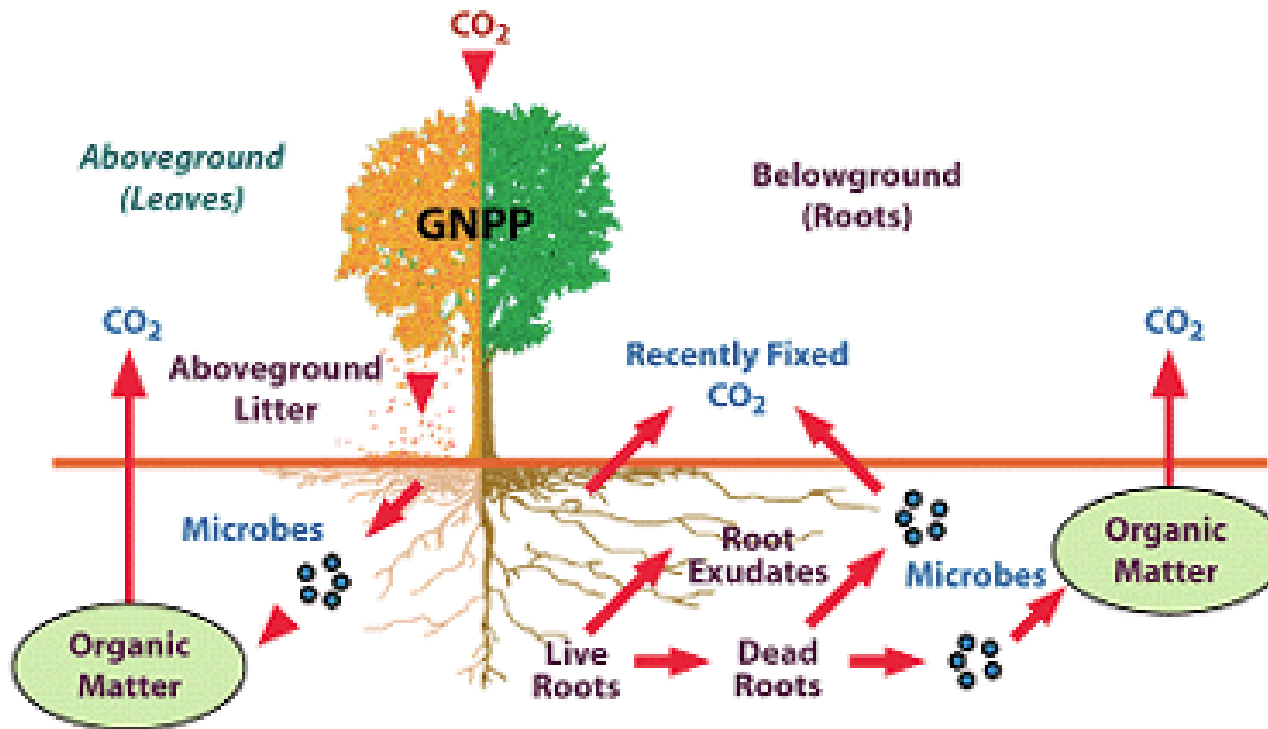


C sequestration in the Monaro.
Where are we at?
Where do we go from here?
&
Milking it for all it's worth

Lachlan Ingram
Faculty of Agriculture, Food and Natural Resources
University of Sydney

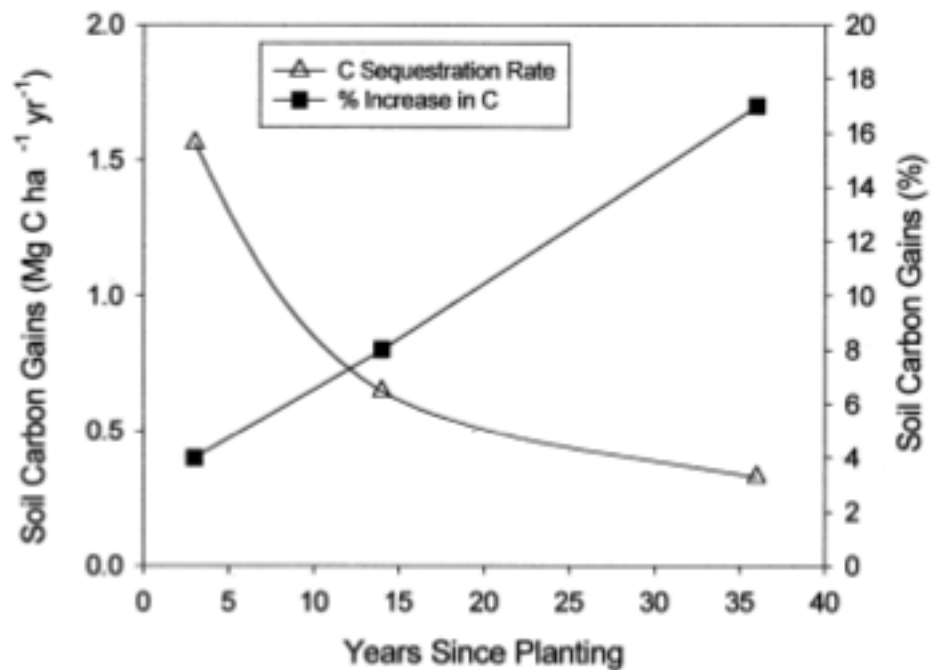
Background



Root death and decomposition are where SOM get it's C from

Soil organic matter is 50% C

Lucerne (alfalfa) in Nth American rangeland systems



Where are we at?

Sites	0-30 cm
<i>Monaro</i>	SOC (t ha ⁻¹)
Native pasture: deep granite $n = 6$	55
Native pasture: shallow granite $n = 6$	31
Native pasture: basalt $n = 6$	85
Introduced pasture: deep granite $n = 6$	53
Introduced pasture: basalt $n = 6$	94

Sue Orgill
Nutrient Smart Farms
EH Graham Centre for Agricultural Innovation
NSW Dept of Primary Industries

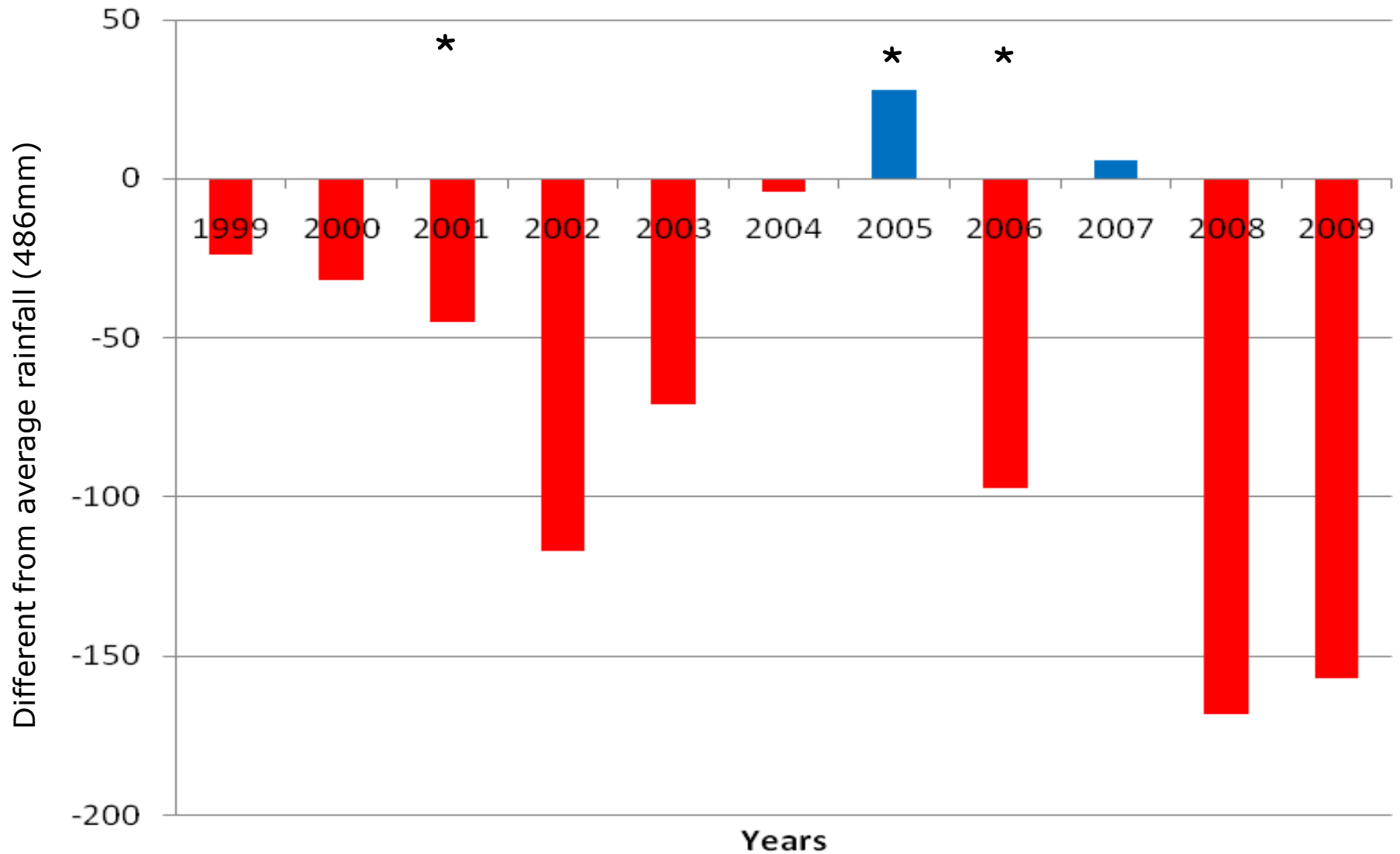
Where can we go?

Preliminary study - Coolringdon, 2010

- two chronosequences - lucerne monoculture & improved pastures
 - pasture ages: 0 (L), 4, 5.5, 9.5 yrs and a native (unimproved) site
 - Soil (organic) C and total N

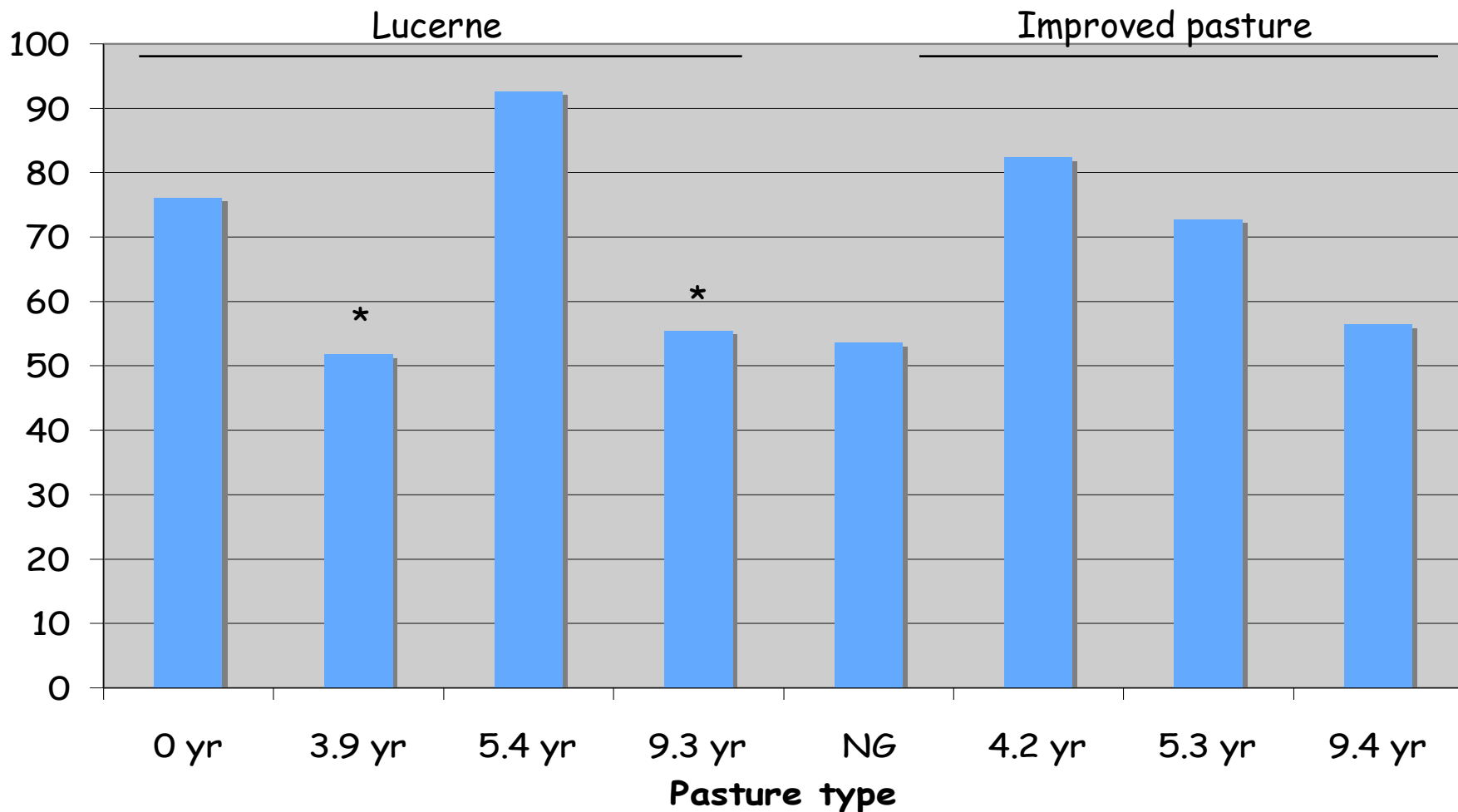
 - Why?
 - Little info out there on:
 - low(er) rainfall systems (>600 mm)
 - soil depth
 - management -: lucerne, improved pasture systems
 - "functionality of C"
 - Inputs required for FullCAM model
-

Cooma AP rainfall 1999-2009

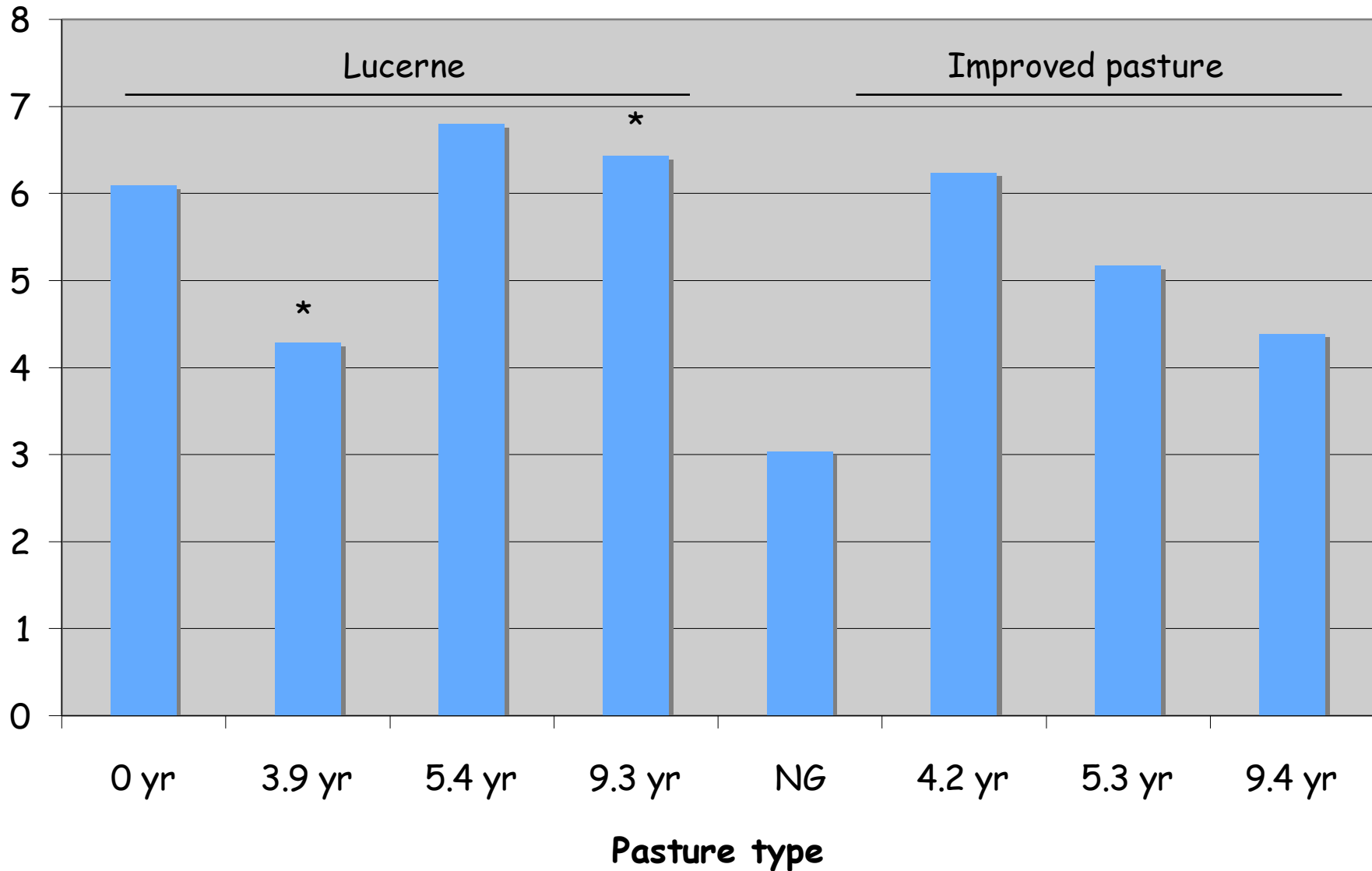


Soil C & pasture type

2010	2006	2005	2001	-	2006	2005	2001
-	-100	+30	-45		-100	+30	-45



Soil N & pasture type



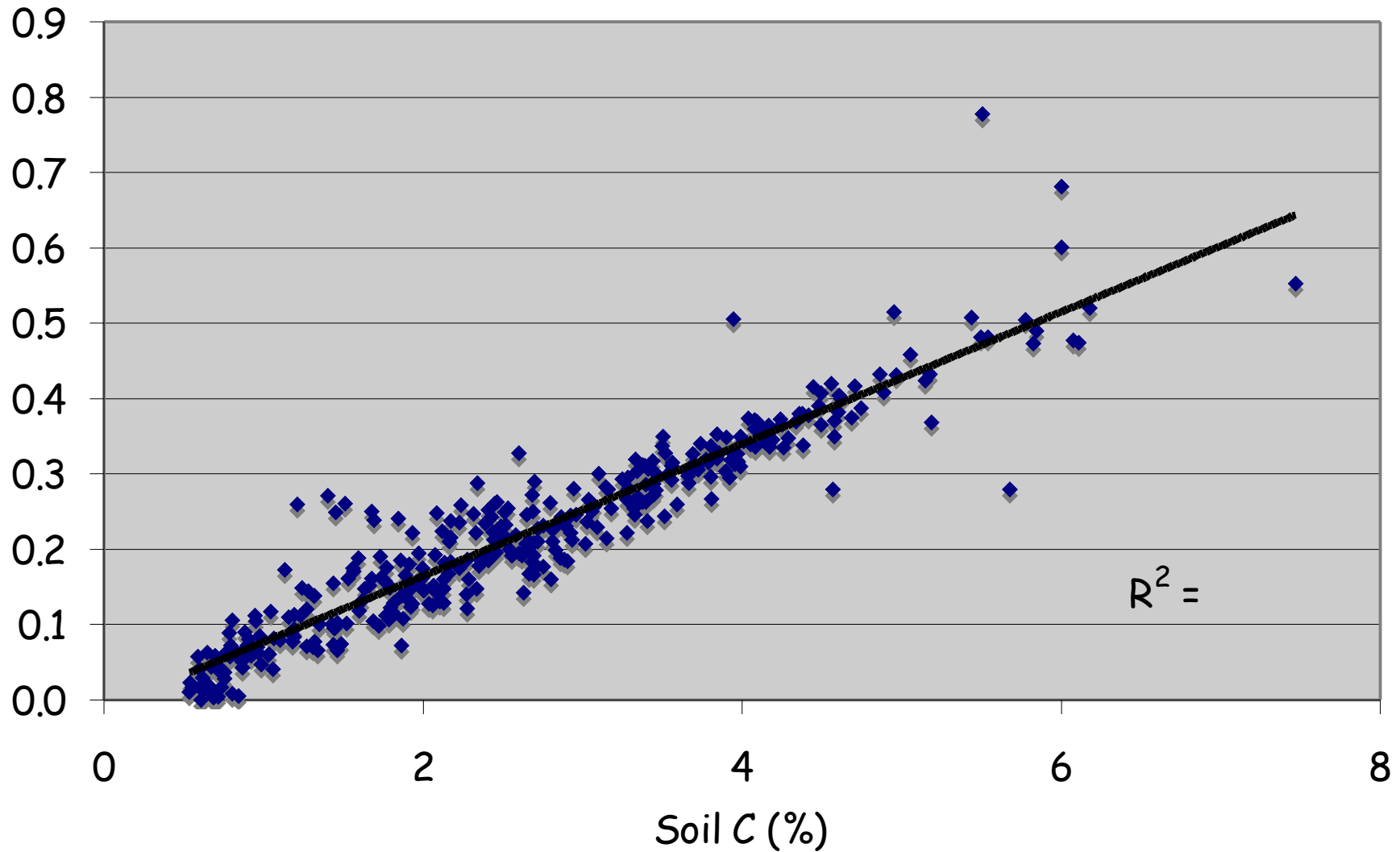
So what are our results?

- Both IP & Lucerne increased SOC (during drought)
 - Range of factors may have influenced results
 - SOC depth & lucerne??
 - soil fertility
 - paddock history
 - drought
 - Despite drought, lucerne \uparrow N \rightarrow \uparrow following pasture production
-

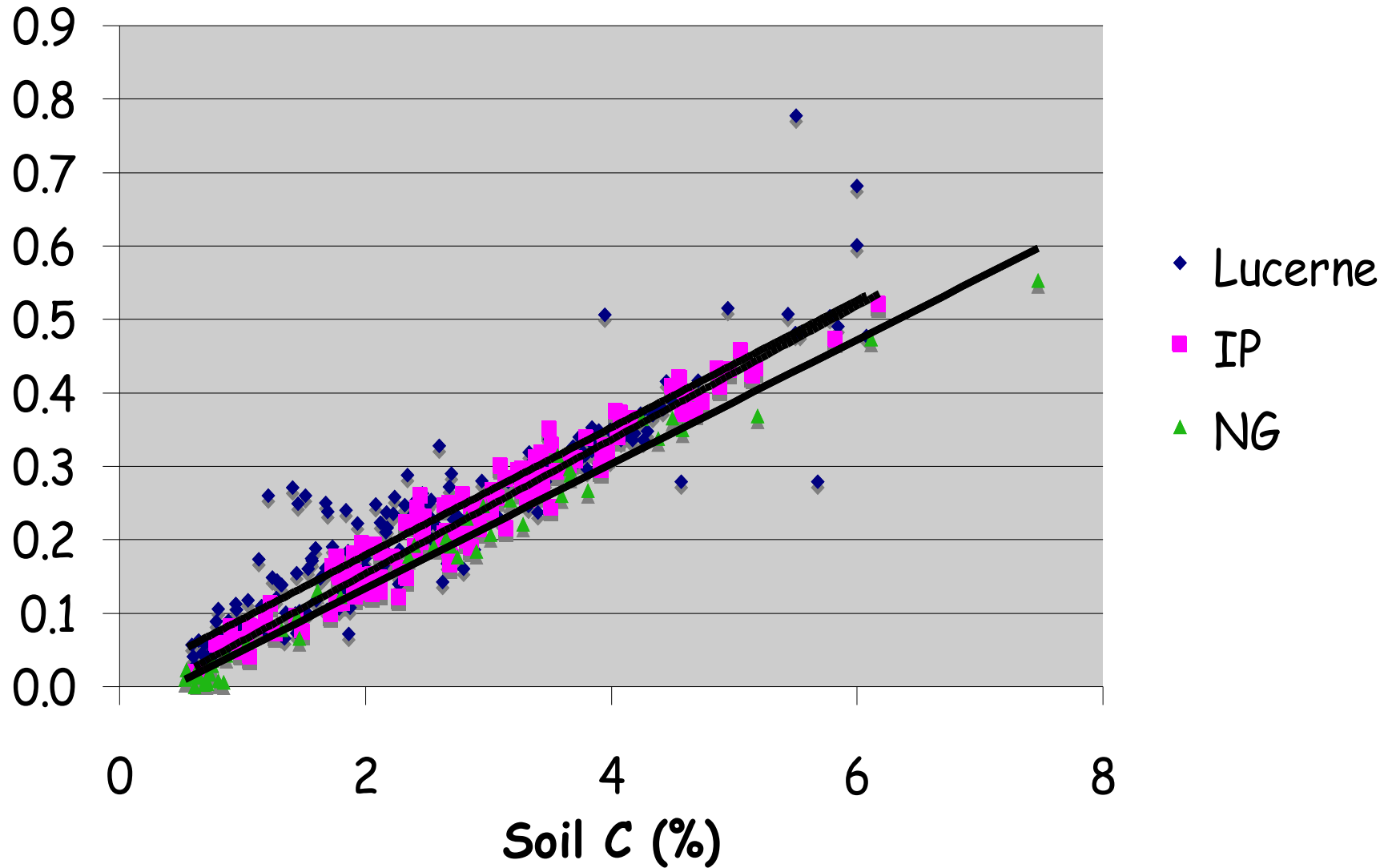


Milking it for all it's worth

Soil organic C vs N

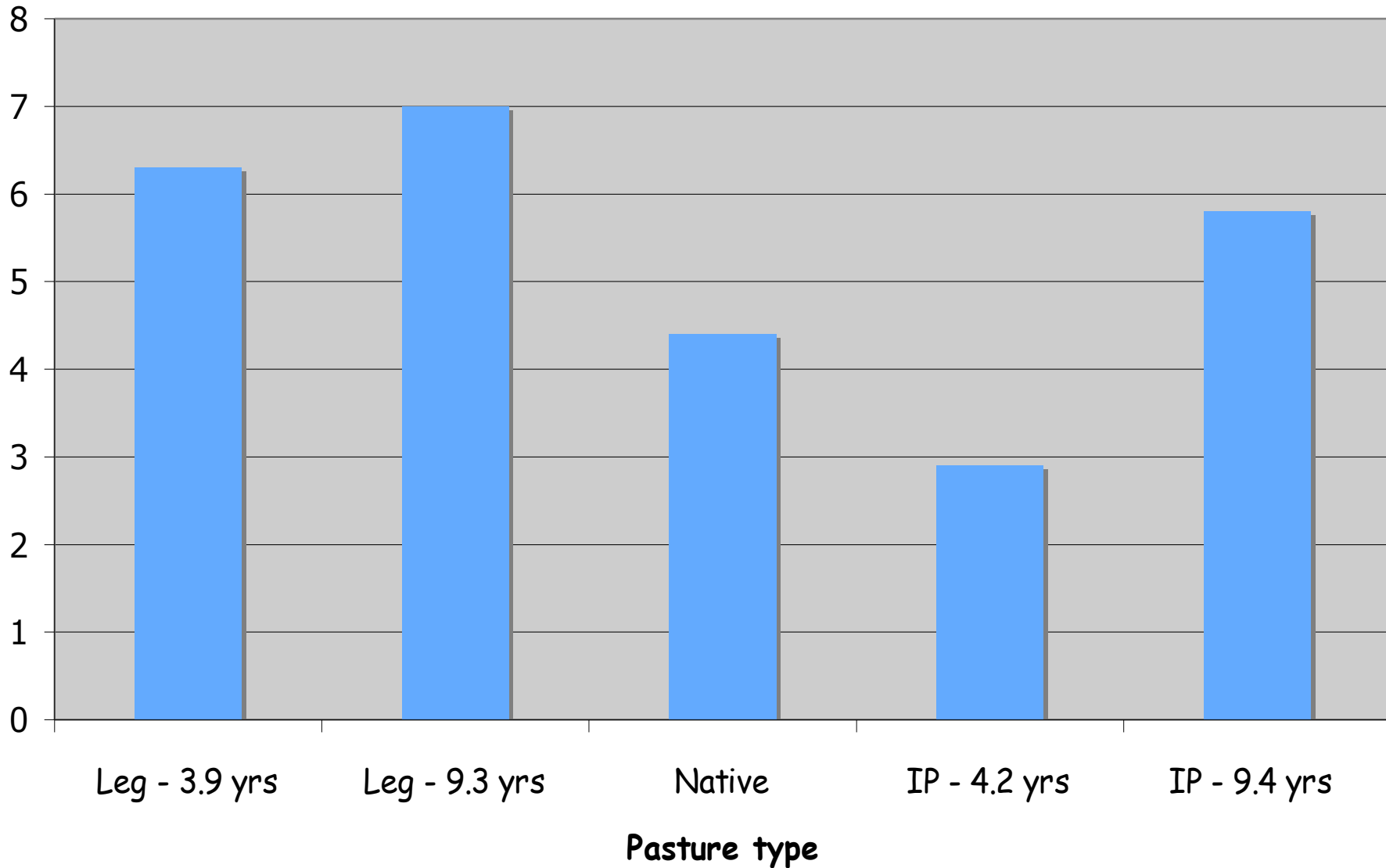


Soil organic C vs N



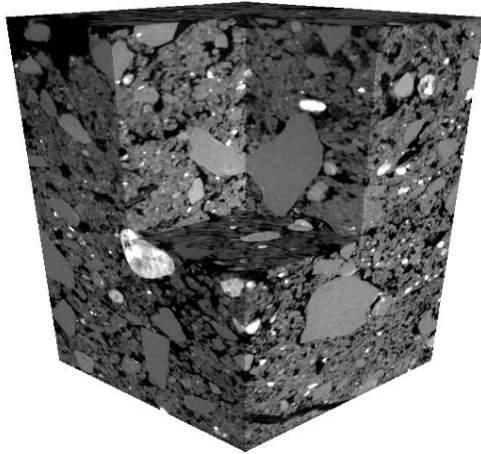


Infiltration rate

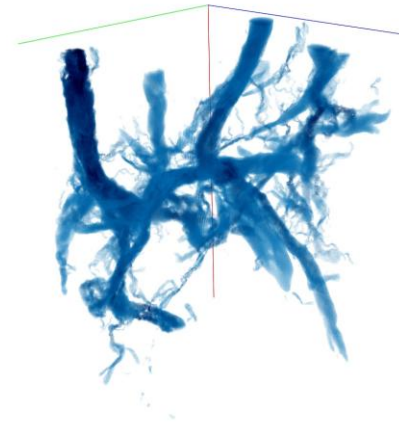
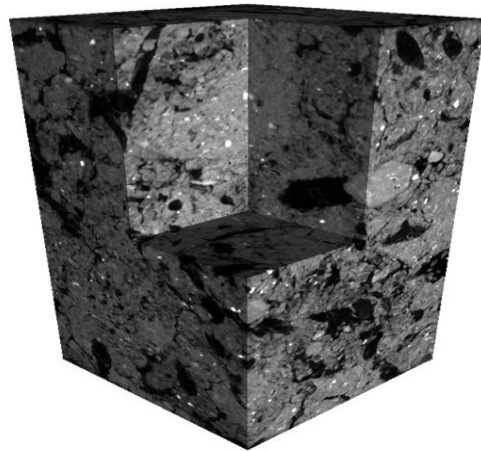




"Cool" (read Nerdy) Science



IP - 9.4 yrs
22,720 kg C ha⁻¹



IP - 4.2 yrs
18,556 kg C ha⁻¹



In Summary

- We can modify management to improve soil C
 - Improving soil C has “knock-on” effects
 - improve soil fertility
 - improve soil water holding capacity
 - improve profitability
-