Comprehensive analysis of intensive silvopastoral systems (SPS) (Colombia - case studies)

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agri benchmark

Evora, Portugal
27.09.2016
Assessment conducted by four institutions

**agri benchmark** Network
Thünen Institute of Farm Economics

**CIPAV** Centre for Research on Sustainable Agricultural Production Systems

**FEDEGAN**
Colombian Cattle Ranching Farmers Association
Economic studies Unit

**World Animal Protection**
1. Developing the assessment – Describing the regions
1. Beef Finishing
2. Dual Purpose
3. Dairy
4. Dairy
5. Cattle Breeding

Colombia

Reference Scenario - baseline Vs. New Scenario after intervention

Economic Animal Welfare Social Impact Environmental
Content

1. Methodological approach

2. Preliminary results

3. Conclusions and next steps
Silvopastoral systems

Nutrients

Land

Water

Natural Resources Used

Reference Scenario - baseline Vs. New Scenario after intervention

Economic → Animal Welfare → Social Impact → Environmental
1. Methodological approach

- **Gathering information**
  - Farm records
  - SPS project
  - CIPAV Research activities

- **Defining baseline scenarios**
  - Farm visits
  - Expert panels (Farmers, advisors, researchers)
  - Historical farm data on SPS investments

- **Modelling SPS adoption**
  - Historical farm data + expert panel
  - External quality check protocol
  - FEDEGAN Economic Studies Unit
  - AW expertise (Prof. Broom, Cambridge Univ.)

- **Preliminary results**
  - Animal and forage production
  - Production systems economics
  - Animal Welfare
  - Environment
1. Methodological approach

- Constant beef price and weaners price
- Constant milk price
- Constant variable cost/unit

1. We have been modeling ISPS
2. Using historical data
3. Validated by advisors, researchers and farmers
4. Crosschecking with regional and national studies

Baseline

Reference situation

Period of SPS adoption and investments

Ten years

Baseline
Year 1
Year 2
Year 3
Year 4
Year 5
Year 6
Year 7
Year 8
Year 9
1. Methodological approach – Challenges

a. Conventional grazing vs. SPS grazing

b. Overlapping animal production on conventional and SPS

c. Balancing: feed requirements and rations, # of animals and forage + grass production

d. Agroforestal production (timber)
1. Methodological approach – Challenges

SPS production

Conventional grazing

Year 1 Year 2 Year 3 Year 4 Year 10

Forage production

Animal requirements

Number of animals

Feeding rations

Stocking rates

Improved animal production performance

Timber production
1. Methodological approach - Challenges

### 3. Land use - planted ha

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Content

1. Methodological approach

2. Preliminary results

3. Conclusions and next steps
Impact of intensive silvopastoral systems

**Reference Scenario - baseline**

- 1. Beef Finishing
- 2. Dual Purpose
- 3. Dairy

**New Scenario after intervention**

- 4. Dairy
- 5. Cattle Breeding

**Vs.**

- Economic
- Animal Welfare
- Social Impact
- Environmental
### Investment costs for SPS

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* incl. soil preparation, fertilisation, plant protection, irrigation
Impact of intensive silvopastoral systems

Reference Scenario - baseline vs. New Scenario after intervention

1. Beef Finishing
2. Dual Purpose
3. Dairy
4. Dairy
5. Cattle Breeding

Feed production (tons dry matter per ha)

Land productivity (kg meat or milk per ha)

- Economic
- Animal Welfare
- Social Impact
- Environmental
Reference Scenario - baseline

Vs.

New Scenario after intervention

Economic

Animal Welfare

Social Impact

Environmental
**Reference Scenario - baseline**

Vs.

**New Scenario after intervention**

**Economic** 🌐 **Animal Welfare** 🐿️ **Social Impact** 🌈 **Environmental** 🌿
Reference Scenario - baseline Vs. New Scenario after intervention

Economic → Animal Welfare → Social Impact → Environmental
Cash flow requirements during the period of adoption

- Baseline
- Year 1
- Year 2
- Year 3
- Year 4
- Year 5
- Year 6
- Year 7
- Year 8
- Year 9

La Luisa - Beef finishing
Petequi - Dual purpose
El Hatico - Tropical dairy
1. Methodological approach

2. Preliminary results

3. Conclusions and next steps
3. Preliminary conclusions

1. Results provide evidence for the ability of SPS to create ‘triple-win’ solutions: (a) Productivity and profitability gains (b) Environmental improvement © Animal welfare benefits

2. The overall uptake of SPS has been limited by the level of investments, access to capital, and investment risk.

3. As intensive SPS are management-intensive, capacity building (advisory services) is a key component of successful delivery.

4. Targeted investment early in establishment of SPS, and an effective capacity building program, can provide increased potential for success.

5. The benefits from such investment are clear and this is an area where international and local policy mechanisms, donors and governments can play a crucial role
3. Next steps

1. In order to better define critical periods and main cash flow needs, a detailed analysis of level of investment is required, as well as for risk evaluation.

2. At local level, will be necessary to increase coverage of case studies, where regional and production system differences and farmers reactions, can be measured and illustrated when adopting SPS.

3. It will be also essential to analyze the impact of financial and incentive measures, when adopting SPS.

4. At regional level (L. America), would also be important to increase coverage of analysis in order to compare other approaches of SPS (e.g. timber + livestock).
3. Next steps

SPS as a sustainable alternative for reducing deforestation in the The Amazonian region (Colombia)

Pictures have been taking during the field visits/CIPAV’s file
Improving natural resource use efficiency and profitability on a wider scale
México (12.000 has on SPS)
3. Next steps

Improving land use, combining complementary enterprises under SPS schemes

Argentina (forestry + beef cattle)
3. Next steps

Sustainable land use alternatives (WWF)
Colombia and Paraguay
(Palm oil / Soy bean vs. sustainable cattle ranching)
Thanks...

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Livestock Systems Manager
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Pictures have been taking during the field visits/CIPAV’s file