Tropentag, September 11-13, 2024, hybrid conference

"Exploring opportunities …
for managing natural resources and a better life for all"

Economic impact of *Canavalia brasiliensis* hay supplementation in beef cattle farming in the Colombian Caribbean

John Jairo Junca Paredes[1], José Edwin Mojica Rodríguez[2], Edwin Castro Rincón[2], Mauricio Sotelo[1], Stefan Burkart[1]

[1] *The Alliance of Bioversity International & CIAT, Trop. Forages Program, Colombia*
[2] *AGROSAVIA, Research Group on Microbiology and Animal Nutrition in the Tropics, Colombia*

Abstract

Improving cattle systems stands as a pivotal measure to increase the income and livelihoods of Colombia's most marginalised rural communities and to enhance environmental sustainability. The present case study focuses on providing an economic analysis of sustainable production alternatives for the traditional cattle system in the Caribbean region of Colombia, which is characterised by minimal investment in pastures and limited feed offer and diversity for cattle during the dry season. The system is typically reliant on monoculture pastures, specifically *Bothriochloa pertusa* (Colosuana grass) and extensive cattle ranching predominates, leading to agricultural frontier expansion. The intervention strategy targeted pasture improvement measures and a supplementation with hay from the legume *Canavalia brasiliensis* at varying inclusion levels (IL) of 0.5 %, 1.0 %, and 1.5 % of dry matter according to the animal liveweight. The technical and productivity outcomes of these interventions proved positive, prompting an evaluation of their economic feasibility. Employing cash flow analysis, profitability metrics such as Net Present Value (NPV) and Internal Rate of Return (IRR) were calculated within a probabilistic framework, enhancing the robustness of estimates and highlighting key variables impacting economic gains. The findings demonstrate profitability across all production alternatives. Notably, profitability surged substantially from the traditional system, with the average IRR increasing from 10.19 % to 16.74 %, 16.85 %, and 17.39 % for the three intervention scenarios, respectively. The most promising alternative is supplementation at the 1.5 % IL, where milk productivity accounted for 73.4 % of profitability. Beyond enhancing productivity and mitigating environmental impacts, the integration of legumes helps in soil restoration and reduces the ecological footprint of cattle farming. The identified benefits of such technological change underscore the imperative of fostering the adoption of new practices among small-scale cattle farmers.

Keywords: Economic evaluation, environmental impact reduction, legumes, milk productivity

Contact Address: Stefan Burkart, The Alliance of Bioversity International & CIAT, Trop. Forages Program, km 17 recta Cali-Palmira, 763537 Cali, Colombia, e-mail: s.burkart@cgiar.org