

'From the Ground Up' Field Walk March 2023

Increasing soil carbon to ameliorate compaction in irrigated soils

The aim of the site is to test the theory that we need to incorporate and rapidly break down crop residues to create soil organic matter, rather than just leave stubbles on the soil surface.

Treatment Summary: Applied prior to maize in Nov 2018

1	Surface Applied Stubble @ 10 t/ha
2	Surface Applied Stubble @ 10 t/ha + Fertiliser 60 kg N/ha + 22 kg P/ha
3	Stubble @ 10 t/ha Incorporated
4	Stubble @ 10 t/ha Incorporated + Fertiliser 60 kg N/ha + 22 kg P/ha
5	Surface Applied Chicken Manure @ 10 t/ha
6	Chicken Manure @ 10 t/ha Incorporated
7	Cultivation only

Crop Yield Summary

Treat Nov 18	Fabas 2022		Popcorn 20/21	Canola 20	Fabas 19	Maize 18/19
	t/ha	pl/m ²	t/ha	t/ha	t/ha	t/ha
Stubble surface	3.64	8	10.6	3.23	4.7	13.6
Stubble surface + fert	4.46	9	9.6	2.90	4.6	14.2
Stubble incorp	4.12	8	8.6	2.77	3.6	17.9
Stubble incorp + fert	5.06	8	8.8	3.08	5.9	15.5
Manure surface	3.56	8	9.9	3.03	4.2	17.1
Manure incorp	5.81	6	5.6	2.95	5.0	15.8
Cultivated	4.43	8	5.7	2.86	4.2	15.8

Soil Organic C (%) and Total Carbon (%) Summary

Treat Nov 18	Nov-18	Dec-19		Dec-20		Dec-21		Dec-22	
	OC%	OC%	Total C %	OC%	Total C %	OC%	Total C %	OC%	Total C %
Stubble surface	1.67	2.33	2.65	1.85	2.43	2.14	2.49	2.21	2.42
Stubble surface + fert		1.67	2.59	1.80	2.41	1.69	2.41	1.94	2.65
Stubble incorp		2.04	2.86	1.84	2.58	1.77	2.36	2.13	2.77
Stubble incorp + fert		2.14	2.45	1.78	2.70	1.87	2.28	2.00	2.39
Manure surface		1.78	2.51	1.78	2.03	1.59	1.87	1.68	2.14
Manure incorp		2.06	2.44	2.03	2.49	1.92	2.25	2.21	2.94
Cultivated		2.00	-	1.79	2.46	1.72	2.07	1.90	2.94
Ave			2.00	2.58	1.84	2.44	1.81	2.25	2.01

Be aware of the limitations of the standard OC soil test is important, as well as the demonstration style of the project – ie larger plots but no replication. Numerous trials have been undertaken looking at improving soil OC using the Kirkby recipe, but the key finding from many is that it takes time and money, and don't expect miracles. At the least we can hope to stop the gradual slide in OC and N fertility.

Thanks to Ross Heywood for hosting the site.



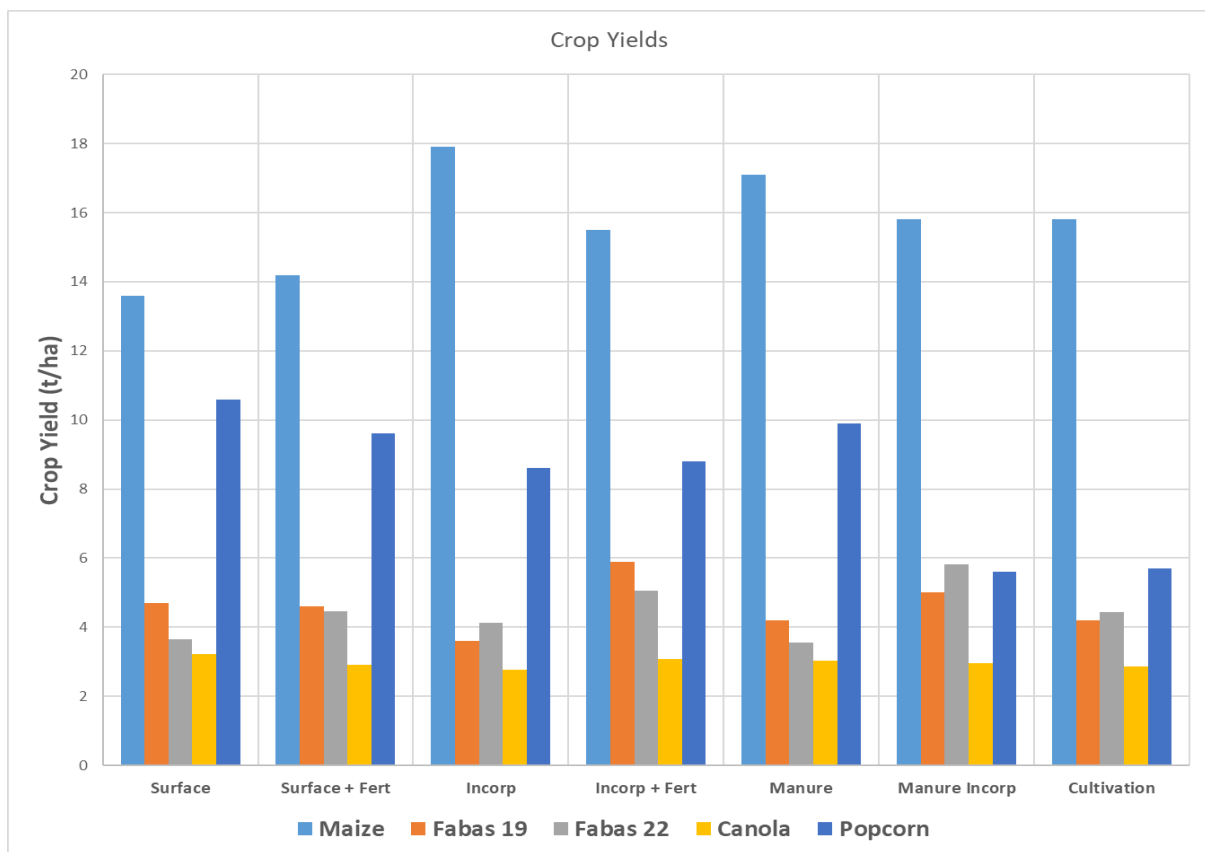
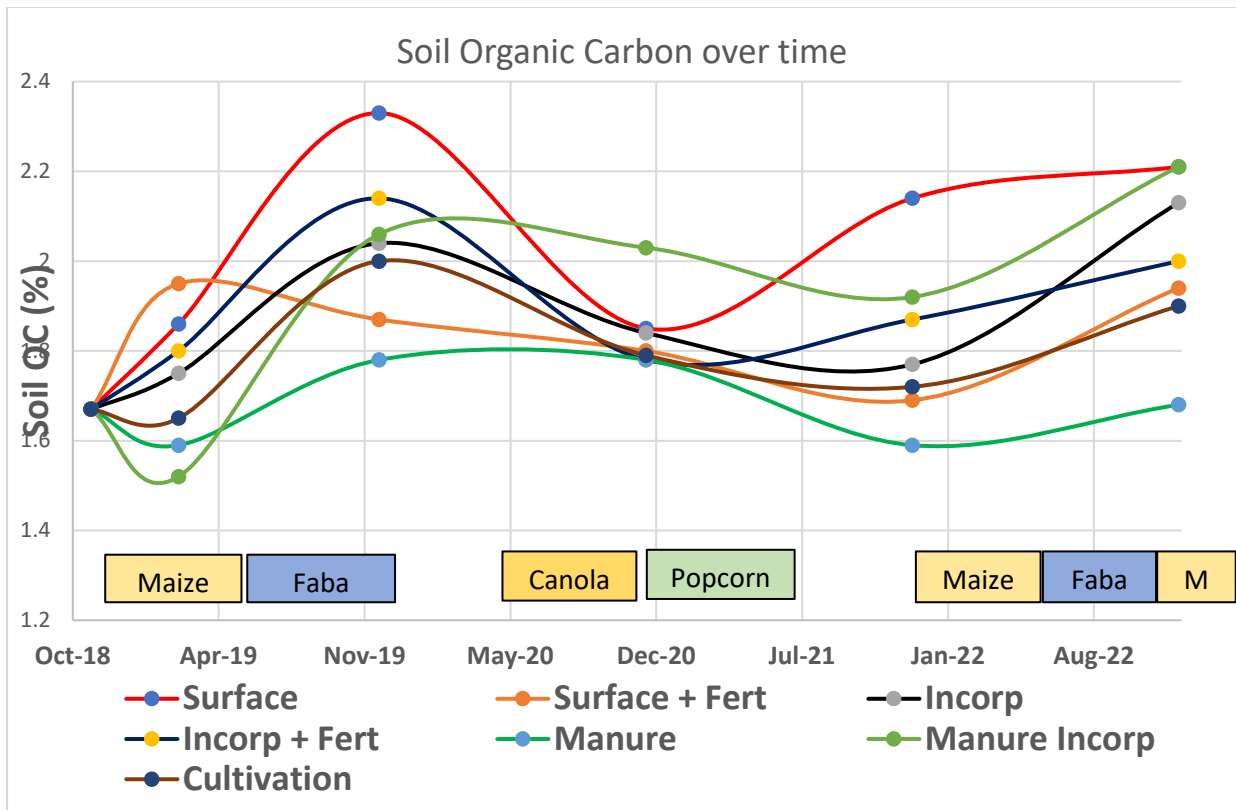
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