Delving, Claying, Ploughing
– Soils aint Soils

Fertiliser 2015

Outline

1. Strategic tillage & soil amelioration
2. Current practice and considerations
3. Measuring soil mixing

Supporting your success
1. Reasoning behind strategic tillage

Percentage of sites sampled (2005–12) with soil pH at 0–10 cm depth below pHCa 5.5

The classes represent the proportions of the soil-landscape map units with high water repellence hazard.

DAFWA report card, 2013

1. Reasoning behind strategic tillage

• Ameliorate water repellence
• Incorporate lime to depth
• Reduce traffic hardpans
• Bury herbicide-resistant weed seeds
• Overcome nutrient stratification in topsoil
• Have some fun with a plough…
### 2. Current practice and considerations

**Clay pit survey by David Hall, DAFWA (n=82)**

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### Successful?

- Ameliorate water repellence

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2. Current practice and considerations

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Successful?
- Ameliorate water repellence
- Bury herbicide-resistant weed seeds

Bring to the surface a highly acidic and inhospitable topsoil…
2. Current practice and problems

Barley grain yield in 2014, 8th season after mouldboarding

Grain yield response:
- MBP or Lime 12%
- MBP & Lime 38%
- Paddock average 3.1 t/ha

3. Measuring soil mixing

Where do different soil layers go after inversion??
3. Measuring soil mixing

Supporting your success  P Blackwell, DAFWA
3. Measuring soil mixing

A new method to measure soil mixing

1  2

3  4

C Scanlan, DAFWA
3. Measuring soil mixing

C Scanlan, DAFWA

3D reconstruction of soil mixing by a rotary spader

C Scanlan, DAFWA
3. Measuring soil mixing

A model to predict soil profiles after inversion and lime or clay application...

More samples are required for a reliable pH mean after soil inversion.

C Scanlan, DAFWA
Summary

1. Choice of tillage implement depends on a multitude of factors

2. At least 10 samples were required for reliable means of pH in ploughed and spaded profiles

3. Modelling soil mixing will help synthesise our understanding of how a profile changes following inversion

Questions? liam.ryan@agric.wa.gov.au

Thank you
Visit agric.wa.gov.au

Supporting your success