

## Introduction

- Increase in global population and changes in people's lifestyles and diets generate high demand for animal protein sources.
- Cattle production systems in Colombia are mostly extensive and inefficient.
- The International Center for Tropical Agriculture (CIAT) works on sustainable intensification (SI) of livestock systems through improving their efficiency and productivity while mitigating negative environmental effects (e.g. deforestation, greenhouse gas emissions).
- SI of livestock systems can be achieved through selection and breeding and subsequent adoption of improved forages, which can either be used as stand-alone technology or be part of a (e.g. silvopastoral) system.
- Silvopastoral systems (SPS) have shown excellent results in terms of higher biomass production, higher animal stocking rates, better nutritional quality and positive environmental effects.



**Picture 1.** Cattle grazing *Brachiaria* Hybrid, CIAT BR02/1752 cv. Cayman and *Leucaena diversifolia*

## About the *Brachiaria* Hybrid Cayman

- Cayman belongs to the *Brachiaria* Hybrid generation developed by CIAT.
- It is a product of interspecific crosses between *B. brizantha*-*B. decumbens*-*B. ruziziensis*.
- It is characterized by excellent palatability, high nutritional quality and water-logging tolerance.

## Conclusions

- Multi-strata silvopastoral systems, such as the one evaluated in TIII, can be an excellent alternative for improving the productive parameters of cattle farming
- In addition, they can provide valuable environmental benefits (e.g. reduce greenhouse-gas emissions)
- The results are valuable inputs for decision makers in Colombia who are strongly promoting the establishment of silvopastoral systems
- Further research is needed in order to understand the economic and environmental implications of establishing silvopastoral systems at a larger scale

## Acknowledgements

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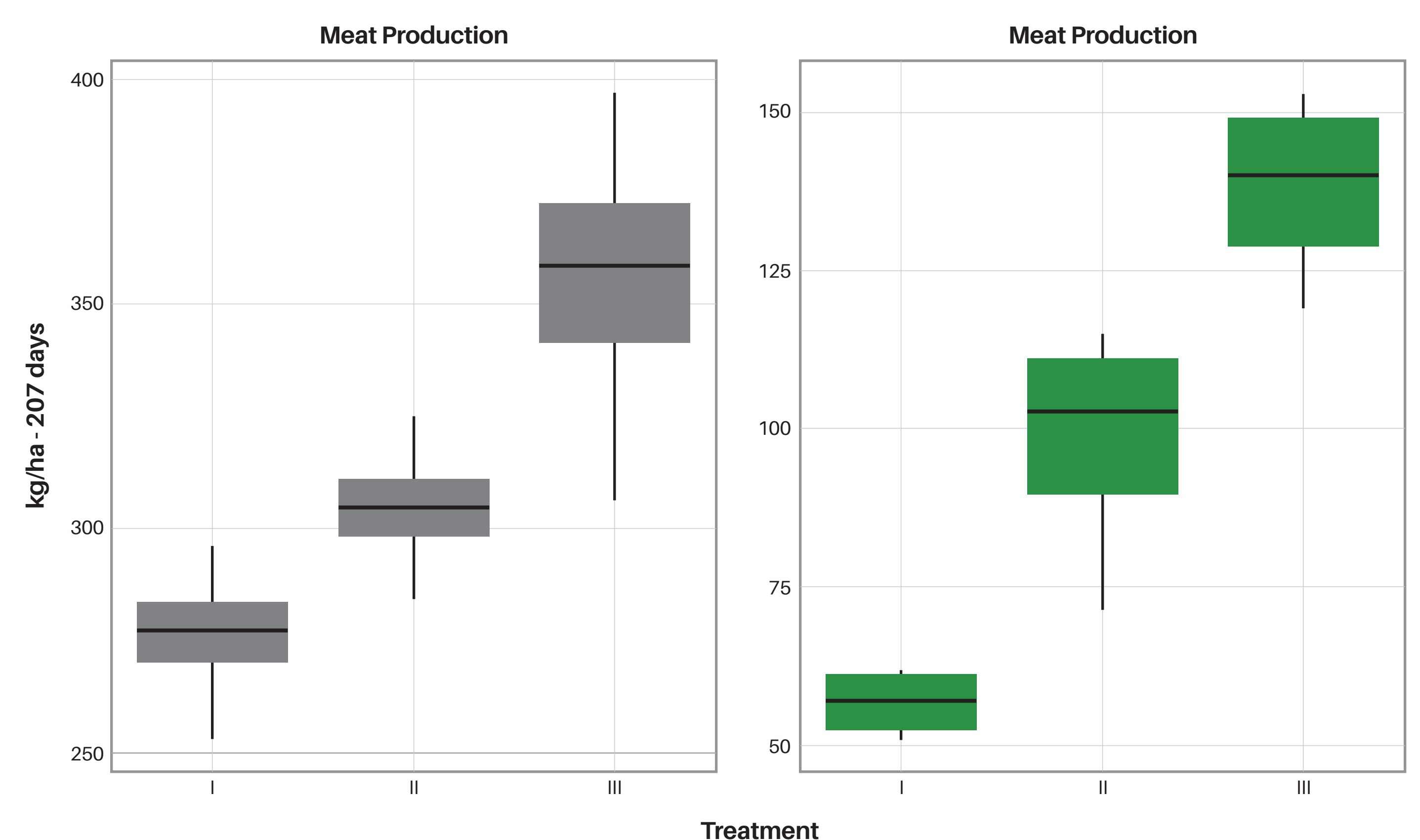
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## Methods

- At CIAT's headquarters in Cali, Colombia, we evaluated the live weight gains (kg/ha) of twelve steers (age: two years) randomly distributed in three groups, applying one grazing treatment to each group
- The three treatments under evaluation were:
  - TI - *Brachiaria* Hybrid, CIAT BR02/1752 cv. Cayman
  - TII - cv. Cayman plus *Canavalia brasiliensis* CIAT 17009
  - TIII - cv. Cayman plus *C. brasiliensis* CIAT 17009 plus *Leucaena diversifolia* ILRI 15551.
- In an experimental randomized complete block design, each treatment was applied on plots of 3,300 m<sup>2</sup> with three repetitions during a period of seven months.

## Results

- Average live-weight gains per animal under grazing:
  - TIII (552 kg/ha) > TII (392 kg/ha) > TI (227 kg/ha)
- Average stocking rates (LU=450kg) per hectare:
  - TIII (3.2; 1,423 kg/ha) > TII (2.7; 1,219 kg/ha) > TI (2.5; 1,104 kg/ha)
- Multiple comparisons with Duncan tests show significant differences among the three treatments, being TIII the best performing ( $p < 0.005$ ), followed by TII and TI.



**Figure 1.** Meat production (kg/ha<sup>-1</sup>/207 days of evaluation) and weight gain (kg/animal).



**Picture 2.** Cattle grazing on a silvopastoral system