



Tropentag, September 14-16, 2022, hybrid conference

“Can agroecological farming feed the world?  
Farmers’ and academia’s views”

## Effects of adopting improved forages on poverty alleviation and climate risk reduction in cattle systems: Evidence from Colombia

KAREN ENCISO<sup>1</sup>, AURA BRAVO<sup>2</sup>, DIEGO ALVAREZ<sup>3</sup>, STEFAN BURKART<sup>4</sup>

<sup>1</sup>*The Alliance of Bioversity International and the International Center for Tropical Agriculture (CIAT), Tropical Forages Program, Colombia*

<sup>2</sup>*The Alliance of Bioversity International and the International Center for Tropical Agriculture (CIAT), Tropical Forages Program,*

<sup>3</sup>*The Alliance of Bioversity International and the International Center for Tropical Agriculture (CIAT), Performance, Innovation and Strategic Analysis for Impact,*

<sup>4</sup>*The Alliance of Bioversity International and the International Center for Tropical Agriculture (CIAT), Tropical Forages Program, Colombia*

### Abstract

Cattle play an important role in rural livelihoods and the economies of developing countries, especially regarding food and nutrition security and producer welfare. Cattle support poverty alleviation by building resilience and strengthening the livelihoods of large numbers of rural people: over half a billion poor farmers depend on cattle globally. At the same time, the cattle sector is one of the major contributors to greenhouse gas emissions but is also heavily affected by the impacts of climate change, often disrupting productivity primarily by reducing feed crop and forage quality and availability as well as water availability. In this sense, introducing improved forages as cattle feed in the tropical cattle systems has demonstrated a significant reduction of climate change-related risks on cattle farms, such as reduced feed insecurity during dry seasons and reduced enteric fermentation, ultimately improving producer welfare and reducing poverty. This study aims at measuring the impacts of adopting improved forages in cattle systems in three Colombian cattle regions: Caribbean coast, Orinoquia, and Amazon. We use Propensity Score Matching to assess the contribution of improved forages on producer welfare (Progress out of Poverty Index (PPI) and Household Dietary Diversity Score (HDSS)). The analysis is based on primary data obtained through a multistage sampling procedure with 1,039 cattle households in the study regions. Our results show that the expected probability of falling under the different poverty lines is being reduced by 2 to 7% among the adopters of improved forages. Regarding the HDSS indicator, no significant differences were found between adopters and non-adopters. The variables cattle herd size, total farm size, pasture management, and membership in a farmer association are significantly related with the adoption decision. The results suggest a causal relationship between the adoption of improved forages and poverty reduction. These findings contribute to the roadmap of sustainable intensification of cattle systems in Colombia and highlight the need for increased investments in the dissemination of improved forages and the design of incentives that help to foster adoption levels, taking advantage of potential synergies among the agendas of cattle transformation and poverty reduction among in the cattle sector.

**Keywords:** Climate change, improved forages, livestock, poverty reduction, resilience, sustainability