

BRAZILIAN LOW CARBON AGRICULTURE PLAN: update

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Brazilian Low Carbon Agriculture Plan

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Recent key achievements: Low-carbon agriculture in Brazil

| Technology / Process | Commitment / (land use increase) | Mitigation Potential (Million Mg CO ₂ eq) |
|--|-------------------------------------|--|
| Pasture Recovery ⁽¹⁾ | 15 million hectares | 83 to 104 |
| Integration Crop-Livestock-Forest ⁽²⁾ | 4 million hectares | 18 to 22 |
| No Tillage System ⁽³⁾ | 8 million hectares | 16 to 20 |
| Biological Nitrogen Fixation ⁽⁴⁾ | 5.5 million hectares | 10 |
| Planted Forests ⁽⁵⁾ | 3 million hectares | - |
| Manure Treatment ⁽⁶⁾ | 4.4 million m ³ | 6.9 |
| Total | - | 133.9 to 162.9 |

1. Correct management and use of fertilizer. Mitigation potential considered was 3.79 Mg CO₂eq ha⁻¹ year⁻¹

2. Including Agroforestry Systems. Mitigation potential considered was 3.79 Mg CO₂eq ha⁻¹ year⁻¹

3. Mitigation potential considered was 1.83 Mg CO₂eq ha⁻¹ year⁻¹

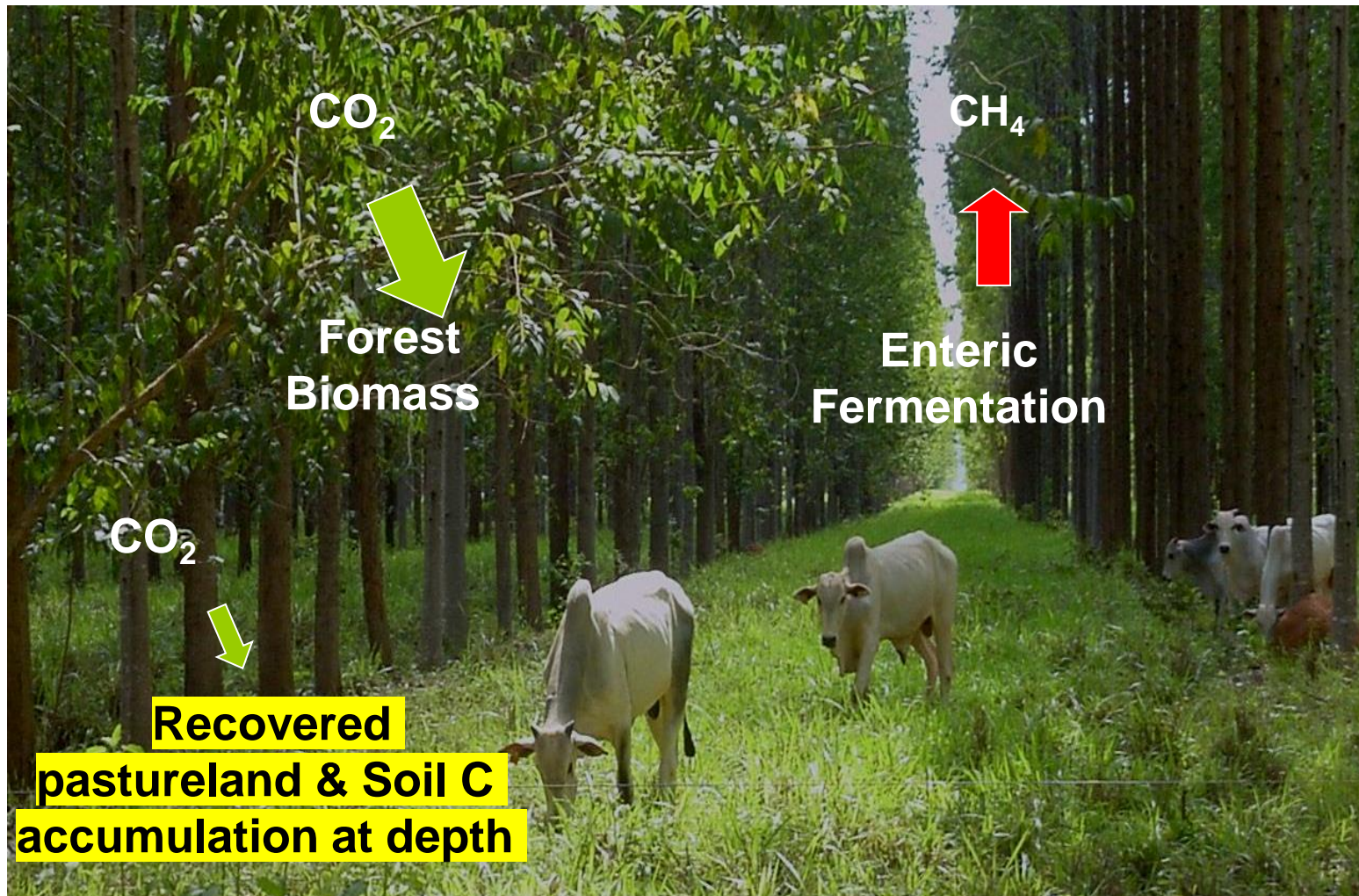
4. Mitigation potential considered was 1.83 Mg CO₂eq ha⁻¹ year⁻¹

5. Not considered

6. Mitigation potential considered was 1.56 Mg CO₂eq m³



Crop-Livestock-Forest Integrated Systems



Soil Carbon Dynamics in South America Savannah Areas

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Soil C Dynamics

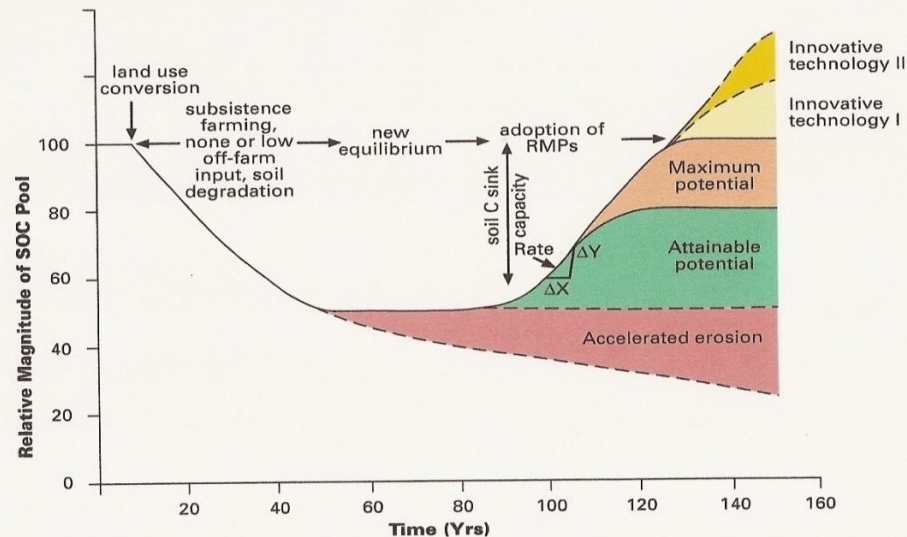


Fig. 3 A schematic of the soil C dynamics upon conversion from a natural to agricultural ecosystem, and subsequent adoption of recommended management practices (RMPs). In most cases, the maximum potential equals the magnitude of historic C loss. Only in some soil-specific situations, the adoption of RMPs can increase SOC pool above that of the natural system. An example of this is acid savanna soils of South America (Llanos, Cerrados) where alleviation of soil-related constraints can drastically enhance the SOC pool.

Lal, R. 2008 Conference Soil and Climate Change, Brussels, June, 12, 2008

Animal welfare = thermal comfort



Note: Please believe us because the cows are not stuck with chains in the trees!!!

Animal welfare = thermal comfort



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Recent key achievements: Network to foster and promote iCL-F systems ("Rede de Fomento à iLPF")

- Public-private partnership;
- Established in 2012;
- 97 units for demonstrating the technology;
- 19 Embrapa's research units involved;
- From lab to farms;



November-2016



Dow AgroSciences



JOHN DEERE



syngenta

Embrapa

<http://redeilpf.com.br>

Multi-institutional Low Carbon Agriculture Lab Monitoring Agricultura GHG Emissions- Platform ABC (Coordinated by Embrapa)



Embrapa Environment- Jaguariúna, SP, Brazil



Ministério da
Agricultura, Pecuária
e Abastecimento



Adoption of Integrated Crop-Livestock-Forest (CLF) Systems in Brazil- 2016

Evolution of adoption:

2005-2010 – 3.6 million ha

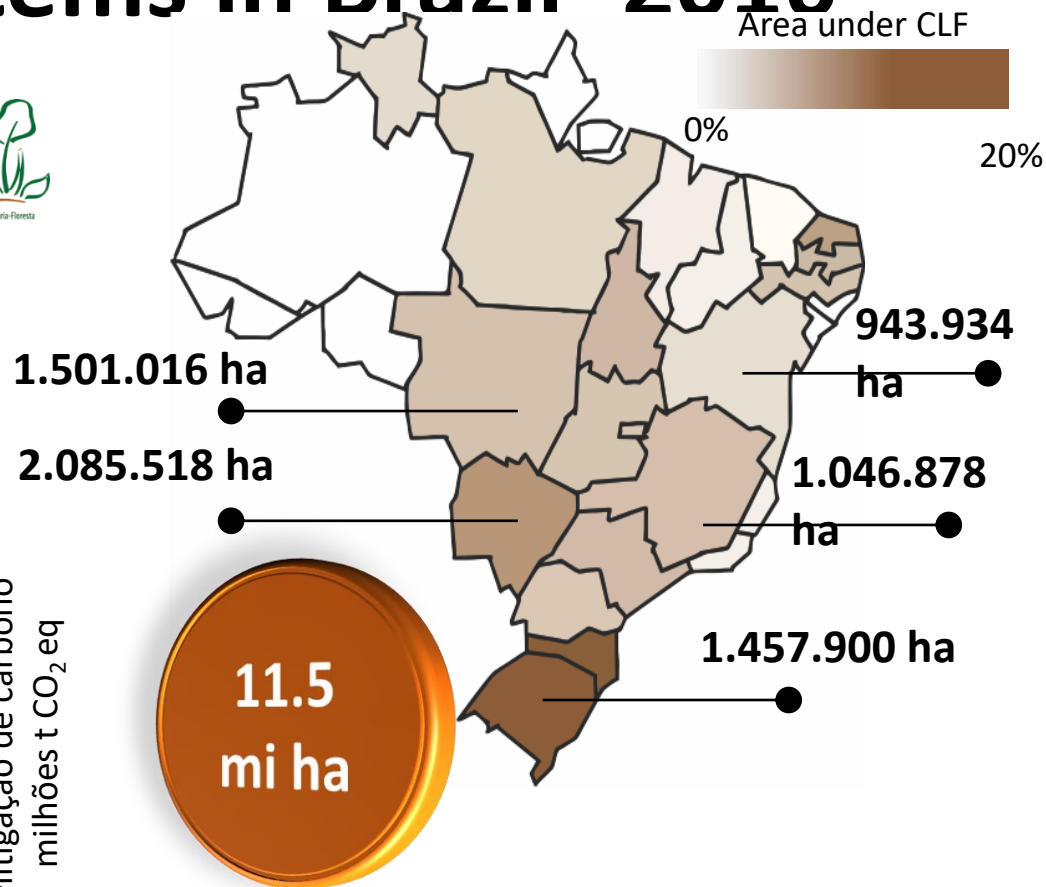
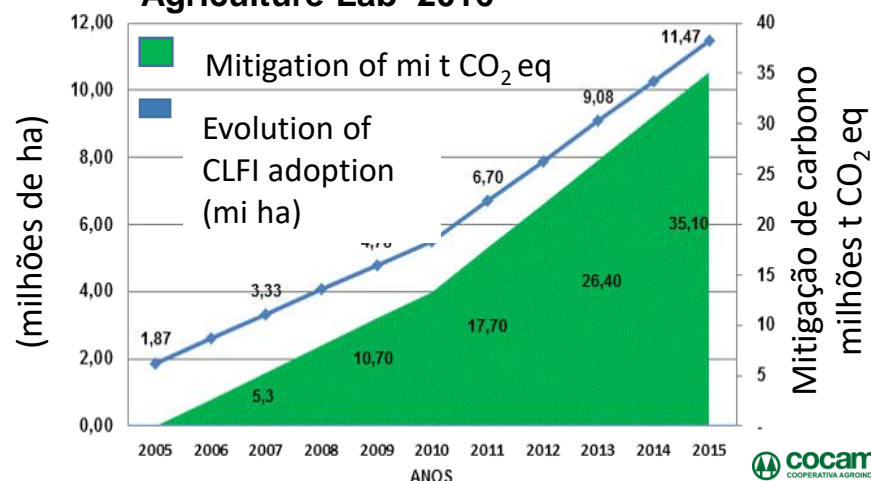
2010-2015 – 6 million ha

Evolution of mitigation:

2005-2010 – 13.3 mi t CO₂ eq

2010-2015 – 21.8 mi t CO₂ eq

Source: Low Carbon Agriculture Lab 2016



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Extraordinary change within 10 years, with support from Embrapa and Extension Service, Mrs Marize Porto, a Farmer in Goiás State (Neotropical Savanna).

Integrated crop livestock forestry system

How to take a farm out of bankruptcy

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Expointer- 2016- One of the main agricultural exhibition of Brazil,
Porto Alegre/RS (subtropical climate)

Farmer of the Year



Photo: Joseani Mesquita Antunes / Embrapa

In the State of Rio Grande do Sul, Mr. Ivonei Librelotto has adopted integrated crop-livestock system

Double-purpose wheat, which allows for grazing and grain production, is one of the pillars of the system, implemented nine years ago. A pioneer in the use of the wheat cultivar, the farm is a model unit of Embrapa Wheat.

Final Remarks

- Low Carbon Agriculture Plan- strong connection with GRA Flagships Soil Carbon Sequestration, Enteric Fermentation and Inventory
- Can be very useful to future activities of eventual GRA Flagship on Circularity in Climate Smart Food Production (monitoring and data in all country, including at farm level)
- Multi-institutional Low Carbon Agriculture Lab to Monitoring Agricultural GHG Emissions in Brazil Platform ABC- data base, remote sensing for land use and management changes....- example to other countries on how to make a national monitoring of Government Plan – Coordinated by Embrapa, with Executive Board with members from other public institutions (including Ministry of Environment), private institutions (including banks) and no-governmental organizations – Support to GRA Inventory Flagship
- Brazil and Embrapa- totally open to international cooperation including CRG member countries.