Transformations and characteristics of soybean production chain in Mato Grosso (Brazil)

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Abstract
This article analyzes the transformations and characteristics of soybean production chain in Mato Grosso (Brazil), focusing on the expansion of this crop in the state, on involved actors (mainly rural producers and industries) and on market structure. To this end, a set of research techniques was combined, including literature review, statistical analysis and semi-structured interviews. Findings indicate that, in addition to huge growth in soybean planted area, production and productivity, most of this grain cultivation is concentrated in large estates. Moreover, the sector is dominated by a small number of large transnational companies, which operate vertically in various stages of the production chain. In sum, soybean market in the state of Mato Grosso is seen to be highly immersed in global production networks, so that the governance of this local chain is increasingly permeated by transnational processes, dynamics and actors.
Keywords: Agribusiness. Soybean market. Transnational companies.

Transformações e características da cadeia produtiva da soja em Mato Grosso (Brasil)
Resumo
Este artigo analisa as transformações e a características da cadeia produtiva da soja em Mato Grosso (Brasil), com ênfase na expansão do cultivo no estado, nos atores (sobretudo produtores rurais e indústrias) e na estrutura de mercado. Para tanto, conciliou-se um conjunto de técnicas de pesquisa, como revisão bibliográfica, análise estatística e entrevistas semiestruturadas. Os resultados apontam que, além do grande crescimento na área plantada, na produção e na produtividade da soja, o cultivo do grão tem se concentrado entre os produtores com maior área. Além disso, o setor está dominado por um reduzido número de grandes empresas transnacionais, que inclusive atuam em vários elos da cadeia produtiva de forma verticalizada. O que se observa, sinteticamente, é a elevada imersão do mercado mato-grossense da soja nas redes globais de produção, de modo que a governança desta cadeia local está perpassada, cada vez mais, por processos, dinâmica e atores transnacionais.
Palavras–chave: Agronegócio. Mercado da soja. Empresas transnacionais.

Transformaciones y características de la cadena productiva de la soja en Mato Grosso (Brasil)
Resumen
Este artículo analiza las transformaciones y características de la cadena productiva de la soja en Mato Grosso (Brasil), con énfasis en la expansión del cultivo en el estado, en los actores

(especialmente productores e industrias rurales) y en la estructura del mercado. Para ello, se combinó un conjunto de técnicas de investigación, como revisión de literatura, análisis estadístico y entrevistas semiestructuradas. Los resultados muestran que, además del gran crecimiento en el área sembrada, en la producción y en la productividad de la soja, el cultivo del grano se ha concentrado entre los productores con mayor superficie. Además, el sector está dominado por un reducido número de grandes empresas transnacionales, que incluso operan en varios eslabones de la cadena productiva de manera vertical. Lo que se aprecia, sintéticamente, es la alta inmersión del mercado de la soja de Mato Grosso en las redes de producción global, por lo que la gobernanza de esta cadena local está cada vez más permeada por procesos, dinámicas y actores transnacionales.
Palabras clave: Agronegocio. Mercado de la soja. Empresas transnacionales.

1 Introduction

Over the last few decades, the agricultural commodity market has undergone far-reaching economic, political, institutional, regulatory, financial, social, technological and organizational transformations that substantially changed the dynamics of the agrifood system as a whole (NIEDERLE; WESZ JR., 2018). Despite different readings about the contemporary moment, understood as a "corporate food regime" (MCMICHAEL, 2016), a "neoliberal food regime" (OTERO, 2012) or "neoliberal food system" (IORIS, 2017), everyone recognizes the growing economic concentration of agri-food markets in the hands of a restricted group of transnational conglomerates allied to financial capital.

The state of Mato Grosso is probably one of the Brazilian places that better represents such dynamics of contemporary agricultural commodity market. Mato Grosso is currently labelled as the "farm of Brazil" (or of the world, for the most optimistic ones), due to great availability of natural resources, favorable edaphoclimatic conditions, intensive use of technological innovations and high productivity. In this context, soybean is the protagonist. According to Conab (2020), in the 2019/20 harvest the grain reached a planted area of 10 million hectares (which exceeds the area of Portugal), absorbing 91% of temporary crops in Mato Grosso (IBGE, 2020) and accounting for 64% of the state's total exports value in 2019 (SECEX, 2020). Mato Grosso is the leading Brazilian state in soybean cultivation, accounting for 29% of production in 2019/20 (CONAB, 2020), and alone it exceeds double the combined production of Bolivia, Paraguay and Uruguay (FAO, 2020).

This article analyzes the transformations and characteristics of the soybean production chain in Mato Grosso (Brazil), focusing on the expansion of this crop in the state, on involved actors (especially rural producers and companies) and on market structure.

The paper is organized into five parts, besides this Introduction and final remarks. First it presents the research methods and, next, discusses the expansion of soybean cultivation in Mato Grosso, highlighting cultivated area, production and regions where it is grown since the 1970s to current days. Then, it focuses on some characteristics of soybean producers in the state. The following section discusses the upstream soybean production chain (pre-farm gate), which comprises supply of factors of production, such as machinery and equipment, and of inputs such as seeds, fertilizers and pesticides. Finally, the downstream production chain is analyzed, which

comprises post-farm agri-food production processes, including storage, processing and distribution of produce.

2 Methodological procedure

This study combined both qualitative and quantitative research procedures and techniques. Initially, a bibliographic and documental review was carried out on the topics addressed in this article, and information was also collected in media materials, especially newspapers and magazines, and in reports, institutional bulletins and balance sheets of companies that are currently operating in the sector. Secondary data was gathered from various statistical sources, and then systematized and presented in graphs and tables organized using Microsoft Excel software, in addition to some cartograms elaborated in the QGIS 3.18 software.

Furthermore, field research was carried out in the state, focusing on the capital city, Cuiabá, and in the state's southeastern region (municipalities of Rondonópolis, Primavera do Leste, Campo Verde, Poxoréo and Jaciara) and Parecis region (Sapezal, Campos de Júlio and Campo Novo do Parecis). In total, 40 semi-structured interviews were conducted – in 2012 (20 interviews), 2013 (15) and 2020 (5) –, involving topics that crossed different dimensions of the production chain. Given difficulties in scheduling interviews and the fact that some people were fearful of participating in the research, we decided to use family and fellow networks to mediate contacts with key actors. Also, at the end of each interview, interviewees were asked to suggest other people involved in soybean market in the region for further interviews.

Despite a non-probabilistic sampling, the study aimed at covering a broad set of actors either directly or indirectly connected with the soybean market in Mato Grosso. Thus, representatives of six downstream companies (agro-processing, trading, storage and biodiesel plant), four upstream companies (inputs resellers and seed suppliers), three civil society organizations (trade unions and associations), two cooperatives and two government agencies, in addition to six professionals (agronomists, agricultural technicians, outsourced services and truck drivers).

In addition, we interviewed 17 farmers of varied profiles and land situations (size of area, own or leased lands),[1] different degrees of social participation (in cooperatives, unions, social movements, political parties etc.), various forms of commercialization (direct sales, futures contracts, exchange of grains for inputs etc.), different origins (from different Brazilian states, from Argentina or elsewhere), different degrees of business diversification (only soybeans and corn, crops and livestock, farming and complementary activities etc.) and diverse infrastructure on the property (from those who outsource the entire production process to those who have the entire structure in the establishment).

Most interviewees allowed us to record the interview, thus enabling its transcription and analysis. In the other cases, the field diary was used to record the greatest amount of information available, both at the time of the interview and after it was carried out.

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[1] Interviews ranged from large agribusiness groups, which cultivate more than 200 thousand hectares of soybeans in Mato Grosso (on either owned or leased land) to agrarian reform settlers, who produce the grain on ten hectares.

3 Expansion of soybean cultivation in Mato Grosso

Throughout the 20th century, Mato Grosso experienced numerous initiatives to expand frontier,[2] which occurred through extermination and depopulation of traditional ways of life, thus creating a large stock of land and demographic voids. This process was fundamental for advancing agricultural production in the state, as it allowed for private and public colonization initiatives in these areas, which, combined with the action of intermediary agents, such as brokers and land grabbers, favored the acquisition of large tracts of land by southern emigrants at relatively low prices when compared to other south-central states (FERNÁNDEZ, 2007). In parallel, a series of public policies was set for land preparation, acquisition of machinery, construction of infrastructure (including roads, ports and cities), investments in research, market formation, technical assistance etc. (BARROZO, 2008; HEREDIA; PALMEIRA; LEITE, 2010). Edaphoclimatic conditions also facilitated the advance of grain cultivation: plateau lands, with flat topography, favoring large-scale cultivation; latosol, which, despite having low natural fertility and high acidity, is deep and well drained, allowing for mechanization; climatic regularity, with two well-defined seasons, which facilitates the development of production cycles (MORENO; HIGA, 2005).

Until the mid-1970s, soybean cultivation was experimental and the result of individual initiatives carried out in different municipalities of the state. One of the interviewed farmers, born in Cruz Alta/RS, bought a 15,000-hectare property in Primavera do Leste region in 1973 and told: "I was the first one who planted soybeans here [Primavera do Leste region]. It was from 1976 to 1977. At first it did not produce well, there was no variety adapted to the climate and type of land here, but later it improved" (Farmer, 2012). Then, some barriers still hindered and/or prevented the planting of soybeans, such as the soil's low natural fertility and high acidity, besides the absence of varieties adapted to long days and the lack of infrastructure for production and distribution.

According to data from the Municipal Agricultural Survey (PAM/IBGE), the first record of soybean cultivation in Mato Grosso dates back to 1974, accounting for 50 hectares cultivated in Barra do Bugres (IBGE, 2020). In turn, Conab data (2020) for the 1977/78 harvest (beginning of the historical series) record one thousand hectares with soybean cultivation. In the early 1980s, however, the oilseed showed a huge growth in cultivated area, totaling over 300 thousand ha in 1983 (Chart 1). At that time, the main location of crops was the *cerrados* (tropical savannahs) of southeastern Mato Grosso, which concentrated more than 70% of the harvested area in the state, especially in the municipalities of Itiquira, Rondonópolis and Alto Araguaia (Chart 2). According to Fernández (2007), this region was strategic for its proximity to other producing areas in the states of Goiás and Mato Grosso do Sul,

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[2] We must take note that the issue of frontier advance was widely discussed in Brazil by both agribusiness representatives and academics. However, as Bernardes (2005) correctly argues, it must be considered that, in the case of Mato Grosso, such advance did not occur on "empty" lands, where "pioneers" bridged the gap between wild world and civilization, leading to progress. On the contrary, these lands were occupied by indigenous people, dwellers, small-scale miners, rubber tappers etc. In this regard, Martins (1996) offers an interesting analysis by arguing that such frontier advance is characterized by a new economic rationality, by formal and institutional constitution of new political mediations, by the expansion of markets and introduction of new concepts of life.

which already had limestone (to neutralize aluminum and soil acidity) and more adapted varieties, as well as a basic infrastructure (roads, warehouses, banks etc.).

Chart 1 – Cultivated area and soybean production in Mato Grosso (1977/78 - 2019/20 harvests)
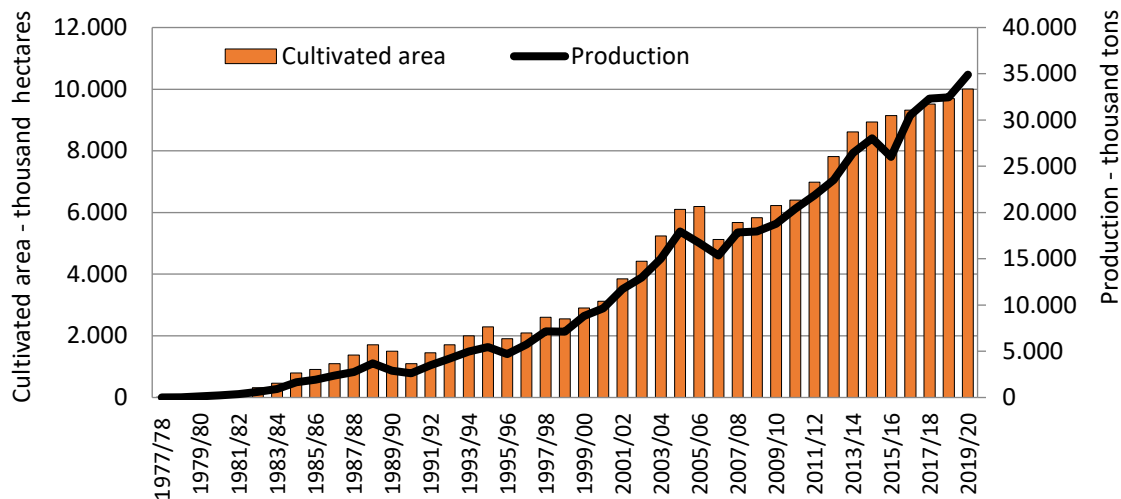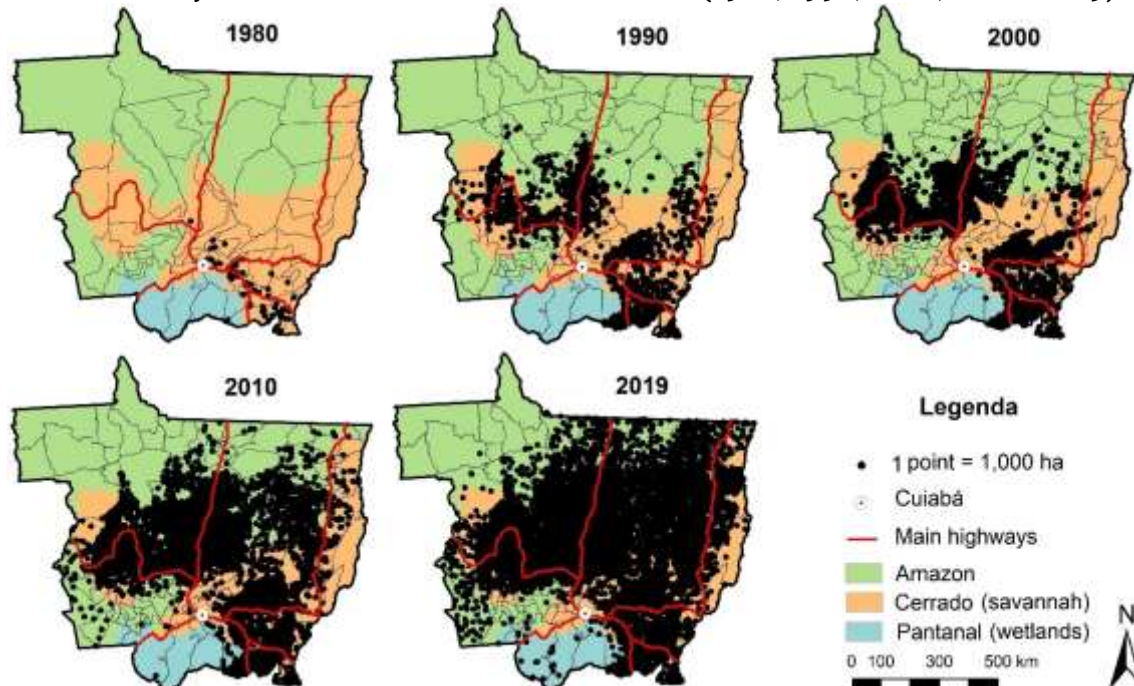

Source: Conab (2020). Elaborated by the author.

During the 1980s, new soybean varieties began to be introduced, which were better adapted to the edaphoclimatic conditions of *cerrado*, and changes were also made in forms of planting and soil management, particularly by using limestone (BERNARDES, 2005). Furthermore, until mid-1980s, a highly subsidized rural credit policy was in force, aimed at financing production costs, investment and commercialization (LEITE, 2001). The new raise in soybeans international prices since the mid-decade onwards and the upward trend in replacing consumption of animal fats (lard and butter) with vegetable oils, strategically elaborated by companies of the sector (WESZ JR., 2011), were also important. These elements were influential in both the expansion of cultivated area, which reached 1.7 million hectares in 1989, and the increase in production and productivity, which jumped from 30 to 40 sacks/ha (one sack = 60 kg) in the decade (IBGE, 2020).

These simultaneous and interrelated processes favored the advance of soybean crops toward new regions in the state: Parecis Microregion, close to the border with Rondônia, especially municipalities of Sapezal, Campos de Júlio, Diamantino and Campo Novo do Parecis; and Alto Teles Pires Microregion, located along BR-163 highway, including mainly the municipalities of Sorriso, Lucas do Rio Verde, Nobres and Nova Mutum (Chart 2), which were destination of several colonization projects. These two microregions then became the main in production, accounting for half of the harvested area in the state. This, added to that of the southeastern mesoregion, reached 85% of the area in 1989. In the 1980s, Mato Grosso became the third largest soybean producing state, behind Paraná and Rio Grande do Sul. Another milestone in this period was the record of area harvested surpassing that of rice, until then, the main temporary crop (IBGE, 2020).

Chart 2 – Soybean harvested area in Mato Grosso (1980, 1990, 2000, 2010 e 2019)

Source: Municipal Agricultural Survey – several years (IBGE, 2020). Elaborated by the author.

The 1990s began with the first decrease in soybeans cultivated area and production in Mato Grosso, following the national downward trend, mainly due to a sharp drop in international prices. However, since the 1995/96 harvest it regained momentum, showing a practically uninterrupted growth in cultivated area until 2005/06, reaching more than six million hectares. Therefore, in ten years soybean cultivated area has tripled (Chart 1). Besides the increasing demand and rising international prices, also changes in economic policy, which devalued exchange rate and reinstated the policy of generating trade balances anchored in the export of primary products, were key in that expansion (WESZ JR., 2011).

At that time of soybean appreciation and producers' capitalization, crops expansion continued to areas of lower real estate value, with flat land, deep soils and access to transport infrastructure, which allowed for expansion with less investment (FERNÁNDEZ, 2007). Many producers moved to these new regions, a strategy employed both by capitalized producers and by those with less economic power, as farmers who were indebted or had limited land assets, who chose to sell their land in valued areas and buy new land in remote regions, where prices were lower. Capitalized producers, on the other hand, kept their areas in valued regions and, given the greater returns obtained in the "good years", bought new land in other regions (either in Mato Grosso or in other states) (WESZ JR., 2014; DESCONSI, 2017). During field research, we noticed that this second strategy was applied by large soybean producing groups that bought vast areas in the region of Vale do Araguaia/MT (municipalities of Canarana, Porto Alegre do Norte, Querência and Água Boa), becoming major soybean producers in recent years (Chart 2).

Between 2004 and 2007, soybean cultivation faced a major crisis in the state, caused by a drop in its price, by the Asian soybean rust and climate variability (which decreased productivity), increase in production costs, foreign currency gap and environmental tensions (WESZ JR., 2014). From 2006 to 2007, two million hectares

were no longer cultivated in Mato Grosso. In the following crops, however, the crop resumes its growth, reaching 34.9 million tons and 10 million hectares – increasing 127% and 95%, respectively, from 2006/07 to 2019/20 (Chart 1). In this span of seven harvests, soybean prices reached historic records and international demand grew rapidly. Technological innovations (dissemination of improved seeds, precision planting, new inputs, irrigation etc.) and the reconversion of pasture or forest areas into temporary crops were also fundamental for this advance (NIEDERLE; WESZ JR., 2018; COSTA et al., 2020).

Chart 1, showing soybean cultivated area and production in Mato Grosso from 1976/77 to 2019/20 harvests, illustrates the huge growth of such variables during these more than 40 years. It is noteworthy that, over the period, in a few moments there was decrease in planted area, followed by a strong recovery. This performance consolidated Mato Grosso as the largest soybean producing state in Brazil, with Paraná and Rio Grande do Sul alternating in second and third positions. Other states with significant growth in recent years are Goiás and Mato Grosso do Sul, in addition to Maranhão, Tocantins, Piauí and Bahia (which became known as "Matopiba") (CONAB, 2020).

In terms of productivity, there was a great expansion between the 1970s and the beginning of the 2000s, when the yield per hectare jumped from 1,300 to 3,000 tons (a 130% rise), due to new technologies that adapted the grain to the state's conditions, as mentioned above. Productivity remained close to 3,000 ton/ha in the following years, marked by incorporation of new areas that, although having less productive potential were still attractive because of low land prices and the high value of the grain. In recent years (2017/18 – 2019/20) there has been a new growth in productivity, which reached nearly 3,500 ton/ha, and a slowdown in incorporation of new cultivation areas (IBGE, 2020).

As shown in Chart 2, until the 2000s, soybean production in Mato Grosso was concentrated in the *cerrado* regions, mainly in three large "stains": Parecis, BR-163 and Southeast. From 2000 to 2010, an increase in production areas is observed, which includes the aforementioned regions (with expansion towards the North, in the Amazon biome) and new areas, especially the Araguaia Valley, which follows the BR-158 highway, on the border with Goiás and Tocantins. In this case, the main producing municipalities are Querência, Canarana and Água Boa. Currently, only in Pantanal and in the Depression of Meridional Amazon (Northwest of the state) grain cultivation is not significant. In 2019, only 20 (14%) of the 141 municipalities in the state did not cultivate the grain (IBGE, 2020).

In short, in four decades, Mato Grosso has firmly established itself as the main soybean production area in Brazil. Although during field research interviewees have almost exclusively attributed this performance to technological innovation, production specialization, entrepreneurship, economic management and increase in both price and demand, clearly the edaphoclimatic, topographical and environmental conditions, alongside production costs structure in these new areas, State's support through colonization, infrastructure financing and technology transfer policies and municipal tax exemptions were also decisive (BARROZO, 2008; FERNÁNDEZ, 2007; HEREDIA; PALMEIRA; LEITE, 2010). Therefore, it was a set of conditions and factors that made possible the expansion of soybeans in Mato Grosso, introducing in the state a new pattern of accumulation in agricultural activity.

4 Produtores de soja em Mato Grosso

The number of soy producers grew significantly from 1980 to 2017, going from 270 to 7,097, according to the Agricultural Censuses data. In this same period there was a huge increase in both cultivated area (15,583%) and quantity produced (33,416%). Table 1 illustrates these variables by groups of total area of establishments, whose main change over the years refers to the concentration in strata above 1,000 hectares, especially in terms of harvested area and production, which was less than 70% in 1985 and reached 90% in 2017 (IBGE, 2020). This tendency of soybean growth in strata with a larger area is due,

> first, to the very logic of reproduction and capital accumulation in agriculture. Mastery of technology, associated with agricultural machines and implements that provide higher yield per unit of work, leads farmers to expand cultivated area, seeking greater investment efficiency. Second, a rise in production costs per unit of area and, consequently, decrease in profitability, leads farmers to seek gains through scale of production. And third, agricultural activity is an alternative for farmers to keep investing their earnings. Altogether, these factors, and others may be added, have contributed to concentration and centralization of both capital and natural resources in agriculture (FERNÁNDEZ, 2009, p. 46).

Regarding the number of soybean producers from 1996 to 2017, a growth in all strata is observed, including establishments with less than 100 hectares, with increases both in absolute terms (from 166 to 1,234) and relative terms (from 6% to 17%). This is mainly a result of the implementation of the National Program for Production and Use of Biodiesel (PNPB), which encourages participation of family farmers and agrarian reform settlers in soybean production (this topic will be discussed further on).

Table 1 – Number of soybean producing establishments, harvested area and yield by total area groups in Mato Grosso (1980, 1985, 1996, 2006 e 2017)

Number of soybean producing establishments										
Total area strata	1980		1985		1996		2006		2017	
< 10 ha	16	5,9%	70	2,3%	8	0,3%	3	0,1%	7	0,1%
> 10 < 100 ha	11	4,1%	490	16,1%	158	5,8%	393	10,5%	1.227	17,3%
> 100 < 1.000 ha	139	51,5%	1.698	55,9%	1.401	51,0%	1.706	45,4%	2.651	37,4%
> 1.000 ha	104	38,5%	782	25,7%	1.179	42,9%	1.658	44,1%	3.212	45,3%
Total	270	100%	3.040	100%	2.746	100%	3.760	100%	7.097	100%

Soybean cultivated area (in thousand hectare)										
Total area strata	1980		1985		1996		2006		2017	
< 10 ha	0	0,1%	0	0,0%	1	0,1%	0	0,0%	0	0,0%
> 10 < 100 ha	0	0,2%	15	1,8%	4	0,2%	25	0,6%	52	0,6%
> 100 < 1.000 ha	16	27,8%	246	30,0%	383	22,0%	615	14,7%	811	9,2%
> 1.000 ha	41	72,0%	562	68,3%	1.352	77,7%	3.546	84,7%	8.000	90,3%
Total	57	100%	823	100%	1.740	100%	4.186	100%	8.863	100%

| Soybean yield (in thousand tons)										
Total area strata	1980		1985		1996		2006		2017	
< 10 ha	0	0,1%	0	0,0%	3	0,1%	0	0,0%	0	0,0%
> 10 < 100 ha	0	0,2%	28	1,7%	9	0,2%	66	0,6%	165	0,6%
> 100 < 1.000 ha	27	30,8%	483	30,0%	988	22,3%	1.722	14,7%	2.647	8,9%
> 1.000 ha	61	69,0%	1.100	68,3%	3.438	77,4%	9.959	84,8%	26.966	90,6%
Total	89	100%	1.611	100%	4.439	100%	11.747	100%	29.779	100%

Source: Agricultural Census – several years (IBGE, 2020). Elaborated by the author.

In Mato Grosso, soybean production is marked by the presence of large corporate groups. The 20 largest ones planted 533 thousand hectares in 2004/05 harvest, accounting for 9% of the area cultivated with the oilseed in the state. Despite data pointing to great concentration, the Instituto Mato-grossense de Economia Agropecuária (IMEA) demonstrates that over the recent years these figures have further increased – in the 2009/10 harvest the same 20 groups already controlled 1.2 million hectares (a 318% growth), accounting for 20% of the soybean harvested area in the state (REGIONALMT, 2010). Identifying the groups, their cultivated area and nationality is increasingly difficult, because they include large publicly traded companies, controlled by foreign funds or by national entrepreneurs linked to other branches of the economy (BERNARDES, 2017). In the media, Bom Futuro, Amaggi, SLC Agrícola and Bom Jesus appear as the main groups operating with soy production in Mato Grosso. Information in their websites reveals that each of them cultivated at least 133,000 hectares with soybeans in the 2018/19 harvest, and that together they controlled a total of 1.7 million hectares.

By comparing soybean production in Mato Grosso and in the rest of Brazil, a difference becomes evident concerning land dimensions of the units that produce the grain. Although, in both cases, there has been a concentration in establishments with more than 1,000 hectares over the recent years, significant variations are observed in terms of proportion. While national data (not included Mato Grosso)

indicate that approximately half of soybean comes from units with more than one thousand hectares, in the state this figure exceeds 90%, predominating those with more than ten thousand hectares – the stratum that grew the most in the last period, raising from 24% to 35% of production (Chart 3).

Chart 3 – Soybean production by strata of total area in Brazil (not included MT) and in Mato Grosso (1985, 1996, 2006 e 2017)
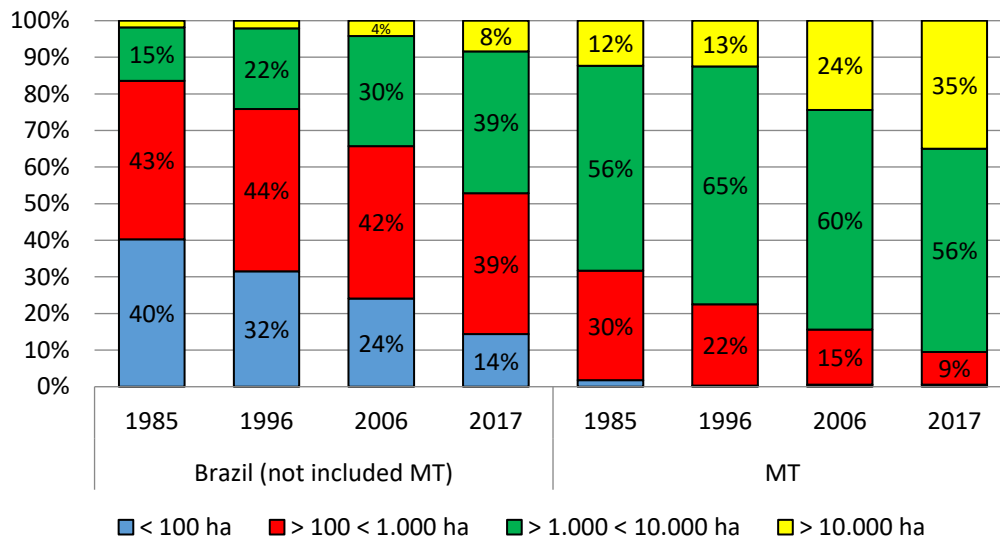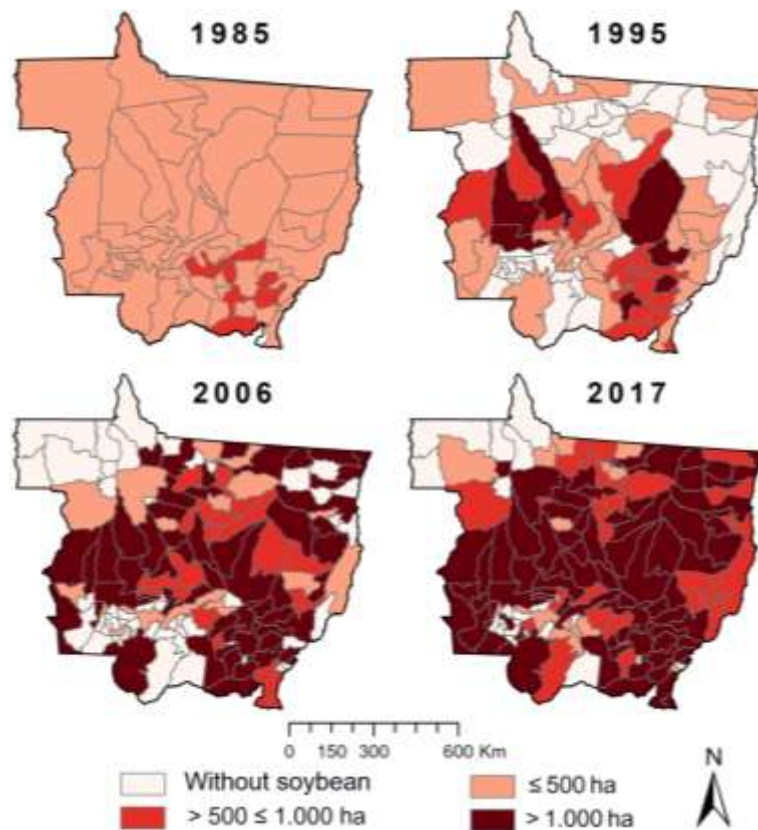

Source: Agricultural Census – several years (IBGE, 2020). Elaborated by the author.

This great difference is related to the forms of management of agricultural enterprise and the progressive change in production patterns, which seek increasing productivity, efficiency and profitability. It must be recognized, however, that the predominance of soybean production in large-scale units is fundamentally related to the dynamics of occupation of territory and to the process of colonization of lands, which placed the indigenous people in reserves and the dwellers in settlements, thus clearing these areas for emigrants from the South – who found it difficult to maintain or expand their areas in their region of origin and ended up buying land at a reduced price in the Cerrado – and from the Northeast – who came as labor force for collecting roots (FERNÁNDEZ, 2007; MORENO, 2007; COY; BARROZO; SOUZA, 2020).

The average area of soybean cultivation per agricultural establishment in Mato Grosso has grown substantially over the years, as shown in Chart 4. Data from the 1985 Agricultural Census indicated that in most municipalities average harvested area was less than 300 hectares, and there was a greater dispersion of cultivation in the state – only Aripuanã showed no production. In 1996, the first municipalities showing average cultivated area above one thousand hectares appeared. Their number grew in 2006 and became the vast majority in 2017. The municipalities with the highest average areas, in 2017, were São Félix do Araguaia (6,105 ha), Sapezal (5,507 ha) and Bom Jesus do Araguaia (4,381 ha) (IBGE, 2020). By comparing Chart 4 with Chart 2, it can be said that this concentration does not only affect those municipalities with the largest cultivated area, but also locations with a reduced number of producers, such as in the Southwest and North of the state.

Chart 4 – Average soybean harvested area by agricultural establishment in municipalities of Mato Grosso (1985, 1995, 2006 e 2017)

Source: Agricultural Census – several years (IBGE, 2020). Elaborated by the author.

Once described the land profile of soybean farmers in Mato Grosso,[3] it is worth discussing the organization of this market, with emphasis on the other actors that form the production chain, as well as on the links established between them.

4 Upstream sectors in soybean production chain in Mato Grosso

In Mato Grosso there is no factory of tractors and harvesters; there are only dealerships, which are scattered throughout the main agricultural regions. According to yearbooks of the Brazilian Automobile Industry (ANFAVEA, 2020), there were 119 dealerships in 2019 (while in 2010 there were 81), most of which representing CNH (40.3%), with Case and New Holland brands, in addition to John Deere (28.6%), AGCO (24.4%), with the AGCO, Massey Ferguson and Valtra brands, and Agrale (6.7%) (Chart 5). The sale of agricultural machinery and implements is closely related to outcomes of the previous harvest and to producers' expectations regarding the future harvest, which can be seen in the decline in sales of tractors and harvesters in 2005 and 2006, resulting from the crisis in the sector, as mentioned earlier. From 2006 to 2013, however, sales recovered, surpassing, for both harvesters and tractors, the figures of 2003 and 2004. In recent years, the market has been more stable, with annual sales

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[3] We intended to present other characteristics of soybean producers in Mato Grosso, but the access to microdata from the 2017 Agricultural Census was unavailable, hindering further information.

of tractors ranging from 2,000 and 2,700 units and of harvesters ranging from 900 to 1,300 machines (Chart 5).

Chart 5 – Number of dealerships by company and sales of tractors and harvesters in Mato Grosso
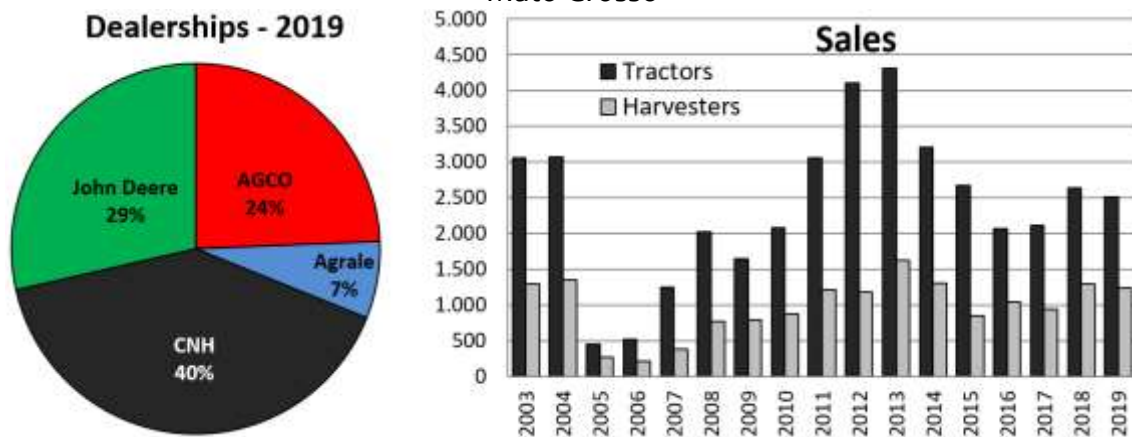
Source: Anfavea (2020). Elaborated by the author.

Regarding fertilizers, Mato Grosso is the largest national consumer and one of the regions that most apply fertilizer per hectare in the world – around 450 kg/ha, while in Argentina and the United States the average is 40 kg/ha and 30 kg/ha, respectively. Although there are no units for extraction and production of granulated chemical fertilizers in the state, the high consumption has encouraged increasing installation of factories that mix and distribute these products. In 2011, there were 35 factories in Mato Grosso, divided into: mixers of compound mineral fertilizers, producers of organic fertilizers and producers of liquid fertilizers. Among installed companies, the transnationals ADM, Bunge, Mosaic (Cargill), Cofco and Yara stand out, alongside the national companies Heringer, Fertipar and Sudoeste. Rondonópolis concentrates 50% of these plants and 76% of the installed mixing capacity in Mato Grosso (SILVA, 2011). Although current data for Mato Grosso are not available, we believe that the state reproduces the high concentration existing in the country, where only four firms control virtually three quarters of the national market: Yara (25%), Mosaic (20%), Fertipar (15 %) and Heringer (13%) (AGROLINK, 2017).

Mato Grosso is also the first Brazilian state in consumption of agrochemicals, and soybean stands out as the crop that most absorbs agricultural pesticides (50.2% of total consumption) (AENDA, 2020). Despite being the main national market, Mato Grosso does not have a significant number of pesticide factories (not least because most products are imported). However, there is a significant presence of resellers. In a municipality like Campo Verde, with 350 thousand hectares of temporary crops, there were approximately 20 resellers in 2012, all located in the urban perimeter. There are, also, several technical salespersons (TS) who work directly for transnational firms. As with fertilizers, there are no data for the state, but the national logic is probably reproduced, with supply being concentrated in a few transnational companies such as Syngenta (18.5%), which was acquired by ChemChina; Bayer (15.6%), which bought Monsanto; Corteva (10.9%), new brand resulting from the merger between Dow and DuPont; and BASF (9.2%) (AGROLINK, 2020).

The production of soybean seeds involves basically two fundamental actors: cultivars maintainers (or seed producers) and seed supplier companies. Cultivars

maintainers are companies that invest in research and development of new plant varieties, with specific characteristics to meet the different soil and climate conditions of the producing regions. This sector shows some similarities with that of pesticides, such as the large number of mergers and acquisitions and market concentration in a few companies, although in the case of seeds there are national and public corporations (as Embrapa) (SANTOS, 2013). Another noteworthy aspect is the presence of companies that predominate in the production of both products (seeds and pesticides), such as Bayer/Monsanto, Dow/DuPont and Syngenta/Nidera/ChemChina. Cultivars maintainers create seed breeding stations in different regions of Brazil seeking to adapt their genetics to local conditions. In 2000 there was only one soy breeding station in Mato Grosso (Rondonópolis). In 2013, the number of stations increased to eight in the state and jumped to 17 in 2020, mostly located in the main grain producing regions (Southeast, BR-163 and Parecis) (CANAL RURAL, 2020).

Seed suppliers, in turn, reproduce the genetic material created by cultivars maintainers. According to an interview with Agrosol Sementes (2013), "we partnered with Bayer, Nidera, Monsoy [a subsidiary of Monsanto] and we use their genetic base to produce the seeds, which we then sell to producers in the region". In 2020, there were 46 seed suppliers in Mato Grosso, predominantly located in the Southeast of the state. Some seed suppliers belong to large soybean producing groups, such as Amaggi, Sementes Bom Futuro and Sementes Itaquerê (ABRASEM, 2020).

Continuous biological, mechanical and physical-chemical innovations are at the heart of the upstream sectors in soybean production chain, being responsible for the emergence of new products at each harvest (COSTA et al., 2020). An example is the caterpillar resistant transgenic seed (INTACTA RR2 PRO), developed by Monsanto and much referred to during the 2012 and 2013 field research; another one is HB4 seed, from the Brazilian company TMG, announced as 30% more resistant to drought, and object of much expectation among producers in 2020. These innovations are undoubtedly fundamental for increasing agricultural productivity.

However, technological development comes at a cost, which has grown in recent harvests. Surveys carried out by IMEA (2020) on production expenses for transgenic soybean cultivation show increase in expenditure per hectare, which raised from R$ 1,563.20 in the 2010/11 harvest to R$ 4,378.99 in 2020/21 (180% rise in nominal terms). The weight of inputs in total cost is noteworthy, which has remained close to 50% in the analyzed crops, mainly related to fertilizers (macronutrients) and pesticides (insecticides, fungicides and herbicide).

To cover production costs, farmers resort to different sources of funds (PROFETA et al., 2014). IMEA (2020) has sought to estimate these costs, based on five groups of sources: bank with federal government financing; agrochemical, fertilizer, seed and grain multinationals; inputs resellers; financial system; and own resources (Chart 6). A first issue is that the main source varies according to the harvest. There were periods when own resources, multinationals and resellers predominated. The fact that own resources are the main source in most years indicates the strong capitalization of producers due to the rise in prices of the grain. Multinationals (especially ADM, Bunge, Cargill, Dreyfus) ended up reducing their importance, especially after the international financial crisis, while resellers assumed part of this role. Nevertheless, since 2014/15 they have been recovering their share.

Also noteworthy, especially in recent harvests, is the expansion of financial capital to fund harvests, accounting for a quarter of total resources used for soybean production in the state (Chart 6).

> The financial system, through free resources, presented the main change in funding this crop and reached the largest share of that player in IMEA's historical series. For the sixth consecutive season there was an increase in participation of banks with funds originating from Agribusiness Letters of Credit (LCA), own funds, funds in foreign currency and others. With the reduction in Selic rate in recent months and the increase in interest rate for the Agricultural and Livestock Plan (PAP), it became more attractive for rural producers to access financing through resources without government subsidies, either for not limiting resources by CPF [taxpayer identification number] or for the faster process for credit approval. Thus, there was an increase of 7 p.p. [percentage points] in the share of the financial system in soybean agricultural financing in Mato Grosso and there was a decrease of 4 p.p. in the participation of banks with federal government funds (IMEA, 2020, p. 1).

Chart 6 – Funding sources for soybean production in Mato Grosso (2008/09 – 2019/20)
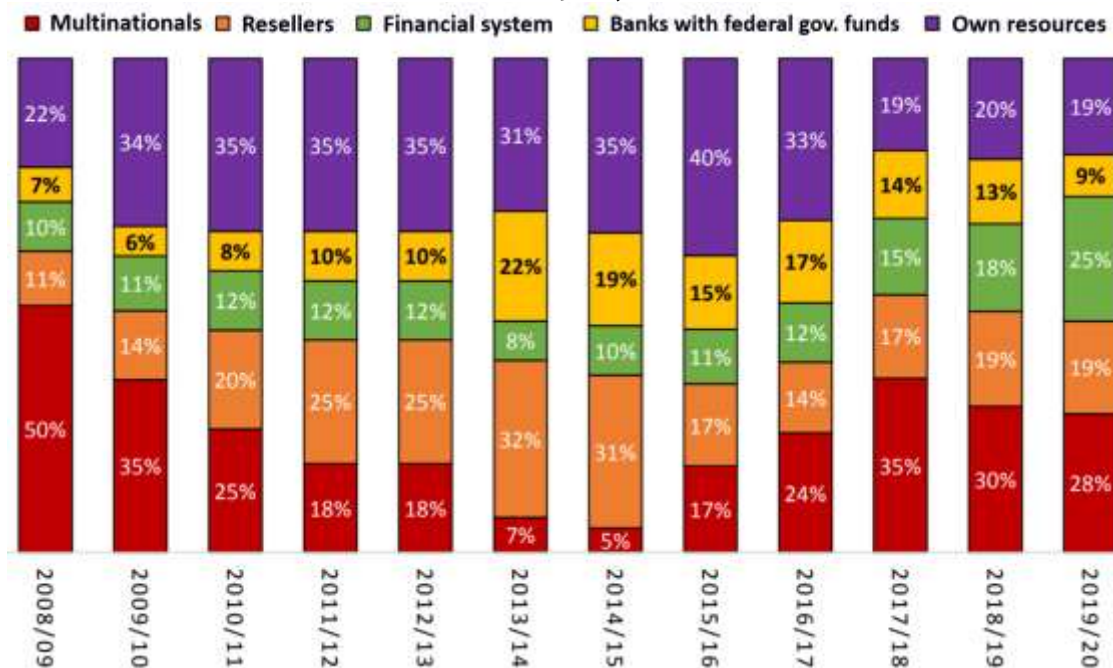
Source: IMEA (2020).

Regarding inputs acquisition, in Mato Grosso it is usually made from three suppliers: resellers, directly from the manufacturer or from the cooperative. The most usual, especially for medium and small farmers who are not organized into cooperatives, is purchasing from resellers, through contracts involving the so-called "packages", which imply a combined sale of seeds, fertilizers and pesticides, in addition to technical assistance (TA) offered throughout the harvest time (generally the TA value is established as a percentage of the harvested crop). The "package" can be paid either immediately (when farmers have own resources available, or financing obtained from banks or the financial system) or at the harvest, which characterizes a reseller loan (Chart 6) to be paid either in currency or in soybeans

(generally the value is converted into soybeans sacks and is paid in grain after harvest).

The second source of inputs are fertilizer mixers and distributors, seed suppliers or directly manufacturer corporations through TS, which can also be paid immediately or at harvest. As fertilizers are produced or sold by the same companies that buy soybean, a vertical relationship is built up, which will be further discussed in the next section. Purchases through TS are carried out by the largest producer groups (such as Bom Futuro, Amaggi, Vanguarda, SLC Agrícola, Bom Jesus, Itaquerê etc.) that purchase large quantities.

Finally, the acquisition can occur through a cooperative. In this case, the cooperative orders the demanded volume of inputs to the companies (discriminating the specifics of the products) and defines the supplier company based on the best price option. Therefore, the cooperative is the intermediary between the producer and the company, what allows soybean farmers the advantage of obtaining lower costs in purchasing inputs. Although the presence of cooperatives has grown in recent years in Mato Grosso, it is not as widespread as it is in the South of the country (GIMENES; GIMENES, 2007).

5 Downstream sectors in soybean production chain in Mato Grosso

Soybean produced in Mato Grosso is mostly destined for direct export, without added value (58% of the 2018/19 crop). In addition to this destination, 9% is sent to processing in other states and 29% is processed in Mato Grosso, turning into bran (76%), whose main destination is export, and into oil (20%), which is mainly consumed in the country (IMEA, 2020). The 2006 Agricultural Census[4] included a question that allowed for identifying what actor did buy soybean from rural producer. In Mato Grosso, the main buyer, which absorbed 60% of production, was the industrial sector, which also includes trading companies, since these work in both processing and exporting the grain (IBGE, 2020). It is worth highlighting that this sector is the main buyer both in areas where soybean cultivation is consolidated, such as the Southeast region of the state, BR-163 and Parecis (the first two having already the presence of factories), and in microregions where cultivation expansion is more recent (Paranatinga, Norte Araguaia, Canarana etc.). The ability of the industry to absorb grain despite a wide territorial dispersion is due to a common strategy used by the main companies: to build storage units (silos) in different regions, aiming to capture this production, which is then transported to their plants or to their port terminals (FREDERICO, 2009).

The second major buyers of soybeans in the state in 2006 were traders that absorbed 17.6% of production (IBGE, 2020). This category includes both middlemen and resellers of inputs. The middlemen (which would be the "traditional intermediaries") are those who buy the grain and resells it in another region at a higher price. This occurs more generally in places that are more distant from the main routes and whose production is lower, as the micro-regions of Aripuanã and Alto Guaporé where this type of sales reaches more than 40% of total production. Input resellers are classified as intermediaries because they receive soybeans from farmers who sign contracts for payment in grain and trade it with agro-industry or trading

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[4] This question was excluded from the 2017 Agricultural Census.

companies. Resellers that crush or export agricultural production via own means are hardly found. Currently, the role of intermediaries in the purchase of grain has probably been reduced, because, as peripheral regions expand their production, the interest of large trading companies in building storage and flow systems for crops grows.

The remaining soybeans harvested in Mato Grosso in 2006 went to: integration companies (10%), especially the Sinop, Sorriso and Lucas do Rio Verde and Nova Mutum region, which has a significant number of cattle, swine and poultry, as well as slaughterhouses (BERNARDES; ARACI, 2010); cooperatives (5.7%), with greater presence in the Southeast of the state; direct export (4.9%), especially in the micro-regions of Parecis and Tangará da Serra (IBGE, 2020) where soybeans are shipped along the BR-364 to Porto Velho, and then on bulk cargo barges along the Madeira River and the Amazon River until reaching the Port of Itacoatiara/AM. It is worth noting that the Parecis region is the main area of operation of the "Agro Division" of Amaggi Group, which performs direct export.

Despite these data, we must consider that a large part of soybean production ends up, at some point, being directed to trading companies and crushing industrial plants. This is because the oilseed that producers sell to middlemen, input resellers, small companies and smaller cooperatives is eventually sold to large agribusinesses, which have infrastructure for processing, transporting and exporting the production (WESZ JR., 2011). Therefore, even if farmers deliver their production to different actors, much of the soybeans ends up funneling to a small number of companies. This scenario is clear in some reports collected in the field research:

> As contracts with producers are signed, we [reseller] organize the business. When we have a good number of soybeans sacks to receive, then we make a contract with a multinational to deliver soybeans to them at a fixed price. [...] The soybean that producers deliver to us, we sell to multinationals (Inputs reseller, 2013).
> Take Sinagro, for instance, it is the reseller that makes the largest volume of exchanges in the region [Southeast of MT]. But it does not export production, it has to sell to multinationals. With Agrovence is the same, they don't pull a single soy bean they have, 100% goes to multinationals. In the end, everything will end up in the hands of the multinationals. Today it is ADM, Bunge, we [Cargill], Dreyfus, Noble, which is a new company that is selling a lot, and Amaggi (Agroindústria, 2012)

Storage capacity has grown significantly in the state. In 1980, there was capacity to keep 242 thousand tons in the silos, which increased to 5.6 million in 1990, 12.7 million in 2000, 26.7 million in 2010 and 37.9 million tons in 2019 (Chart 7). Sorriso (241 silos and 12.3% of the state's capacity), Primavera do Leste (129 / 6.5%), Lucas do Rio Verde (84 / 5.3%), Campo Novo do Parecis (113 / 4.8%), Sapezal (86 / 4.2%) and Nova Mutum (114 / 4.2%) stand out as municipalities with the largest capacity. Mato Grosso is currently the first Brazilian state in storage capacity (22.3%), followed by Rio Grande do Sul (18.2%), Paraná (17.7%), Goiás (8.0%) and São Paulo (7. 8%). As shown in Chart 7, considering only soybeans, the state has a storage capacity 15% higher than production. However, taking into account the whole production in grains, coverage is only 56.2%, indicating a storage capacity deficit of 29 million tons in 2019 (CONAB, 2020).

Chart 7 – Storage capacity and soybean, corn and other grains production
(thousand tons) in Mato Grosso (1980 - 2019)
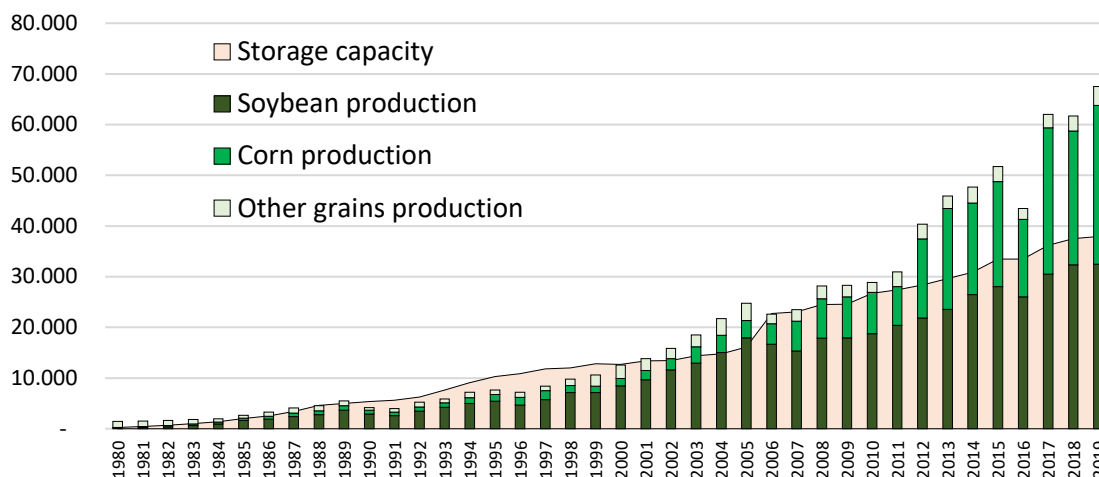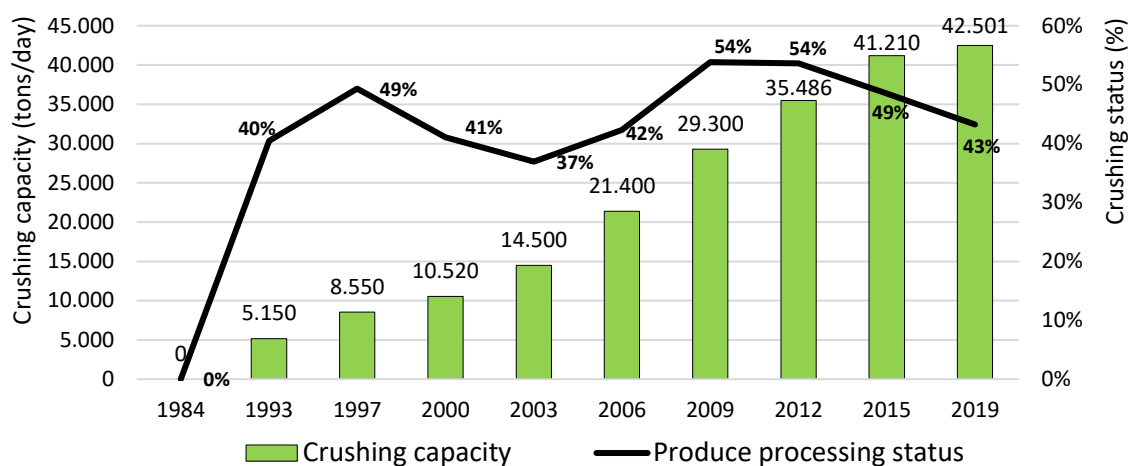

Source: Conab (2020). Elaborated by the author.

Silos allow the regular flow of grain circulation in time and space, being essential from production to the final stages of export and consumption.

> [...] at agricultural fronts, control of the storage system becomes even more strategic, for being the main grain producing region in the country, for the great distance from exporting ports and consumer regions and the precariousness of transport systems. This context makes ownership of the storage system a key element in controlling production. That is why in the main producing regions, ownership of storage systems is even more selective, being controlled by large grain processing and exporting firms, making producers and the State subservient to the companies' policy (FREDERICO, 2009, p. 5)

Besides the increase in storage capacity, there was also an increase in soybean crushing capacity in Mato Grosso. Until 1980 there were no crushing plants in the state, which began to be built at the end of that decade. However, it is at the turn of the century that crushing capacity of firms grows significantly, from 10.5 to 42.5 ton/day from 2000 to 2019. In 2019, there were 15 soybean processing units in Mato Grosso: ADM, in Rondonópolis and Campo Novo do Parecis; Agrenco, in Alto Araguaia; Amaggi, in Lucas do Rio Verde; Araguassú (leased by 7Sete Agroindustrial), in Porto Alegre do Norte; Bunge, in Rondonópolis and Nova Mutum; Caramuru, in Sorriso; Cargill, in Primavera do Leste; COFCO, in Rondonopolis; Dreyfus, in Alto Araguaia; Olvepar, in Cuiabá; Clarion (leased by Root Brasil), in Cuiabá; Sperafico, in Cuiabá; and Tauá, in Nova Mutum. However, in 2019, the plants of Agrenco, Olvepar, Clarion and Tauá were paralyzed (ABIOVE, 2020).

Considering the local soybean production, Mato Grosso had capacity to crush 42.2% of produce in 2000, a figure that raised to 53.8% in 2009, given the increase in processing capacity. However, in the last decade, industrial capacity did not keep up with production speed, and crushing coverage was only 43.2%, close to the 2000 figure (Chart 8). In 2019, the state accounted for 22% of the national crushing capacity, being the leader in Brazil, with Paraná ranking second, accounting for 18.7%, and Rio Grande do Sul in third position, with 15,9%. In 1993 Mato Grosso was sixth in this ranking, became fourth in 2000 and took the lead in 2010 (ABIOVE, 2020)

Chart 8 – Soybean crushing installed capacity (tons per day) and produce processing status in Mato Grosso (%)

Source: Abiove (2020) and Conab (2020). Elborated by the author.

Besides increase in production, which encourages closeness between industrial plants to reduce their costs, other elements contributed to this expansion of capacity in Mato Grosso: Kandir Law, which encourages grain processing within state boundaries to reduce taxes;[5] increase in demand for bran and the consolidation of poultry and hog farming; improvement of the regional transport system and diversification of the modes of produce transport (in addition to the opening of new roads, also railways and waterborne transport modes for produce distribution were expanded, reducing costs and facilitating access to the international market); tax exemption granted by the state; political support offered by the government, in line with actions of companies (BERNARDES; ARACI, 2010; HEREDIA; PALMEIRA; LEITE, 2010; WESZ Jr., 2011).

Another sector that grew in importance within the downstream link of soybean production chain is biodiesel. In 2004, the National Program for Production and Use of Biodiesel (PNPB) was created, determining mandatory blending of biodiesel in conventional diesel, with increasing proportion over the years, reaching 12% in 2020. Among other goals, the Program is aimed at the inclusion of family farmers in this production chain. To this end, the main initiative built was the Social Fuel Seal, which is awarded to companies committed to purchase raw material from family farming (FINCO; RIBEIRO; BAILIS, 2014; VAZ; OLAVE, 2015). To obtain the Seal in Mato Grosso, companies must prove that at least 15% of their production is supplied with crops from family farmers. Companies holding the Seal have the main advantages of differentiation/exemption from PIS/PASEP and COFINS taxes, access to better financing conditions with banks and assured participation in public auctions of the National Agency of Petroleum, Natural Gas and Biofuels (ANP), at which they can trade up to 80% of their biodiesel. This scenario encourages mills to promote

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[5] Kandir Law, which establishes the taxation system for goods circulation and transport, encourages processing products in the same state they are produced, as interstate transfer of products implies payment of taxes. If Mato Grosso's soybean is crushed in São Paulo, for example, a 12% tax (ICMS -Tax on Operations related to Circulation of Goods and on Provision of Interstate and Intermunicipal Transport and Communication Services) would apply on the value of soybean sent. Thus, as Mato Grosso is soybean largest national producer, processing plants approached the production site.

soybean farming among family farmers and agrarian reform settlers. Mato Grosso was the second state in biodiesel production in 2018, with 21.2% of national production, with Rio Grande do Sul being the leader (27.7%). In the same year, there were 16 biodiesel plants in the state, 11 of which were in operation (ADM, Bunge, COFCO, Transportadora Caibiense, Biocamp, Bio Óleo, Bio Vida, Biopar, Fiagril, Caramuru and Cooperfeliz). The plants are spread across all soybean producing regions of Mato Grosso, especially in the Southeast region and BR-163 (ANP, 2020).

The main downstream companies in the soybean market in Mato Grosso are the Americans ADM, Bunge and Cargill, the French Dreyfus (these four known as ABCD), the Brazilian Amaggi and the Chinese COFCO (those six could be called AABCCD). While ABCD has dominated the regional (WESZ JR., 2016) and global (MURPHY; BURCH; CLAPP, 2012) grain markets for years, COFCO has expanded its participation in this market after purchasing Noble and Nidera (WILKINSON; WESZ JR.; LOPANE, 2016; ESCHER, 2021; WESZ Jr.; ESCHER; MEFANO, 2021) and Amaggi, that belongs to the family of former governor Blairo Maggi, became internationalized (PASTRE, 2016). These firms operate at different fronts of the production chain, such as supply of fertilizers and financing for soybean production (as already seen), storage, produce processing, sale of finished goods and export of grains and derivatives. To further expand their power over the different stages of the production chain, these corporations carry out joint ventures in sectors where they do not have a large presence, such as the seed and pesticide sectors. This was the case of partnerships established between Cargill and Monsanto, Bunge and DuPont, Dreyfus and Genética Don Mario (partially purchased by Dow), identified during the field research.

In terms of storage, these companies have a wide and branched system of silos. Despite having facilities in all regions of the state, investments are concentrated in places with large production, close to soybean crushing plants and to flow routes to the international market. In 2000, ADM, Bunge, Cargill, Dreyfus, Amaggi and Noble were able to store 3.2 million tons of soybeans, which represented almost a third of the structure present in the state. AABCCD capacity increased to 6.6 million tons in 2010 and to 8.8 million tons in 2020, keeping a share of 23.1% (Table 2). Currently, Amaggi is the company with the highest storage capacity (5.7% of total capacity in Mato Grosso), followed by Bunge (4.4%), Cargill (4.2%), Dreyfus (3.1%) and ADM and COFCO (both with 2.8%) (Table 2). The rest of the storage structure is distributed among smaller companies, cooperatives and individual and group farmers,[6] who took advantage of the increase in subsidized rural credit to build silos (LEITE; WESZ Jr., 2014).

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[6] Among the large soybean producing groups, Bom Futuro stands out as the world's leader soybean producer, with a capacity of 1.3 million tons, which represents 3.5% of the structure available in the state (Conab, 2020).

Table 2 – Storage capacity of the main companies in Mato Grosso (2000, 2010 and 2020)

Company	2000		2010		2020		Variation (2000 - 2020)
	Cap. (ton)	% MT	Cap. (ton)	% MT	Cap. (ton)	% MT	
Bunge	1.145.392	10,3%	1.628.592	6,4%	1.687.182	4,4%	47,3%
Cargill	667.950	6,0%	1.517.670	6,0%	1.583.030	4,2%	137,0%
ADM	413.190	3,7%	1.077.880	4,3%	1.077.880	2,8%	160,9%
Dreyfus	264.940	2,4%	843.190	3,3%	1.185.900	3,1%	347,6%
COFCO*	62.000	0,6%	199.053	0,8%	1.072.833	2,8%	1.630,4%
Amaggi	677.520	6,1%	1.374.210	5,4%	2.172.250	5,7%	220,6%
Sub-total	3.230.992	29,2%	6.640.595	26,3%	8.779.075	23,1%	171,7%
D+ empresas	7.847.571	70,8%	18.621.208	73,7%	29.168.892	76,9%	271,7%
Total no MT	11.078.563	100,0%	25.261.803	100,0%	37.947.967	100,0%	242,5%

*Until 2014, data refer to Noble. Source: Conab (2020). Elaborated by the author.

Regarding crushing capacity, at the beginning of the 21st century Bunge and Amaggi had already processing plants in Cuiabá, and ADM in Rondonópolis. Even with the control of only three plants, these companies accounted for 76.5% of processing capacity in the state in 2000, considering only soybean crushing plants in operation (OLIVEIRA; SANTOS, 2004). During the 2000s, such scenario changed significantly: on the one hand, those three companies increased crushing capacity of their existing plants; on the other hand, other transnational companies with global operations built new projects in the state, such as Dreyfus, Cargill and COFCO, in addition to Bunge and Amaggi, which already had processing structures in Mato Grosso. In 2017, Bunge was the company with the greatest market power in this sector, with 28.8% of the state crushing capacity, followed by ADM (20.6%), Amaggi and COFCO (each with 11.5%), Dreyfus (9.8%) and Cargill (8.6%) (Table 3).

Table 3 – Soybean crushing capacity by operating company in Mato Grosso (2000 - 2017)

Company	2000	2003	2006	2009	2012	2017
ADM	20,6%	27,7%	27,0%	22,3%	23,4%	20,6%
Amaggi	21,5%	11,0%	16,2%	15,8%	16,1%	11,5%
Bunge	35,8%	45,0%	27,0%	30,8%	31,8%	28,8%
Caramuru	0,0%	0,0%	0,0%	0,0%	3,3%	3,5%
Cargill	0,0%	0,0%	0,0%	10,3%	10,0%	8,6%
Clarion	9,3%	5,9%	4,9%	5,1%	0,0%	0,0%
COFCO*	0,0%	0,0%	0,0%	0,0%	0,0%	11,5%
Dreyfus	0,0%	0,0%	16,2%	10,3%	10,0%	9,8%
Sperafico	12,9%	10,4%	8,6%	5,5%	5,4%	5,2%
Total	100%	100%	100%	100%	100%	100%

*Until 2014, the company was controlled by Noble. Source: Oliveira and Santos (2004); Pessoa and Pereira (2006); Wesz Jr. (2011, 2014); Oleofar (2018); Abiove (2020). Elaborated by the author.

These six firms are also engaged with soybean export. The dual possibility – of processing the oilseed or exporting it in natura – provides an important and

fundamental room for maneuver to increase profitability of companies, as it allows them to make choices according to the current context (WESZ JR., 2011). Since the beginning of the 2000s, AABCCD has been operating in the state, with Bunge and Amaggi standing out – they alone exceeded 40% of soybean exports from Mato Grosso between 2003 and 2011. ADM, Cargill and COFCO (Noble and Nidera until 2014) have expanded their market power over the years, while Dreyfus has a more unstable situation. The fact is that these six companies, together, managed to control more than 80% of soybeans exports from Mato Grosso between 2008 and 2011. However, as they opened new plants or expanded the capacity of those already in operation, their market share had a reduction, although being still highly significant, close to two thirds of the total (Chart 9).

Chart 9 – Soybeans exports volume (Thousand tons) by leading companies and their weight in soybean total exports from Mato Grosso (2003 – 2017)
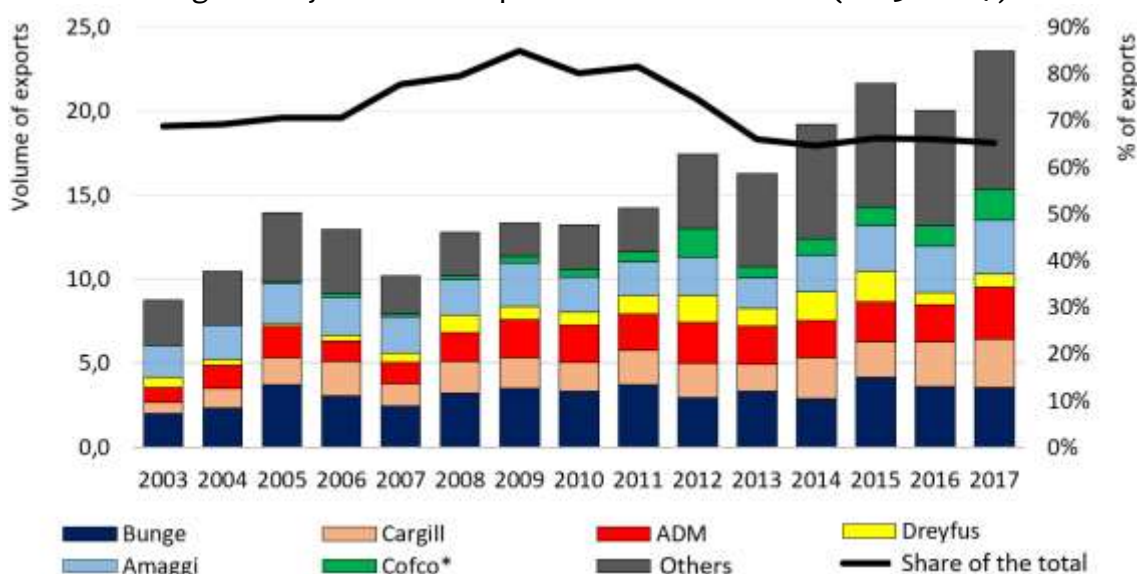
*Until 2014, data refer to Noble and Nidera. Source: Trase (2020). Elaborated by the author.

The various initiatives and strategies developed by ADM, Amaggi, Bunge, Cargill, COFCO and Dreyfus entailed a growth in their trades at international market. According to SECEX data (2020), the value of exports of these six companies in Mato Grosso jumped from US$ 1.25 billion in 2003 to US$ 9 billion in 2013 (a growth of 645%). From 2013 to 2015,[7] their exports fell by 22%, mainly reflecting the drop in prices of agricultural commodities. It is worth noting that Bunge, Amaggi, ADM and Cargill occupied the top four positions in the ranking of the largest exporting companies in the state from 2007 to 2015. In 2015, Bunge accounted for the highest value in exports (US$ 2.1 billion), controlling alone 16.1% of total exports of Mato Grosso. Amaggi ranked second, and Cargill, third (both with $2.1 billion), followed by ADM ($1.1 billion), JBS ($741 million), COFCO ($691 million) and Dreyfus (US$501 million) (SECEX, 2020).

It is noteworthy that from 2003 to 2015, when information by firms was still available, AABCCD accounted for at least half of the value of total exports from Mato

[7] With the justification of keeping the companies' secrecy, Secex stopped making the values of exports per company available.

Grosso (in 2009 and 2011 they accounted for two thirds) (Chart 10). In short, a large part of Mato Grosso's trade balance is linked to a small number of companies, mostly transnational, which trade, among other products, soy beans, bran and oil. The economic weight of these corporations, especially regarding generation of surplus in the trade balance, makes the state highly dependent on them, what gives them an important asset to bargain state investments in areas that are strategic for the companies (land plots for construction of industrial plants, infrastructure for production flow, tax incentives etc.).

Chart 10 – Exports value (million US$) by leading companies and their weight in total exports from Mato Grosso (2003 - 2015)
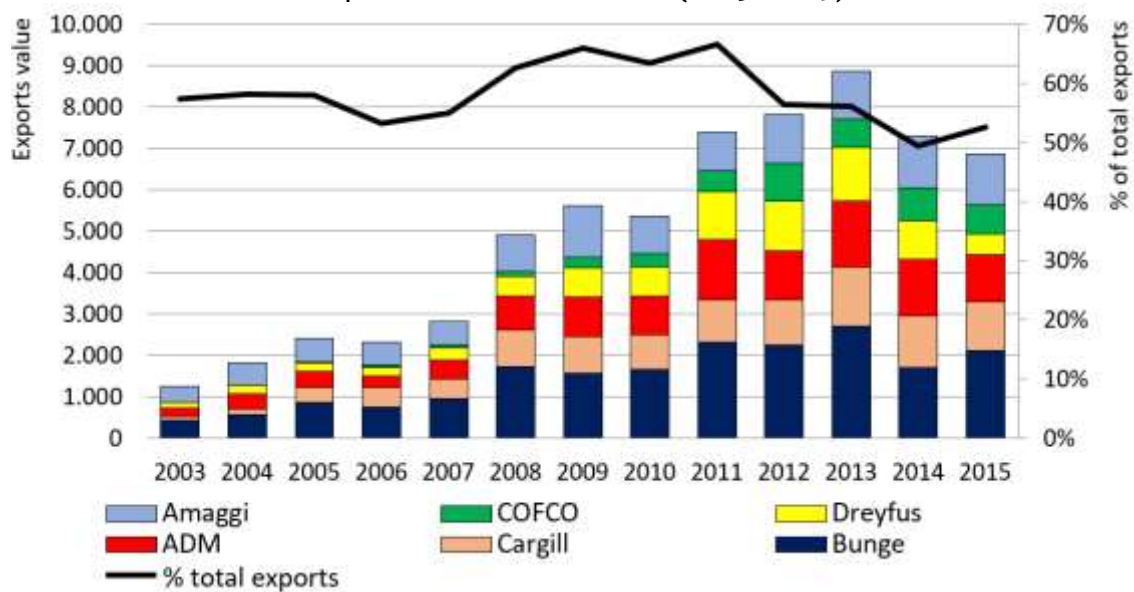
Source: Secex (2020). Elaborated by the author.

6 Final remarks

Over the recent decades, soybean cultivation has assumed great centrality in Mato Grosso, occupying nine out of ten hectares cultivated in the summer and accounting for two out of three dollars exported from the state. However, this study points to its high concentration, evident both among rural producers (85% of production comes from establishments with a total area of more than 1,000 hectares) and among companies both upstream and downstream the production chain (a quite small number of firms control large part of the market for machinery, fertilizers, pesticides, seeds, crushing and export). Among those companies, leading global corporations predominate, which are connected with financial capital and hold great economic and political power, thus defining the rhythm, dynamics and operation ways of this market. In short, soybean production chain in Mato Grosso has been marked by interrelated processes of concentration and transnationalization, and its activity is highly dependent on a small number of predominantly foreign companies.

Despite the undeniable economic importance of soybean for Mato Grosso, when discussing the contribution of this production chain to regional development in light of this research findings, two risks stand out (in addition to others not

analyzed in this work). The first concerns the high dependence on a single product, what, in the event of a sectoral crisis – which can stem from both climatic problems and market fluctuations, diplomatic tensions, economic instability etc. –, will cause a huge impact on the state, which lacks other activities with the same degree of relevance. The second risk refers to the reduced number of direct beneficiaries from this production chain (especially of national origin, when we look at companies, or from Mato Grosso, when we focus on producers), given the highly concentrated market structure. In this sense, the analysis of the spillover capacity of economic gains from soybean production to the whole society of Mato Grosso should be object of future studies.

REFERENCES

ASSOCIAÇÃO BRASILEIRA DAS INDÚSTRIAS DE ÓLEOS VEGETAIS – ABIOVE. **Estatística**. 2020. Disponível em https://abiove.org.br/estatisticas/ Acesso em: 14 ago. 2020.

ASSOCIAÇÃO BRASILEIRA DE SEMENTES E MUDAS – ABRASEM. **Associação dos Produtores de Sementes de Mato Grosso**. 2020. Disponível em http://www.abrasem.com.br/associacao-dos-produtores-de-sementes-do-mato-grosso-aprosmat/ Acesso em: 28 mai. 2020.

 ASSOCIAÇÃO BRASILEIRA DE DEFENSIVOS PÓS-PATENTE – AENDA. **Informações**. 2020. Disponível em https://www.aenda.org.br/Acesso em: 2 nov. 2020.

AGROLINK. **4 empresas detêm 73% do mercado de Fertilizantes no Brasil**. 2017. Disponível em https://www.agrolink.com.br/noticias/4-empresas-detem-73--do-mercado-de-fertilizantes-no-brasil_395514.html Acesso em: 27 mai. 2020.

AGROLINK. **Top 20 agroquímicas Brasil 2018**: Vendas voltam a subir. 2020. Disponível em https://www.agrolink.com.br/noticias/top-20-agroquimicas-brasil-2018--vendas-voltam-a-subir_428140.html Acesso em: 14 mai. 2020.

ASSOCIAÇÃO NACIONAL DOS FABRICANTES DE VEÍCULOS AUTOMOTORES – ANFAVEA. **Anuário da indústria automobilística brasileira**. 2020. Disponível em http://www.anfavea.com.br/anuario2020/anuario.pdf. Acesso em: 22 jul. 2020.

AGÊNCIA NACIONAL DO PETRÓLEO, GÁS NATURAL E BIOCOMBUSTÍVEIS - ANP. **Anuário Estatístico Brasileiro do Petróleo, Gás Natural e Biocombustíveis**. 2020. Disponível em http://www.anp.gov.br/publicacoes/anuario-estatistico/5809-anuario-estatistico-2020 Acesso em: 14 out. 2020.

BARROZO, João Carlos. **Mato Grosso**: do sonho à utopia da terra. EdUFMT, 2008.

BERNARDES, Julia A. et al. (Orgs.) **Globalização do agronegócio e land grabbing**: a atuação das megaempresas argentinas no Brasil. Lamparina: Rio de Janeiro, 2017.

BERNARDES, Julia A.; ARACI, Luís A. dos S. (Org.) **Espaço e circuitos produtivos**: a cadeira de carne/grãos no cerrado mato-grossense. Rio de Janeiro: Arquimedes, 2010.

BERNARDES, Julia. A. Circuitos espaciais da produção na fronteira agrícola moderna: BR-163 mato-grossense. In: BERNARDES, J. A.; FREIRE FILHO, O. de L. (Orgs.) **Geografia da soja BR-163**: fronteiras em mutação. Rio de Janeiro: Arquimedes, 2005.

CANAL RURAL. **MT: pesquisa vai mostrando viabilidade do plantio da soja em fevereiro**. 2020. Disponível em https://www.canalrural.com.br/agronegocio/mt-pesquisa-vai-mostrando-viabilidade-do-plantio-da-soja-em-fevereiro/ Acesso em: 18 mai. 2020.

COMPANHIA NACIONAL DE ABASTECIMENTO – CONAB. **Informações agropecuárias**. 2020. Disponível em https://www.conab.gov.br/info-agro/safras/serie-historica-das-safras . Acesso em: 25 ago. 2020.

COSTA, Nilson Luiz et al. Aspectos da importância do complexo soja no Brasil e no Rio Grande do Sul: 1997–2017. **Redes,** v. 25, Ed. Especial, p. 1840-1863, 2020. DOI: https://doi.org/10.17058/redes.v25i4.12735

COY, Martin; BARROZO, João Carlos; SOUZA, Edison A. (Orgs.) **Estratégias de expansão do agronegócio em Mato Grosso**: os eixos da BR-163 e da BR-158 em perspectiva comparativa. Brasília: Editora IABS, 2020.

DESCONSI, Cristiano. **O controle da lavoura: a construção de relações sociais e a produção de soja entre assentados do meio norte do Mato Grosso–Brasil**. 2017. 329f. Tese (Doutorado em Sociologia e Antropologia) – Universidade Federal do Rio de Janeiro, Rio de Janeiro, 2017.

ESCHER, Fabiano. BRICS varieties of capitalism and food regime reordering: A comparative institutional analysis. **Journal of Agrarian Change**, v. 21, n. 1, p. 46-70, 2021.

ORGANIZAÇÃO DAS NAÇÕES UNIDAS PARA A ALIMENTAÇÃO E A AGRICULTURA - FAO. **Data**. 2020. Disponível em http://www.fao.org/faostat/en/#data. Acesso em: 25 ago. 2020.

FERNÁNDEZ, Antonio J. C. **Do Cerrado à Amazônia: as estruturas sociais da economia da soja em Mato Grosso.** 2007. 262f. Tese (Doutorado em

Desenvolvimento Rural) – Universidade Federal do Rio Grande do Sul, Porto Alegre, 2007.

FREDERICO, Samuel. **O novo tempo do cerrado: expansão dos fronts agrícolas e controle do sistema de armazenamento de grãos**. 2009. 285f. Tese (Doutorado em Geografia Humana) – Universidade de São Paulo, São Paulo, 2009.

FINCO, Marcus V. A.; RIBEIRO, Vinícius S.; BAILIS, Robert. Biocombustíveis e a economia verde inclusiva: buscando o desenvolvimento regional sustentável na Amazônia Legal Brasileira. **Redes,** v. 19, n. 3, p. 130-153, 2014. Disponível em: https://online.unisc.br/seer/index.php/redes/article/view/4360

GIMENES, Régio M. T.; GIMENES, Fátima M. P. Agronegócio cooperativo: a transição e os desafios da competitividade. **Redes**, v. 12, n. 2, p. 92-108, 2007. Disponível em: https://online.unisc.br/seer/index.php/redes/article/view/261

HEREDIA, Beatriz M. A.; PALMEIRA, Moacir; LEITE, Sergio P. Sociedade e Economia do Agronegócio. **Revista Brasileira de Ciências Sociais**, v. 25, p. 159-176, 2010.

IBGE – Instituto Brasileiro de Economia e Estatística. **Banco de dados agregados**. 2020. Disponível em https://sidra.ibge.gov.br/. Acesso em: 25 ago. 2020.

IMEA – Instituto Mato-grossense de Economia Agropecuária. **Relatórios de mercado**. 2020. Disponível em http://www.imea.com.br/imea-site/relatorios-mercado Acesso em: 14 jul. 2020.

IORIS, Antonio A. R. **Agribusiness and the neoliberal food system in Brazil**: frontiers and fissures of agro-neoliberalism. Routledge, 2017.

LEITE, Sergio Pereira. Análise do financiamento da política de crédito rural no Brasil (1980-1996). **Estudos Sociedade e Agricultura**, n. 16, p. 129-163, 2001.

LEITE, Sergio Pereira; WESZ JR., Valdemar J. Estado, políticas públicas e agronegócio no Brasil: revisitando o papel do crédito rural. **Revista Pós Ciências Sociais**, v.11, n. 22, p.83 - 107, 2014.

MARTINS, José de Souza. O tempo da fronteira retorno à controvérsia sobre o tempo histórico da frente de expansão e da frente pioneira. **Tempo social**, v. 8, n. 1, p. 25-70, 1996.

MCMICHAEL, Philip. **Regimes alimentares e questões agrárias**. São Paulo: Editora Unesp/Ufrgs, 2016.

MORENO, Gislaene. **Terra e poder em Mato Grosso**: política e mecanismo de burla (1892 a 1992). Cuiabá/MT: Entrelinhas e EDUFMT, 2007.

MORENO, Gislaene; HIGA, Tereza Cristina Souza. **Geografia de Mato Grosso**. Território, Sociedade, Ambiente. Entrelinhas, Cuiabá, 2005.

MURPHY, Sophia; BURCH, David; CLAPP, Jennifer. **Cereal secrets**: the world's largest grain traders and global agriculture. Oxford: Oxfam, 2012.

NIEDERLE, Paulo A.; WESZ JR., Valdemar J. **As novas ordens alimentares**. Porto Alegre: Editora da UFRGS, 2018.

OLEOFAR. Capacidade instalada de esmagamento no Brasil. 2018. Disponível em https://pt.calameo.com/books/00376540345ff8d96ae46 Acesso em: 4 out. 2020.

OLIVEIRA, Nilton O.; SANTOS, Heleno N. Agroindústria no estado do Mato Grosso: aplicação de um modelo de localização. In: CONGRESSO LUSO-BRASILEIRO DE TECNOLOGIA DE INFORMAÇÃO E COMUNICAÇÃO NA AGRO-PECUÁRIA., 1., 2004., Santarém. **Anais [...]**. Santarém-Portugal, 2004.

OTERO, Gerardo. The neoliberal food regime in Latin America: state, agribusiness transnational corporations and biotechnology. **Canadian Journal of Development Studies**, v. 33, n. 3, p. 282-294, 2012.

PASTRE, Rafael**. Reprimarização do desenvolvimento: o papel das principais agroindústrias brasileiras de soja no Centro-Oeste (1994-2014).** 2016. Dissertação (Mestrado em Economia) – Universidade Estadual de Campinas, Campinas, 2016.

PESSOA, Sirlene G.; PEREIRA, Benedito D. Mudanças nos Modais de Transportes: óbice ao Desenvolvimento da Agroindústria da Soja em Mato Grosso? In: XLIV CONGRESSO BRASILEIRO DE ECONOMIA E SOCIOLOGIA RURAL., 44., 2006., Fortaleza. **Anais [...]**. SOBER: Fortaleza, 2006.

PROFETA, Graciela Aparecida et al. Crédito rural como fator determinante para as exportações brasileiras de soja em grão, junho de 2000 a janeiro de 2010. **Redes**, v. 19, n. 1, p. 74-92, 2014. Disponível em: https://online.unisc.br/seer/index.php/redes/article/view/3227

REGIONALMT. **Vinte grupos concentram 20% da área plantada de soja em MT**. 2010. Disponível em http://www.regionalmt.com.br/noticia.php?id=4280 . Acesso em: 14 ago. 2020.

SANTOS, Paulo Eduardo de C. **Marcos regulatórios, inovações biotecnológicas e a concentração da indústria de sementes de soja, milho e algodão no Brasil**. 2013. 164f. Tese (Doutorado em Agronomia) – Universidade de Brasília, Brasília, 2013.

SECRETARIA DE COMÉRCIO EXTERIOR – SECEX. **Indicadores e estatísticas de comércio exterior**. 2020. Disponível em http://www.mdic.gov.br/index.php/comercio-exterior/ . Acesso em: 25 ago. 2020.

SILVA, Francisco Vieira. **O processo de expansão da fronteira agrícola moderna em Mato Grosso e a formação dos circuitos espaciais e da produção de fertilizantes**. 2011. Dissertação (Mestrado em Geografia) - Universidade Federal de Mato Grosso, Cuiabá, 2011.

TRASE. **Supply chains**. 2020. Disponível em https://trase.earth/flows/data-view Acesso em: 12 out. 2020.

VAZ, Vitor H. da Silva; OLAVE, Maria E. Leon. Contribuições de uma rede de cooperação a cooperativas de agricultura familiar para a implementação do PNPB em Sergipe: o caso da rede biodiesel Sergipe. **Redes**, v. 20, n. 1, p. 129-150, 2015. DOI: https://doi.org/10.17058/redes.v20i1.3735

WESZ Jr., Valdemar J. **Dinâmicas e estratégias das agroindústrias de soja no Brasil**. Rio de Janeiro: E-papers, 2011.

WESZ Jr., Valdemar J. **O mercado da soja e as relações de troca entre produtores rurais e empresas no Sudeste de Mato Grosso (Brasil)**. 2014. 220f. Tese (Doutorado em Ciências Sociais) – Universidade Federal Rural do Rio de Janeiro, Rio de Janeiro/RJ, 2014.

WESZ JR., Valdemar J. Strategies and hybrid dynamics of soy transnational companies in the Southern Cone. **Journal of Peasant Studies**, v. 43, n. 2, p. 286-312, 2016.

WESZ JR., Valdemar J.; ESCHER, Fabiano; FARES, Tomaz M. Why and how is China reordering the food regime? The Brazil-China soy-meat complex and COFCO's global strategy in the Southern Cone. **The Journal of Peasant Studies**, p. 1-29, 2021.

WILKINSON, John; WESZ Jr., Valdemar J.; LOPANE, Anna R. M. Brazil and China: the agribusiness connection in the Southern Cone context. **Third World Thematics**, v. 1, n. 5, p. 726-745, 2016.

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