SMALL SCALE, GREAT OPPORTUNITY:
TOWARDS SUSTAINABLE YOUNG LIVESTOCK FARMING IN THE AMAZON AND THE POTENTIAL OF THE INNOVATION AND LEARNING HUBS (ILHs)

Reino dos Países Baixos

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GTPS Grupo de Trabalho da Pecuária Sustentável

Executive Summary

Livestock breeding: the invisible link in the chain

Livestock farming is considered a key activity for food security, accounting for 34% of the total protein consumed globally. The livestock chain accounts for about 14.5% of global emissions of anthropogenic greenhouse gases (GHG), of which 65% is attributed to cattle raising (FAO, 2018). Brazil, the second largest beef producer (USDA, 2018) and one of the 10 largest GHG emitters in the world (WRI, 2017) plays a key role in this scenario. Almost a third of the Brazilian cattle herd is located in the Amazon, where production is characterized by extensive pasture systems, with low intensity of pasture management and low use of chemical inputs, which results in low productivity and often in gradual soil degradation (zu Ermgassen, 2018). In addition, the expansion of livestock within the Amazon biome has been directly associated with its deforestation since the intensification of its occupation process by non-indigenous peoples from the 1960s onwards.

In order to promote improvements in the livestock chain for sustainable and low carbon production that reach all its links, in addition to increasing the monitoring and traceability of the proprieties with livestock production, efforts have been made to increase productivity through the transition from an extensive livestock system to a management with more intensified levels and adoption of technologies. However, such initiatives have generally been restricted to large and medium-sized properties - often in rural areas consolidated in the Legal Amazon – and focused on improvements in the stages of rearing and fattening; not reaching the small-scale farmers who are responsible for the least profitable stage within the livestock chain, breeding, which have scarce access to resources, technical assistance and technologies (Cavalcanti, 2011).

Although projections for meat production in the Legal Amazon region show a strong growth trend, most of the producers, especially the more traditional ones and with fewer resources, are carrying out the activity with low technological and managerial level (EMBRAPA, 2018). In order to reverse this scenario, a joint effort and commitment of the whole production chain is necessary to allow the techniques of management, production and good practices reach the small-scale livestock farmers, the indirect producers, and be effectively incorporated into their production systems.

Study focus:

- Analyse the challenges and the operational, technical, and institutional feasibilities of scale replication of low carbon good agricultural practices under the scope of family farming in the Amazonian biome.
- Contribute to leverage partnerships between Brazil and the Netherlands, and funding for the establishment and enhancement of Innovation Learning Hubs (ILH) in the Amazon biome.

Specific objective:

- To propose a strategy for scale intervention aimed at the mitigation of deforestation and the adoption of good agricultural practices in small productive units in the Amazon based on the replication of a model and methodology used in the initiative of Solidaridad in Brazil: "Inclusive and Sustainable Territories in the Amazon, in the Tuerê settlement, in Novo Repartimento / PA"[1].

[1] *For more information, visit: https://solidaridadsouthamerica.org/sites/solidaridadsouthamerica.org/files/publications/low_carbon_family_agriculture_in_the_amazon0.pdf*

The Innovation and Learning Hub (ILH): the scale solution for the Amazon

The intervention strategy outlined by the study hereby presented consists of the implementation of ILH directed to small-scale livestock breeding (small properties are considered as productive units up to four fiscal modules) in the Amazon.

The goal of establishing the ILH is to generate impact from models that mitigate GHG emissions, increase the life quality and the income of farmers, and contribute to the expansion of new low carbon businesses network. The following flowchart shows how we came to conceptualize ILH.

HOW DID WE CAME TO CONCEPTUALISATION OF THR ILHs:

Context: Climate change and the need for sustainable livestock practices in Amazon.

Emission
- Deforestation
- Degraded Pastureland
  Inefficient Management of livestock

Smallholder Producers
- Fundamental, yet little perceived, actors in chain
- Main producers of young livestock, i.e. calves

Demonstration units combining the production of livestock forest and exotic cultures (Ex. Cacao, Babaçu, Açaí)

- AIM: Improve the carbon balance of smallholder livestock production in the Amazon..

Methodology

Integrated and continuous rural technical assistance by:
- Capacity building.
- Demonstration units.
- Digital Solutions

Practices to reach sustainable production:
- Optimization of input use.
- Improved pastureland and herd management.
- Recovery of degraded soils.
- Forest conservation.
- Genetic inprovement of the bovine herd.
- Diversification of the productive unit.
- Overall improved efficiency of calves raising.

Pilot: Settlement Tuerê

Innovation and learning Hub (ILH)

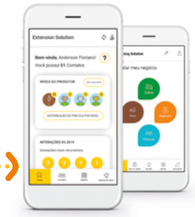
ILHs as multipliers of good practice at scale
- Strategic partnerships (gov, research, industry).
- Demonstration Units.
- Institutional and financial arrangements.

ILH

FIELD ACTIONS-CONTINUOUS AND INTEGRATED TECHNICAL ASSISTANCE

INSTITUTIONAL ARRANGEMENTS

DIGITAL SOLUTIONS



ILH: 3 Intervention pillars

To validate the proposed intervention strategy, a field survey regarding the social acceptance of the practices and tools was conducted through interviews with farmers from Tuerê and with local technicians from Novo Repartimento. Some of the statements presented here were extracted from the study[2].

The intervention strategy of ILH is based on the consideration that digital solutions and field actions are complementary to each other in the search of overcoming the main difficulties found in the sector, which were based on three central pillars:

I. Field Actions

- Demonstration Units
- Collective training for farmers and agricultural technicians
- Continuous technical visits and monitoring of the impact in the adoption of best practices.

"Only when we see it happening that we will be able to develop, because people, nowadays, are very sceptical. Sometimes they implement it (the intensive livestock system) in one place, but we will only really believe in it when we see the results. They are already implementing it (a demonstration unit) there. Next year we will start seeing how much it increases income, the number of animals that maintain//live in that piece of ground. Only then people will want to be part of it". ***(BNL, farmer of Novo Repartimento / PA).***

II. Online platforms and applications:

Pilot-platform for ILH: Sustainable Livestock Breeding[3]

- The "Sustainable Livestock Breeding" platform was created by WLR, and it aims to connect the actors in the chain and share information on sustainable production practices.

Applications for family farming

- *Farming Solution*[4]*:* developed by Solidaridad to inform farmers about the best agricultural practices and to foster autonomy in the identification of bottlenecks, in planning improvements, and monitoring the advances.
- *Extension Solution:* developed by Solidaridad to assist with the work of the field technicians, allowing them to organize tasks, register interactions with farmers, and collect field data.

Guide of Indicators for sustainable Livestock - GIPS

- The GIPS developed by the Sustainable Livestock Working Group (GTPS) is a tool that establishes the principles and criteria that define the sustainable practices of production, processing, and commercialization of the livestock products in Brazil, making it possible to diagnose and set goals for the implementation of improvements.

III. Partnerships and strengthening of local institutional arrangements

Institutional, public-private, and multistakeholder arrangements to technically and economically enable the ILH, making it possible to leverage sector actions and commitments.

"To scale up the work that we are doing, I would advocate for establishing more agreements with state institutions, bringing more professionals to carry out more training, both for technicians and farmers." ***(Daniel Costa, Solidarity technician in Pará)***

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[2] *A detailed analysis can be found in Chapter 6 of this report. Available at: https://pecuariadecriasustentavel.wordpress.com/os-pequenos-grandes*

[3] *In order to demonstrate the purpose of this component, we have created a pilot platform that will be supplied hereafter with a description of technical information and new contents. Available at: https://pecuariadecriasustentavel.wordpress.com*

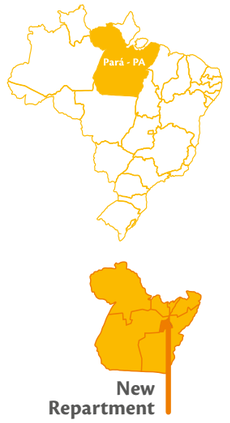
[4] *For more information, visit: https://solidaridadfarmingsolution.org/farming-solution*

Expanding the mitigation of GHG emissions with innovative small-scale livestock

The goals established for the reduction of emissions in the productive family unit in the Amazon were defined based on an empirical study, "Carbon Balance in family agricultural production in the Amazon", carried out by Solidaridad in Brazil, in a technical partnership with the Institute of Agricultural and Forest Management and Certification (Imaflora), which developed a framework for measuring GHG emissions from land use in the region.

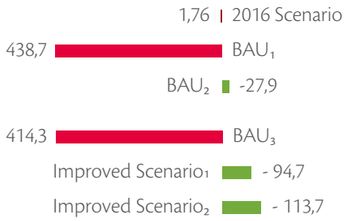
The following factors were analysed: land use – livestock, cocoa and forest - and the agricultural practices of family farmers of the Tuerê settlement, in Novo Repartimento / Pará. As a result, the study estimated the carbon balance of an average productive unit in 2016 (baseline) and the potential for the mitigation of emissions in five projected scenarios, two of which were "business as usual" and three were improved scenarios, which include changes in agricultural practices, greater efficiency in land use and zero deforestation.

CARBON BALANCE BY THE COCOA, LIVESTOCK, AND FOREST SYSTEMS FOR THE 2016 BASELINE AND THE DIFFERENT PROJECTED SCENARIOS.

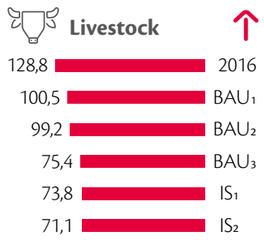


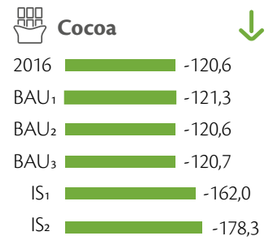
Carbon Balance

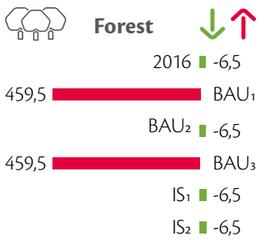
GHG emissions per year (tCO2e)



- **2016 Scenario**
- **BAU$_1$ -** Deforestation and reduced agricultura productivity.
- **BAU$_2$ -** Reduced productivity and zero deforestation.
- **BAU$_3$ -** Deforestation and better agricultural management.
- **Improved Scenario$_1$** - Improved agricultural management.
- **Improved Scenario$_2$** - Improved agricultural management and pastureland restoration.







Source: *Solidaridad, 2018.*

Reduction in scale of GHG emissions in the sector

From the scenarios outlined by the study, the following question emerges:

What would be the impact of mitigating GHG emissions if the improved management practices for small-scale livestock breeding expanded within the Amazon biome?

In the Tuerê context, the estimates indicated that the implementation of certain management practices, such as the improvement of pasture conditions, increase in fertility rate, increase in herd stocking rate, and decrease in deforestation can lead to a ***reduction of carbon emissions of 75% per kg of weaned calf.*** According to calculations, ***the emissions from livestock can be reduced from 4.8 tCO2e / ha / year to 2.7 tCO2e / ha / year,*** demonstrating, in an unprecedented manner, the potential of family farming as a GHG sink in the Amazon and of contributing to the national emission reduction targets.

Management practices for low carbon livestock

> *" The way it has been carried out (the livestock), the farmer has losses. I do not think he can sustain himself only with the 50 hectares for cattle ranching in the way he has been working on it, extensive. If he changes to the other model, the one we are building now, it is another reality: he can produce more, earn more, and have more cattle in a smaller area; increasing quality by bringing technology."* ***(Pedro Santos, Solidaridad's technician)***

In order to reduce GHG emissions in the small-scale production units in the Amazon, the model to be replicated through the ILH proposes the improvement and/or the implementation of agricultural practices concerning each of the identified factors:

I. Improvement of soil and pasture conditions

- Management of soil fertility
- Proper choice of fodder
- Implementation of rotational grazing

> *"To yield the pasture, I had to build more paddocks. To improve conditions, make mor e divisions. Because then, it will take longer to use the whole pasture, for the animal to walk around the entire pasture. He'll stay in a small place and make better use of the pasture. "* ***(BNL, farmer of Novo Repartimento / PA)***

II. Increase in the stocking rate

- Maintenance of the balance between the animal stocking rate and the mass forage rate.

III. Increase in fertility rate

- Improvement of animal nutrition
- Establishment of a breeding season
- Detection of the heat of the matrices
- Adequate sanitary control

Technical Challenges for scaling low carbon Livestock

Infrastructure

- Absence of a continuous and qualified network for technical assistance for an integrated action covering environmental, social and productive aspects, and capable of operating in different production chains.
- Difficulty to access services and inputs due to poor road conditions and the lack of a commercialization network in remote locations

Good agricultural practices

- Inadequate animal nutrition practices
- Inadequate production planning and management
- Adaptation of the practices to the reality of the Amazonian family farmers

Research and dissemination

- The necessity of strengthening the network for scientific research directed to family farming
- Limited existing technological diffusion network

Public-private arrangements and funding

- Lack of institutional arrangements for sustainable and low carbon production
- The need for private sector involvement in initiatives that contribute to legal compliance at all levels of the production chain

Benefits of ILH for the Livestock Value Chain

The Sustainable Livestock Working Group (GTPS) has identified the potential benefits of implementing the ILH for each link of the livestock value chain:

Supplies and Services
- Increase and durability of the consumer market

Productive sector
- Improvement in production quality
- Improvement in management
- Increase in profitability
- Ensure the continuity of the production system

Civil society
- Endorsement of socioeconomic development and environmental conservation

Retail and Restaurants
- Improvement of the quality of the products offered to consumers
- Lower risk concerning the legality of the origin of the raw material
- Lower risk associated with environmental and labour issues

Financial Institutions
- Higher guarantees of debt payments
- Lower risks associated with environmental and labour issues

Industries
- Improvement in the quality of the raw material offered
- Lower risk of losses
- Lower risks concerning the legality of the origin of the raw material
- Lower risks associated with environmental and labour issues

Perspectives for the future of the ILHs

The study has identified that small-scale livestock has excellent potential to contribute to the mitigation of GHG emissions at the national level. In this context, the ILHs, through a systemic and structured look at the existing knowledge, constitute as an accessible intervention strategy for the small-scale livestock farmer in the Amazon.

From a business point of view, the implementation of ILHs is capable of creating a favourable environment for business development and attract new investments into the territory. Moreover, the establishment of partnerships with the public and private sectors, as well as the inclusion of other production chains, is essential to enable the economic, inclusive and environmentally balanced development in the context of family farming. Therefore, we conclude that it is possible and urgent to promote low-carbon livestock breeding in the Amazon from solid and efficient institutional arrangements capable of guaranteeing large-scale results.

To access the complete study and the references, visit:

https://pecuariadecriasustentavel.wordpress.com/os pequenos-grandes

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