Managing OVERSEER® version changes

Stakeholder Advisory Group, June 2015

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Acknowledgements to Alastair MacCormick

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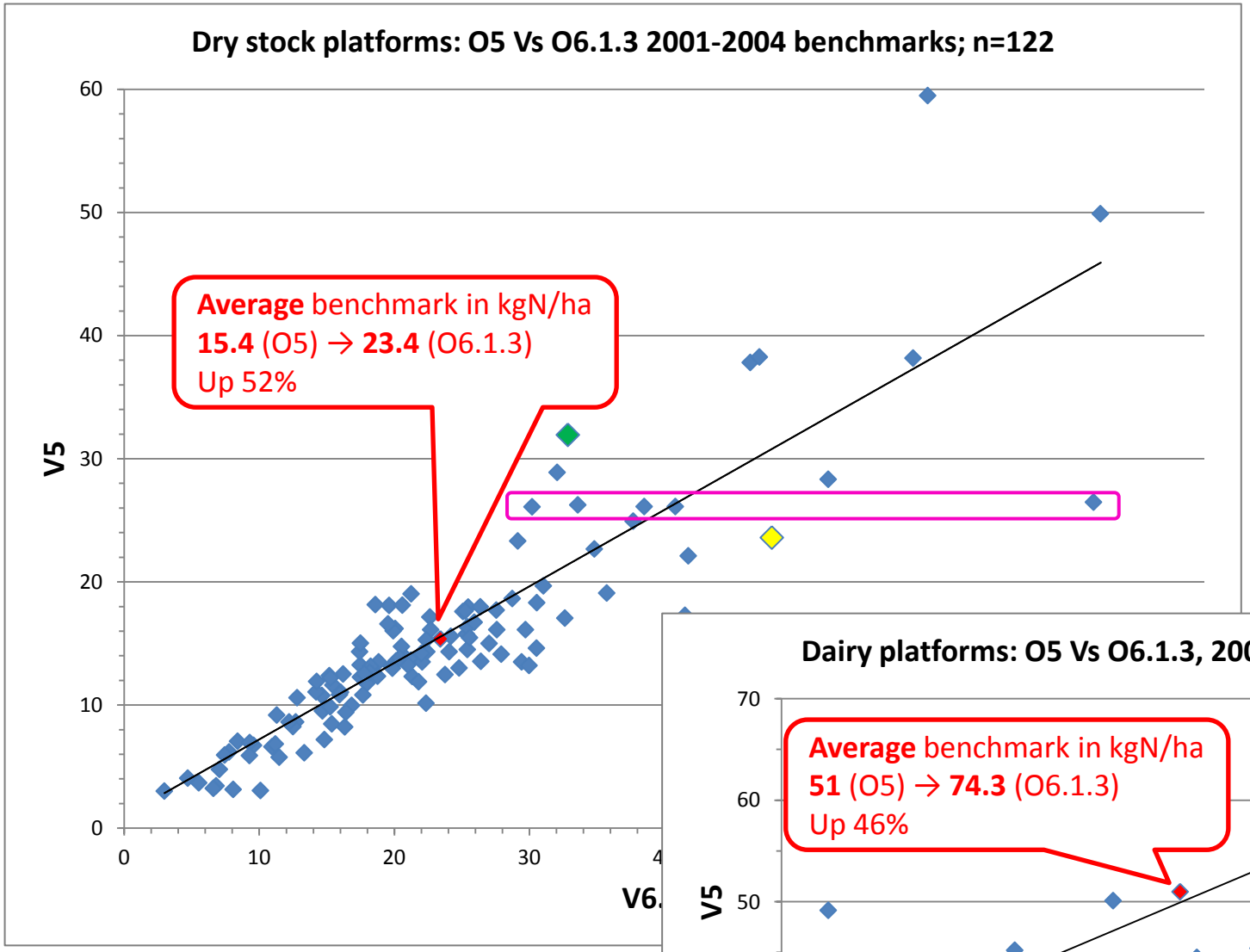
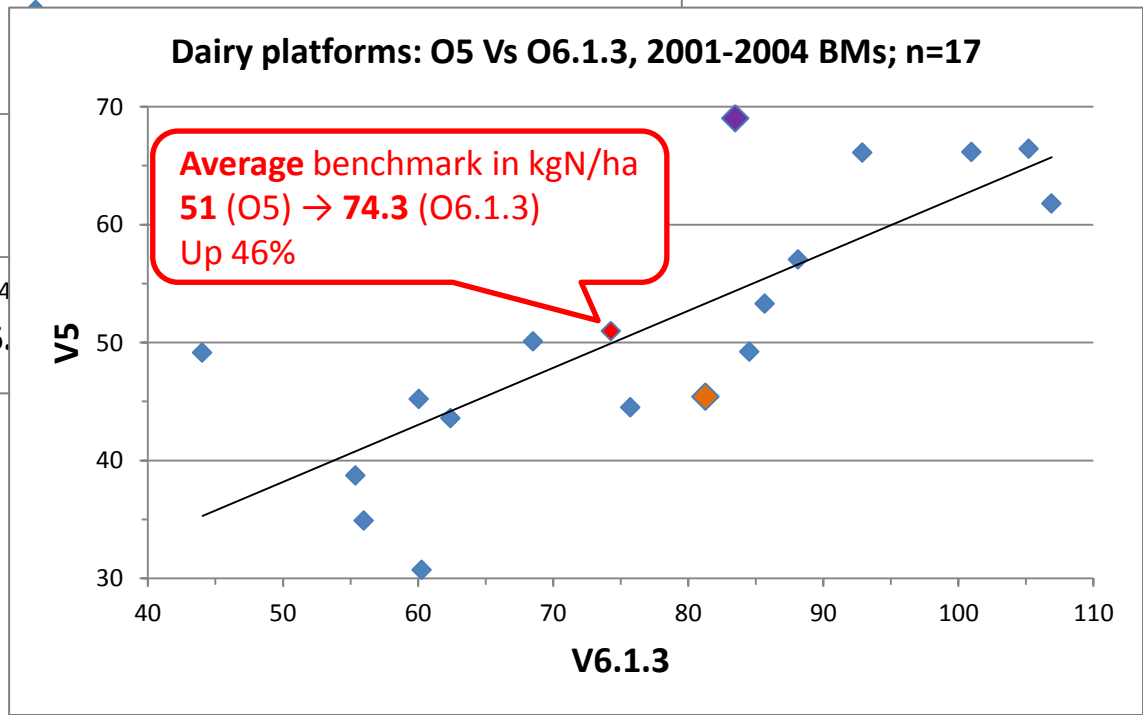
Why do the numbers change between versions

- Version change hierarchy e.g: **6.1.3**
  - 1st number – major "engine" and user interface changes
  - 2nd number – major new features
  - 3rd number – minor upgrades and bug fixes
- Science is always developing and improving
- OVERSEER is always developing and improving
  - Better drainage model based on soil physics
  - New calibration studies
    - New soil and climate calibration
    - New farm systems e.g. dairy goats
    - New mitigations e.g. cow housing
  - Better input data e.g. soils (S-map) and virtual climate station network

Rotorua: Wharenui and Parekarangi SFF trial data analysis underway NOW





The version challenge

Draft method for version changes

Method intent is to keep NDAs fair i.e maintain proportionality

- **through time**
- **between landowners**

The method needs to cover:

1. **Multiple future OVERSEER updates**
2. **Use latest version = best science**
   - **new calibration**
   - **new mitigations, new land uses**
3. **NDA monitoring**
4. **NDA trading and sales**

Example nutrient budget

Pastoral block reports

Nutrient budget | Nitrogen | Phosphorus | Graph - N pools | Graph - changes in N pools | Other values

Nutrient budget

(kg/ha/yr)	N	P	K	S	Ca	Mg
Nutrients added						
Fertiliser, lime & other	22	46	26	48	162	8
Rain/clover N fixation	119	0	1	1	1	1
Irrigation	0	0	0	0	0	0
Supplements fed on block	5	1	4	0	1	0
Nutrients removed						
As animal products	29	5	2	4	11	0
As supplements	19	2	13	2	3	1
Net transfer by animals	2	0	2	0	0	0
To atmosphere	30	0	0	0	0	0
To water	19	0.4	13	42	16	6
Change in block pools						
Organic pool	47	9	0	3	0	0
Inorganic mineral	0	15	-8	0	-2	0
Inorganic soil pool	0	14	9	0	135	3

Preparation for version method

1. **Anchor NDA allocation with one version**
   - **likely 6.2.0, upon rules notification Sept 2015**
2. **Establish simple OVERSEER reference files for:**
   - **100 ha drystock @ 21 kgN/ha/yr**
   - **100 ha dairy @ 47 kgN/ha/yr**

   } **Mid-point of NDA ranges**

   - **Trees**
     - **Native bush @ 3**
     - **Plantation @ 2.6**
   - **House blocks @ septic + garden…**
3. **Define NDA as % of reference file(s)**
   - **also N start point and intermediate targets**

Apply version method

4. For each OVERSEER update, re-run reference files
5. Calculate % shift in each reference file
6. Adjust NDAs by % shifts when needed:
   - 5 year updates of Nitrogen Management Plan
   - Selling or trading NDA
   - Still useful to track NDA shifts

An example…

Draft OVERSEER version example

Current scenario, version 6.1.3

Land use	Area ha	BM, 6.1.3		NDA, 6.1.3		6.1.3 Ref file	% of reference file	
		kgN/ha	kgN	kgN/ha	kgN		BM	NDA
Dairy	200	72	14400	50	10000	47	153%	106%
Drystock	30	40	1200	32	960	21	190%	152%
Bush	20	3	60	3	60	3	100%	100%
Totals	250		15660		11020			

Imagine an update scenario, version “6.X”

Land use	6.X ref file		NDA , 6.X			% of reference file	
	kgN/ha	change	kgN/ha	kgN		BM	NDA
Dairy	50	+6%	53.2	10638		153%	106%
Drystock	25	+19%	38.1	1143		190%	152%
Bush	4	+33%	4.0	80		100%	100%
Totals				11861			

Main points

- **Overseer updates will shift start points, current N loss and NDA (and any intermediate targets)**
- **Reference file method maintains NDA proportionality "mostly"**
  - **Some properties impacted more/less than "average"**
- **A database challenge**
- **Accounting for sales and trades**
  - **Adjust NDA in kgN, then adjust %**