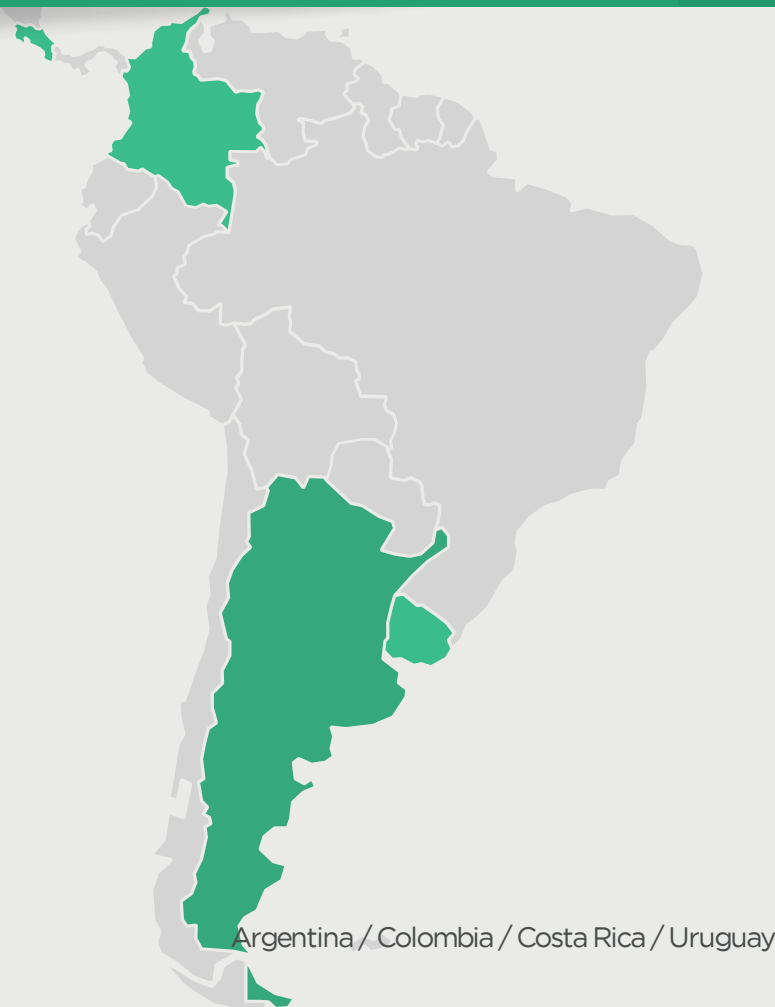




Satellite monitoring of quantity and quality of available biomass in pastoral livestock systems

Pastoral farming contributes 46% of GDP and is key to food and social security in LAC. Tools that improve their efficiency are needed to increase their profitability and sustainability.



Remote sensors allow monitoring large areas and have information in almost real time

The implemented initiative

- i) Generate and calibrate real-time prediction models of forage quantity and quality from remote sensors for relevant forage resources in 4 LAC countries with cold, temperate, subtropical and tropical, semi-arid and humid climates,
- ii) Validate the models generated in demonstration units

- and commercial farms, and
- iii) Manage the knowledge generated, training both technicians and producers as well as those responsible for national GHG inventories in order to ensure technology transfer.

Lower the cost of estimating in real time and with adequate precision the quantity and quality of forage in pastoral livestock systems through a satellite tool

The technological solution

A platform comprised of the national agricultural research and innovation institutes and other actors in the sector will be formed which, thanks to their regional presence and the extension, transfer and technological

development activities that they carry out, will be key to achieving the objective and reaching all beneficiaries: family and business producers, livestock advisors, software developers and public officials.

Satellite monitoring project workflow

Knowing the quantity and quality of forage is key to sustainable pastoral farming

We propose to generate local information to estimate them through satellite data for the main forage resources of LAC

Field measurements

6500 forage quantity and quality data



Satellite data

Optical and microwave sensors, auxiliary information



Forage quantity and quality prediction

Machine learning
Radiative transfer models
Ecophysiological models

Link with other research groups



Diffusion and transfer

Metadata
Dissemination material
Dissemination and training conferences and workshops
Contact with Ag-tech companies

Validation and implementation in production systems

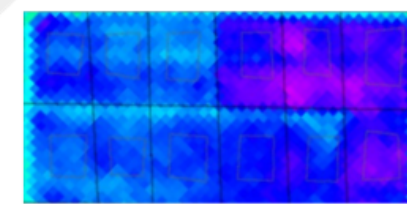
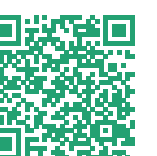


Figure: satellite estimation of available forage for a temperate pasture in the province of Buenos Aires (Argentina)

Link with extension projects and productive environment



MÁS INFO



Results

- 1) A protocol, a cell phone application and a website were generated to record ground truth (biomass and forage quality measured in the field). Currently, there are more than 800 ground truth-satellite measurement pairs for various forage resources. As data continue to be incorporated, forage quantity and quality prediction models will be calibrated. Models will be extrapolable to the range of situations evaluated.
- 2) The accuracy of the prediction models will be tested

at system scale. Demonstration modules of the experimental stations belonging to the participating institutions and 12 commercial farms that participate in the associated projects that promote the adoption of technologies in pastoral livestock systems will be used.

- 3) Dissemination and training activities will be carried out to ensure developed products reach potential users and that they are able to use them properly.

3 PhD thesis in progress

79 Researchers and technicians involved in biomass sampling

8

1 App for recording and systematizing data

Main donors



Participating Organizations

