Connecting the Brazilian agriculture to ecosystem services and Nexus food-water-energy security

Brazilian Agriculture Ministry (MAPA)

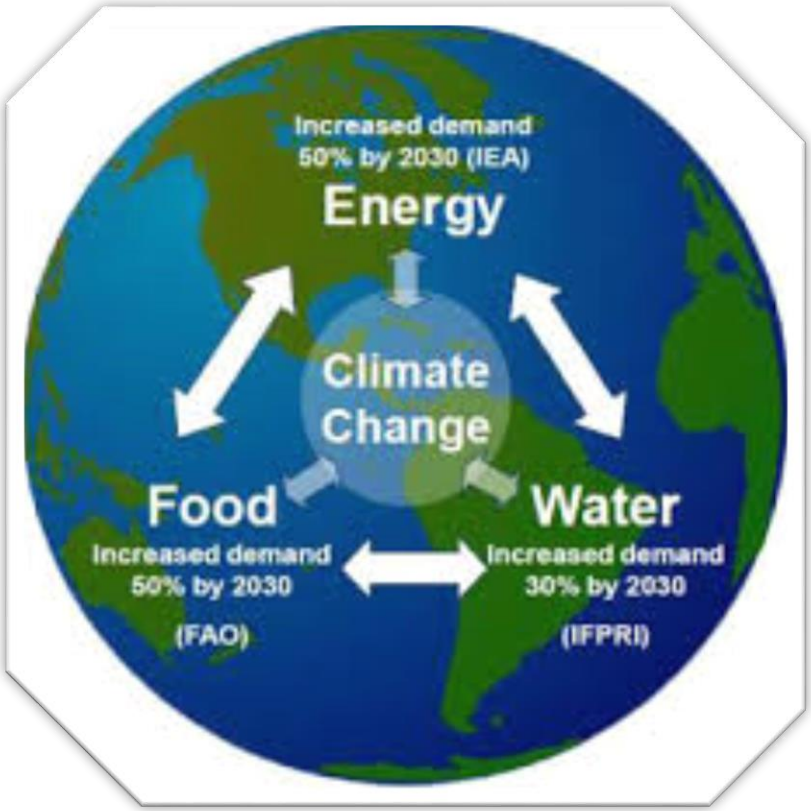
Brazilian Agriculture Research Corporation (EMBRAPA)

Presenter: Ana Paula Turetta
Embrapa's researcher

G20 Operations Virtual

August, 31st 2020

❑ The motivation



http://waternexussolutions.org/284/the-perfect-storm-scenario-and-nexus-thinking-to-meet-increasing-demand-for-energy-food-water.html

immediate need to adopt interventions that can minimize impacts and meet the demand of a growing world

Embrapa

❑ The proposed solution

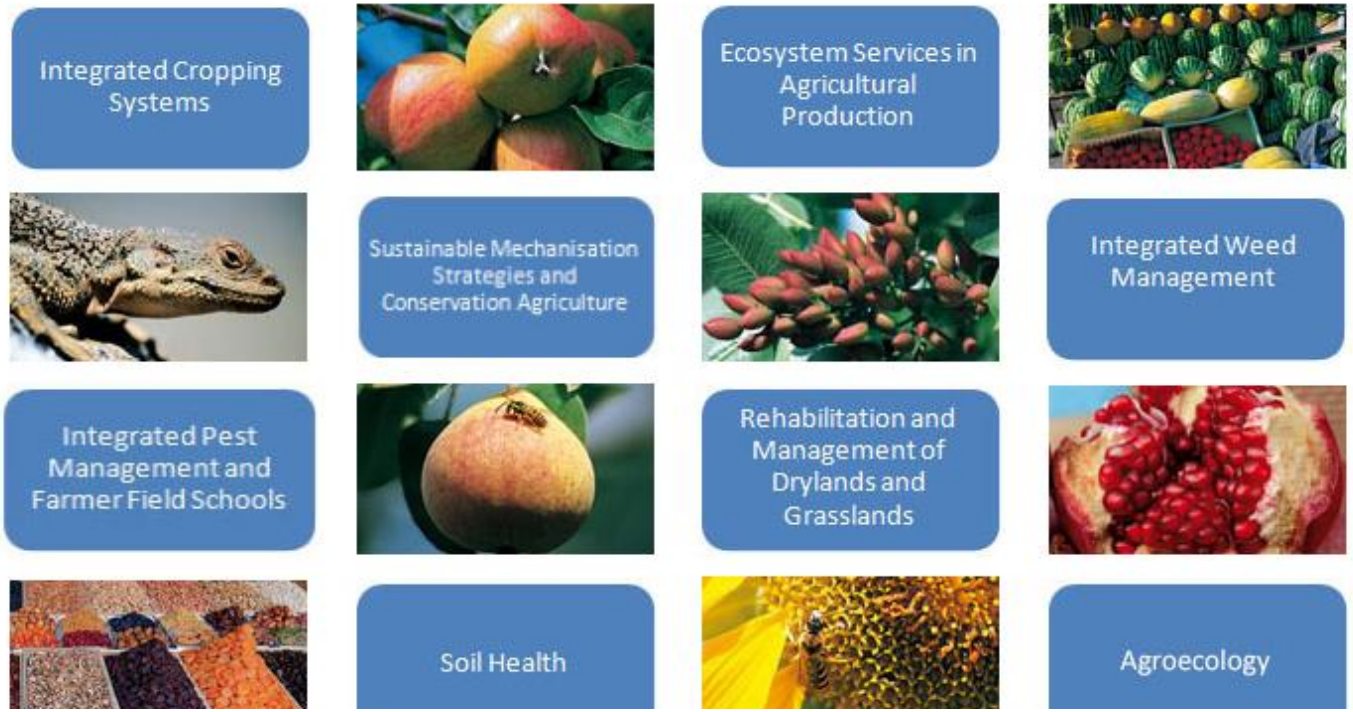
To enhance ecosystem services provide from agriculture…

Source: the authors

Embrapa

❑ The proposed solution

…thorough **agriculture sustainable** practices that enhance **multifunctionality** in the agriculture



❑ The goal of research line

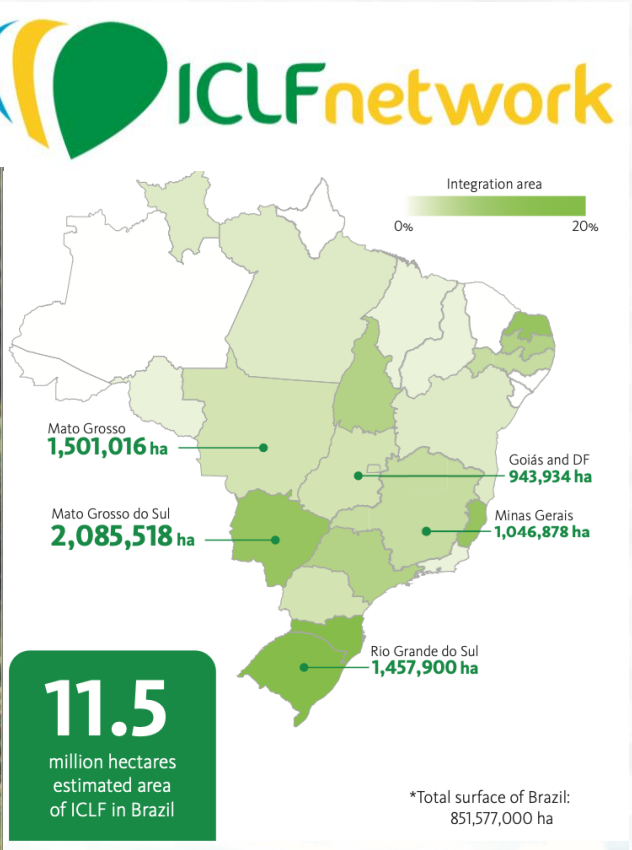
To evaluate the impact of rural practices on Nexus F – W – E security

- **Conservation Agriculture** is a farming system that promotes minimum soil disturbance (i.e. no tillage), maintenance of a permanent soil cover, and diversification of plant species. It enhances biodiversity and natural biological processes above and below the ground surface, which contribute to increased water and nutrient use efficiency and to improved and sustained crop production (FAO, 2017).

Source: FAO, 2017.

❑ And Brazil is promoting this practices!

✓ **Integrated crop-livestock-forest (ICLF)**



https://www.redeilpf.org.br/arquivos/folderweb_EN_atual.pdf

Embrapa

✓ No tillage system

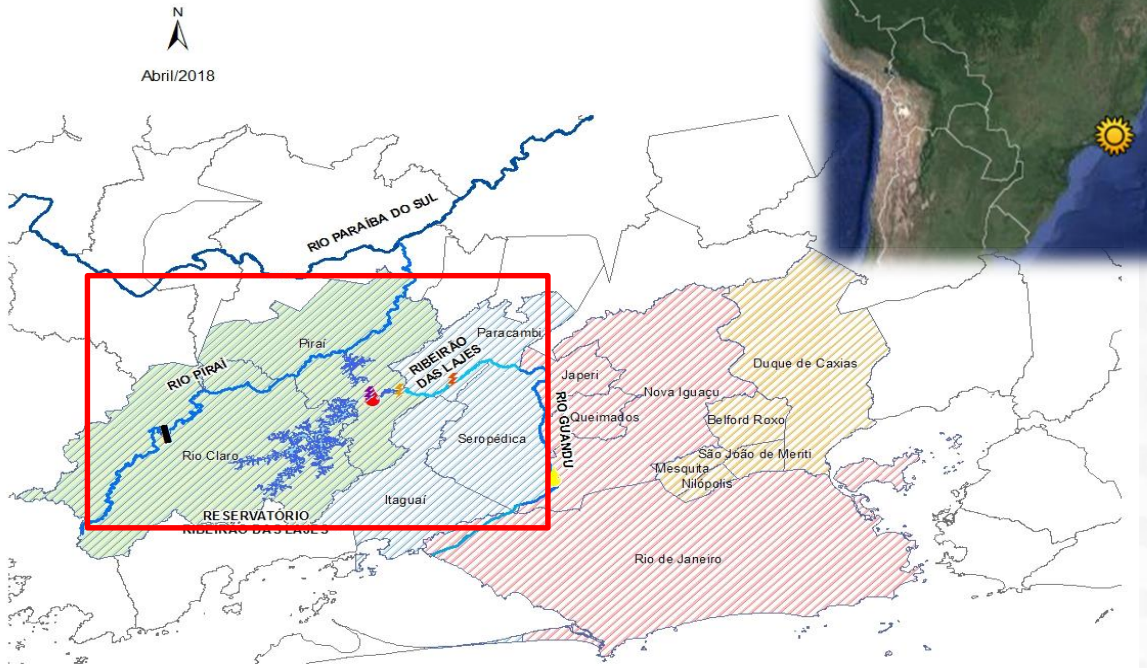
Expansion of no tillage system in Brazil

https://febrapdp.org.br/download/34024evolucao-do-sistema-plantio-dibeto-1972a2018-jpg.jpg

Embrapa

❑ The case study

Financed by Brazilian National Council for Scientific and Technological Development (CNPq) - 441313/2017-5
Executed by EMBRAPA
Duration: Dec. 2017 – Jun. 2021



- ✓ Watershed Guandu in Rio de Janeiro – Brazil;
- ✓ Atlantic forest domain;
- ✓ Important area for water supply for many cities, including Rio de Janeiro (second biggest city in BR).

❑ The methodological framework

Bibliographic survey;
Data base organization
(natural, social and economic aspects of the study area)

Definition, in a participatory process, the impact of agricultural practices on F – W – E security, considering the landscape attributes and indicators

Experts workshop (Apr. 2019)

Analysis and data consolidation from de 1st Workshop

Generation of LU scenarios

Decision makers consultation

Analysis and consolidation of the results of the 2nd Workshop and final product preparation

To develop a portfolio of best agriculture practices related to F – W – E sustainability, validated in a participatory manner

Embrapa

❑ Main outcomes

Data base (spatial data; environmental and socio-economic indicators; public policies; bibliographic survey)

Participatory workshops: experts and decision makers

Integrated data analysis

Nexus F – W – E scenarios

Portfolio of best agriculture practices related to F – W – E sustainability

To offer a framework that connects agriculture practices, ecosystem services and F-W-E Nexus able to support decision making in multiple levels

Obrigada!

Thank you!

EMBRAPA's Ecosystem Services Group

ana.turetta@embrapa.br

rachel.prado@embrapa.br

Embrapa