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When natural landscape and biodiversity matter

Over the last 40 years, Brazil has left the position of agricultural products importer to become one of the world's largest exporters of food, fiber and biofuels. The country is a major player in the production and trade of coffee, orange juice, soybeans, corn, cotton, meat and other foodstuffs. Not surprisingly, when considering the challenge of feeding a growing global population, eyes often turn to Brazil.

Investment and the adoption of technologies in the field have helped

paving the road for improvements to roll on over the last decades. New management techniques, smart use of inputs, agricultural equipment and the adoption of increasingly productive seeds, developed by conventional breeding and biotechnology, raised the Brazilian agriculture to a powerhouse category.

Undoubtedly, biotechnology has boosted Brazil's agriculture take-off. Moreover, it has shielded crops on a tropical climate battleground where fungi or other pathogens are more likely to pay uninvited visits and leave the door open to severe economic damages out on the field.

A leap in past - In 1998, Brazilian farmers have adopted the first genetically modified organism (GMO) in the country, an herbicide-tolerant soybean. However, only in 2005 the Brazilian government took a major step forward to pass the Biosafety Law — a scientific-based framework that triggered off a systematic biosafety analysis.

GM Crop Approval in Brazil

(Between 1998 and 2015)

Corn Soybean Cotton Beans Eucalyptos

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1	0	0	0	0	0	0	1	0	3	5	9	8	6	3	1	2	10
•							•		0					•	•	•	

Source: CNTBio, December 2015

Ever since, biotechnology has both skyrocketed productivity levels nationwide and hammered down production costs due to the reduction of pesticides agrochemicals on pestresistant crop fields. Yield gains over time have also grounded pressure on new farming lands. Today, farming covers only

27.7% out of 851 million hectares that comprise the Brazilian territory. 61% of the Brazilian territory is preserved.

Brazil has one of the world's strictest environmental laws, known as "The Forest Code", which requires every farmer to keep green areas preserved inside their rural properties. Water sources are also protected by the Code. As a result of national legislation, rural properties alone are responsible for keeping 93.9 million hectares covered by native vegetation.

This is an adaptation to the article "Brazilian agriculture: a sustainable growth model" written by Adriana Brondani, PhD in Biological Sciences from the Federal University of Rio Grande do Sul (UFRGS) and executive director of the Council for Biotechnology Information (CIB).

On the sustainable path – Brazilian farmers protect water springs

The Brazilian Confederation of Agriculture and Livestock (CNA, in Portuguese) and the National Rural Learning Service (SENAR, in Portuguese) have launched a project to help farmers preserve the springs and waterbodies in their properties. The National Program for Protection of Springs highlights the ecological-oriented concern from farmers in protecting a key resource for agriculture. On a practical approach, CNA's Program proposes five easy steps to enable, in one day, the protection of a spring. The five steps are respectively - identifying, fencing and clearing the waterbody, steps followed by controlling erosion and replanting native species. The goal of the program, launched in early 2015, was to protect at least a thousand springs in rural areas throughout the country within one year.

SENAR also launched the 1st Spring Protection Contest in order to encourage greater participation of farmers and to mobilize SENAR's 27 state offices, as well as the rural workers' unions affiliated to the CNA System.



From left to right: Daniel Carrara, SENAR's CEO, and José Mário Schreiner, President of the Federation of Agriculture and Livestock of Goiás.

The contest awarded the SENAR of the State of Goiás for registering the highest number of protected springs - 665 springs were registered in the state. The Rural Union from Camapuã, in Mato Grosso do Sul, got chest-medaled for developing the best initiative for protection of

springs through the engagement of local government - 56 springs were fenced and about 13,000 people were benefited. Altogether, 1782 springs were protected and 29 springs protection initiatives were registered throughout Brazil. CNA's goal were not only met, but exceeded.

Agricultural exports take a leap forward in 2015

Despite the drop in agricultural products total export revenue, the volume of shipments reached record high levels in 2015. According to the Brazilian Ministry of Development, Industry and Foreign Trade (MDIC), the sector's total exports amounted to US\$ 88.22 billion, 8.8% less than in 2014. The economic challenges currently faced by the country, combined with the fall in commodity prices and the instability of the Brazilian currency have played a significant role to the revenue reduction.

On the other hand, the volume of products shipped reached record high levels, ending 2015 at 163.28 million tons, 15.9% up as compared to 2014. Although the slowdown on the average commodities prices has indeed affected the revenue of Brazilian exporters, products themselves remain highly competitive in foreign markets. In addition, the opening of new and promising markets for Brazilian agricultural products has also been o responsible for the raise in shipments. These factors have leveraged the share of agricultural sector in the total

exports. While in 2014 agricultural goods accounted for 43% of Brazil's total exports, in 2015 figures have up-leaped to 46%.

Brazil's imports of agricultural products totaled US\$ 13.07 billion in 2015, 21.3% down as compared to the previous year, when they reached US\$ 16.61 billion. The decline also reflects the reduction in purchasing power due to the devaluation of the Brazilian real against the US dollar. Nonetheless, these results guarantee a US\$ 75.16 billion surplus in Brazil's agricultural trade balance in 2015.

Brazil's Trade Balance (2014-2015)

January to December												
		Exports (US\$ billion)	r).		Imports (US\$ billion)	Balance						
	2014	2015	Δ%	2014	2015	Δ%	2014	2015				
Total Brazil	225.1	191.13	-15.1%	229.16	171.45	-25.2%	-4.06	19.68				
Agro products	96.75	88.22	-8.8%	16.61	13.07	-21.3%	80.14	75.16				
Non-agro products	128.35	102.91	-19.8%	212.55	158.38	-25.5%	-84.2	-55.47				
Agro market share (%)	43%	46%	6.98%	7%	8%	5.17%	-	(=)				

Source: Agrostat/MAPA: Preparation: SRI/CNA

Brazil's Trade Balance (2014-2015)



Source: Aliceweb/MDIC

Brazil's top exports

In 2015, soybeans and its byproducts led the country's exports, totaling US\$ 27.96 billion. In other words, the exports of soybeans, soybean meal, crude soybean oil, refined soybean oil and other soybean oils, altogether, represent 14.6% of Brazil's total exports in 2015.

Despite the 11% downturn in the exports revenue of these products, the volume sold internationally increased 16.7% from 2014. In 2015, the shipment of these goods totaled 70.82 million tons. This volume has never been reached before.

The meat sector secured the second place among the most exported Brazilian agricultural products, with sales of US\$ 14.72 billion in 2015. Compared to 2014, there was a 15.5% decrease in revenue, mainly due to a 19.5% reduction in the exported value of fresh beef and 9.6% reduction in the exported value of fresh poultry meat.

The global market demand for Brazilian beef has been affected by the fall in oil prices. The shipments of fresh beef to Russia and Venezuela, two major buyers of this product, took a landslide fall due to the loss in purchasing power. On the positive side, the opening of new markets for Brazilian beef, such as the Chinese, South African, North American and Saudi

instilled faith into the sector in 2015.

As for fresh poultry meat, an international market cooling may have caused the reduction in the Brazilian export revenue, registering a 15.2% drop in the average sales price between 2014 and 2015. Yet, volume exported increased 6.6%, to 3.9 million tons. Brazilian chicken products can be found in nearly 150 different countries, including the biggest importers, such as Japan, Saudi Arabia and Mexico, market recently opened to Brazilian chicken.

Concerning pork, Brazilian exports revenue took a downturn while volume increased in 2015. For fresh pork, the increase in volume was 13%, reaching 472.7 thousand tons. In terms of revenue, sales totaled US\$ 1.17 billion. The average price of fresh pork suffered a 28.5% reduction from 2014 to 2015, which may have been a result of the recovery of the US production. Since 2013, the United States has been battling Porcine Epidemic Diarrhea (PED), a condition of severe diarrhea and dehydration that rapidly transmits among pigs and that may cause significant losses in production.

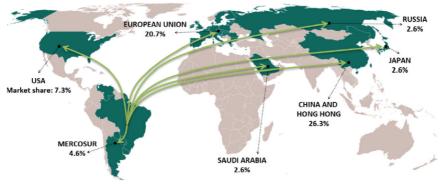
The scenario remains positive for **forest products**. In 2015, exports revenue was 3.8% higher than in 2014, and the shipped volume increased 9.5%. Pulp, the main byproduct of this sector

exported by Brazil, reached record high sales totaling US\$ 5.59 billion, or 11.97 million tons. Compared to 2014, these figures represent an increase of 5.6% in value and 8.5% in the volume exported by Brazil. Paper exports also showed growth. In 2015, they amounted US\$ 2.03 billion in external sales, 5.5% more than in 2014. Yet, in volume, the increase was much greater, reaching 14%.

The sugar and ethanol sectors were the fourth main exported grouping of agricultural goods. Exports totaled US\$ 8.53 billion, or 25.52 million tons. The export revenue of raw cane sugar fell 20.8% and the shipped volume 1.7%, compared to 2014. This drop in revenue is due to a sharp reduction of 19.4% on the average price of this product. Since 2014, the price of sugar has been declining. It began to show signs of recovery only in the second half of 2015. Thus, the Brazilian raw cane sugar reached US\$ 5.9 billion, or 18.93 million tons, in external sales

Coffee exports were also a 2015 highlight, staying in fifth place on the top exports list. Revenue from foreign sales last year fell 7.6% compared to 2014, adding up to US\$ 6.16 billion. Green coffee had US\$ 5.56 billion, or 2 million tons, in external sales

Main destinations and market share of Brazilian agricultural exports (2015)



Source: Agrostat | Preparation: CNA

Perspective for 2016

In 2016, agriculture¹ will continue to reassert itself as the main economic sector of Brazil, being responsible for a significant share of the country's foreign trade and playing an important role in job creation. Although some products have seen their exports revenue fall in 2015, the overall volume of trade will continue to increase, showing the sector's strength even in times of difficulties. Finally, in 2016, the international and domestic political and economic scenarios are likely to create both challenges and opportunities to Brazilian agricultural exports.

Agricultural products lead Brazilian exports, showing strength in times of difficulties

The Brazilian agricultural and agroindustrial sectors are predicted to show steady growth in 2016. Productivity levels should reach unprecedented levels and the opening of new markets will reinforce the constant demand for these goods. Three main factors will define the global market for agricultural commodities in 2016: extra caution related to exchange

rate variations, oscillations in the Chinese economy, and the conclusion of new trade agreements' negotiations. The combination of these factors has great potential to influence Brazilian agriculture and its trade balance.

The significant (and sudden) fluctuations of the Brazilian currency, the real, have been a matter of concern to Brazilian farmers, as they are critical to determining the trade prices of goods and inputs. Although the US dollar appreciation against the real may point to a favorable scenario for Brazilian exports, it directly

affects the production cost of sectors that depend on imported agrochemicals. It may create uncertainties for farmers at the time of planning their harvests. This trend is confirmed by 2015's foreign trade data, which shows a continuous decline in Brazil's imports. This is one of the clearest direct effect of the high exchange rate.

In 2016, the agricultural sector will continue to prove its importance to the economy, increasing Brazil's presence and strengthening its image abroad.

¹ For the purposes of this article, we consider "agricultural products" all of those contained in the World Trade Organization Agreement on Agriculture, plus other agro-industrial products such as pulp, paper and wood. In total, there are nearly 2,800 tariff items.



