

CLOSING THE FOREST FRONTIER: SCALING AGROFORESTRY AMONG SMALLHOLDER FARMERS AT THE AMAZONIAN AGRICULTURAL FRONTIER OF MATO GROSSO

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the degree of Master in Public
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THE FOLLOWING PAGES:

EXPLAIN THE
PROBLEM

SHOW KEY FINDINGS

PROPOSE A
PATHWAY FORWARD



SUMMARY:

- **Deforestation is a pressing problem in Brazil.** The Government and firms operating in key industries, like soy and cattle, are increasingly facing international pressures.
- **Agroforestry poses an opportunity** to address an untargeted population: smallholder farmers.
- **The problem: low profitability** relative to participating in deforesting industries hinders take up.
- **The hope:** low profitability only concerns a subgroup of low-productivity farmers.
- **The short-term need:** shifting some ongoing regional policies involving input provision, access to credit, and technical assistance from extensive cattle ranching to agroforestry.
- **In the long term:** payment for environmental services could make a difference. This would be enabled by regularizing property rights.



CONTEXT

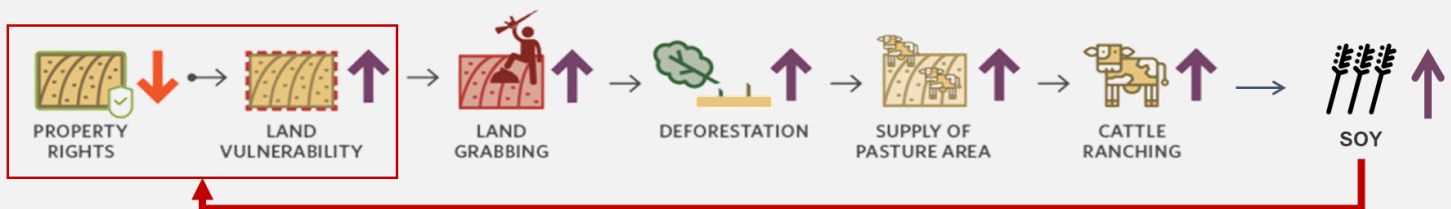
Deforestation has been increasing in Brazil since 2015, after a period of sustained decline between 2004–2012.

The decline was driven by large scale farms, but deforestation rose in small plots.

PROBLEM

Smallholder farmers play a key role in a vicious cycle of deforestation.

When faced with lack of alternatives, smallholder farmers settle frontier plots and begin clearing forests. Eventually, plots are bought by agribusiness for soy or beef. Then, smallholder farmers move further into the forest and expand the frontier.



Source: CPI/PUC-Rio, 2021

Smallholder farmers move further into the forest
(pushing the frontier)

Agroforestry poses an opportunity to provide farmers with an alternative means of income. The problem is that low agroforestry profitability relative to soy and extensive cattle hinders take up, increasing pressure on the forest.

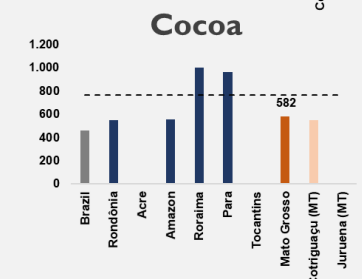
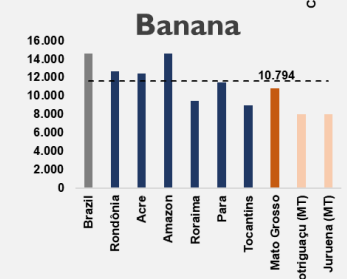
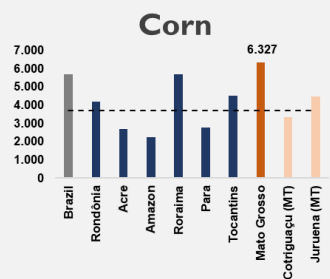
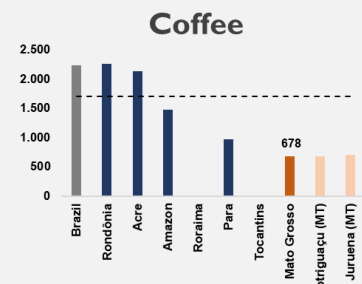
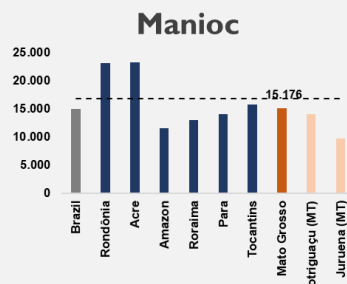
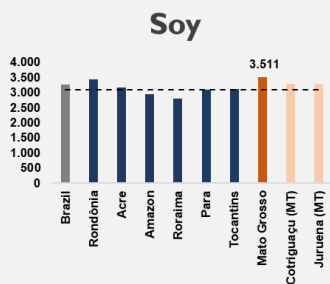


KEY FINDINGS

Low profitability is driven by low productivity

- Average yields in pilot municipalities (Jurueña and Cotriguaçu) are lower than in Mato Grosso.
- Soy and corn are the “highest yield” products – especially soy.
- Coffee and cocoa have very low yields. Mainly explained by labor intensiveness in a context where labor is scarce, and low access to inputs.

Productivity by products (kg/ha)



But only among a subgroup of smallholder farmers (Tier 1)

- Family farms can be classified in 3 tiers, heterogeneous in their productivity and degree of appropriability.
- It is estimated that Tier 1 and Tier 2 farmers' productivity is 10% and 50% of Tier 3 farmers, respectively.



Property rights	Owner, unclear plot boundaries	Owner, title in process	Owner, production permits
Plot size	< 10 has, (3 ha and stream as reserve)	25 has (+ 25 has of virgin forest contributed to larger common reserve)	50 has (25 has as reserve)
Access to credit	No, only government support	Yes, but started with government support only	Yes
Labor allocation	20% in plot - 80% outside plot	80% in plot – 20% in cooperative	100% in plot
Reliability	Low – production is wasted	Medium to High – commercializes to palm heart company and nut coop	High – set up their own firm and pulp processing

Source: Authors' own elaboration based on fieldwork and secondary sources [Soto-Baquero, et al. (2007), Assunção & Chiavari (2015)]

Photography: Alejandro Rueda-Sanz

PROPOSING A PATHWAY FORWARD

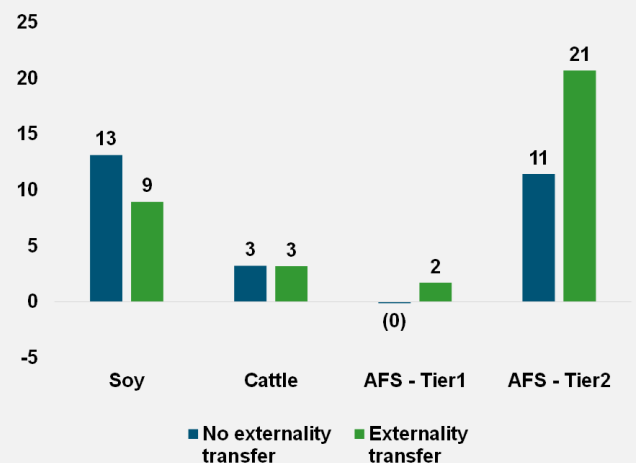
Efforts should focus on addressing smallholder farmers in Tier 1: the most vulnerable.

- Currently *Tier 1 farmers have low productivity and commercial capabilities*, resulting in unprofitable AFS production models.

Objective of change: moving to Tier 2.

- Short-term:** focus on increasing private gains (blue bar).
- Long-term:** appropriating externalities to increase incentives for AFS adoption across tiers (green bar).

Net Present Value of a 20-year project: Average



Source: Authors' own elaboration based on financial modelling

POLICY RECOMMENDATIONS

Short-term

De-risking credit:

- Tailor credit lines to adjust the needs of AFS crop maturity (+3 years), using PRONAF and Linhas ABC.

Inputs and assistance:

- Increase government resources to provide inputs (i.e., limestone).
- Bring technical support for AFS, besides EMPAER, such as from private donors.

Promoting Associativity:

- Establish workflows: knowledge sharing groups, truck volume top-ups and market information.

Medium term

Regularizing property rights:

- Guarantee compliance with forest code.
- Collaborate and follow up on requests with CAR.
- Replicate the success of settlement titling in Vale do Amanhecer (Jurueña) to guarantee titling collaboratively.

Long term

Fund for AFS

- Set up a fund to support AFS initiatives that compensate farmers for the environmental externality of their activities.
- Collect funds from donors, governments, international programs and agribusiness industry.
- Target cashflow at allowing farmers to maintain and scale AFS activities.

Improving Environmental Enforcement:

- Despite economic incentives, legal enforcement is critical to raise the costs of deforesting.

Feasibility Assessment

Key Levels	High	Medium	Low
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Short term:

De-risking credit



Technical



Political



Key actors

- Banco do Brasil
- BNDES
- State Gov: SEDEC

Facilitating access to lime, fertilizers and technical assistance



- Local Agriculture Secretary
- EMPAER

Promoting associativity



- Local Agriculture Secretary
- Private sector
- Civil society

Medium term:

Regularizing property rights



- Local Agriculture Secretary
- SEAF
- CAR

Long term:

Fund for AFS



- State Gov.: SEAF, SEMA
- PCI

Improving environmental enforcement



- State Government
- Federal Government

Source: Authors' own elaboration



