



Prioritizing climate-smart cattle farming practices and technologies for sustainable livestock production in Colombia's Orinoquia region

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Introduction

- ▶ The Orinoquia region in Colombia is home to diverse ecosystems, including forests and various agroecological zones, but extensive cattle ranching poses a significant challenge as it contributes to deforestation and threatens the region's valuable forest resources.
- ▶ Climate-smart cattle farming (CSCF) aims to increase productivity and income while enhancing resilience and reducing GHG emissions from cattle ranching.
- ▶ The assessment of CSCF integrates various variables including productivity, mitigation, adaptation, economic feasibility and ease of implementation in the Orinoquia.
- ▶ CSCF practices and technologies were evaluated and prioritized based on quantitative data collected from literature and consultation's with local producers and experts.

Methodology

The CSCF prioritization framework consisted of two phases:

Phase 1: Identification and evaluation of CSCF practices and technologies based on the literature and indicators definition.

- ▶ CSCF practices and technologies were ranked based on nine indicators grouped into five pillars: productivity, mitigation, adaptation, economic feasibility, and ease of implementation.

Table 1. Indicators evaluated by pillar

Pillar	Indicator	Unit
Productivity	Animal stocking rate	AU/ha
	Weight gain	kg/day
	Duration of practice evidence	yr
Mitigation	Enteric methane emission intensity	kg CH ₄ /kg WG /day
	Soil carbon stock	Ton C/ha/day
Adaptation	Forage production in high and low precipitation seasons	Kg DM/ha
Economic feasibility	Establishment costs	US\$/ha
Ease of implementation	Difficult implementation	-
	Producers' interest in specific practice/technology adoption.	-

AU: Animal unit of 450 kg. **WG:** weight gain. **Evidence time:** time that elapses between the adoption of a practice or technology and its impact on productive indicators such as daily weight gain and stocking rate. **Carbon stock:** first 50 cm of depth. **Establishment costs:** includes adaptation and preparation of soils, the establishment of pastures and legumes, tree planting, division of paddocks with stripes, installation of a livestock aqueduct, and replanting of trees. **TRM:** COP/US\$ 4,104 - Fx January-October 2022 according to Colombia's Central Bank. The scoring criteria for ease of implementation were based on two indicators: a) difficult implementation from 1 to 3: 1-2 difficult implementation, >2 and 3< intermediate ease of implementation, >3 easy implementation; and b) Level of interest assessed on a 1 to 3 scale: 1 little interest, >2 and 3< intermediate interest, >3 high interest.

Phase 2: Stakeholders' participatory prioritization.

- ▶ The assessment of practices and technologies was validated through local stakeholders consultation.
- ▶ Detailed characterization of promising CSCF practices and technologies.
- ▶ Ranking scale for CSCF practices and technologies: Low 1 to <1.5, medium-low 1.5 - <2, medium-high 2 - <2.5, and high 2.5 - 3. Assessments based on average value for each indicator.
- ▶ Identification of barriers and opportunities for scaled adoption.

Results

Farmers assign more weight to the pillars which impact the most in their particular context as follows. Productivity(22%), mitigation(11%), adaptation, (26%), ease of implementation(18%)and, economic viability(23%).

Scoring and final ranking of promising technologies by farmers were:

Table 2. List of prioritized CSCF practices and technologies.

Score	Ranking	CSCF practices and technologies
2.7	1	Intensive silvopastoral systems for browsing
2.7	2	Improved pastures plus rotational grazing
2.6	3	Grazing management based on sward height
2.4	4	Silvopastoral Systems - Fodder Banks
2.3	5	Strategic supplementation - Multinutritional block and silages

The intensive silvopastoral systems for browsing and the improved pastures plus rotational grazing represented the CSCF practices with the greatest productive, environmental, and economic benefits (Figure 1 and 2).

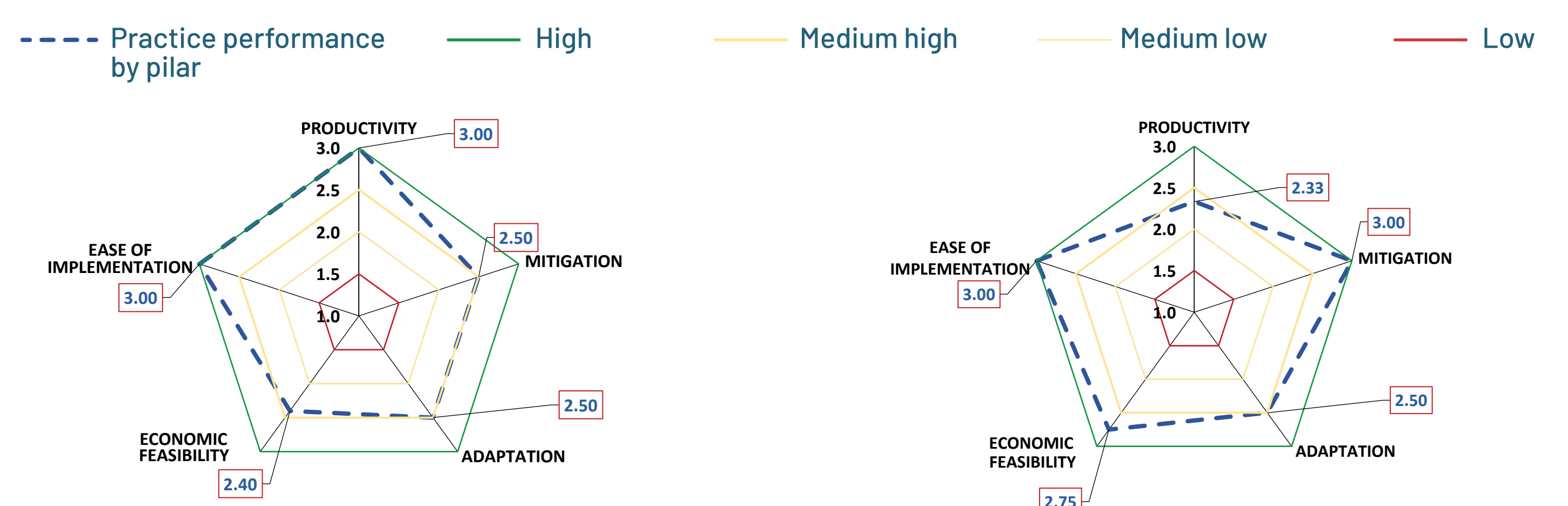


Figure 1. Intensive silvopastoral systems for browsing

Figure 2. Improved pastures plus rotational grazing

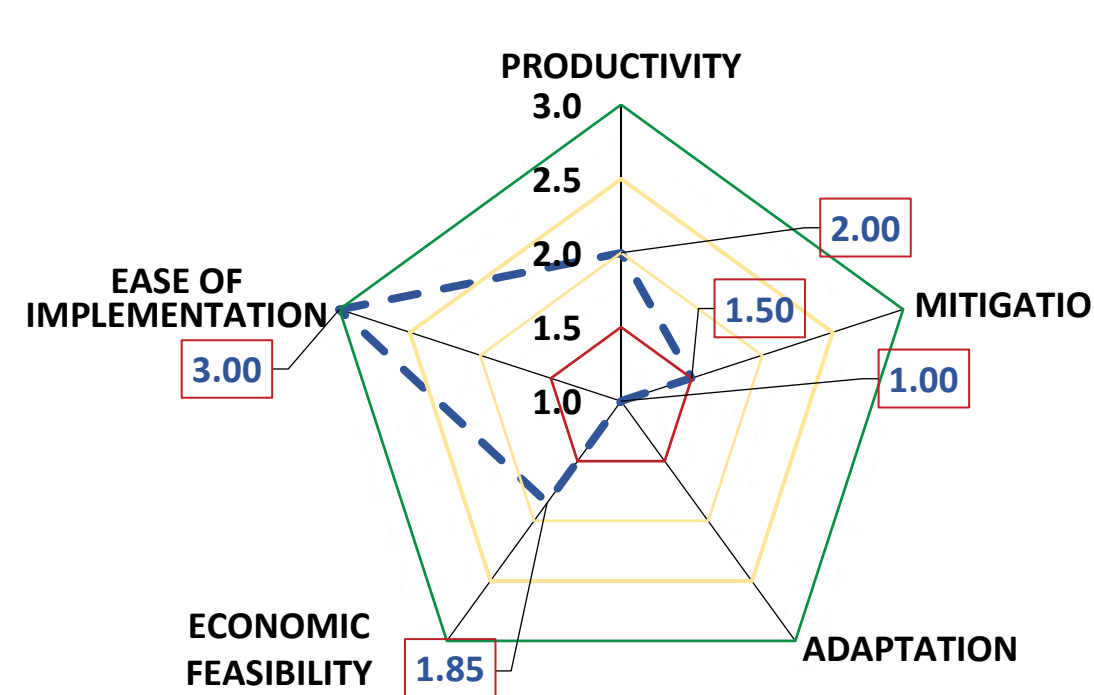


Figure 3. Traditional livestock management

Traditional livestock management in the Orinoquia region (Figure 3), which is characterized by extensive grazing management with low stocking rates (0.5 -1 AU/ha), resulted in the most easily accessible and economical alternative for small producers but represents medium-low levels of productivity, higher GHG emissions and low adaptation to climate change. Score: 1.8, Ranking: 11.

Conclusions

- ▶ The assessment conducted under a stakeholder participation approach facilitates alignment of these results with local policies, and priorities of stakeholders including public and private actors and representatives of the civil society.
- ▶ This ranking exercise aims to allow local producers to take better informed decisions related to their technology adoption cycle.
- ▶ Promoting CSCF practices and technologies in the Orinoquia region of Colombia is paramount to ensure a sustainable livestock activity

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