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Territorial sustainable intensification packages for cattle systems in Colombia and Argentina

ARGENTINA, COLOMBIA, HONDURAS



Webstory

Technological solution

The gap between the kilograms of beef these systems take off a hectare today and what their forage base would allow is a wide one, and closing it by loading more animals onto the same management raises the territory's absolute emissions instead of lowering emissions per kilogram. On top of that gap sit technologies rarely adapted to the soil, climate, and socioeconomic conditions of each site, and mitigation evidence that stops at the experimental plot or rests on generic emission factors, without answering whether the package performs on a commercial farm, and at what cost. Each package starts from the actual constraints of its environment, whether waterlogging and salinity, water scarcity and remaining woodland, or fragile soils under intensive grazing. Measuring methane, nitrous oxide, and soil carbon directly at each site replaces default factors with locally derived ones, and scaling on commercial farms closes the loop with an assessment of costs, gross margin, and return.

Technological description

The package pulls grazing, fertilization, forage species, supplementation, and health and reproductive management into one sequence of decisions, and its contents shift from one environment to the next with soil, water regime, and forage supply. Most of its practices are already known: what is new is combining them, adapting them to the territory, and quantifying them together. In the Flooding Pampa it links zone-based management, fertilization and forage species choice, real-time forage monitoring, a stocking rate of 2.0 cow equivalents per hectare, fixed-time artificial insemination, and first breeding at 15 to 18 months. In the Dry Chaco, warm-season Chloris gayana pastures, fertilized or not, and a silvopastoral system with white carob, under rotational grazing and supplementation. In the Orinoquía, an agrosilvopastoral arrangement or improved pasture, adapted grass and legume mixtures, stocking matched to forage supply, supplementation, and health and reproductive care.

Impacts and results

At least 2,500 hectares in the Flooding Pampa, 500 in the Dry Chaco, and 50 model hectares in the Orinoquía, together with the herds they carry, will come under the management validated for each environment and set against a reference management run in parallel on the same site. The technology readiness level (TRL) of each package will advance on that commercial performance, documented in technical notes covering methodology, the baseline measured on site, and verifiable indicators. The variables committed cover animal productivity per unit area, carrying capacity, forage and tree biomass, and beef production per hectare; emissions intensity and absolute emissions, reported separately; enteric methane per animal; and soil organic carbon stocks with their uncertainty interval. A gross margin higher by at least 10% and a regional monitoring, reporting, and verification protocol as a public good are also expected.

+ 10 %
Expected gross margin gain on commercial farms

2000
Expected individuals trained

3
Territorial technology packages validated with a TRL gain

3
Expected scientific articles published

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