Soil spectral signatures for sugarcane fertiliser recommendations through an adapted soil typology

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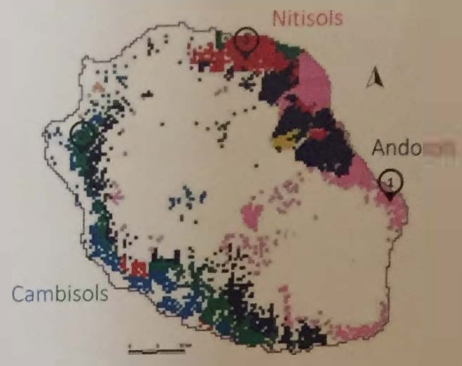
CONTEXT

- Sugarcane sector is a major pillar of Réunion Island economy
- SERDAF: a tool for sugarcane nutrient management improvement
- SERDAF: Expert system based on soil types and soil fertility assesment
- Need to update the soil map to improve the nutrient management

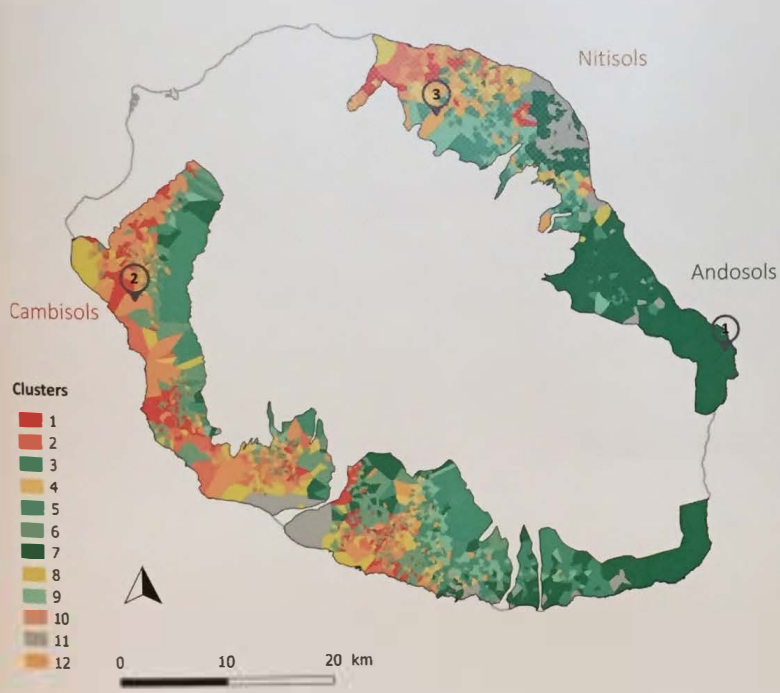


Soil classification used on SERDAF

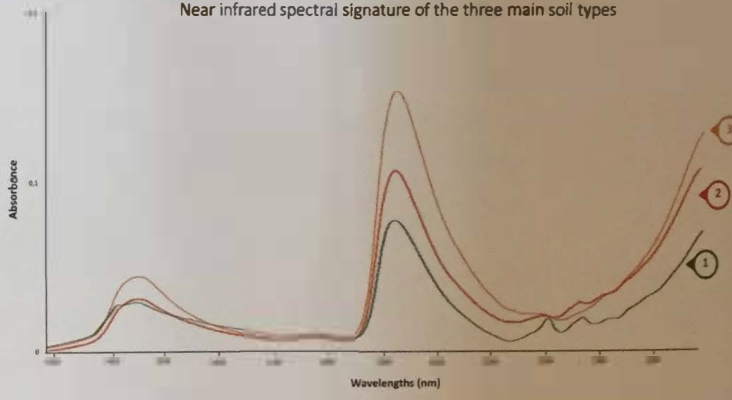
INNOVATION: USE OF SOIL INFRARED SPECTRA TO UPDATE THE SOIL MAP

- 3500 soil samples → Location, near infrared (NIR) soil spectra, soil chemicals properties, mineralogy

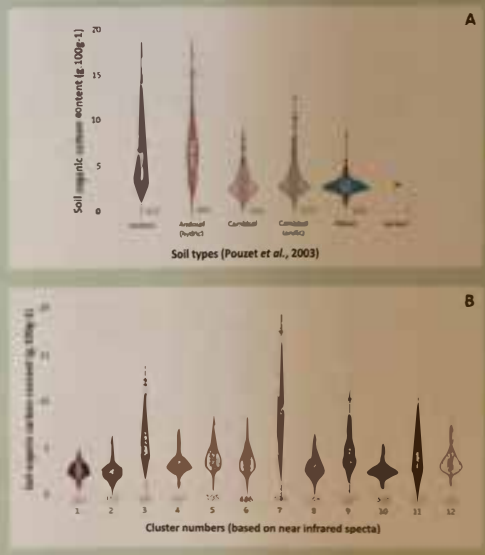
Sketch of Réunion Island soil map updated by NIR spectra clustering



Near infrared spectral signature of the three main soil types



Density of soil organic carbon content (gC.100g soil^{-1}, 0-30 cm layer) according to the curent (A) and the proposed (B) soil classifications



PERSPECTIVES

SERDAF N and P fertiliser recommendations could be improved by the update of (Ph.D of M. RAMOS, 2018-2021):

PHOSPHORUS
- Soil sorption capacities

Soil map

NITROGEN
- Mineralization coefficient
- Use efficiency coefficient