

Building Soil Organic Carbon

Sustainable Agriculture Project Forum

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Irrigated Cropping Council



Building Soil Organic Carbon

Project evolution

Beyond Soilcare:

Compaction and amelioration project in maize

Compaction, rip, rip + gypsum (rip + OM)

Could see the results of vehicular compaction in-crop

Yield data showed no differences

Compaction at 35-40cm as a result of irrigation



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Project evolution

From the Ground Up:

Increasing soil carbon to ameliorate compaction in irrigated soils – **improving soil structure**

How to build soil carbon?

Treatments applied and then monitored

Measure soil structure by crop performance

Annual soil test measuring soil carbon

Non-wetting soil issue



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Project evolution:

How to build carbon in a cropping situation?

Clive Kirkby theory part 1

Need to 'compost' or a rapid breakdown of our high C stubbles by adding water + nutrients (N, P, Ca & S)

Clive Kirkby theory part 2

Our soil OC is the dead soil microbes, so we need to create a large population of microbes



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Demonstration Summary: Treatments applied Nov 2018 prior to maize, crop residues are retained where possible

- 'Stubble' 10 t/ha applied to the surface
 10 t/ha applied to the surface plus fertiliser
 10 t/ha incorporated
 10 t/ha incorporated plus fertiliser
- Manure 10 t/ha applied to the surface
 10 t/ha incorporated

Cultivation only

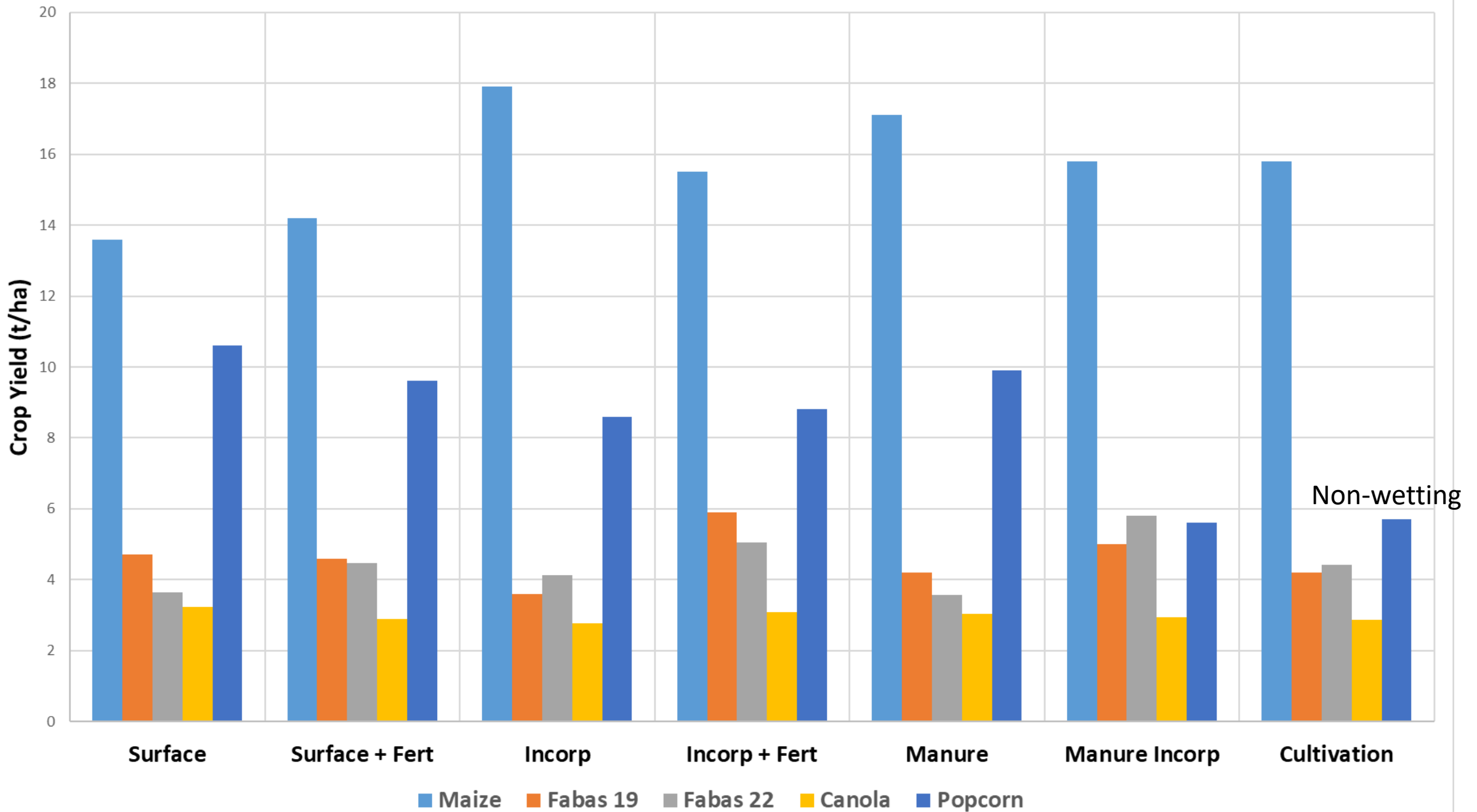


National
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Program

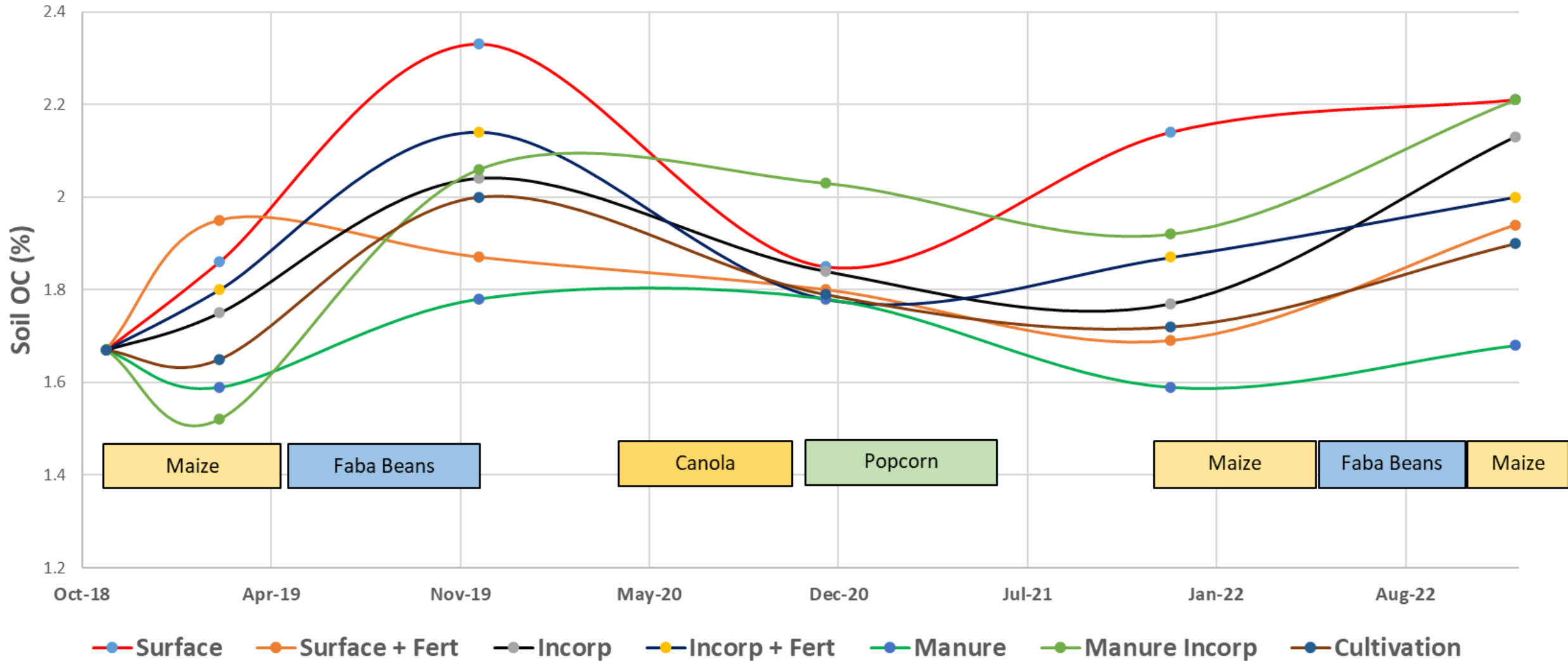


Irrigated Cropping Council
Promoting irrigated agriculture

Crop Yields 2019 - 2022



Soil Organic Carbon over time 0-10cm



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Summary and Learnings

- Simply maintaining soil OC is a win!
- Not meeting crop N requirements results in depletion of soil OC
- Its not easy to build soil OC in a cropping situation
- Pulses do help
- Building soil OC requires other nutrients (\$), not just carbon
- Identify the problem first, then apply the right remedy

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