

March 2018

## Information Sheet for Overseer v.6.3.0

### Overview and summary

Overseer is a farm decision-support tool that helps farmers and their advisors understand their farm's impacts and make the best decisions for their farms.

Overseer plays a major role in the success of New Zealand primary industries, because it supports: Farm nutrient management decisions that can improve farm profitability and environmental outcomes; regulation to meet national water quality objectives ; and management of greenhouse gas emissions.

### Overseer version 6.3.0

Overseer 6.3.0, released at the end of March 2018, will add outdoor pig modelling to the tool, as well as improvements to annual ryegrass and seed crops, both in the model and the interface. It will also include the usual bug fixes and improvements.

The significance of the changes mean most farms will see a change in their N-loss and GHG results. Some may be substantial.

Changes to annual rye grass and seed crops: We have made some changes to defoliation management (grazing, cut and carry and pasture fallow) of permanent pasture sown in a crop block, ryegrass or white clover seed crops, and annual ryegrass forage crop – this should reduce the frequency of feed errors.

Management of annual ryegrass, seed crops, and permanent pasture in crop blocks is now modelled more like pasture blocks, that is, animal production and the distribution of animals on these blocks determines animal intakes from each block, and hence the pasture production (or yield) of the annual ryegrass, seed and permanent pasture crops. This approach overcomes several issues including partial grazing of a block and developing feed wedges, and it removes the need to allocate crops to animals.

New outdoor pigs modelling: Version 6.3.0 will include outdoor pig systems. PorkNZ have created a user guide for entering outdoor pig systems which will be available on the user guides page of MyOverseer.

### Other bug fixes

There are also a substantial range of bug fixes, including:

- Amendments to GHG emission factors
- Partial fix for nitrous oxide emissions (set a starting point >90% for water filled pore spaces)
- Under fodder crop rotations, fertiliser and effluent applications are now considered in the weighted average of pasture blocks for the 12 months prior to the crop rotation
- Errors in the reporting of effluent processes
- Errors that impact on the results of Farm area calculations, live weight removal and stock reconciliation

Full details of all updates and an analysis of expected changes in N-loss, P-loss and GHG emissions are provided to users in Release Notes, along with the latest version of the Best Practice Data Input Standards on MyOverseer.

### Why does OVERSEER need to update regularly?

Overseer is continuously evolving to support changing farming practices and systems, reflect the latest scientific research, and improve the user experience.

For further information, please contact:

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Like all software tools, Overseer regularly updates to fix bugs and improve functionality. With each update, Overseer improves its prediction of nutrient losses from farms. For this reason, older versions of Overseer are not available after a new version is released. Maintenance updates typically occur every 6 months.

### How will Overseer 6.3.0 impact on nutrient loss estimates?

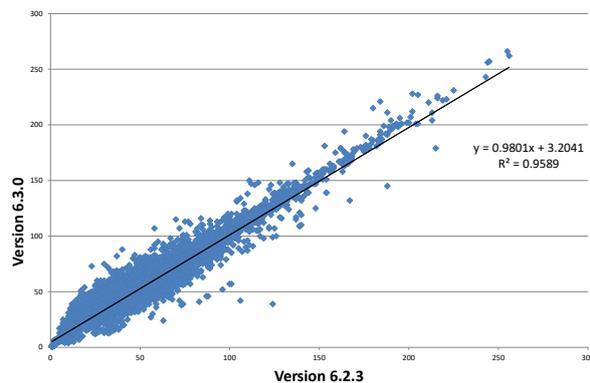
Most updates to Overseer change the nutrient budget estimates. This is because even minor updates to the engine will change the results.

To understand the overall impact of the changes, AgResearch run a drift analysis of just under 32,000 realistic farm files, mostly of dairy farms. This shows the range of changes users can expect. The results are published in the Release Notes.

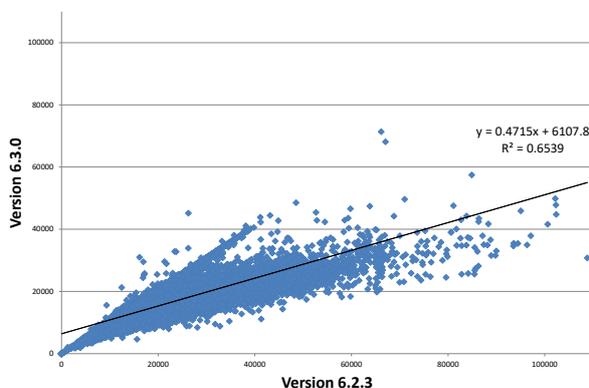
Most farm files will see a change in their N leaching and GHG emissions results between version 6.2.3 and 6.3.0. There is very little change in P loss to water.

Average change in N leaching of 3.1 kg N/ha/yr, and with 83.7% of the files tested showing a change. This is mainly due to changes to the crop model mentioned above, and the bug fix of a feed allocation algorithm that was generating error messages or unusual results.

The change is represented in this graph, which shows N loss to water, comparison between v 6.2.3 and v 6.3:



**Total N leaching, comparison between v6.2.3 and v6.3.0**



The model update also introduces an average change in greenhouse gas emissions of -3999.8 CO<sub>2</sub>-eq/ha/yr. Almost all files are showing a change, often with ghg values lower than that in 6.2.3, largely due to the reduction in nitrous oxide emissions.

The change is represented in this graph, which shows modelled greenhouse gas emissions, comparison between v 6.2.3 and v 6.3.0:

**Total greenhouse gas emissions, comparison between v6.2.3 and v6.3.0**

**Table 1: The absolute changes in key measures between v6.2.3 and v6.3.0**

	P loss to water (kg P/ha/yr)	N loss to water (kg N/ha/yr)	GHG* emissions (CO <sub>2</sub> -eq/ha/yr)	N Use Efficiency
Average change	0.0	3.1	-3999.8	-0.5
25th percentile	0.0	0.0	-6120.8	-1.0
75th percentile	0.0	5.0	249.0	0.0
% with no change	72.5	16.3	0.5	36.2

\* Greenhouse Gas,

Will my current farm file still work?

Yes, existing farm files will still work with the new Overseer version, and we encourage you to review and update your farm files, so Overseer can give you more accurate management information for your systems.

For those using the cropping model, they will need to manually update existing farm files with annual ryegrass and seed crops and any older XML files that they import . We have provided a guidance document to users with further information about this.

If my N-leaching estimates goes up, will I be prosecuted for breaching my resource consent?

Regional Councils set their resource consent compliance frameworks, knowing Overseer changes over time. Anyone with a consent requiring an Overseer N-leaching estimate should discuss changes with their council.

What about the new Overseer tool being developed?

Overseer is working on a new version of the tool, to be launched in the next few months. It will connect to the current Overseer engine, but will have a completely different (and easier to use) user interface. All improvements made to the current product's engine will be captured in the new tool.

### Summary:

The following summary is provided to support communication with your stakeholders about this Overseer update.

- Like all software, Overseer requires regular updating to incorporate new science and to fix bugs and improve functionality. All updates improve the estimates of nutrient losses from farms.
- Overseer 6.3.0 introduces outdoor pig farms to the model, introduces a new approach to the cropping model which require changes from some users, and includes bug fixes.
- The significance of the bug changes mean most farms will see a change in their N leaching and GHG emissions results. Some may be substantial.
- The average change for N leaching from 6.2.3 is 3.1 kg N/ha/yr, mainly due to changes to the crop model and a feed allocation issue and a bug fix of a feed allocation algorithm
- The average change in greenhouse gas emissions of -3999.8 CO<sub>2</sub>-eq/ha/yr, more often with GHG emissions values decreasing from v.6.2.3.
- Users can find more information about these changes with the Release Notes that are published on MyOverseer.

