

# Brazilian Agriculture feeds around 10% of the World Population<sup>1</sup>

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## Highlights:

- ***We estimate the Brazilian share in the world grains and oilseeds production to check the importance of the Brazilian agricultural sector to the world food security***
- ***Based on physical production of grains, Brazil's share of world grain production grew from 6% in 2011 to 8% in 2020. Thus, we estimate that 636,922 million people were fed by Brazil exports of grains and oilseeds, and poultry and pork meats in 2020 (Brazilian population of 212,235 million people more 424,687 million people in other countries)***
- ***The second estimate was based on the monetary value of grains from international prices, also including the value of beef exported in its grain equivalent. Brazilian agricultural production in 2020 was enough to feed 772,600 million people worldwide - 212,235 of the Brazilian population and another 560,365 million from other countries***

Debates about the importance of the Brazilian agricultural sector to the world food security have been surrounded by controversies over the number of people that Brazil actually feeds in the world, ranging from 1 billion to 1.5 billion people. Although such high numbers may seem boastful or exaggerated, it is important to have credibility in the estimates, derived from some method for their calculations. In this work, we started from the production of grains and oilseeds, basic foods of large populations in the world and the most important supplies for the production of animal protein, and then quantified how much Brazil contributed to the feeding of people in Brazil and in the world<sup>3</sup>.

This procedure basically meets the World Bank's classification of "food", designed for the Food Price Index<sup>4</sup>. For the construction of this Index, the World Bank considered as cereals rice, wheat, corn and barley; vegetable oils and meals: soybean, soybean oil, soybean meal, palm oil, coconut and peanut oil; other foods: sugar, banana, beef, poultry and orange.

In the present work, two basic alternatives were calculated: the first was based on the physical production of grains and the second adding the monetary value from international prices to physical production. In the latter case, the beef exported by Brazil was transformed into the grain equivalent. For the two basic alternatives, the number of people who are fed by Brazilian production, including Brazil, was calculated. In our understanding, we consider that the second alternative is closer to the answer of how many inhabitants are fed by the Brazilian agricultural sector.

In the first alternative, based on physical production, data from the International Grains Council (IGC) were used, by subtracting grains imported by Brazil. The number of people fed by the Brazilian production was estimated according to the participation of Brazil in the world production of grains and oilseeds. The percentage of Brazilian grain production in relation to the world was calculated based on data from national grain production. In the period considered, Brazil's share of world grain production grew from 6% in 2011 to 8% in 2020. Thus, the people fed by Brazil exports of grains, oilseeds and poultry and pork meats in 2020 are the Brazilian population of 212,235 million people as well as 424,687 million more people in other countries (Table 1).

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**Table 1. Population fed by Brazil - IGC Data.**

| Year | World Production<br>(Millions of tons) | Brazil's production<br>sans imports<br>(Millions of tons) | Brazil/World (%) | World Population | Population fed by<br>Brazil* |
|------|--|---|------------------|------------------|------------------------------|
| 2011 | 2,452,6                                | 146,3   | 6%               | 7,002,860,604    | 417,794,078                  |
| 2012 | 2,438,8                                | 167,0   | 7%               | 7,085,763,408    | 485,076,006                  |
| 2013 | 2,660,7                                | 170,5   | 6%               | 7,169,640,142    | 459,476,269                  |
| 2014 | 2,741,4                                | 187,2   | 7%               | 7,254,228,377    | 495,435,006                  |
| 2015 | 2,707,0                                | 170,0   | 6%               | 7,338,964,960    | 460,902,810                  |
| 2016 | 2,881,9                                | 214,6   | 7%               | 7,424,282,488    | 552,936,635                  |
| 2017 | 2,834,5                                | 207,8   | 7%               | 7v509,065,705    | 550,412,052                  |
| 2018 | 2,861,2                                | 224,4   | 8%               | 7v591,932,907    | 595,401,472                  |
| 2019 | 2,875,3                                | 232,2   | 8%               | 7,673,533,972    | 619,156,931                  |
| 2020 | 2,961,6                                | 243,2   | 8%               | 7,755,567,903    | 636,922,324                  |

\* Products: rice, barley, corn, soybeans and wheat.

Source: IGC; AgroStat (MAPA); World Bank. Available at: <https://www.igc.int/en/markets/marketinfo-sd.aspx>; <http://indicadores.agricultura.gov.br/agrostat/index.htm>; <https://data.worldbank.org/indicator/SP.POP.TOTL>. [accessed: 17/09/2020].

Based on IGC data, annual growth rates were also estimated. The results indicate that between 2011 and 2020, the world production of basic grains (rice, barley, corn, soybeans and wheat) grew at 2.05% per year, while Brazilian production of the same products grew 5.33% per year, more than double the world production. The explanatory power of the model is 85% for the world and 91% for Brazil.

The second alternative of calculation estimated the population fed by Brazil from the international prices of products, established by the International Monetary Fund (IMF), multiplied by the annual physical production. The value of the exported beef was transformed into its grain equivalent. Then, the proportion in relation to the total was calculated, as performed previously.

The pork and poultry meat exported by Brazil contains, to a large extent, the inputs corn and soybeans, already included in Brazil's participation in the grain production. A necessary adjustment was made for the beef exported by Brazil, as it is basically produced in pasture (grass-fed). Domestic production consumed internally was included in the food for the 212,235 million Brazilian inhabitants. It was assumed that all beef exported originates from grass-fed cattle, although some of it comes from the feedlot system, and some of the feed contains grains, such as soybeans and corn.

It is estimated that Brazilian exports of grains and beef converted into grains in 2020 were enough to feed 772,600 million people globally - 212,235 of the Brazilian population and another 560,365 million from other countries (Table 2). The variation of 809,472 million people in the total population fed by Brazil in 2019 compared to 2020 is due to the variation in product prices in the two years considered. Thus, it can be affirmed that around 800 million people are fed by Brazil, including the Brazilian population.

From 2011 to 2020, there was an increase of 259,442 million people who benefited from the food produced in Brazil. In addition to the significant number of people fed globally, the growth of Brazilian participation in the world food market in the period is notable. If the growth of Brazilian exports continues at a similar pace to that observed in recent years, it is estimated that the production of the Brazilian agricultural sector in the next 10 years may be able to feed more than 1 billion people.

**Table 2. Population fed by Brazil - Grains valued at international prices and exported beef, converted into grains.**

|      | Population fed by Brazil |   |                      |                     | Total fed population |
|------|--------------------------|---|----------------------|---------------------|----------------------|
|      | Grain (Ml t)             | Exported beef equivalent to grains (Ml t) | Grain-fed population | Beef-fed population |                      |
| 2011 | 146,3                    | 15,1                                      | 465,174,314          | 47,984,145          | 513,158,459          |
| 2012 | 167,0                    | 17,1                                      | 558,694,436          | 57,177,888          | 615,872,324          |
| 2013 | 170,5                    | 20,7                                      | 552,909,010          | 67,184,173          | 620,093,183          |
| 2014 | 187,2                    | 21,2                                      | 607,862,537          | 68,668,628          | 676,531,165          |
| 2015 | 170,0                    | 18,7                                      | 563,822,175          | 61,922,034          | 625,744,209          |
| 2016 | 214,6                    | 18,6                                      | 702,284,013          | 60,904,974          | 763,188,987          |
| 2017 | 207,8                    | 20,4                                      | 721,708,617          | 70,801,017          | 792,509,634          |
| 2018 | 224,4                    | 22,6                                      | 688,007,510          | 69,429,028          | 757,436,538          |
| 2019 | 232,0                    | 25,7                                      | 728,658,490          | 80,813,474          | 809,471,965          |
| 2020 | 243,2                    | 28,3                                      | 692,157,477          | 80,442,612          | 772,600,089          |

Source: IGC; AgroStat; World Bank. Available at: <https://www.igc.int/en/markets/marketinfo-sd.aspx>; <http://indicadores.agricultura.gov.br/agrostat/index.htm>; <https://data.worldbank.org/indicator/SP.POP.TOTL>. [accessed: 26/10/2020]

#### Footnotes:

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<sup>3</sup> Complete work in Portuguese "O Agro Brasileiro alimenta 800 milhões de pessoas", with methodology specification and other estimates available at:

<https://www.embrapa.br/documents/10180/26187851/Popula%C3%A7%C3%A3o+alimentada+pelo+Brasil/5bf465fc-ebb5-7ea2-970d-f53930b0ec25?version=1.0&download=true>

<sup>4</sup><https://www.worldbank.org/en/research/commodity-markets>.

<sup>5</sup> Data for this conversion were obtained from Pinto & Millen (2019).

#### REFERENCES

AgroStat (MAPA). 2020. Available at:

<http://indicadores.agricultura.gov.br/agrostat/index.htm>. Accessed October 2020. (in Portuguese).

FAOSTAT. 2020. Available at: <http://www.fao.org/faostat/en/#data>. Accessed November 2020.

IBGE. 2020. Available at: <https://sidra.ibge.gov.br/pesquisa/pam/tabelas>;

<https://www.ibge.gov.br/>. Accessed November 2020. (in Portuguese).

IGC. International Grains Council. 2020. Available at:

<https://www.igc.int/en/markets/marketinfo-sd.aspx>. Accessed September 2020.

IMF. INTERNATIONAL MONETARY FUND. 2020. Available at:

<https://www.imf.org/en/Research/commodity-prices>. Accessed October 2020.

PINTO, A.C.J. & MILLEN, D.D. 2019. Nutritional recommendations and management practices adopted by feedlot cattle nutritionists: the 2016 Brazilian survey. *Canadian Journal of Animal Sciences* 99(2): 392-407.

THE WORLD BANK. 2020. Available at:  
<https://www.worldbank.org/en/research/commodity-markets> ANCO MUNDIAL. Accessed  
October 2020.