Brazilian Agriculture

Tropical agriculture

Brazilian agriculture is one of the most competitive in the world. It is an example of productive efficiency in tropical regions. From being a net food importer in the 1970’s, Brazil became the second major food exporter. Given its effectiveness in food production in tropical zones, Brazil presents itself as one of the main food suppliers to the world's future food demand, with soybean leading this process.

The Brazilian Agricultural Research Corporation (Embrapa), created in 1973, under the Brazilian Ministry of Agriculture, Livestock, and Food Supply, has taken on the challenge to develop a genuinely Brazilian model of tropical agriculture.

Agribusiness accounts for approximately 25% of the GDP; supplies 35% of the country's jobs and 45% of the exports; maintains 61% of Brazilian lands with native vegetation.

A great revolution

From 1970 onwards, Brazil incorporated a wide area of infertile savannah lands (Cerrado) into an important granary of the world. Such revolution was considered one of the greatest achievements of the twentieth century, according to Dr. Norman Bourlaug, the father of the green revolution and Nobel Peace Prize.

The efficiency of the Brazilian productive systems allowed reconciling agricultural development with preservation of the environment. Currently, Brazil maintains approximately 60% of its territory covered by native vegetation. In other regions of the world, such as the United States and Europe, these rates are 23% and 1%, respectively.

In addition to the government protected areas, the Brazilian producer maintains in its properties areas of native vegetation reserves, established in Law, which depending on the location, vary from 20%, 35% or 80% of the property area.

Low-Carbon Emission Agriculture

With a low-carbon emission agricultural model, Brazil has stood out for a more sustainable agriculture based on technologies such as No-Till System, Biological Nitrogen Fixation, Integrated Pest Management and Integrated Crop-Livestock-Forests systems.

Soybean in Brazil

Soybean is the crop that has grown the most in the last 40 years in Brazil. The impact of soybean on the Brazilian agribusiness has been so significant that we can divide its history into two periods: before and after soybean. Much investment in science and technology was needed to adapt the crop to the Brazilian soil and climate.

Embrapa Soybean

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Brazilian Agricultural Research Corporation
Ministry of Agriculture, Livestock and Food Supply

Integrated crop-livestock-forests systems: a new agricultural revolution under way

Integrated crop-livestock-forest (ICLF) is a production strategy that integrates different production systems - agricultural, livestock and forestry - within the same area. It can be implemented using mixed, rotating, or succession crops, so that there is interaction between each component, thus generating mutual benefits. ICLF can be implemented in different ways, with a wide range of crops and various animal species. It is adaptable to regional characteristics, climatic conditions, local market, and producer’s profile, and can be adopted by small, medium, and large producers.

Photo: Luiz Gustavo Garbelini

Soybean is the driving force of Brazilian Agribusiness; the crop is cultivated from 30°S to 5°N; No-Till System is applied to over 80% of soybean cultivated area; the largest area in the world; Biological Nitrogen Fixation with rhizobia: Exempts nitrogen fertilization, preserves water, soil quality and is applied over almost 100% of cultivated area; Integrated Pest Management: reduce up to 50% of insecticide used in tropical conditions.

11 million ha are being used by the crop-livestock-forest integration system*; 83% of this area consists of crop-livestock integration*, where soybean has a predominant role; The system contributes to reduce de greenhouse gas emissions; Between 2010 and 2015, the increase of 5.96 million ha of ICLF was responsible for the sequestration of 21.8 million tons of carbon dioxide equivalent (CO\textsubscript{2} eq).

*Research commissioned by the ICLFI Development Network/Kleffmann Group
Brazilian agriculture is one of the most competitive in the world. It is an example of productive efficiency in tropical regions. From being a net food importer in the 1970's, Brazil became the second major food exporter. Given its effectiveness in food production in tropical zones, Brazil presents itself as one of the main food suppliers to the world’s future food demand, with soybean leading this process.

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**Sources:** Conab, IBGE and author's calculation

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**EVOLUTION AREA OF MAIN CROPS IN BRAZIL**
A GREAT REVOLUTION

From 1970 onwards, Brazil incorporated a wide area of infertile savannah lands (Cerrado) into an important granary of the world. Such revolution was considered one of the greatest achievements of the twentieth century, according to Dr. Norman Bourlaug, the father of the green revolution and Nobel Peace Prize.

The efficiency of the Brazilian productive systems allowed reconciling agricultural development with preservation of the environment. Currently, Brazil maintains approximately 60% of its territory covered by native vegetation. In other regions of the world, such as the United States and Europe, these rates are 23% and 1%, respectively.

In addition to the government protected areas, the Brazilian producer maintains in its properties areas of native vegetation reserves, established in Law, which depending on the location, vary from 20%, 35% or 80% of the property area.

**LANDS USE IN BRAZIL**

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Native Vegetation in Rural Properties</td>
<td>11%</td>
</tr>
<tr>
<td>Crops and Planted Forests</td>
<td>8%</td>
</tr>
<tr>
<td>Pastures</td>
<td>19.7%</td>
</tr>
<tr>
<td>Cities, Macroligistics, Energy, Infrastructure, Mining and Other</td>
<td>11.3%</td>
</tr>
<tr>
<td>Native Vegetation in Indigenous Lands</td>
<td>13%</td>
</tr>
<tr>
<td>Native Vegetation in Units of Conservation</td>
<td>17%</td>
</tr>
<tr>
<td>Native Vegetation in Retreating Lands, Relieves, Interior Waters</td>
<td>20%</td>
</tr>
<tr>
<td>Others</td>
<td>11.3%</td>
</tr>
</tbody>
</table>

Sources: Embrapa, IBGE, CNA, MMA, FUNAI, DNIT, ANA, MPOG
LOW-CARBON EMISSION AGRICULTURE

With a low-carbon emission agricultural model, Brazil has stood out for a more sustainable agriculture based on technologies such as No-Till System, Biological Nitrogen Fixation, Integrated Pest Management and Integrated Crop-Livestock-Forests systems.

SOYBEAN IN BRAZIL

Soybean is the crop that has grown the most in the last 40 years in Brazil. The impact of soybean on the Brazilian agribusiness has been so significant that it can be divided in two periods: before and after soybean. Much investment in science and technology was needed to adapt the crop to the Brazilian soil and climate.

SOYBEAN AREA AND PRODUCTION IN BRAZIL

- Soybean is the driving force of Brazilian Agribusiness;
- The crop is cultivated from 30°S to 5°N;
- No-Till System is applied to over 80% of soybean cultivated area, the largest area in the world;
- Biological Nitrogen Fixation with rhizobia: Exempts nitrogen fertilization, preserves water, soil quality and is applied over almost 100% of cultivated area;
- Integrated Pest Management: reduce up to 50% of insecticide used in tropical conditions.
INTEGRATED CROP-LIVESTOCK-FORESTS SYSTEMS: A NEW AGRICULTURAL REVOLUTION UNDER WAY

Integrated crop-livestock-forest (ICLF) is a production strategy that integrates different production systems - agricultural, livestock and forestry - within the same area. It can be implemented using mixed, rotating, or succession crops, so that there is interaction between each component, thus generating mutual benefits.

ICLF can be implemented in different ways, with a wide range of crops and various animal species. It is adaptable to regional characteristics, climatic conditions, local market, and producer's profile, and can be adopted by small, medium, and large producers.

- 11 million ha are being used by the crop-livestock-forest integration system*;
- 83% of this area consists of crop-livestock integration*, where soybean has a predominant role;
- The system contributes to reduce greenhouse gas emissions;
- Between 2010 and 2015, the increase of 5.96 million ha of ICLF was responsible for the sequestration of 21.8 million tons of carbon dioxide equivalent (CO₂ eq).

*Research commissioned by the ICLFI Development Network/Kleffmann Group
Brazilian agriculture has taken on the challenge to develop a genuinely Brazilian model of tropical agriculture. Under the Brazilian Ministry of Agriculture, Livestock, and Food Supply, has led soybean in this process. As one of the main food suppliers to the world's future food demand, with Brazil becoming the second major food exporter. Given its effectiveness in food production in tropical zones, Brazil presents itself as an example of productive efficiency in tropical regions. From being a net food importer in the 1970's, Brazil became the second major food exporter. Given the success of this model, Brazilian agriculture is one of the most competitive in the world. It is an example of how tropical agriculture can be sustainable in tropical zones.

Integrated crop-livestock-forest (ICLF) is a production strategy that integrates different production systems - agricultural, livestock and forestry systems: a new agricultural property area. ICLF can be implemented in different ways, with a wide range of crops and animal species. It is adaptable to regional characteristics, climatic conditions, local market, and producer's profile, and can be adopted by small, medium, and large producers. Photo: Luiz Gustavo Garbelini

ICLF has a predominant role; it contributes to the sequestration of 21.8 million tons of carbon dioxide equivalent (CO₂ eq). Between 2010 and 2015, the increase of 5.96 million ha of ICLF was 83% of this area consists of crop-livestock integration*, where soybean is the driving force of Brazilian Agribusiness. With a low-carbon emission agricultural model, Brazil has stood out for its success in producing and exporting soybean, which supplies 35% of the country's jobs and 45% of the exports.

In addition to the government protected areas, the Brazilian producer maintains in its properties areas of native vegetation reserves, established in accordance with the Law, which depending on the location, vary from 20%, 35% or 80% of the property area. Such revolution was considered one of the greatest achievements of the twentieth century, according to Dr. Norman Bourlaug, the father of the green revolution and Nobel Peace Prize laureate. From 1970 onwards, Brazil incorporated a wide area of infertile savannah lands (Cerrado) into an important granary of the world. Such revolution was possible due to the introduction of new crops, such as soybean, and the development of new technologies, such as the No-Till System, which has a low carbon footprint and is applied over almost 100% of the cultivated area.

The impact of soybean on the Brazilian agribusiness has been so significant that it has prompted the development of more sustainable agriculture based on technologies such as the No-Till System, Biological Nitrogen Fixation, and Integrated Pest Management. The crop is cultivated from 30°S to 5°N in the largest area in the world, preserves water, soil quality and is applied over almost 100% of the cultivated area; it is considered one of the greatest achievements of the twentieth century.

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