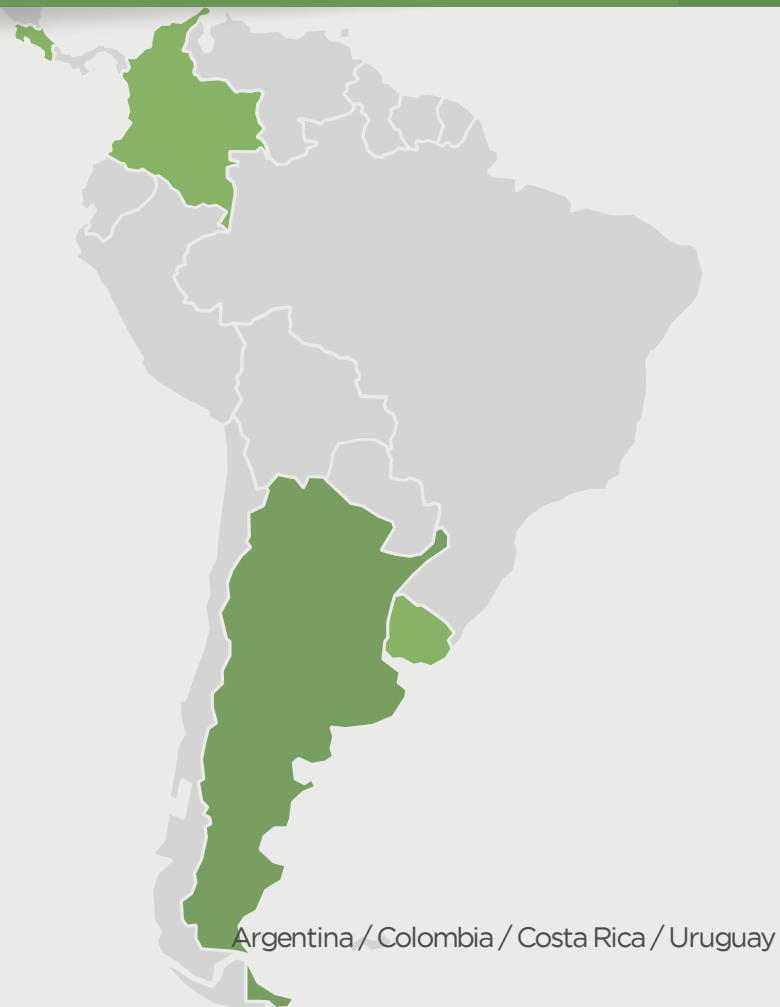# Satellite monitoring of quantity and quality of available biomass in pastoral livestock systems

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.

Argentina / Colombia / Costa Rica / Uruguay

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

The implemented initiative

It is proposed i) to generate and calibrate prediction models in real time 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 made up 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 activities of extension, transfer and development of technology that they carry out, will be key to achieving the objective and reaching everyone the 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
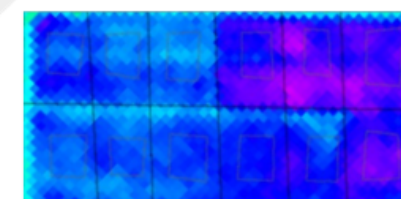
Diffusion and transfer
Metadata
Dissemination material
Dissemination and training conferences and workshops
Contact with Ag-tech companies

Forage quantity and quality prediction
Machine learning
Radiative transfer models
Ecophysiological models

Validation and implementation in production systems

Forage (Kg/ha)
4000
3000
2000
1000
150m

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

79 researchers and technicians.

Link with other research groups

Link with extension projects and productive environment

Results

1) A large database of geo-referenced field measurements will be generated. Correlations with the available remote information will be analyzed. It is expected to generate more than 6,500 pairs of ground truth-satellite measurement for the main forage resources of the four countries. The expected results are forage quantity and quality prediction models calibrated and validated with local data, capable of being extrapolated 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 that the developed products reach potential users and that they are able to use them properly.

MÁS INFO

Main donors

Participating Organizations

FONTAGRO