



High SOC stocks under sugarcane crops on volcanic soils of Reunion island



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Agricultural soils can play a crucial role in Soil Organic Carbon (SOC) sequestration according to the '4 per 1000' initiative

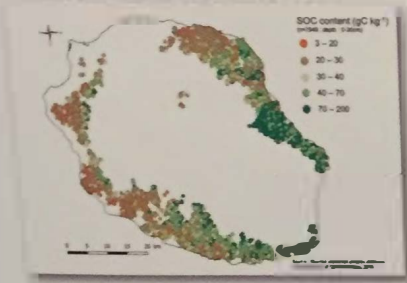
As high carbon content soils, tropical volcanic soils of Reunion island highlight the importance of "carbon hotspots" to study soil organic carbon (SOC) sequestration in order to face the challenges of climate change and food security



GEOREFERENCED DATA ON SOC CONTENTS UNDER SUGARCANE CROPS

A LARGE SOIL ANALYSIS DATABASE : more than 20 000 soil samples from sugarcane plots analysed since 1993

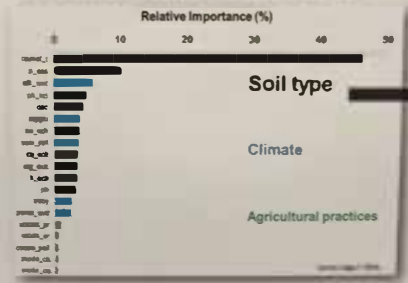
SPATIAL ANALYSIS



SOC content map under sugarcane crops

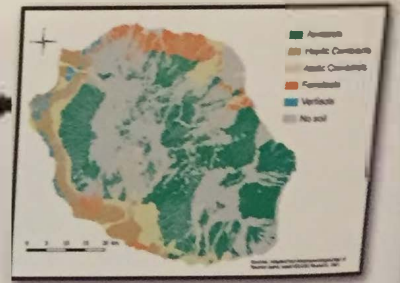
➔ High variability of SOC contents

DATA MINING ANALYSIS



Boosted Regression Tree of SOC content under sugarcane crops

➔ Soil type, the main driver of SOC content

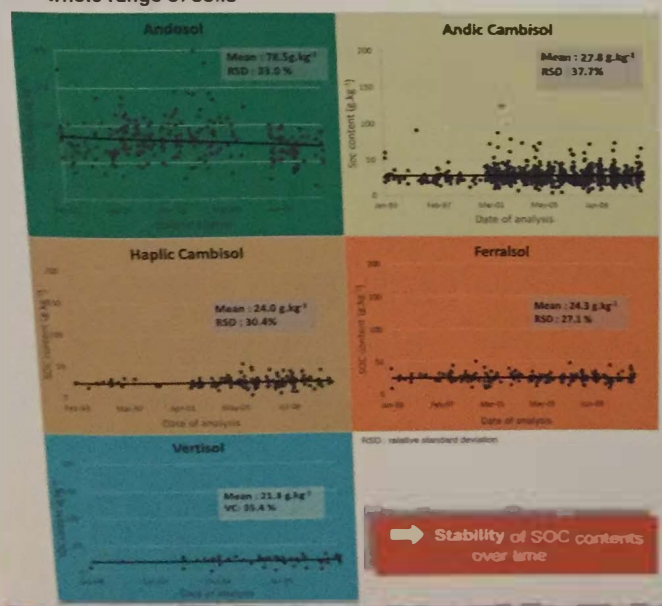


Simplified soil map of Reunion island

A volcanic rock weathering gradient, from Andosols to Ferralsols !

DYNAMICS OF SOC CONTENTS IN VOLCANIC SOILS UNDER SUGARCANE CROPS

Long-term series, built over the last 20 years showed constant SOC contents under sugarcane crops on the whole range of soils



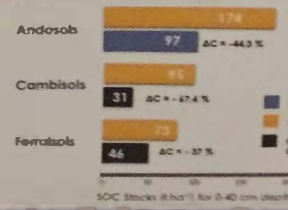
➔ Stability of SOC contents over time

High organic carbon INPUTS to the soil combined with conservative agricultural practices



➔ SOC Saturation reached in soil under sugarcane crops ?

Preliminary results showed higher SOC stocks than in pineapple and market gardening



➤ Sugarcane crops with conservative agricultural practices conserve the high SOC stocks of volcanic soils in Reunion
 ➤ But these "carbon hotspots soils" are still VULNERABLE TO LANDUSE CHANGE