Overseer is jointly owned by MPI, Fert Association of NZ, AgResearch.

Strategic Plan 2009-2019

The VISION:

"A robust, science-based decision support tool and policy support tool that is widely used for improving farm profitability, optimising nutrient use and minimising impacts on air, soil and water quality."

CURRENT STATUS:

"The farm specific capturing of the movement of nutrients, and the modelling of losses for each process results in this model being potentially suitable to support implementation and monitoring of regional council policy."

Under Priorities it is stated that the path towards achieving the vision is ambitious and cannot be delivered in the short-term with existing funding. Furthermore, a "Science" priority is to "Consolidate the model and reduce current weaknesses before expanding its scope".

Study by Massey University 2013 states that "Uncertainty regarding the absolute accuracy of predictions from models like OVERSEER means that such models are generally better able to predict relative changes than absolute values. All model users need to recognise this aspect of model application.

OVERSEER is output based model

Differences between measured and modelled values, for example N leaching, are an expression of the certain/uncertainty arising from attempting to model complex biological processes with a minimum set of readily available farm data inputs. The uncertainty in N leaching (from the root zone) in a pastoral model has been estimated to be +/- 20% (Ledgard and Waller, 2001). Depending on who you talk to the uncertainties can be +/- 30% (an ECAN view) and up to +/- 100% (Fed Farmers). The uncertainty of phosphate run-off has not even been estimated.

Why is this? OVERSEER is designed for predicting the difference in nitrate *leaching* levels but not to specifically measure actual nitrate losses.

While in a regulatory context the impact of such OVERSEER-related uncertainties are lessened by conducting what-if-scenarios, as a farmer that presents serious problems for me!

Take for example the following scenario...

The Massey University reviewers further state the evolution of OVERSEER to becoming a primary tool for nutrient management, including setting regulatory limits by regional authorities, places an obligation on the owners of the model to resource the model and manage the increasing risks associated with the model.

A word on nitrate leaching and look up table values…ECANS Technical Report No. R10/127 (Sept. 2010)….in its conclusion its states:

"The are many difficult issues in estimating nitrate-N leaching rates for the main land uses on different soils and rainfall zones, including the rarity of good long term measured data, which means that models such as OVERSEER cannot be reliably calibrated for Canterbury conditions. An expert approach was used to extend the Lincoln University Dairy Farm data – Lincoln University is presumed to have adopted Best Practice and is the only farm used to establish base data for Canterbury dairy farms – to a range of soils, climates and other land uses. More data on both drainage and nitrate-N leaching rates are required.

The report concludes that while data in the report are a reasonable starting point to gain an understanding of the regional implications of land use in relation to nitrate-N leaching, the Caucus Workshop agreed that the values are not suitable for use at a farm scale as the values are simple long term annual estimates that do not take into account management practices. The extrapolation also does not take into account the feasibility of some of the soil/climate/land use combinations.

I therefore have two points to make:

1) OVERSEER in its current form is not suitable to identify my farm's or any other farm's base leaching rates for nitrate. *under best practice mgmt.*

2) The *base* leaching levels for Canterbury dairy farms identified by ECAN are based on one farm (Lincoln University dairy farm) and extrapolated *deriving* different soil and climate conditions, which in itself is an extrapolation ~~with~~ potentially large errors. *from there to*

This means that even if OVERSEER was able to predict absolute leaching levels, the base data *used* potentially ~~suggested~~ ~~by ECAN is~~ *are* of little meaning or even misleading. *For example…*

I go back to my initial concern…but will formulate it more in the abstract…if I make economic decisions based on base data set that diverges materially from my farm's actual leaching data, then the use OVERSEER in a regulatory context leads me as well other farmers' to make sub-optimal economic or environmental decisions. In other words, the dairy industry has a good chance ending up making inefficient economic decisions with scarce resources available. Alternatively, it is possible to make inefficient environmental decisions. From a societal perspective such outcomes are undesirable. If it is claimed that good science must go into the process of measuring and mitigating environmental impacts then OVERSEER is not the right way to go.
at least in its current form

Thx