Improving the sector processes with the MApping of Sugarcane Harvest MASH

Development of an innovation based on radar satellite imagery to monitor the sugarcane harvest

Légende photos © Nom/CIRAD

➢ CHALLENGES

The sugar sector often lacks geographic information on the sugarcane fields to optimize the crop production and the delivery to the mills. In particular the harvest status of the fields is seldom accurately known in countries where the production is in the hand of thousands of growers. Yet this information is very useful to organize the logistics of the harvest and maximize the quality (sugar content) of the cane. This issue is well known under the name of "harvest to crush challenge".

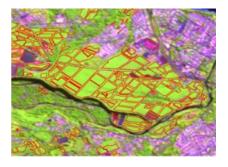*Légende photos © Nom/CIRAD*

➢ CIRAD'S TECHNOLOGY

MASH uses a signal processing algorithm applied to Synthetic Aperture Radar (SAR) images which can be used when optical sensors are inoperative (clouds, haze). SAR images time series are used by the team at Reunion Island to monitor sugarcane harvest by identifying the harvested fields and computing the ratio of cut/uncut areas at different geographical scales. The main innovation is based on the analysis of the signal backscattering, which is sensitive to the development of the crop:
1) It enables mapping of the sugarcane fields and we believe it can be quite powerful to optimize the harvest logistics
2) In addition, based on this information, we propose to confirm & adjust during the campaign the harvest forecast, to optimize workforce and inputs.

➢ CIRAD
IN A NUTSHELL

CIRAD is the French agricultural research and international cooperation organization working for the sustainable development of tropical and Mediterranean regions. With over 100 countries, it works to generate new knowledge, support agricultural development, and contribute to the debate on the main global issues concerning agriculture, food and rural territories. It has a staff of 1650, including 800 researchers. Sugar cane is one of the tropical supply chains in which it specializes.

Visit Cirad website:
www.cirad.fr

MASH

Development of an innovation based on radar satellite imagery to monitor the sugarcane harvest

➢ CONTACTS

info-products@cirad.fr

pierre.todoroff@cirad.fr

➢ THEY ARE DEVELOPING THIS INNOVATION

Pierre Todoroff and his team of Aida Research Unit based at Réunion Island

http://ur-aida.cirad.fr/

The team works on an original approach which consists in coupling agronomic model and geographical information, within information systems, to lead to solutions applied for the sugarcane sector.

➢ WHAT WE ARE OFFERING

- Technology transfer to a R&D service of sugarcane processor
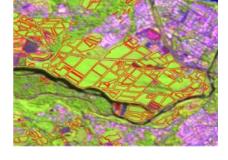- Technology transfer to an imagery service operator

➢ PUBLICATIONS & REFERENCES

Baghdadi N., Boyer N., Todoroff P., El Hajj M., and Begue A., 2009. Potentiel of SAR sensors TerraSAR-X, ASAR/ENVISAT, and PALSAR/ALOS for monitoring sugarcane crops on Reunion Island. Remote Sensing of Environment, vol.113, Issue 8, pp. 1724-1738.
http://publications.cirad.fr/une_notice.php?dk=549410

Mulianga B, Bégué A, Clouvel P and Todoroff P., 2015**.** Mapping Cropping Practices of a Sugarcane-Based Cropping System in Kenya. Remote Sensing Journal. ISSN 2072-4292. http://www.mdpi.com/journal/remotesensing

Légende photos © Nom/CIRAD

Légende photos © Nom/CIRAD