

PLANNING YOUR PATHWAY WITH NUTRIENT CONSTRAINTS

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Local councils are currently introducing plans to meet objectives relating to water quality driven by Central Government. Nutrient management is a key aspect of emerging plans, which may have a significant impact on your farm business. Using the requirement for meeting nutrient management regulations as a catalyst for reviewing your farm business strategy will help to maintain control over the direction of your business into the future. This workshop aims to demonstrate how using OVERSEER as a tool we can develop a pathway forward. Having an understanding of the environmental constraint on your business, you will be in a better position to:

- Understand the impact your farm has on your surrounding environment
- Build a business strategy that is better able to respond to regulatory requirements
- Understand how within season and day to day operations may have an impact
- Ask great questions that can be useful in directing future research
- Advocate for your farm business.

The concepts of farming within limits and reducing nutrient loss are becoming increasingly familiar, along with the concern that compliance is only a cost to the business with no real value. OVERSEER is a tool used for estimating nutrient losses from a farm system; however, the emphasis has been on the use of OVERSEER nutrient budgets for compliance – to generate “a number”. Using a tool such as OVERSEER to run a retrospective nutrient budget each year is a waste of horsepower. A nutrient budget on its own has little meaning, and is of little value when you have a limit, or have to manage reductions. When well used however, with context and understanding of the farms physical resources, system, and business direction, OVERSEER is a powerful tool to highlight aspects of the production system that can be altered in a sustainable way for the business.

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Using a case study to step through the process, it is possible to relate it back to how you want to plan for your own farming business, and be able to see actions to ensure you are well placed to understand the impact for your business.

Identify governing rules for the farm business

The first step is to understand the rule maker for the property and who you will be reporting to. There are a number of “governing bodies” that may be holding you accountable for your nutrient losses and setting limits. Examples of these may include:

- Local Regional Council (Regional Plan rules, irrigation consent conditions, effluent consent conditions, land use consents, riverbed grazing consents etc)
- Irrigation schemes
- Overseas Investment Offices – OIO
- Milk/meat processing companies.

It is important to note that there could be several relating to one business, and they may involve achieving reductions in Nitrogen loss. Once you know your governing rules, you will know what you are required to quantify to determine your limit.

Run OVERSEER to determine the limit associated with your nutrient losses

As an example, a property located within the red zone under Canterbury’s Land and Water Regional Plan must ensure future Nitrogen losses do not exceed their baseline Nitrogen loss. The OVERSEER model calculates an estimate of nitrogen lost from the bottom of the root zone, and in many cases this becomes a limit.

It is important to note that in some Regional Plans there is still a requirement to quantify Phosphorus losses as well as Nitrogen losses, with limits associated with both.

What is the impact of the constraint?

After determining your limit, you can estimate the impact on your business by running a current OVERSEER nutrient budget and comparing the two. Running an additional scenario or scenarios allows the best comparison, and is an excellent way to see what management options your farm is sensitive to. This part of the process is the trigger for strategic discussions at a high level and looking across multiple years.

When running future scenarios, don’t sell yourself short. Start with what amazing would look like, and don’t quit on your dreams before you start. A well constructed nutrient budget can help identify key risk areas and enables you to identify practical means of managing N loss risks. Seeking sound advice is important to shed light on what it would take to make it happen. At Agri Magic we decouple intensification from nutrient loss; it is our challenge (on your behalf) to

continue increasing on farm productivity and resource use efficiency, and to mitigate the impacts associated with nutrient loss.

Once modelled, it is important to use a number of OVERSEER's reports to check for sensibility. They help the modeller to know if the scenarios are realistic and also which aspects of the system are the most sensitive to losses. It is commonly known that aspects such as improving irrigation water use efficiency and reducing drainage will reduce nitrogen losses. However, given the complexity of farm systems, and the impact of the rules, an understanding of what is driving nutrient loss for your property and being able to identify where you would make the best improvements within the context of your farm business objectives is fundamental. Understanding how your management changes affect nutrient loss is still a new concept, but as farmers, you naturally grasp cause and effect and OVERSEER helps us demonstrate that.

Through analysis of the scenarios, and quantifying the magnitude of the limit, the key risks associated with achieving your goal or scenario become clear. Everyone making operational decisions within your farm business needs to understand the constraint, and the impact their decision making has on that.

Each farm is unique, with different mixes of resources including soils, climate, topography, irrigation opportunity, and management (capability and style). Because of this, your situation **will be** different to your neighbours and requires a **customised approach**.

Linking the limit with day to day and within season operations

Some farms will be operating very close to their limit already and may require stricter management going forward; others may have wiggle room in the system to respond to seasonal changes associated with climate, people, and pay-out.

For each farm the risk associated with nutrient losses will be different. On one farm for example, managing the rates and timings of nitrogen fertiliser use may be a greater risk to nutrient losses than growing a crop on the platform for transition feeding. Another good example to think about is the consequence in regards to nutrient losses if you cannot respond to your soil moisture monitoring technology.

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OVERSEER nutrient budgets and Farm Environment Plans are key tools available for managing risks associated with environmental limits. A Farm Environment Plan, is a live document you use to record the good management practices you are already implementing on-farm, the evidence you have of this, and any future actions required.

Bullet pointing these points on one page that can be easily located (in the dairy diary), and that is updated each season is a great way to focus the most important day to day, or within season actions and consequences. This document can be updated when you complete your year-end nutrient budgets for compliance and are planning for the next season. Having completed your feed and financial budgets for the upcoming season at this stage is also useful as it your responsibility to know what you can afford if mitigations are required. At Agri Magic we can provide a one page Agri Magic risk sheet customised to each farm to highlight the key seasonal and day to day decisions that impact the ability of that farm to remain within its limit.

The role of new research in your system

There is a lot of research being undertaken to identify ways to reduce nutrient losses on farms. Often the research will look at one aspect of the farm system; for example, the use of catch crops (such as oats) following winter feed crops. It is important to understand the impact new research has on components of a farm system, however, any potential options should not be looked at in isolation. Using the catch crop example, when integrating a catch crop of oats following kale into your management plan, the nitrogen losses may be reduced on that area of the farm that was in winter feed; however, the impact across the whole farm could be minor. It is fundamental that new research or mitigation options are modelled within the context of your whole farm. Any future reductions required are not based on a block within your property, they are across the whole farm, therefore, a number of mitigation options may be required to achieve the reductions required.

Influencing your future

“Effects based policy” is an opportunity for you to continue to innovate and to manage your own reductions. However, it is fundamental that you, and those influencing your farm business understand your own impact first, and how what you do within your farm impacts nutrient losses. Once understood, you can make a plan to move forward through this new world of nutrient related constraints. A change in culture around on-farm recording, combined with amazing new Information Technology options becoming available could present huge opportunities for our industry in the future. If you don’t plan to embrace this period of change as a way to improve business performance and get the most out of the inputs you are using, you risk being forced by input controls.

With better insight for your own business, you immediately become a far better advocate for not only yourself, but for your industry. You will be able to communicate back to the community the changes and progress made, and be in a better position to influence future policies. Invest in gaining a better understanding of the risks associated with your business to be able to plan your pathway forward; it is complex and could have a big impact on the future of your farm business.

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