

# Cattle on self-mulching soils

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# UPDATE 08



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# The problem

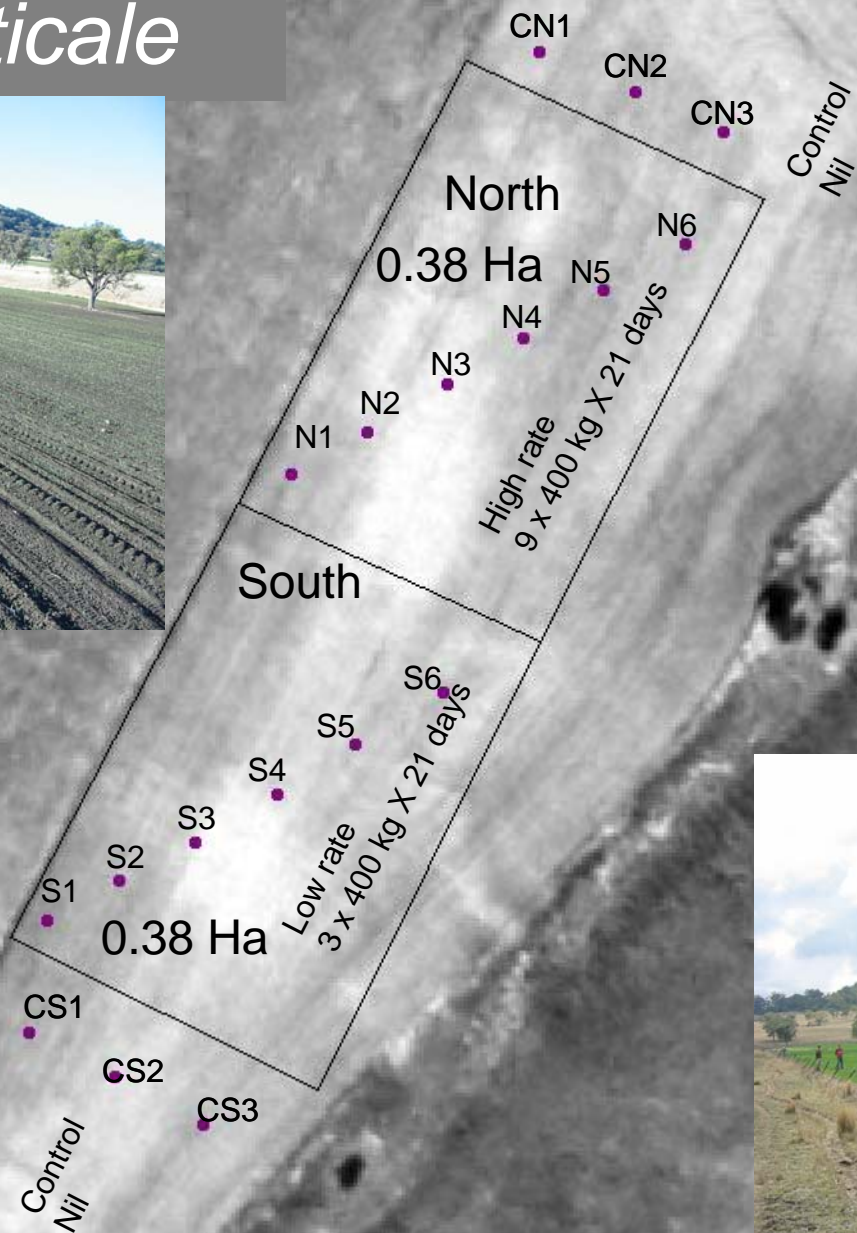


- do cattle restrict grain growth on Vertosols?
- are soil physical properties affected?
- does rainfall intensity affect physical damage?

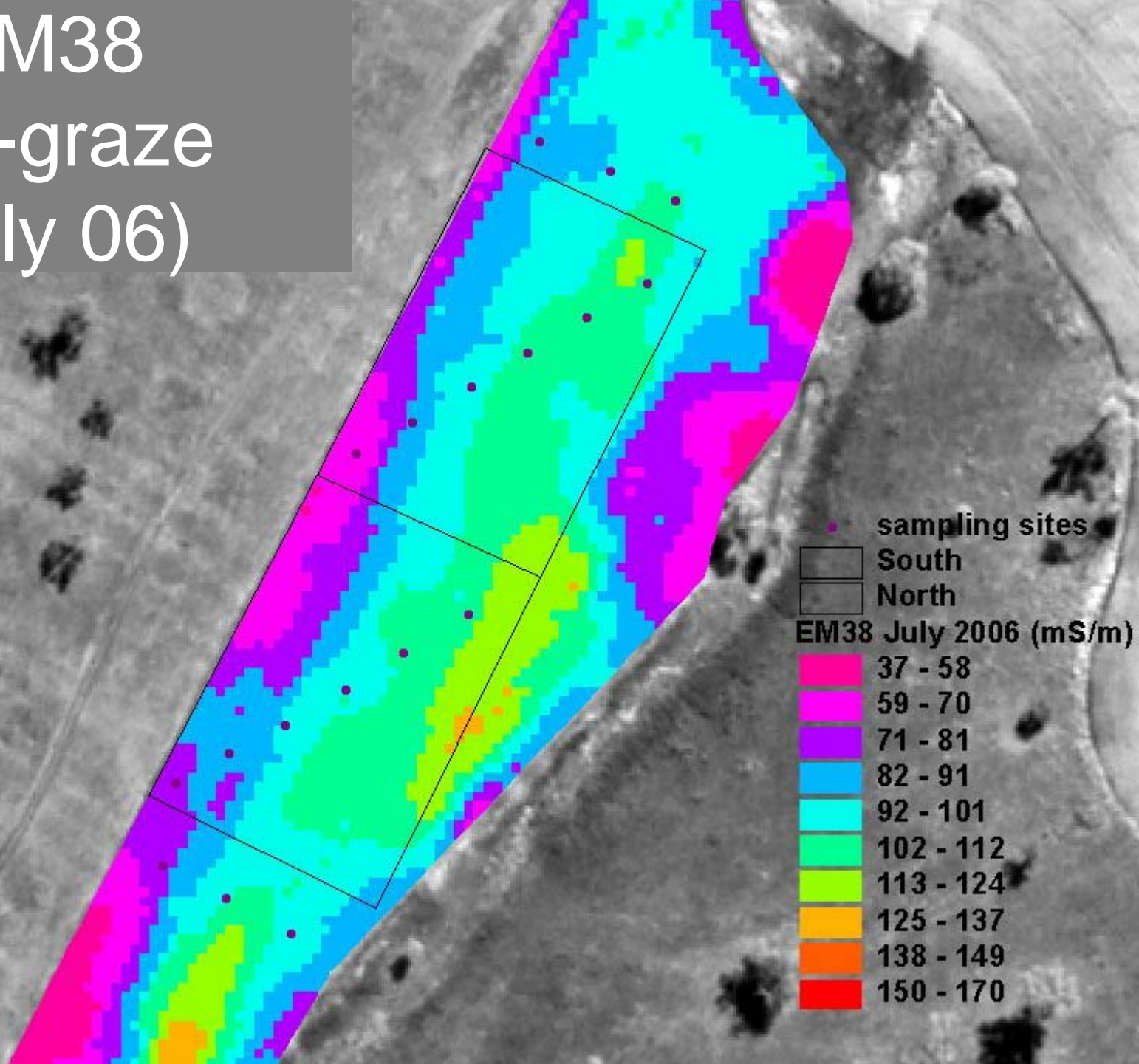


# The plot design

## *Grazing Triticale*



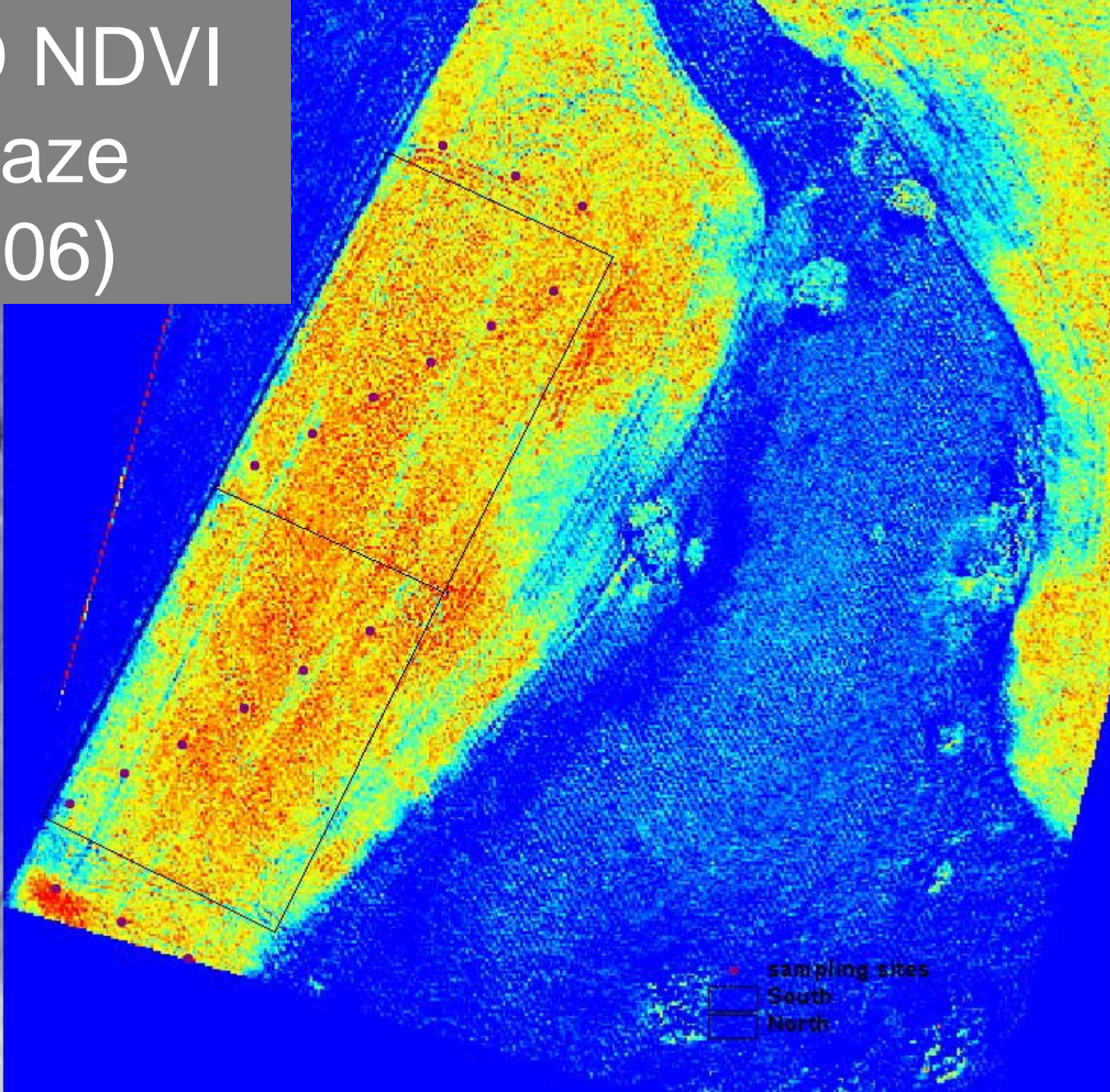
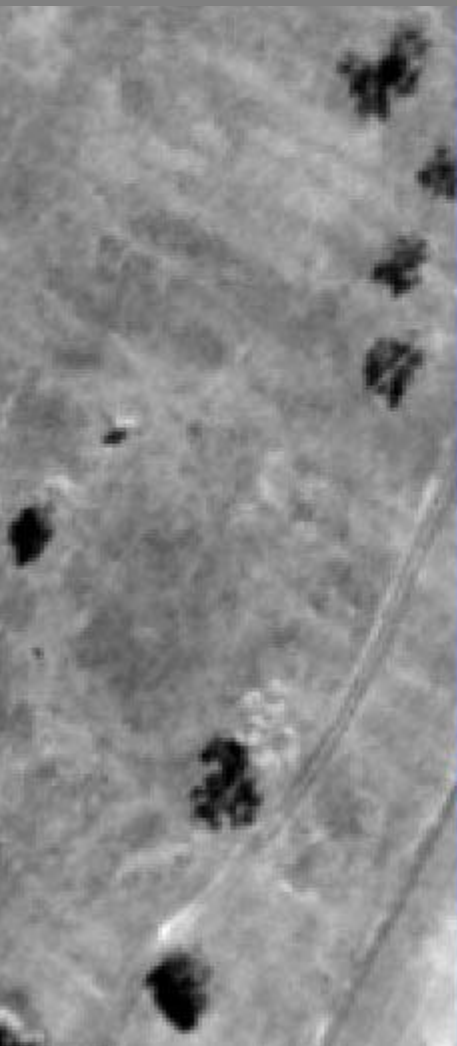
# EM38 Pre-graze (July 06)



# UNEBirD NDVI

## Pre-graze

(Sept 06)



• sampling sites  
South  
North



# Compaction trial

**Table 1.** Stocking rate effects on soil physical properties

	0 steers		3 steers		9 steers	
	Before	After	Before	After	Before	After
Soil moisture 0-3 cm (%)	39	37	36	35	37	35
Soil moisture 3-10 cm (%)	32	37	33	37	33	36
Hydraulic conductivity (mm/hr)	110	52	60	72	71	52
Penetration resistance (kPa)	410	405	400	410	320	590
Mean weight diameter	2.8	3.0	2.8	2.5	2.4	3.0

- significantly higher resistance after heavy grazing

# The Running of the Cows...

- 4 rainfall intensities
- 20 cows
- 1 race
- Lots of mud...



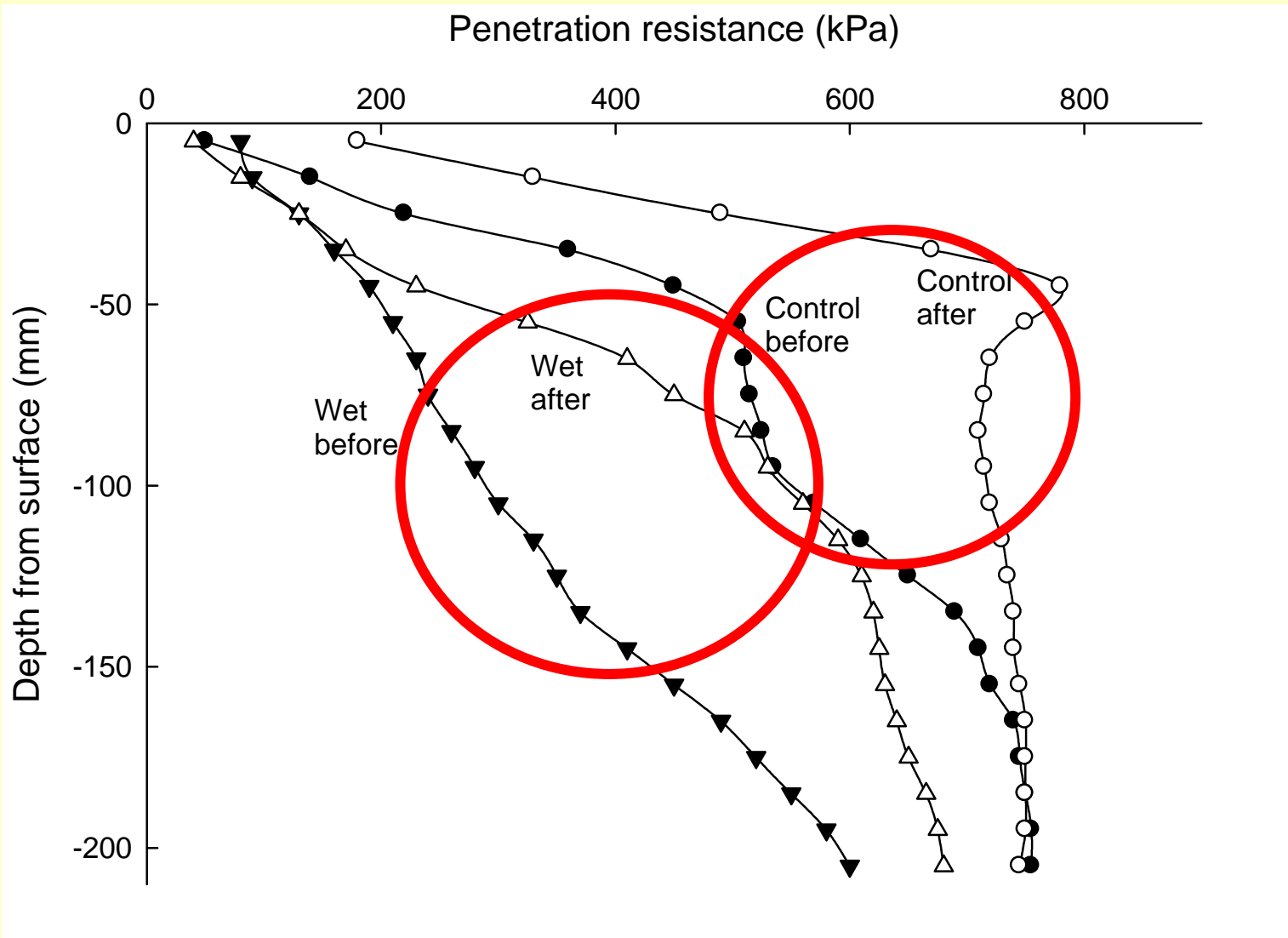
# The Running of the Cows...





- **deep hoof prints**
- **churning of soil**
- **no rainfall intensity effect**
- **rapid recovery**

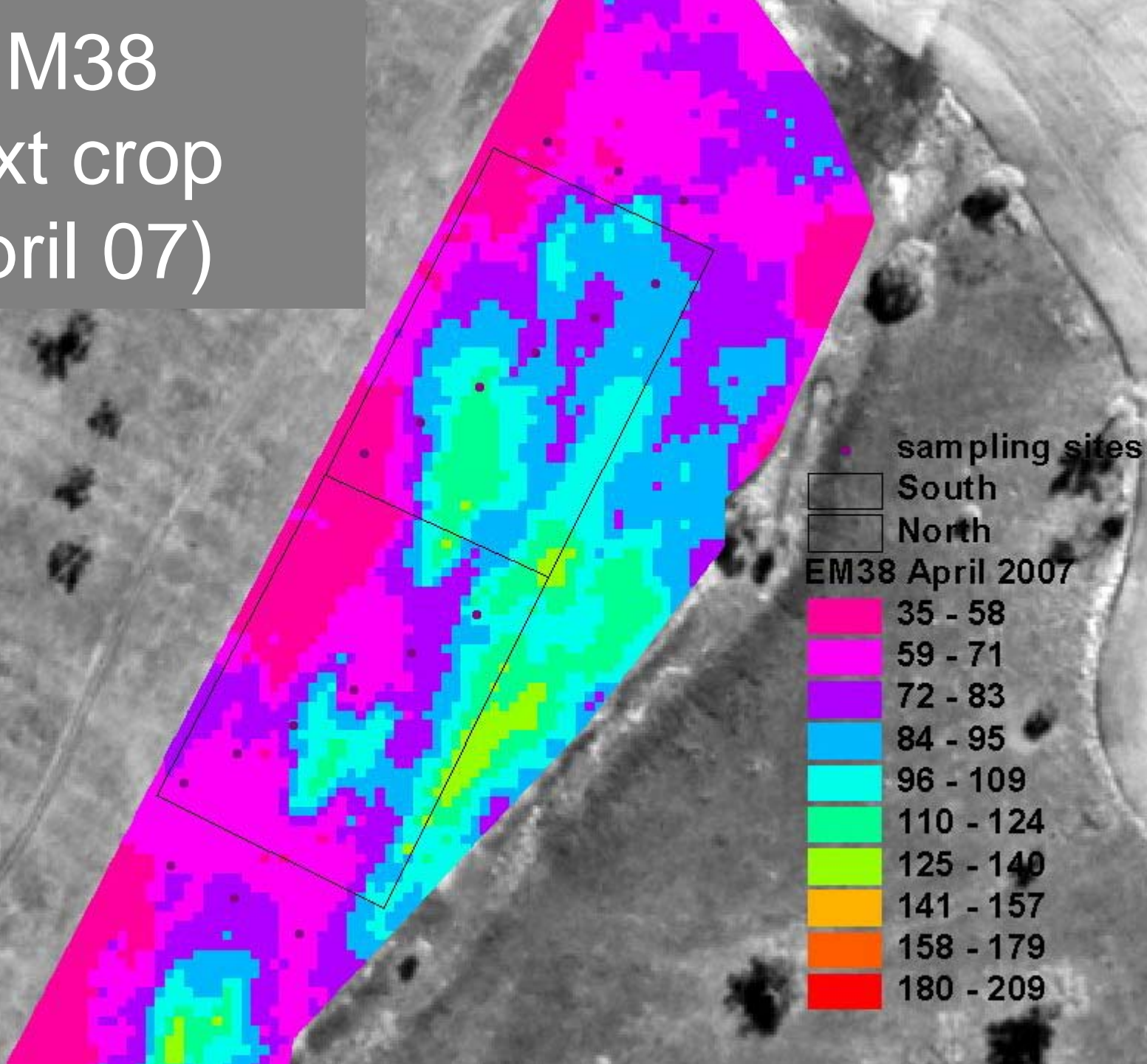
# But similar resistance increase from 5-15 cm



**Figure 1.** Soil penetration resistance before and after trampling of wet and dry Vertosol

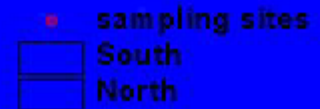
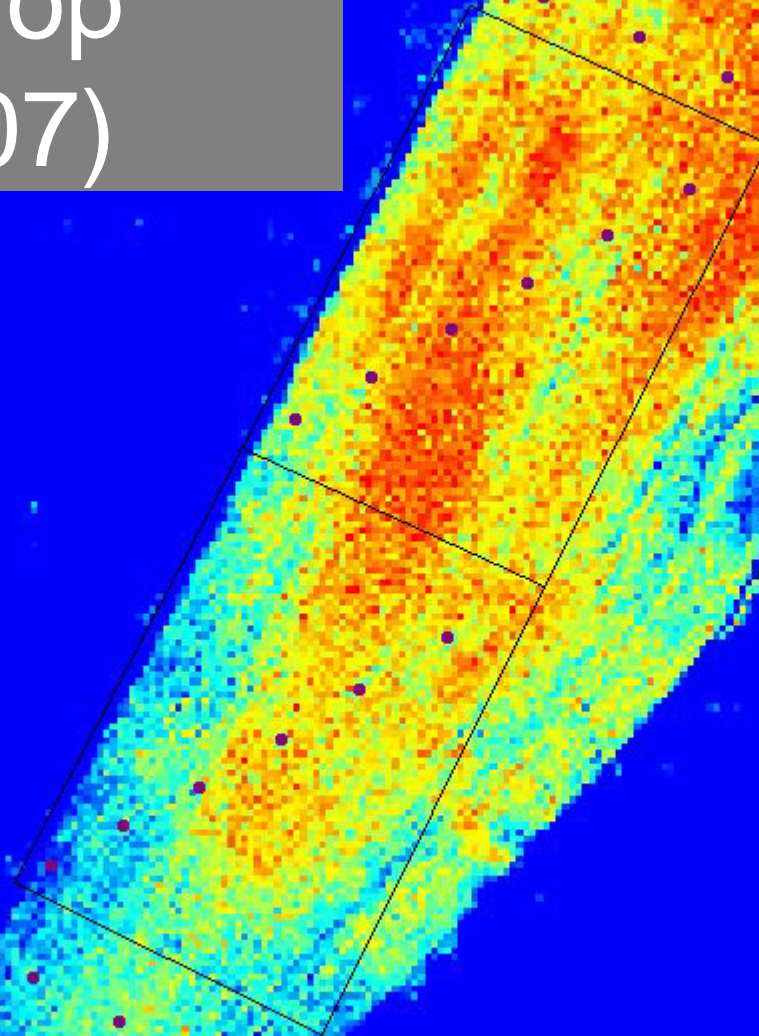
# EM38

## Next crop (April 07)



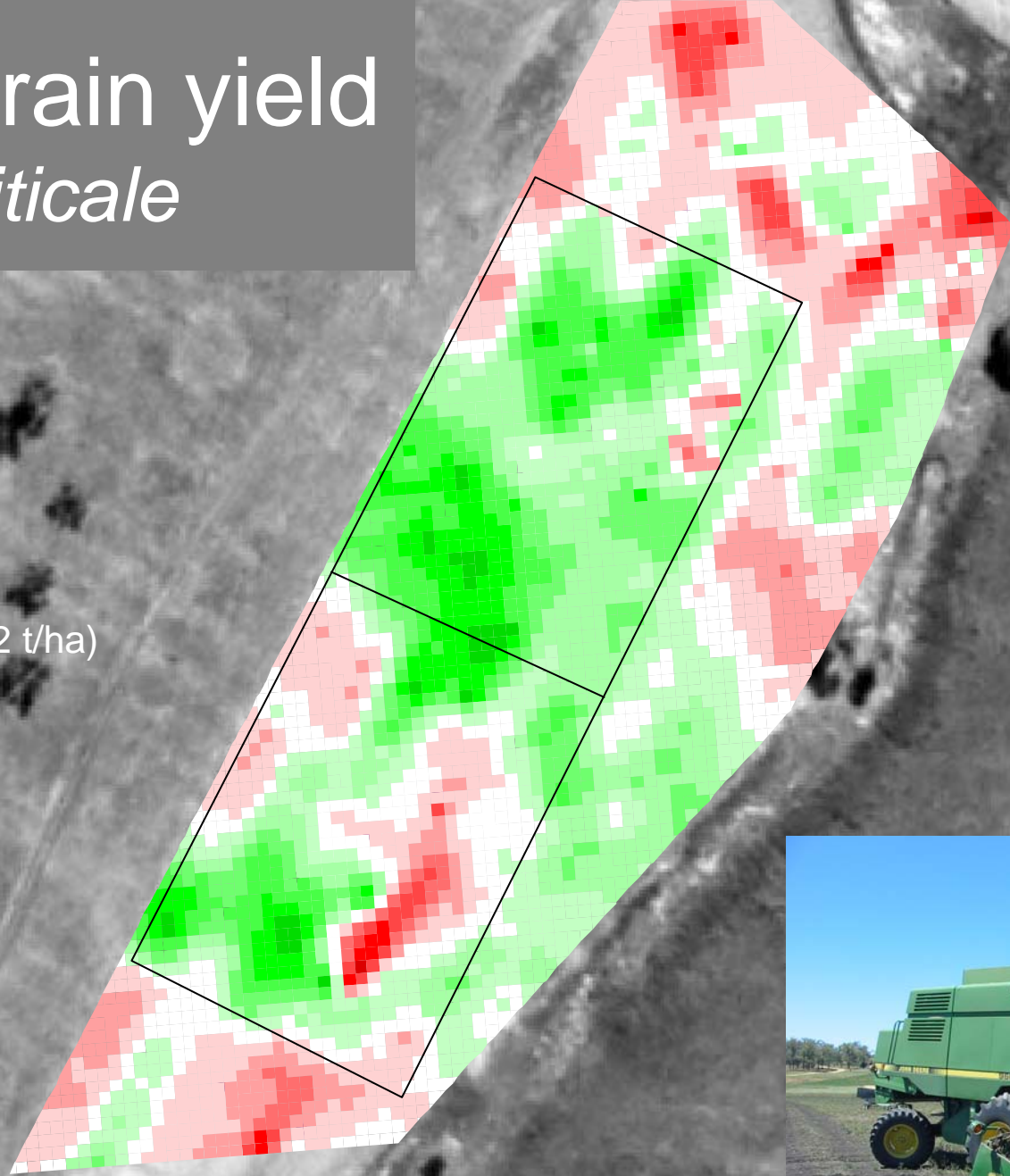
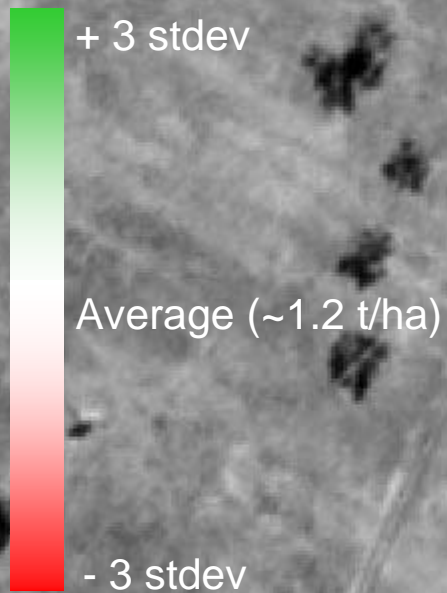
# UNEBirD NDVI

Next crop  
(Sept 07)



# 2007 grain yield

## *Triticale*



## Take home message

- Soil physical damage from trampling may not be as high as initially thought **BUT...**
- Self-mulching soils have a high capacity to repair themselves
- Further research is necessary that follows grazing and cropping in greater detail