

Release Notes – Overseer version 6.3.5

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1. Overall impact

Number of active farm accounts and scale of impact for the update to Version 6.3.5

% change	N loss/ha	P loss	GHG
≥20% increase	49	2	37
≥10% increase	37	2	70
≥5% increase	62	16	90
≥2% increase	143	39	201
>0% increase	1201	264	1350
0 (no change)	103	4443	164
<0% decrease	2908	454	3301
≤2% decrease	242	20	22
≤5% decrease	208	3	11
≤10% decrease	182	0	5
≤20% decrease	117	1	2
Fixed error	22	25	22
Created error	170	170	170

2. Animal weights

A new graph showing modelled weight gain for mobs has been added. This addition has come as a result of a review of mob data that is used by the model and a need to remove the ambiguity in how animals are set up. The key changes are as follows.

Sales at same weight

Legacy only allowed a single end (or carcass) weight for each mob and so if sales were made at different times during the year, all animals in the mob were assumed to have the same weight gain during the year.

Mobs with multiple sales were imported into OverseerFM with the same live weight for each sale in the mob. OverseerFM would call the model with a single end weight for all animals and so was consistent with Legacy.

This caused a problem where users had entered sales into FM at the same weight. For example, a sale in March at 40kg and a sale in May at 40 kg. The animals in each sale should be on different growth curves; however, these were merged into a single mob with a single end weight.

This release has updated the mobs that were imported from Legacy to use default weights for sales and hence place all animals on the same growth curve. While animals that have been entered in FM with the same sales weight will now be on their own growth curve. This reflects the fact that those sold earlier grew faster.

Default sale and mob end weights

Where sales are made at “default” weights, it can be a little unclear what that means. We have now applied the following rules:

- If an end weight is entered, this will be applied to the last animals in the mob. This may be any remaining animals on the farm or the last sale if all animals are sold and the sale uses “default” weight.
- If all animals are sold and the last sale does not use default weight, then you cannot enter an end mob

weight.

- If no end mob weight is entered, the model calculates the end weight based on the starting weight and typical growth rates.
- All default sales will track on the same growth curve as the last animals in the mob. This could be any remaining animals or the last sale if all animals are sold.
- Sales at a live/carcass weight have their own weight gain curve.

Weight gain graph

For stock classes that require weights, a weight gain graph has been added to the stock data entry screen in OverseerFM. This shows the modelled weight gain of different animals in the mob. The following is an example of animals being sold at different weights during the year. By showing this graph, users will be able to check for any errors in how the mob has been set up. Further help on using this graph is provided in OverseerFM. Search for animal weights to find it.



Weight gain in a single month

The model was not recording any weight gain if a mob was on the farm for one month only. This has now been changed to that there is some weight gain and hence there is a slight change in energy required by those animals.

Weight gain when no animals on farm

If all animals in a mob are removed from the farm and then animals are added to the mob in a later month, the model placed those new animals on the farm at the same weight as those that left (several months earlier). A change has been made such that those animals are now added at the weight the original animals would have been on that month.

Impact on N losses

The following table shows the impact of these changes on N losses. This is for all farms that have at least one analysis with a valid result using model version 6.3.4. There is a total of 6421 farms that meet these criteria.

The first row is where the farm has an analysis that was giving an error but is now fixed. The last row is where it was giving a result but is now in error. This is due to the change in ME requirements and hence feed requirements of the animals.

% change	% of farms
Fixed error	0.3
>=20	0.1
>=10	0.4
>=5	1.1
>=2	3.6
>0	47.4
No change	35.7
<0	9.1
-2	0.5
-5	0.2
-10	0.1
-20	0
Created error	1.5

3. Minimum leaching calculation

A discrepancy in the way the model implemented the minimum leaching was found and has now been corrected. In some cases (when mineralisation was low) the model gave a significantly lower N leaching rate than it should have.

The following rules are now applied for setting a minimum leaching rate for pasture:

- The default minimum value is 5
- For pasture, the minimum value decreases from 5 to 3 as the value of `initial mineralisation` decreases from 6.66 to zero. This reduces the minimum value on low producing sites irrespective of drainage.
- The minimum value decreased linearly from 5 as drainage decreases below 200 mm (rate: 5/200 (kg N/ha)/mm), with a minimum value of 1 if drainage is less than 40 mm. This overrides the pasture one.

For 3,497 farms the following changes were observed. There are several farms (138) that have significant changes (greater than 10%) in N loss numbers.

% change	% of farms
>=20	0.5
>=10	0.3
>=5	0.3
>=2	0.5
>0	1.1
No change	62.6
<0	22.8
-2	5
-5	2.8
-10	2.4
-20	1.6

4. Weaning age for outdoor pigs

In very rare situations the code was incorrectly setting the weaning age to 0. This has been corrected and we have found there is only one example of this in OverseerFM.

5. Fertilising crop blocks with headlands and tracks

If a crop block has defined part of the area as headlands/tracks and fertiliser was applied as a total amount, in some cases this was being incorrectly converted to a rate using the whole block area rather than subtracting the headland/track area first.

Out of 3552 farms, 12 farms had an N loss change by less than 2%.

6. Dairy lactation curve

AgResearch reviewed the current implementation of the dairy cow lactation curve and developed a more appropriate equation. While this has little effect on the overall result as it does change the distribution slightly during the year.

There were small changes in around 66% of farms, while in a small number the change in ME meant they now have a problem with the amount of food available to animals, generating an error.

% change	% of farms
Fixed error	0.06
0 -> 2	20.3
No change	33.4
0 -> -2	46.1
Created error	0.17

7. Error handling when animals overfed on crops

When animals were getting too much feed from crops the model was not always handling this error appropriately and so resulted in a balancing error that was difficult to diagnose. This has been corrected and so a more appropriate error is now shown to the user, making correction or assistance easier.

8. Supplement distribution across blocks

If supplements were fed on all blocks and monthly timing was entered, the same amount of supplement was fed on each block regardless of size. This is not consistent with how the model operates if no months were selected. This has been changed to feed amounts based on the area of each block.

Around 93% of farms were unaffected. 8 farms reduced N by between -2 and -5, with the remaining farms adjusted by between -2 and 2 percent.

% change	% of farms
Fixed error	0.03
0 -> 2	2.3
No change	92.7
0 -> -2	4.7
-2 -> -5	0.2

9. N balancing error for ryegrass crops

In some cases, ryegrass crops were not being treated like pasture in the model which created an imbalance in the nutrient budget. This has now been corrected and so should fix this problem.

98.5% of farms are unaffected, with the remaining farms change by less than 2%.

10. Change precision of ME parameters

Change precision of age factor from 0.000082 to 0.03/365. This changes basal energy for animals slightly.

Change to precision of energy coefficient from 0.042 to 0.0423.

% change	% of farms
Fixed error	0.03
>=20	0
>=10	0
>=5	0
>=2	0.14
>0	0.11
No change	86.8
<0	6.7
-2	4.8
-5	0.62
-10	0.03
-20	0
Created error	0.8



11. Dairy goat lactation curve

We have updated the dairy goat lactation curve to more accurately reflect current data.

Two farms were affected. N loss went down 5% on one and up 3% on the other.

12. Potassium slow release rate

The potassium slow-release rate was incorrectly set to 33.33 rather than 333.3. This has been corrected. Has no effect on N loss.