation of the hole with width, length and depth of around 40 cm. The planting consists of covering the seedling with “clod” earth and spacing the seedlings of 3 to 4 meters. Harvest after 12 months.

Ipomoea batatas, when penetrating the soil, their roots favor the oxygenation of the soil, they make use of tombs (earth piles) facilitating the development of the roots, with such depth that allows an adequate formation of the roots/rhizomes. The branches accommodated in the shade for two days to wither, preventing them from breaking during planting and can be cut to a length of 30 to 40 cm and placed across the windrows with a depth between 15 and 20 cm. The spacing varies from 80 to 100 cm between rows and from 25 to 40 cm between individuals. Planting takes place in the month of September, preferably.

The loss of varieties in the region can occur due to natural disasters (droughts or intense volumes of water) and inadequate seed management and conservation. Social factors such rural exodus, reduced number of family labor and old age can also compromise the loss or abandonment of cultivars, which can cause quilombola cultural erosion. And as a guarantee, they use strategies: in situ conservation on the properties; community seed banks in the region (ex situ conservation) and encouraging family succession (cultural heritage passed on from generation to generation). To guarantee the production of native seeds, cultural strategies are followed, such as: 1. production area - land preparation; organic fertilization and sowing. The previous green fertilization, with species such as pigeon peas, forage peanuts and turnips and the incorporation of residues from other cultures (corn straw, beans and oilseeds), cattle, swine and chicken manure. 2. Crop systems - polyculture, monoculture, intercropping, thinning, control of undesirable plants and control of pests and diseases. 3. Drying - on canvas, sometimes in the sun, sometimes in the shade. 4. Storage - ears in warehouses and grains in sacks. For the germplasm bank, storage in PET bottles. The influence of the moon as a cultural factor is considered among the population of these communities. They believe in the power of the moon on the planting of seeds, cuttings and the removal of wood from the forests and that the success of agriculture comes from the light of the moon

Forest species include the following categories of uses: food, medicinal, ornamental, firewood (each cubic meter yields 300 kg) and timber for construction in general (Table 3). In these communities, forests offer surprising varieties and amounts of food and play a significant role as a food source, rich in nutrients that usually complement the population's diet. Species such *Malpighia glabra*, *Genipa americana*, *Siparuna guianensis*, *Vochysia divergens*, *Lueheopsis rósea* are cultivated in the transitional spaces between the residence and the woods. denominated quinta florestal.

Table 3 - Forest species and ethnocategories of uses. Chapada dos Guimaraes. MT. 2022.

Family/species	**Common name**	**Categories of uses**	**Fsp**	**Fid**	**NF**	**FC**	**Pcusp (%)**
Anacardiaceae							
Mangifera indica L.	Manga	A; M; Or; Ou	330	330	100,0	1,00	100,0
Anacardium occidentale L.	Caju	A; M; Or; Ou	330	330	100,0	1,00	100,0
Myracrodruon urundeuva Allemão	Aroeira	M; Or; Ou	290	254	0,87	0,88	77,0
Spondias mombin L.	Cajá	A; M; Or; Ou	278	260	0,93	0,84	78,0
Spondias tuberosa Arruda	Umbu/tapereba/imbu	M; Or; Ou	256	175	0,69	0,65	77,0
Spondias lutea L.	Seriguela/jacote	A; M; Or; Ou	326	302	0,92	0.99	91,0
Astronium fraxinifolium Schott	Gonçaleiro	M; Ou	188	99	0,52	0,56	30,0
Annonaceae							
Annona squamosa L.	Ata	A; M; Ou	279	220	0,81	0,84	68,0
Annona coriacea Mart.	Araticum	A; M; Ou	250	225	0,90	0,76	69,0
Annona muricata L.	Graviola	A; M; Ou	189	170	0,90	0,58	53,0
Apocynaceae							
Macrosiphonia velame (A. St.-Hil.) Müll. Arg.	Velame-branco	M; Ou	187	146	0,78	0,57	45,0
Himatanthus obovatus (Müll. Arg.) Woodson	Angélica/tiborna	M; Ou	109	100	0,92	0,36	33,0
Aspidosperma polyneuron Müll. Arg.	Guatambu/peroba-rosa	Ou	265	265	100,0	0,80	80,0
Bignoniaceae							
Jacaranda decurrens Cham.	Carobinha-branca	M; Ou	187	119	0,63	0,48	56,0
Tabebuia ochracea (Cham.) Standl.	Ipê amarelo	M; Or; Ou	299	256	0,85	0,91	77,0
Tabebuia heptaphylla (Vell.) Toledo	Ipê roxo	M; Or; Ou	299	256	0,85	0,91	77,0
Handroanthus impetiginosus (Mart. ex DC.) Mattos	Piúva	M; Or; Ou	107	72	0,67	0,33	22,0
Tabebuia aurea (Silva Manso) Benth. & Hook. f ex S. Moore	Paratudo	M; Ou	289	240	0,83	0,87	72,0
Anemopaegma arvense (Vell.) Stellfeld ex J.F. Souza	Vergatezo/catuaba	M; Or; Ou	152	84	0,55	0,46	25,0
Bixaceae							
Bixa orellana L.	Urucum	A; M; Or; Ou	293	275	0,94	0, 80	88,0
Boraginaceae							
Cordia trichotoma (Vell.) Arráb. ex Steud.	Louro-pardo	A; M; Or; Ou	275	196	0,71	0,83	59,0
Cordia glabra L.	Louro-branco	A; M; Or; Ou	304	245	0,80	0,92	73,0

Caryocaraceae							
Caryocar brasiliense Cambess.	Pequi	A; M; Or; Ou	326	318	0,98	0,99	97,0
Dilleniaceae							
Curatella americana EU.	Lixeira	M; Or; Ou	309	295	0,95	0,93	88,0
Davilla nitida (Vahl) Kubitzki	Lixinha, lixeirinha	M; Or; Ou	309	274	0,87	0,83	73,0
Euphorbiaceae							
Croton urucurana Baill.	Sangra-d'água	M ; Ou	255	188	0,73	0,77	57,0
Croton salutaris Casar.	Sangra-d'água	M; Ou	255	188	0,73	0,77	57,0
Euphorbia hyssopifolia L.	Sete sangrias	M; Ou	182	170	0,93	0,55	51,1
Fabaceae							
Dimorphandra mollis Benth.	Barbatimão-branco	M; Ou	205	188	0,92	0,62	57,5
Caesalpinia ferrea Mart. Ex Tul.	Jucá	M; Ou	95	63	0,66	0,29	20,0
Pithecellobium tortum Mart.	Jurema	M; Ou	283	196	0,69	0,86	60,0
Inga heterophylla Willd.	Ingá-do-mato	A; M; Ou	221	172	0,78	0,67	53,0
Caesalpinia echinata Lam.	Pau-brasil	M; Or; Ou	142	83	0,59	0,43	25,0
Tamarindus indica L.	Tamarindo	A; M; Or; Ou	183	176	0,96	0,56	55,0
Pterodon pubescens (Benth.) Benth.	Sucupira-branca	M; Or; Ou	281	256	0,91	0,85	77,5
Bowdichia virgilioides Kunth	Sucupira-preta	M; Or; Ou	281	254	0,90	0,85	76,5
Enterolobium contortisiliquum (Vell) Morong	Timbó	M; Ou	180	100	0,56	0,55	31,0
Amburana cearensis (Allemão) A.C. Sm.	Amburana	M; Ou	98	79	0,80	0,29	23,2
Hymenaea courbaril L	Jatobá-mirim	A; M; Ou	283	270	0,95	0,85	80,7
Hymenaea stigonocarpa Mart. ex Hayne	Jatobá-do-cerrado	A; M; Ou	299	277	0,92	0,75	90,0
Dipteryx alata Vogel	Cumbaru	M; Ou	310	291	0,94	0,93	87,5
Copaiba langsdorfii (Desf.) Kuntze	Copaíba; Pau d'óleo	M; Ou	296	222	0,75	0,89	68,0
Anadenanthera peregrina (L.) Speg	Anjico-branco	M; Ou	215	188	0,87	0,65	57,0
Acosmium subelegans (Mohlenbr.) Yakovle	Quina genciana	M; Ou	295	267	0,91	0,89	81,0
Malvaceae							
Guazuma ulmifolia Lam.	Chico-magro	M; Ou	89	75	0,84	0,27	23,0
Theobroma grandiflorum (Willd. ex Spreng.) K. Schum.	Cupuaçu	A; M; Or; Ou	247	188	0,76	0,75	57,0
Theobroma cacao L.	Cacau	A; M; Or; Ou	210	179	0,85	0,64	55,0
Myrtaceae							
Psidium guajava L.	Goiaba	A; M; Or; Ou	312	299	0,96	0,95	91,2
Syzygium jambolanum (Lam.) DC.	Jamelão/jambolão	A; M; Or; Ou	99	76	0,77	0,30	23,1

Syzygium cumini (L.) Skells	Jambo	A; M; Or; Ou	86	62	0,72	0,26	20,0
Oxalidaceae							
Averrhoa carambola L.	Carambola	A; M; Or; Ou	298	182	0,61	0,90	55,0
Passifloraceae							
Passiflora cincinnata var. menor Hoehne	Maracujá-do-mato	A; M	154	99	0,64	0,47	30,0
Passiflora edulis fo. flavicarpa O. Deg.	Maracujá	A; M; Or	273	244	0,89	0,83	74,0
Petiveriaceae							
Petiveria alliacea var. tetrandra (Gomes) Hauman	Guiné	M; Ou	311	299	0,96	0,94	90,0
Rubiaceae							
Genipa americana L.	Jenipapo	A; M; Or; Ou	323	289	0,89	0,98	87,0
Coffea arabica L.	Café	A; M; Or; Ou	302	289	0,95	0,91	86,0
Psychotria ipecacuanha (Brot.) Standl.	Poaia	M; Ou	192	118	0,61	0,58	36,0
Calycophyllum spruceanum (Benth.) Hook. F. ex K. Schum.	Mulateira	M; Ou	289	205	0,71	0,87	62,0
Rudgea viburnoides (Cham.) Benth.	Erva-molar	M; Ou	217	183	0,84	0,66	56,0
Rutaceae							
Citrus sinensis L. Osbeck	Laranja	A; M; Or; Ou	314	298	0,95	0,95	90,0
Ruta graveolens L.	Arruda	A; M; Or; Ou	315	301	0,95	0,95	90,0
Citrus limon (L.) Osbeck	Limão	A; M; Or; Ou	310	299	0,96	0,94	90,0
Citrus sp.	Limão rosa	A; M; Or; Ou	247	112	0,45	0,75	35,0
Pilocarpus pennatifolius Lem.	Jaborandi	A; M; Or; Ou	291	194	0,67	0,88	59,0
Sapindaceae							
Talisia esculenta (A. St.-Hil.) Radlk.	Pitomba	A; M; Ou	229	187	0,81	0,69	56,0
Dilodendron bipinnatum Radlk.	Mulher-pobre	M; Ou	187	118	0,63	0,57	36,0
Paullinia cupana Kunth	Guaraná	A; M; Or	311	208	0,67	0,94	63,0
Simaroubaceae							
Quassia amara L.	Pau-tenente	M; Ou	302	267	0,88	0,91	80,0
Vochysiaceae							
Qualea multiflora Mart.	Pau-terra-macho	M; Ou	265	186	0,70	0,80	56,0
Callisthene fasciculata Mart.	Carvão-branco	M; Ou	241	188	0,78	0,73	57,0
Vochysia divergens Pohl	Cambará	M; Or; Ou	318	278	0,87	0,96	83,0

Legend: **A** = food; **M** = medicinal; **Or** = ornamental; **Ou** = Other uses.

Source: Authors' collection. 2022.

Discussion

The predominance of the Catholic religion reflects historical West African. This convergence intensified among slaves in Brazil and became part of the earliest Quilombo societies, as pointed out by ANDERSON (1996). The division of work within the household and the control of tasks by gender and age are determined by cultural experiences. Women manage vegetable gardens and backyards and secondarily, collect food, medicine and ornamental plants and are accompanied by adult men. Voeks (2007), women and men clearly possess different knowledge of their local floras, which is especially pronounced for tropical healing floras. Voeks (2017) describe gardens and backyards as man-made spaces that can be considered cultural or domesticated landscapes Studies by Pasa et al., (2019) reveal that the flow of plants from tropical Africa to the Americas occurred over many years, whether intentionally or not. As part of this botanical trajectory came a domesticated flora from distant regions (VOEKS 2017). Crosby (1993) called this process the “Colombian exchange”, because it contributed to the botanical homogenization of the world. It also favored African readjustment and transculturation through the diffusion of food and magico-religious plants among descendants in the New World, who could thereby claim a degree of sovereignty European and American hegemony (Voeks and Rahsford, 2013). In Afro-descendant communities these spaces usually possess a mixture of both native and exotic species (Ávila et al., 2015). Plants used in religious rituals reveal their medicinal importance as protectors, such as *Zingiber officialis, Ruta graveolens, Petiveria alliacea, Rosmarinus officinalis, Aloe vera, Mentha x villosa, Sanseviera trifasciata, Vernonia ferruginea, Justicia pectoralis, Echinodorus macrophyllus, Alternanthera brasiliana, Allium fistulosum, Dieffenbachia amoena, Porophyllum ruderale, Lactuca sativa, Matricaria chamomilla, Matricaria recutita, Mikania glomerata, Artemisia absinthium and Vernonia polyanthes.* Religious uses occur through blessings and prayers, individually or collectively, to treat “evil eye”, sadness, weakness, envy and fallen ark.

These domestic spaces are called gardens and backyards, with different degrees of manipulation and shelter a diversity of food and medicine. Pasa et al., (2005) they are seen as open-air laboratories where the domestication of plants takes place and as culturais windows to reveal the relationships with the past of the quilombola culture. Altiere et al., (2012) these crop landscapes were enriched by management practices between forest species and crops, constituting a particular agricultural spatial arrangement, allowing interspecific hybridization, which is a key mechanism for the amplification of local genetic variability

Shifting agriculture

Zea mays is a food highly valued by local quilombolas and, on average, each family consumes two bags per year (equivalent to 108 kg), which meets the family's demand. When production exceeds the average, the surplus is shared among members of the community or neighboring communities, as a kind of currency between them. At a social level, farmers depend on maize for family consumption and animal feed. The local itinerant agriculture highlights the cultivar arrangements in the form of polycultures, which is the most common form found in the communities and shelters, on average, six crops: maize, banana, cassava, potato, beans, peanuts, pumpkin. Shifting agriculture in tropical lands of the Cerrado of Mato Grosso is very similar to the dominant land uses in Central and South America by combining cropping arrangements in the midst of forest arrangements assuming characteristics of agroforestry systems. In addition to the complex landscape, the swiddens in Mato Grosso are home to, on average, six crops: corn, beans, bananas, manioc, sweet potatoes and squash. representative herbs (PADOCH and DE JONG, 1993). For Parrotta et al., (2012) agroforestry systems play an important role in household food security and nutrition within a range of agroecological zones on all continents.

In the communities they use eleven (11) native varieties to meet the subsistence of families: beans, cassava, potatoes, corn, pepper, pumpkin, watermelon, yams, pineapple, peanuts and groundnuts. Therefore, foods that satisfactorily meet the diet, which is complemented by the ingestion of fruits, almonds, fruits and oils extracted from the forest. Studies by Martins and Oliveira (2009) highlight that recognizing and valuing systems traditional agricultural crops, in which diversity, knowledge and accumulated over generations and the interdependence of natural resources that make these systems that are primarily responsible for the generation, management and maintenance of agrobiodiversity is of fundamental importance for traditional populations. Food security is a priority on development agendas, but the role that forests play, both directly through contributions from the livelihoods and indirectly through ecosystem services that benefit agriculture is often forgotten. Studies reveal that families around forests drift into average 21% of their income from harvesting wild forest products. A third of this is in the form of forest foods, such as berries and bushmeat, important for nutrition. The remainder in the form of sustainable extractivism such as roots, bark, leaves, flowers, honey and wood, among others. Studies reveal that wild fruits represent a source of minerals and vitamins and can contribute significant amounts of calories, especially when adding seeds and nuts, oils and proteins to diets. Fats and oils are expensive and especially children need energy from these food sources as nuts and seeds, as they are important for the absorption of vitamins A, D, E and K (SEYMOUR, 2014).

For forest resources, statistical analysis reveals the frequency of uses of species of socioeconomic importance and explains the sharing of ethnobotanical information related to categories of uses in local communities. Of the total of 71 forest species, the relative importance was 76 (%) for the consensus of uses above 50% for food, medicinal, ornamental, foraging, biofuel, biocompost and timber uses, expressive data in

ethnobotanical research.

In descending order of PCU*sp* (%) deals with the value of uses and the consensus of uses of forest species (Table 3) we have *Mangifera indica* (100,0); *Anacardium occidentale* (100,0); *Caryocar brasiliense* (97,0); *Citrus sinensis* (90,0); *Ruta graveolens* (90,0); *Citrus limon* (90,0); *Spondias lutea* (91,0); *Hymenaea stigonocarpa* (90,0); *Dipteryx alata* (87,5); *Petiveria alliacea* (90,0), *Psidium guajava* (91,0), *Bixa orellana* (88,0); *Pterodon pubescens* (77,5); *Bowdichia virgilioides* (76,5); *Aspidosperma polyneuron* (80,0); *Tabebuia ochracea* (77,0); *Tabebuia heptaphylla* (77,0); *Genipa americana (87,0); Coffea arabica* (86,0); *Citrus sinensis* (90,0); *Ruta graveolens* (90,0); *Citrus limon* (90,0) and another 32 species that also express the value for the significant predictor (between 50% and 100%) of the consensus of uses of forest species in local communities. Therefore, the use of the ethnobotanical index to assess the relative importance of forest species consensus in a socioeconomic and botanical scenario explains that more incident local uses tend to be more locally shared. We analyze the combined effects of shifting agriculture and the forest as agroforestry systems and their importance for the livelihood of local families. In this scenario, we highlight the relevant role of family farming as predictive models based on the culture and experience of people in their natural environment or the combination of anthropogenic arrangements in a natural environment. In this study we considered the cultural, environmental and biological factors that influenced the sharing of information by populations dependent on the extractive activity of local forest resources, the Mato Grosso's Cerrado.

Scenario of shifting agriculture in the modern world

Although political, economic and environmental pressures have encouraged the shift from swidden agricultural practices to immediate practices aimed at the capitalist market, the hypothesis that swidden cropping systems are disappearing is much discussed in science. Currently, shifting cultivation is practiced in more than 40 countries in tropical regions of Africa, South and Southeast Asia and Latin America under a variety of environmental, social and political conditions (MERTZ, et al., 2008). Itinerant mode remains the dominant form of agriculture in many rural areas, where it contributes to the creation of complex landscapes and livelihoods (MERTZ, 2009). The shifting cultivation is increasingly described as a complex and dynamic form of "agroforestry on fallow land" (DENEVAN and PADOCH, 1988). Several areas of regeneration in these systems continue to be heavily managed for food, economic, and medicine purposes (WADLEY and COLFER, 2004). In Brazil, some regions have adopted new cultures and technologies, but the persistence of shifting crops still seems more concrete and intelligible. In the Mato Grosso the change to monoculture, governance or even commercial production can increase income, but agricultural results can be adverse or even unsustainable, especially if the land is inadequate, or overuse with added inputs. Studies reveal that these changes have often resulted in instabilities in shifting cultivation and resources, previously well adapted to use (WARNER, 1991). For example, shortened cropping cycles or other management practices have, in many situations, contributed to soil fertility, but with productivity declines (BORGGAARD *et al*., 2003; MERTZ, 2009). In many areas where shifting cultivation is still practiced and traditional knowledge of fallow management is well developed, these systems can be managed sustainably without impairing soil fertility and compromising productivity, while conserving biodiversity and maintaining a range of ecosystem services (COLFER *et al*., 2015; PARROTTA; TROSPER, 2012).

In Southeast Asian on shifting agriculture reveal a conservative range of 14 to 34 million people involved in swidden cultivation (MERTZ, at al. 2009). In the Central African the agriculture continues to play a dominant role in providing food, raw materials as cocoa, coffee, palm oil and rubber (SONWA, 2004). Grogan et al., (2013) traditional swidden systems remain an important component of livelihood strategies in Zambia and Tanzania, albeit in an advanced state of decline in more populated areas. In Calakmul Mexico, communities have reduced the area of milpa, traditional corn swidden system, but clear-cut cultivation still stands out, (SCHMOOK et al., 2013). In Indonesia, smallholder farmers are shifting from staple rice to oil palm production. For Steiner (2017), the rules imposed by governance do not guarantee the social, economic and environmental aspects to farmers. In Brazil, Adams et al., (2012) reveal area disappearance swidden in quilombola communities restricting subsistence cultivation activities by encouraging illegal and unsustainable extraction of jussara palm hearts and activities the perennial cultivation of cashcrops such banana, passion fruit and peach palm. Currently, shifting cultivation sustains around 0.5 billion people in tropical forest ecosystems (DE JONG et al., 2001; SCHMIDT-VOGT, 2001; DUCOURTIEUX, 2015).

The expansion of industrial agriculture threatens the diversity of cultivated plants the knowledge, rights and ways of living of indigenous and peasant populations in the tropics (ALTIERI, 2003; SANTILLI, 2009; ADMS *et al*., 2013). Our study reflects the socioeconomic organization the experience quilombola, through of manejo traditional local. We ask ourselves: is it the asymmetrical power in the relations (local x capitalism) or resistance to capitalism, which keep these populations in the practice of shifting agriculture? The management practices are, in general, carried out by collaborative forms of conservation, understood from the notion of traditional space. The local interactions over decades, generated attitudes of innovation and consequently the construction of a local model, as an alternative for food survival, which remains until the present day. For Escobar (2005), local and global relations within historical ecology explain that capitalism and globalization directly affect local relations. For Conklin *et al*., (1957); Warner (1991) shifting swidden in Southeast Asia are historically known to be rich in semi-domesticated crops and plants and spontaneous vegetation, which appears in the cultivation and fallow phases. Wesz (2016) in many countries the shifting agriculture is being replaced by models of faster profitable production, causing changes in socioeconomic with considerable variations between and within continents.

Final Considerations

In addition to the initiatives that focus on the conservation of genetic material (family banks of creole seeds and appreciation of cultural ethnovarieties), we alert to the need for environmental protection and monitoring of these traditional quilombola territories, as a fundamental condition for the in situ/on farm conservation of the agrobiodiversity in the center-west region of Brazil. The communities are holders of creole varieties in the state representing cultural, ecological, food and economic interdependencies and also contributing to local cultural services such as, for example, landscape conservation, heritage and quilombola cultural identity. The traditional swidden, as a quilombola agricultural system, was recognized by IPAN as a national heritage of family farming, with seed banks guaranteeing the maintenance of local creole varieties. Because of these varieties (diversity) of genes and sp, these seeds have adapted to the reality of these farmers, which make them part of the history, survival, culture and life of these populations in Mato Grosso. They do not have support policies or technical information on agricultural production, each on its own, supported by the experience and knowledge gained from traditional culture passed down through generations over time. On the world stage, when comparing shifting agriculture activities, we are faced with models of subsistence in co-evolution or co-evolution, from basic crops to monocultures. The transition process of agricultural management by small rural farmers may sometimes not be adaptable to the new scenario or even the contribution of governance is insufficient to address the social impacts responsible for the transition and may generate a situation of food insecurity for these populations and inevitably inconsistency guarantee of a basic system of sustainable agricultural production.

Therefore, it is necessary to invest in new studies that address issues of expression and collective identity and the relationship between First and Third World cultures, as well as analysis and identification of the characteristics of the transition process and the predominant agricultural scenario for the next century when evaluating the sustainability and food security of rural farmers in different continents.

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BIBLIOGRAPHIC REFERENCE

ADAMS C.; CHAMLIAN MUNARI L. Diversifying Incomes and Losing Landscape Complexity in Quilombola Shifting Cultivation Communities of the Atlantic Rainforest (Brazil). *Human Ecology*, n. 41 (1), p. 119-37, 2013. https://doi.org/10.1007/s10745-012-9529-9.

ADAMS, C., MUNARI, LC.; VAN VLIET, N.; MURRIETA, R. S. S.; PIPERATA, B. A.; FUTEMMA, C.; PEDROSO, J. R., TAQUEDA, C. S.; CREVELARO, M. A.; SOLA-PRADO, V. L. Mergulhador sifying Incomes and Losing Terrascape Complexity em Quilombola Shifting Cultivatiem Communities do Atlântico Rainfore (Brasil). *Human Ecology*. 2012. https://doi.org/ 10.1007 / s10745-012-9529-9.

ALBUQUERQUE UP, HANAZAKI N. As pesquisas etnodirigidas na descoberta de novos fármacos de interesse médico e farmacêutico: fragilidades e perspectivas. Revista Brasileira de Farmacognosia 16: 678-689. 2006.

ALTIERI, M. A., TOLEDO V. M. «The agroecological revolution in Latin America: rescuing nature, ensuring food sovereignty and empowering peasants.» The Journal of Peasant Studies, n. 38 (3), p. 587-612, 2012. https://doi.org/10.1080/03066150.2011.582947.

ALTIERI, M. A. The Sociocultural and Food Security Impacts of Genetic Pollution via Transgenic Crops of Traditional Varieties in Latin American Centers of Peasant Agriculture.

Bulletin of Science, Technology & Society, n. 23 (5), p. 350-59, 2003. https://doi.org/10.1177/0270467603259774

AMORIM, M. L. F. *Excursionismo Eco-rural em Água Fria – Distrito de Chapada dos Guimarães/MT*. 2007. 123f. Dissertação. (Mestrado em Geografia) - Universidade Federal de Mato Grosso, Cuiabá.2013.

AMOROZO, M. C. M. *Sistemas agrícolas de pequena escala e a manutenção da agrobiodiversidade* - uma revisão e contribuições. Rio Claro/ Botucatu, Edição do autor/ FCA – UNESP.2013.

ANDERSON, R. N. The Quilombo of Palmares: a new overview of a maroon state in seventeenth-century Brazil. *Journal of Latin American Studies* 28: 545-566. 1996.

APG IV – Angiosperm Phylogeny Group. An update of the Angiosperm Phylogeny Group classification for the orders and families of flowering plants: APG IV. *Botanical Journal of the Linnean Society* 181: 1-20. 2016.

ÁVILA J.V.C, ZANK S, VALADARES K.M.O, MARAGNO J.M, HANAZAKI N. 2015. The Traditional knowledge of quilombola about plants: does urbanization matter? *Ethnobotany Research & Applications* 14: 453-462. 2015.

BORGAARD, O. K.; ABDUL, G.; LEIF, P. Avaliação de sustentabilidade do cultivo itinerante em Chittagong Hill Tracts de Bangladesh. *Ambio* 32(2):118-23. 2003. https://doi.org/10.1579/0044-7447-32.2.118.

CABALLERO, J. La Etnobotânica. In: BARRERA, A. (Ed.). La Etnobotânica: três puntos de vista y uma perspectiva. INIREB, Xalapa. 1979. p. 27-30.

COLFER, C.J.P.; YULIANI, L.; ADNAN, H.; INDRIATMOKO, Y. *Florestas, árvores e meios de subsistência*: serviços de ecossistemas. 24(2): 97-111. 2015. Issn: 1472-8028. 2015.

CONKLIN, H. C.; HANUNO, O. Agriculture A Report on an Integral System of Sluftmg Cultlvatlon m the Pluhppmes. FAO Development Paper Nº 12 Rome, FAD. 1957.

DE JONG, W., CHOKKALINGAM, U., PERERA, D. The evolution ofswidden fallow secondary forests in Asia. *Journal for Tropical Forest Science*, 13 (4) 800-815. 2001.

DENEVAN, W.; D PADOCH, C. *Swidden Agroforesty* in Peru. New. York New. York Botanical Garden. 1988.

DUCOURTIEUX, O**.** Handbook of Forest Ecology. In: Eds Kelvin Peh, Richard Corlett,Yves Bergeron. Agriculture in the Forest: *Ecology and rationale of shifting cultivation. Roudledge***.** 2015. 1: 573 – 587**.** 2015.

ESCOBAR, A. O lugar da natureza e a natureza do lugar: globalização ou pós-desenvolvimento? CLACSO, Consejo Latinoamericano de Ciencias Sociales. Buenos Aires. 2005. Pp. 69-86. Acesso:

http://bibliotecavirtual.clacso.org.ar/clacso/sur_sur/20100624102140/8_Escobar.pdf acesso em 16.08. 2021.

FAO**.** State of the World's Forests 2016 – *Forests and agriculture: land-use challenges and opportunities*. Rome. 2016d

FAO. *Enabling agriculture to contribute to climate change mitigation*. FAO submission to the UNFCCC. The Food and Agriculture Organization of the United Nations. Rome. 2009.

FAO. A Biodiversidade a Serviço da Segurança Alimentar: *informe da FAO para América Latina e Caribe sobre o Dia Mundial da Alimentação*. 2004.

FRIEDMAN, J.; YANIV, Z.; DAFNI, A.; PALE-WITCH, D. A. Preliminary classification of the healing potential of medicinal plants, based on a rational analysis of an ethnofarmacological field survey among Bedouins in the Negev Desert, Israel. *Journal of Ethnopharmacology*, v. 16, p. 275-287, 1986.

GROGAN, K., BIRCH-THOMSEN, T., LYIMO, J. Transição de turno ing cultivo e seu impacto sobre as pessoas's liveli hoods no Miombo woodlands do norteern Zambia e sudoesteern Tanzânia. *Hum Ecol.* 37:278-283. 2013. https://doi.org/10.1007/s10745-012-9537-9.

LORENZI, H. MATOS; MATOS, F. FJA Plantas medicinais no Brasil: nativas e exóticas. Nova Odessa, São Paulo: Instituto Plantarum, v. 544. 2008.

LORENZI, H. *Árvores brasileiras*: manual de identificação e cultivo de plantas arbóreas nativas do Brasil. Nova Odessa, São Paulo: Instituto Plantarum, p. 368, 2002.

MARTINS, P. S; OLIVEIRA, G. C. X. Dinâmica evolutiva em roças de caboclos amazônicos. In: VIEIRA, I. C. G.; SILVA, J. M. C.; OREN, D. C.; D'INCAO, M. A (Org.). *Diversidade biológica e cultural da Amazônia*. Belém, PA: Museu Paraense Emílio Goeldi, 2009. p. 373-91.

MERTZ, O. Trends in shifting cultivation and the REDD mechanism. Current Opinion in Environmental Sustainability, 1(2), 156–160. 2009. https://doi.org/10.1016/j.cosust.2009.10.002.

MERTZ, O., WADLEY, R. L., NIELSEN, U., BRUUN, T. B., COLFER, C. J. P., DE NEERGAARD, A., MAGID, J. A fresh look at shifting cultivation: Fallow length an uncertain indicator of productivity. Agricultural Systems, 96(1–3), 75–84. 2008. https://doi.org/10.1016/j.agsy.2007.06.002.

MEIHY JCSB. Manual de história oral. São Paulo, Loyola. 1996

MINAYO MCS. 1994. O desafio da pesquisa social. In: Minayo MCS. (org.) Pesquisa social: teoria, método e criatividade. 29th. edn. Petrópolis, Vozes.

MINAYO MCS. 2007. O desafio do conhecimento: pesquisa qualitativa em saúde. 10th. edn. São Paulo, Hucitec.

MINISTÉRIO DE MEIO AMBIENTE. Plano de Manejo. Parque Nacional Chapada dos Guimarães. Chapada dos Guimarães: MMA.; ICMBio.; PARQUE NACIONAL DA CHAPADA DOS GUIMARÃES. 2009. 250 p.

MIRANDA, R. A. O.; PASA, M. C. Agrobiodiversidade dentro e fora das florestas do cerrado. Mato Grosso. Brasil. Biodiversidade, v.19, n.3, 2020 - p. 53-68.

MUNANGA K. Uma abordagem conceitual das noções de raça, racismo, identidade e etnia. *Cadernos Penesb* 5: 15-34. 2004.

PADOCH, C.; W.; DE JONG. "Diversity, Vanation, and Change In Ribennho Agriculture. In: K Redford and C Padoch, eds. *Conservation of the Neotropical Forests* New York Columbia Press.1993.

PARROTTA, J. A.; TROSPER, R. L. Conhecimento Tradicional Florestal: Sustentando Comunidades, Ecossistemas e Diversidade Biocultural. Nova York: Springer. *International Journal of the Commons*, 6 (2),388–389. 2012. https://doi.org/10.18352/ijc.357. 2012.

PASA, M. C. Um olhar etnobotânico sobre as comunidades do Bambá, Cuiabá, MT. Ed. Entrelinhas, Cuiabá, MT. 176 p. 2007.

PASA, M. C; HANAZAKI, N; SILVA, O. M. D.; AGOSTINHO, A.; ZANK, S.; ESTEVES, M. I.P.N. Medicinal plants in cultures of Afro-descendant communities in Brazil, Europe and Africa. *Acta Botânica Brasílica,* 33(2): 340-349. 2019.
https://doi.org/10.1590/0102-33062019abb0163. 2019.

PASA, M. C. Medicina tradicional em comunidades mato-grossenses. *Biodiversidade*, v. 19, n. 2, p. 02-19. 2020.

PASA, M. C. *Medicina Tradicional na Amazônia Brasileira***.** 1. ed. Cuiabá: EdUFMT. MT. E-book. 2021. 162 p. ISBN: 9786555881080

PERONI, N.; MARTINS, P. S. Influência da dinâmica agrícola itinerante na geração de diversidade de etnovariedades cultivadas vegetativamente. *Interciência*. 25 (1): 22-29. 2000.

PHILLIPS, O. Some quantitative methods for analyzing ethobotanical knowledge. In: Alexiades, M. N. (Ed.) *Selected Guidelines for Ethnobotanical Research*: a field manual. NY. NYBG, 1996.

PHILLIPS, O. *Los enfoques cuantitativos em etnogafia y etnobiologia*: Some Quantitative Methods for analyzing Ethnobotanical knowledge . Métodos Quantitativos em Ernobotânica. p. 182 – 194. 1996.

PHILLIPS, O.; GENTRY, A.H. The useful plants of Tambopata, Peru. I. Statistical hypotheses with a new quantitative technique. *Economic Botany* 47 (1): 33-43. 1993 a.

SALAS, A., RICHARDS, M., LAREU, M.V. The African Diaspora: Mitochondrial DNA and the Atlantic Slave Trade. *American Journal of Human Genetics* 74: 454-465. 2004.

SANTILLI, J. *Agrobiodiversidade e direitos dos agricultores.* São Paulo, ED. Peirópolis, 2009. 519 p. ISBN: 9788575961575.

SCHMOOK, B.; VLIET, N.; RADEL, C.; MANZÓN-CHE, M.; MCCANDLESS, S. Persistência do cultivo itinerante em face da globalização: um estudo de caso de comunidades em Calakmul, México. *Hum Eco*. 41, 93-107. 2013. https://doi.org/10.1007/s10745-012-9557-5.

SCHMIDT-VOGT, D. Florestas secundárias na agricultura de roça nas terras altas da Tailândia. *Journal of Tropical Forest Science* 13(4): 748–767, 2001.

SEYMOUR, F. State of the rainforest. In: Hofsvang Ellen (Org). *Importance of the rainforest and biodiversity*. Rainforest Foundation Norway and GRID-Arendal. 8-20 pg. 2014.

SONWA D. *Gestão de biomassa e diversificação secos de cacau na zona florestal úmida do sul dos Camarões*. Tese de doutorado, Faculdade de Agricultura, Universidade de Bonn, Alemanha, Cuvillier Verlag, Gottingen, 2004. 112 pp.

STEINER, R. *Fundamentos da agricultura biodinâmica: vida nova para a terra.* São Paulo: Antroposófica, SP 2017.

VOEKS, R. A. Are women reservoirs of traditional plant knowledge? Gender, ethnobotany and globalization in northeast Brazil. Singapore Journal of Tropical Geography 28: 7-20. 2007.

VOEKS, R. A. Ethnobotany. In: Internacional Encyclopedia of Geography. Fullerton, John Wiley & Sons 1: 1- 4. Voeks RA, Rashford J. 2013. African ethnobotany in the Americas. New York, Springer. 2017.

VOEKS R. A.; RASHFORD J. African ethnobotany in the Americas. New York, Springer. 2013.

WADLEY, R. L and COLFER, C. J. P. Sacred Forest, Hunting, and Conservation in West Kalimantan, Indonesia. *Human Ecology*, Vol. 32, No. 3, June 2004.

WARNER, K. Shifting cultivators: Local technical knowledge and natural resource management in the humid tropics. Roma: UN *Food and Agricultural Organization*, 1991.

WESZ J. R. Strategies and hybrid dynamics of soy transnational companies in the Southern Cone. *The Journal of Peasant Studies*, n. 43 (2), p. 286-312. 2016. https://doi.org/: 10.1080/03066150.2015.1129496

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