



Analysis of agribusiness in the micro-regional of Umuarama – PR

Análise do agronegócio na microrregional de Umuarama – PR

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ABSTRACT

Agribusiness has great importance for Brazil and for the state of Paraná. In 2021, Paraná had the second highest gross agricultural turnover in the country, being also the third largest in grain production and fourth in agribusiness exports according to the Paranaense Agricultural Diagnosis Crop 2020/2021, a report produced by the State Secretariat of Agriculture and Supply (SEAB, 2022).

Keywords: Agribusiness, Micro-regional, Agricultural.

RESUMO

O Agronegócio tem grande importância para o Brasil e também para o estado do Paraná. Em 2021, o Paraná teve o segundo maior faturamento bruto agropecuário do país, sendo ainda o terceiro maior em produção de grãos e quarto em exportação do agronegócio segundo o Diagnóstico Agropecuário Paranaense Safra 2020/2021, relatório produzido pela Secretaria de Estado de Agricultura e Abastecimento (SEAB, 2022).

Palavras-chave: Agronegócio, Microrregional, Agropecuário.

1 INTRODUCTION

Agribusiness has great importance for Brazil and for the state of Paraná. In 2021, Paraná had the second highest gross agricultural turnover in the country, being also the third largest in grain production and fourth in agribusiness exports according to the Paranaense Agricultural Diagnosis Crop 2020/2021, a report produced by the State Secretariat of Agriculture and Supply (SEAB, 2022).

The Northwest Mesoregion of the state of Paraná is in the Third Plateau, is composed of 61 municipalities that together represent 12.4% of the territory of the state according to the Brazilian Institute of Geography and Statistics (IBGE, 2019), totaling 2,481,601.5 hectares, comprising an area of predominance of soils that originates from the Caiuá Sandstone formation (IPARDES, 2004). In this region stand out the cities of Umuarama, Paranavaí and Cianorte, being considered microregions and central poles for various agricultural activities. (CARVALHO, ENDLICH, 2015).

The micro-regional of Umuarama stands out with agricultural activities and almost half of its revenue comes from activities directly linked to agribusiness. In this context, more detailed studies are needed to



assess the importance of agribusiness for the Northwest region, especially for the micro-regional region of Umuarama, to understand the importance of agribusiness, the profile of the micro-regional, the most cultivated crops, as well as the potentialities and challenges found for its growth. This work aims to analyze in more detail the numbers of the micro-regional seeking to understand in a particularized way the importance of agribusiness for the cities that make up the micro-regional.

2 GOAL

This work has as general objective: To analyze the importance of agribusiness for the microregion of Umuarama in the state of Paraná.

And as specific objectives: - To analyze the gross nominal values of production (VBP) of the municipalities belonging to the Microregional of Umuarama in the state of Paraná; - **To analyze the existing cultures in the micro-regional of Umuarama**

3 METHODOLOGY

For this study, we followed the regional delimitation determined by the State Department of Agriculture (SEAB), which uses the city of Umuarama as the headquarters of the microregion and brings together a group of approximate municipalities with similar agricultural skills. The regional nucleus of Umuarama is composed of 21 municipalities, which are distributed in a total area of 1,039,851 hectares, being about 82% cultivated in a soil condition predominantly originating from the Caiuá Sandstone formation, which has the pedological unit determined as a dystrophic Red Latosol (MUZILLI et al., 1990; EMBRAPA, 2013), the predominant climate in the region is of the Cfa type (humid mesothermal subtropical), according to the Köppen classification. The average annual rainfall of the region is approximately 1,500 mm and the average temperature is 22°C.

The method of approach used in the present study was the hypothetical-deductive because it is deduced that agribusiness is an important microregion of Umuarama. The main economic information and predominant cultures will be analyzed, with special focus on the cities that make up the micro-region, and compare their numbers in relation to the results of the state of Paraná.

The data initially discussed were collected from reports composed by SEAB agents in relation to 3 agricultural harvests 2018/2019; 2019/2020 and 2020/2021. With the analysis of these data it was possible to identify the main crops of the microregion and their respective importance. Next, the participation rates of municipalities in the ICMS were surveyed according to the municipal collections found in the Paraná Treasury Secretariat, in order to understand the impact of agribusiness for the Umuarama microregion.

In the part of agricultural activities, data from the WFP (Municipal Agricultural Production) and PPM (Municipal Livestock Production) made available by the IBGE according to the year evaluated were



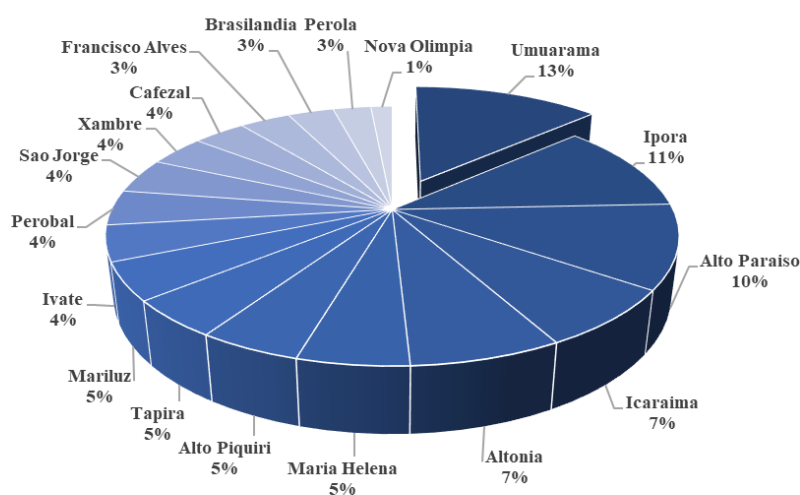
used, where an average amount of commercialization for each agricultural activity was established based on the price and VBP. In relation to livestock, the values used were identical to those available in the report.

The data were tabulated by means of a Microsoft Excel spreadsheet, then the results analyzed and thus tables and figures were made with the respective data. Descriptive statistics will be adopted for data analysis and interpretation.

4 DEVELOPMENT

The microregion that has as its headquarters the city of Umuarama, according to the organization and delimitation carried out by SEAB, represents about 5% of the entire area of the state of Paraná, and in this region it is possible to highlight Umuarama, Iporã and Alto Paraiso, as the municipalities that have the largest territorial extensions, encompassing about 34% of the total area of the Umuarama Microregion (Figure 1). Among the municipalities mentioned, the one with the largest extension (Umuarama) has 4611 rural establishments, on the other hand the smaller one, represented by Nova Olímpia has only 451 establishments, with the entire region having an average of 1326 contributing rural establishments according to data from the secretariat of the treasury with respect to the participation rates per municipality of 2022. Also according to the index, the rural population is 52,491 people, with Umuarama representing 13.75% of this population.

Figure 1. Demonstration of the representative area (%) of each municipality that is part of the Regional Center of Umuarama, PR., as determined by SEAB.



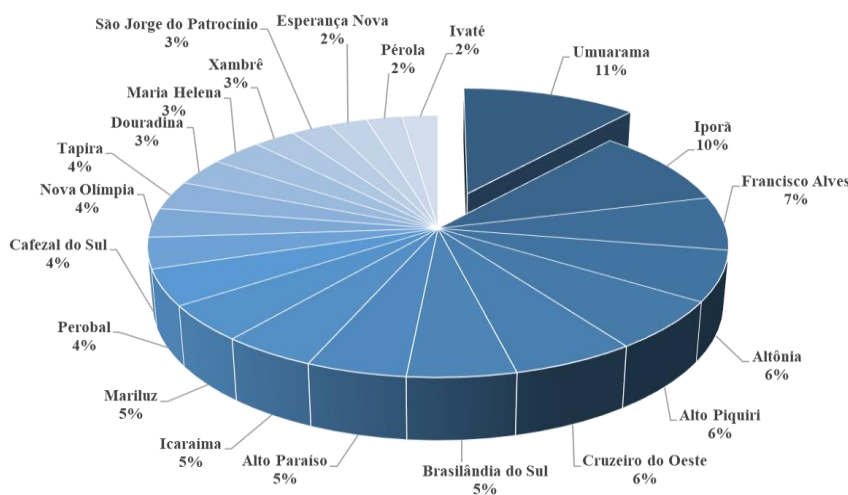
In the 2020/21 harvest, the Umuarama microregion developed a nominal gross value of agricultural production (VBP) of about 6.5 billion reais, representing 3.56% of the value produced for the entire state of Paraná in the period. The average value of the percentage of participation of each city in the total regional



VBP was $4.76 \pm 0.52\%$, highlighting the values of VBP of the municipalities of Umuarama, Iporã, Francisco Alves, Altônia, Alto Piquiri and Cruzeiro do Oeste with participations of 11, 10, 7 and the others with 6%, respectively (Figure 2). These relative values are above the regional average and together represent about 2.99 billion reais in the period, denoting that the sum of the values obtained by these municipalities stands out with 46% of the total VBP of the microregion.

Comparing the data related to the size of the municipalities with the values of VBP, it is possible to notice (Figure 1 and 2) that larger municipalities usually have the highest values of agricultural production, but the results that draw attention are observed for some small municipalities that stand out in terms of VBP, such as Francisco Alves, that even being among the smallest municipalities in the microregion of Umuarama, stands out as the third largest producer of agricultural income.

Figure 2. Demonstration, in percentage, of the nominal gross value of agricultural production (VBP) of the cities belonging to the micro-regional of Umuarama, PR., in the 2020/21 harvest.

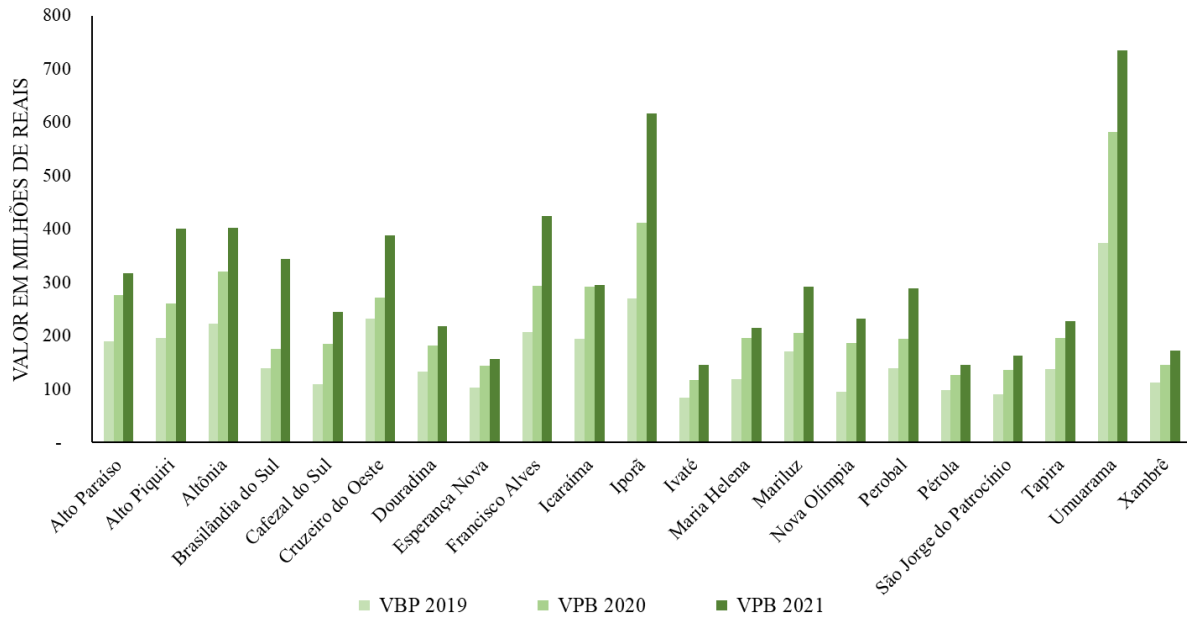


When evaluating the nominal gross value of agricultural production (VBP) according to the city represented in the microregion of Umuarama, in the consecutive agricultural years of 2019/20; 2020/21 and 2021/22, there is growth in this index for all cities evaluated. The average growth values compared to the VBP values of the 2019/20 agricultural year were 43.36 ± 0.04 and 31.12 ± 0.05 for the two subsequent agricultural years (2020/21 and 2021/22), but it is important to note that some cities showed more substantial growth. The cities of Nova Olímpia, Cafetal do Sul, Umuarama, Iporã and Icaraíma had VBP growth above 50% for the 2020/21 agricultural year compared to 2019/20 (Figure 3).



Evaluating the growth of this index for the 2021/22 agricultural year, the cities of Brasilândia do Sul, Alto Piquiri and Iporã stand out, with growth of more than 50%, when compared to the 2020/21 harvest. In general, adding the growth of VBP of the cities in the period evaluated, it can be said that the cities Brasilândia do Sul, Nova Olímpia, Iporã, Cafezal do Sul, Perobal, Francisco Alves and Alto Piquiri had their growth of VBP doubled with the sum of this index in the two consecutive agricultural years.

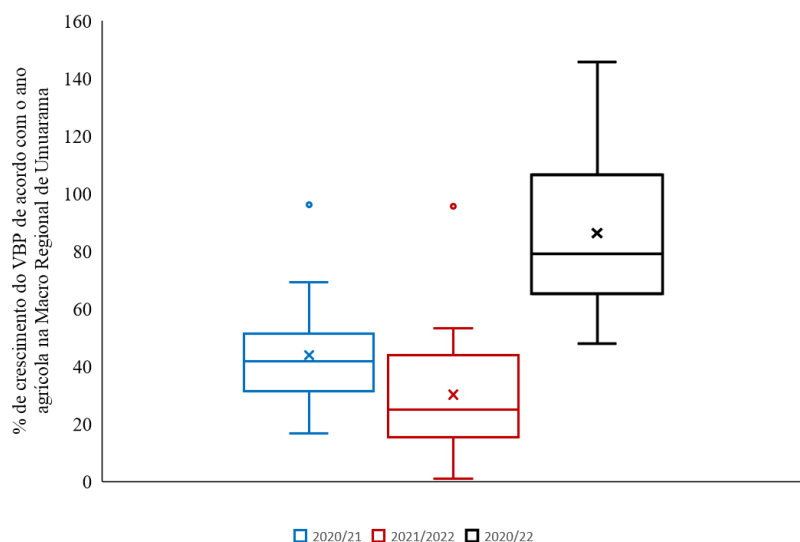
Figure 3. Value in millions of reais of the nominal gross value of agricultural production (VBP) of agribusiness in the cities belonging to the micro-regional of Umuarama, PR., in the 2018/19 harvests; 2019/20; 2020/21.



When evaluating the boxplot plot (Figure 4) it is possible to notice that the evaluated data present interesting symmetry, with the mean values very close to the median values, but in practical terms it is observed that in the agricultural years of 2020/21 and 2021/22 values considered discordant with the others were obtained. These abnormal values, in the case of the present study, may indicate substantially higher growth when compared to the VBP of the other cities studied.



Figure 4 - Boxplot showing the growth of the percentage of the nominal gross value of agricultural production (VBP) of agribusiness of the cities belonging to the micro-regional of Umuarama, PR., in the 2020/21 harvests; 2021/22; 2020/22, compared to the base year 2019/20.



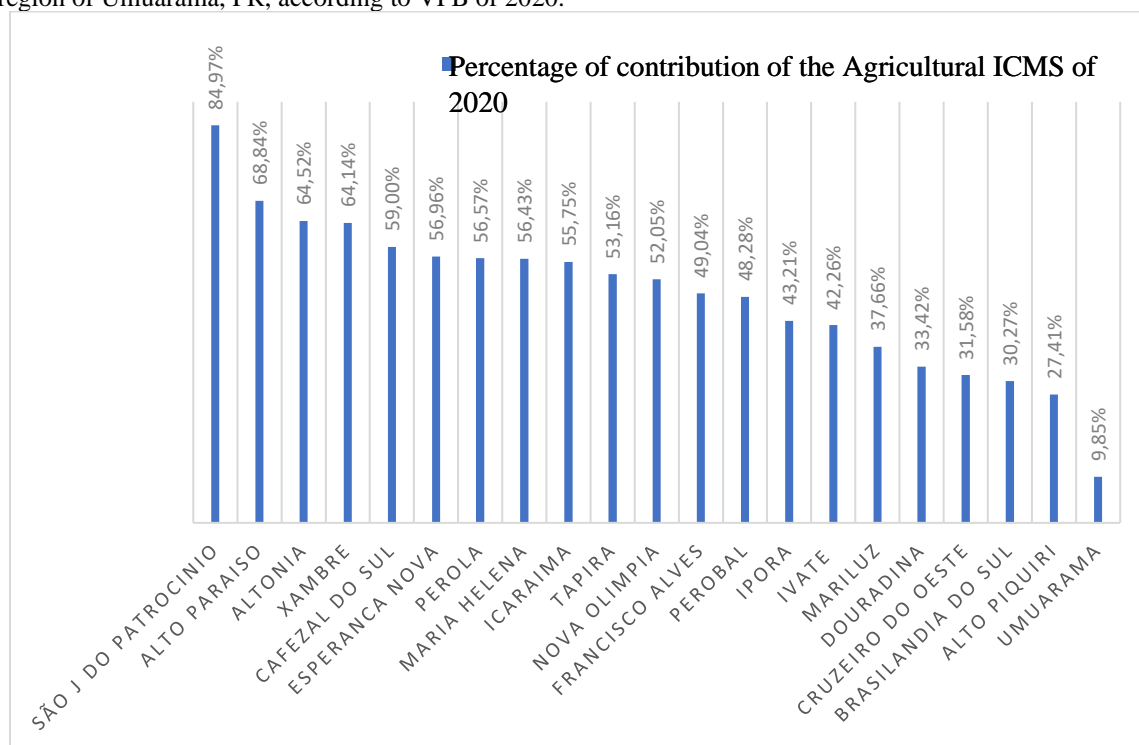
The cities that showed completely atypical growth and above the regional average were Nova Olímpia, for the year 2020/21 and Brasilândia do Sul in the agricultural year 2021/22, when the values were compared with the previous agricultural years. Both cities showed VBP growth above 95% over the previous year of growth, and stood out as the cities that increased this index the most.

In relation to ICMS (Tax on the circulation of goods and services), the contribution of agribusiness proves to be important for most municipalities in the micro-region. The overall percentage of the region is 44.28%, that is, almost 50% of the collection comes from Agribusiness. In this context, the cities of São Jorge do Patrocínio, Alto Paraíso, Altônia and Xambrê stand out with 89.47%, 68.84%, 68.52% and 64.14% that are municipalities where the income comes from activities related to agribusiness. (Figure 5)

The municipalities that show numbers less dependent on Agribusiness in the formation of ICMS are Umuarama, Alto Piquiri, Brasilândia, Cruzeiro do Oeste and Douradina with 9.85%, 27.41%, 30.27%, 31.58% and 33.42% respectively. When analyzing the cities in question, the strong presence of commercial activity and service provision is perceived. Brasilândia do Sul, for example, has 40% of its GDP coming from the provision of services. The city of Cruzeiro do Oeste and Douradina stand out in a greater volume of value triggered in relation to industrial activity.



Figure 5- Percentage of contribution of the Agricultural ICMS in relation to the total of ICMS collected by the municipalities of the microregion of Umuarama, PR, according to VPB of 2020.

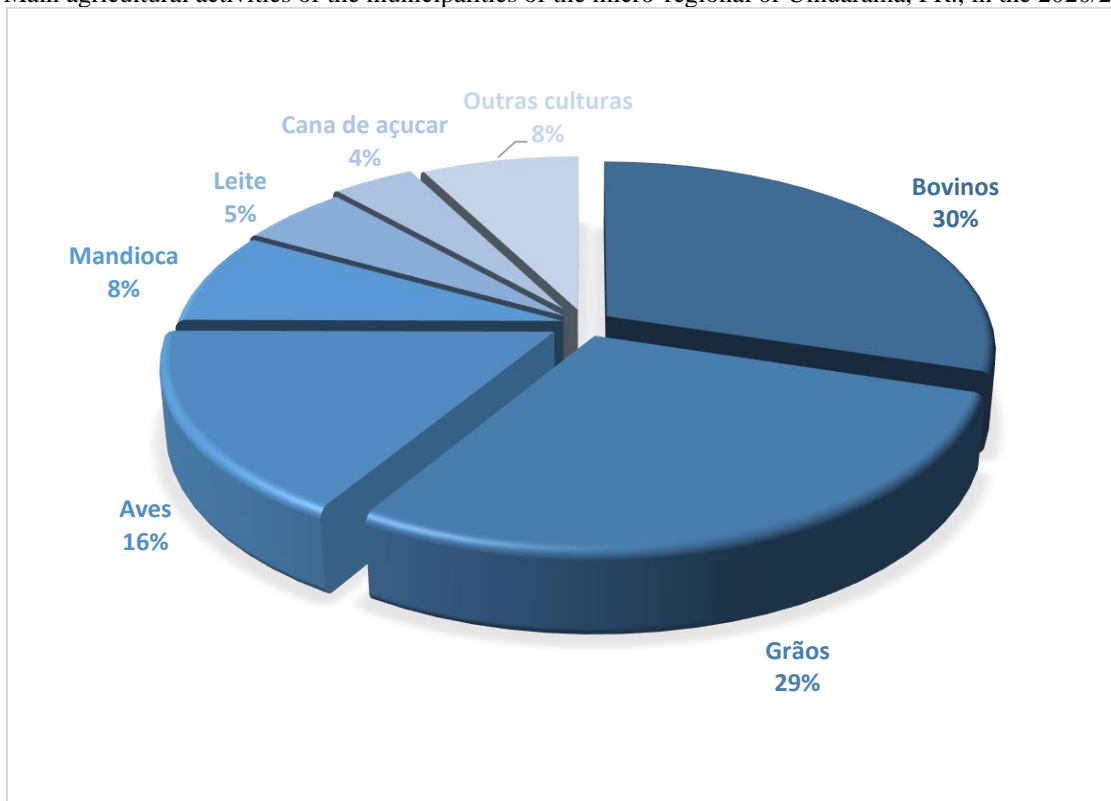


When analyzing specifically the municipality of Umuarama, it is noted that the city stands out as the 37th city in collection in the state of Paraná according to data from the municipal participation index of the ICMS of the state of Paraná released by the Department of Finance (2022), having an added value corresponding to 0.4489% of the state collection, with a forecast of an index of 0.4616% for the year 2023. The city received from the transfer of ICMS of the state of Paraná the amount equivalent to R \$ 37,050,566.62 in the year 2022, and the indexes show a forecast of growth in the collection for the year 2023 according to information from the Portal of Transparency of the state of Paraná (2022) and Portal da Fazenda (2022).

Still from the specific perspective of the municipality of Umuarama, when analyzing the agribusiness sector, it is emphasized that even though it is responsible for 18.82% of the municipal GDP, agribusiness represents only about 9.85% of the municipality's ICMS collection. This low participation is justified by the development of trade and industry activities in the city. According to the latest data released by the IBGE (2020) the GDP of the municipality is around 3.7 billion, of these 62.8% of the value added comes from the provision of services and 18.84% is related to industrial activity.

Second official report of the Deral (2022) the most prominent agricultural activities in the region in 2021 were cattle, grains, poultry, cassava and sugar cane that represent 92.38% of total production.

Figure 6 - Main agricultural activities of the municipalities of the micro-regional of Umuarama, PR., in the 2020/2021 harvest.

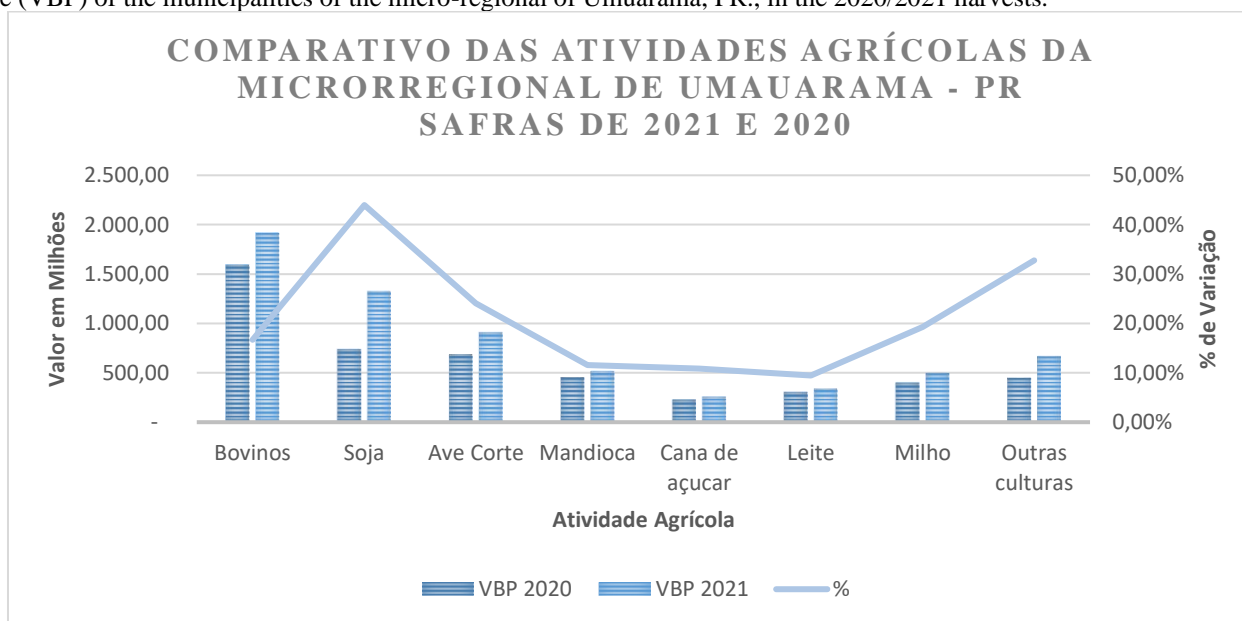


The cattle accounted for 30% of the VBP and include the fat ox, garrote, calves, fat and calf cows, heifers, calves and bulls. Grains represent 29% and have as main support soybeans with 71.49% of the total, followed by corn with 26.86%, rice with 1.49%; beans, peanuts and marketing of other seeds 0.15%. In relation to poultry, the accumulated gross value represents 16% of the total VBP, of which 86% is broiler chicken, which includes farm chickens, free-range chickens and semi-free-range chickens; and 11.70% of the total the brood chicken that are the chicks.

Cassava appears in the ranking as the fourth main crop in the region with 8%, followed by Milk and Sugarcane, with 5% and 4% respectively.



Figure 7 - Comparison of the agricultural activities of the micro-regional of Umuarama – PR in relation to the Gross Production Value (VBP) of the municipalities of the micro-regional of Umuarama, PR., in the 2020/2021 harvests.

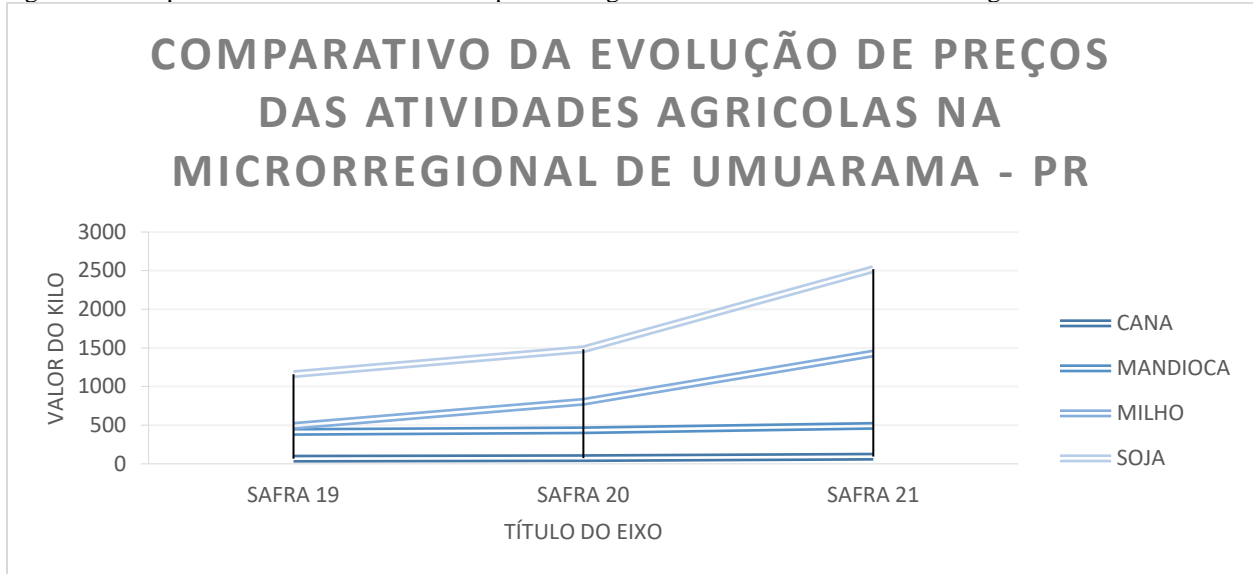


When we consider the 2020 data we can observe that all these crops had significant growth compared to the previous year. Regarding the total VBP there was a growth in the value of 24% in 2021 compared to the BPV of 2020. The highest growth observed was in grains (37%) and poultry (24%), followed by cattle (17%) and cassava (12%). Milk, however, even with the increase in its value, because of the pandemic grew only 9%. The other activities (fruits, vegetables, vegetables, wood, plants, sheep, goats, among others) overall grew by 32%.

In this aspect, we will analyze the average price variable, considering the volume traded and the total value to identify if the growth was effective or if only the price demand elasticity effect occurred.

In relation to products Among the seven activities listed, we can find the following price variations in the negotiations within the state of Paraná for sugarcane, cassava, corn and soybean as shown in Figure 8.

Figure 8 - Comparison of the evolution of the prices of agricultural activities of the micro-regional of Umuarama - PR



Soybeans achieved a growth in its value of 53.91% considering the values traded in 2019 and 2021. Corn obtained a record variation of 65.60% in the period, while cassava and sugar cane obtained a variation of 15.94% and 28.09% respectively.

Using the same price parameters to estimate the quantity traded within the microregion it was possible to identify the growth of VBP did not effectively mean growth for all activities related to agribusiness.

In the case of corn and sugarcane, for example, there was an increase in the price and a reduction in the quantity of tons sold. While corn had a 19.28% of the VBP, it had a drastic reduction of 43.92% in the amount traded. When compared to the 2018/19 harvest, the reduction was 77.92% compared to the 2018/19 harvest, thus being able to justify its elastic price variation, since in this case a lower availability and greater demand for the product, caused a price increase.

Sugarcane had a very similar performance to corn, since there was a growth in value in VBP of 10.82%, and 18.31% compared to the 202/21 harvest with 19/20 and 28.09% compared to the 18/19 crop. However, the amount marketed based on the data we have from the state reduced 24.88% if observed the period between the 18/19 harvest and the 20/21 harvest.

Cassava and soybeans behaved reverse, having increased the VBP in the period, the price and the quantity traded. Soybeans grew 56.03% in VBP, 53.91 in price and 33.54% in quantity comparing the 18/19 harvest with 20/21. It is noted in this case that the producer received more for a smaller quantity, being necessary to take into account in this case the increase in the cost of production to identify if the producer really earned more in this period.

Cassava had a similar behavior, resulting in a little less expressive because the VBP of the crop grew 11.94% and the price had an increase of 15.94% in relation to the practiced in the 18/19 harvest. However,



it is worth mentioning that there was a large growth in the volume traded right at the beginning of the analysis of the data from the 18/19 harvest to 19/20 of 30.89%, a decrease in relation to the 2020/21 harvest of 0.15%.

As far as I grew up In order to analyze the VBP related to animals, we can analyze it in more detail since there is availability of data by city in our region. It is important to note that according to IBGE data, Umuarama has the largest amount of cattle production animals in the state of Paraná, estimated at 134,086 head.

The amount of poultry and cattle herd remained practically stable between the harvest of 18/19 and 20/21, where the chickens had an increase of 8% and the ox less than 0.5% in the number of heads between the three years analyzed. These poultry grew in value of VBP 21.80% and 24.08% totaling 40.64% in the period, while the value traded grew 35.49% in total, having 15.02% and 29.08% in the first and second year respectively.

Cattle have grown in the VBP of 18/19 for 19/20 harvest of 32.21% and 16.68% in the 20/21 harvest compared to 19/20. Totaling a growth of 43.51% in the period. Regarding the market value, the behavior was similar, obtaining 31.92% growth in the first year analyzed, 16.68% in the second year and 43.27% in total.

Milk had a particular behavior, since although the value marketed grew 21% from the first year to the second year, the quantity marketed 28%, the VBP in this period grew 18.94%. Comparing the result of the 19/20 harvest with the 20/21, we obtain that even growing 15% in the marketing value, the amount marketed was around 2% lower than in the previous year while the VBP had an increase of 9.45%. In general, milk in the period grew 26.60% of its VBP, 26% in the quantity traded and 33% in the market value.

5 FINAL CONSIDERATIONS

By analyzing the data of the microregion of Umuarama, it was possible to identify the importance of the microregion for the state of Paraná, and the importance of Agribusiness for the twenty-one cities that compose it. The microregion moves about 6.5 billion reais in agricultural activity, representing 3.56% of the total value of the state. The largest concentration is in the cities of Umuarama, Iporã, Francisco Alves, Altônia, Alto Piquiri and Cruzeiro do Oeste, which together represent 4% of the entire value of the microregion.

Assessing the nominal gross value of agricultural production (VBP) according to each city in the consecutive agricultural years of 2019/20; 2020/21 and 2021/22, there is an increase in this index for all municipalities, with an average of 43.36%. Comparing the data related to the size of the municipalities with the values of VBP, it is noticed that as a rule they have the highest values of agricultural production, however



some small municipalities were also highlighted in the VBP, such as Francisco Alves, which even being among the smallest municipalities in the microregion of Umuarama, stands out as the third largest producer of agricultural income.

In relation to ICMS, the contribution of agribusiness proves to be important for most municipalities in the micro-region, with an average percentage of 44.28%. In this context, the cities of São Jorge do Patrocínio, Alto Paraíso, Altônia and Xambrê stand out, which are municipalities where income comes from activities related to agribusiness, more than 60%. In relation to the municipalities of Umuarama, Alto Piquiri, Brasilândia, Cruzeiro do Oeste and Douradina, even with large agricultural contributions, there is a strong presence of commercial activity and services.

It is important to note that in the period analyzed there was the Covid 19 pandemic generating great impacts for agribusiness and the economy of cities. In the pandemic there were greater demands for food, which not having sufficient availability to meet this demand generated a significant increase in its value. With the devaluation of the national currency, there were stimuli in the export of commodities, which contributed to the rise of prices not only for the region, but throughout the country.

Despite the difficulties, the micro-region showed considerable development in relation to its nominal value of production, and in some cities this value exceeded 100%. It is important to continue this study through the analysis of agricultural activities independently to identify other aspects related to this growth, as well as inputs, production costs, labor, climate, and other factors.



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