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Ex-Ante Evaluation of the Economic Impact of Adopting Improved Forages in the Colombian Eastern Plains

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Abstract

Forage-based cattle systems play a key role in rural economies of developing countries in terms of food security and poverty alleviation. However, they are often related to being a major cause of negative environmental impacts by contributing to increased greenhouse gas (GHG) emissions, land degradation, and reduction of biodiversity. As a result of that, large amounts of resources have been allocated to research and development (R&D) in forage material improvement and a broad range of improved materials were released showing superior characteristics in terms of productivity and environmental impacts compared to native or naturalized materials. However, data are still scarce on both the economic and environmental "yields" of investments in R&D activities around improved forage materials. Through an *ex-ante* evaluation, this study aims at estimating the potential "yields" of the investment in R&D and diffusion activities of the improved forage variety *Brachiaria brizantha* 26124 and the forage hybrid *Brachiaria* Cayman in the Eastern Plains region of Colombia. The analysis used two evaluation methodologies: a) to determine the impact on individual welfare, a discounted free cash flow model and a Monte Carlo simulation were carried out with the simulation software @Risk, and b) to determine the potential social benefits of the technologies and their distribution among producers and consumers, an economic surplus model was developed and a risk analysis was carried out considering changes in adoption rates, productivity levels and probability of success. Data is currently being analysed but preliminary results suggest that both evaluated materials present important economic benefits for the study region and result in a positive return on the investments made in R&D activities. The results will be a key input for decision making processes among public and private institutions involved in funding and executing the development of improved forage materials and will help to set research priorities and resource allocation.

Keywords: Agricultural research, decision making, economic surplus model, funding allocation, priority setting, technological change

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