

Sustainable Nutrient Management in New Zealand Agriculture



FARMED
LANDSCAPES
RESEARCH
CENTRE

FLRC - SOIL, WATER, AIR MATTERS



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Introduction

Background

In accordance with the Resource Management Act (RMA, 1991), the Code of Practice for Nutrient Management aims to ensure that where fertilisers are applied, they are used safely, responsibly, and in a way that avoids, remedies or mitigates any adverse environmental effects, while ensuring that profitability from fertiliser use is maintained. The RMA provides very general statements on how to measure and assess sustainable land management. Therefore, in order to provide clearer guidance, the Code of Practice for Nutrient Management makes use of an internationally recognised, agriculturally based process known as the Framework for Evaluating Sustainable Land Management (FESLM)^a to assess environmental, social, and economic effects. The FESLM uses five guiding objectives to measure sustainability, which are to:

1. protect natural resources and prevent degradation of soil, water and air quality
2. maintain or enhance production/services
3. be socially acceptable
4. reduce the level of potential risk
5. be economically viable.

The five FESLM principles can be grouped into two areas:

- environmental issues, and
- financial and social issues

The Code of Practice for Nutrient Management focuses on several significant environmental considerations:

- determining the land's requirement for nutrients
- nitrate leaching
- surface water contamination from fertiliser runoff
- surface water contamination from direct application of fertiliser to water
- potential effects of third parties.

The Code of Practice for Nutrient Management also provides practical advice to farmers and growers to assist them in adopting best practices for nutrient management.

^a see FESLM website: <http://www.fao.org/docrep/T1079E/t1079e00.htm>

Course Content and Objectives

This shortcourse has been designed to provide a working knowledge of the assessment of the nutrient requirements of a range of agricultural systems, with consideration to best practice for environmental protection. This course comprises the following sections:

1. Farming and Water Quality-Defining the Issue
2. Soil Patterns, Landuse and Climate
3. Nutrients and Nutrient Cycles
4. Diagnostics: Soil and Plant Testing
5. Nutrient Transfer to the Aquatic Environment
6. Issues with contaminants in Fertilisers and By-products
7. Nutrient Cycles and Nutrient Budgeting
8. Overseer® Nutrient Budgets
9. Complying with the Code of Practice for Nutrient Management and Market Requirements

Sections 1 to 7 of this Study Guide have been provided for pre-course revision on the fundamental principles of nutrient behaviour in soil/plant/animal systems. At the shortcourse, case studies are used to familiarise participants with:

- the theory and current practice of determining nutrient and fertiliser recommendations (with extensive use of the Overseer® nutrient budgeting model),
- estimating nutrient losses from agriculture and their impacts on the wider environment,
- the influences of fertilisers on soil nutrient levels,
- recording the sustainable use of nutrients through the Fertiliser Association of New Zealand's Code of Practice for Nutrient Management,
- indicators used to assess the nutrient status in soil, plants, water and atmosphere,

On completion of this shortcourse participants should:

- a) be familiar with the impact of agriculture on water quality in New Zealand and the associated legal and social issues,
- b) know the theoretical basis on which the current Code of Practice for Nutrient Management is based,
- c) be able to use the knowledge on soil processes and nutrient management taught in the course to critically assess methods proposed for sustainable nutrient management in agricultural systems.

Please Note:

The delivery of this course in 2020 has been affected by the Covid-19 pandemic.

Whilst the Course Content and Objectives remain the same, there is no contact course involved and the material that would have been presented at the contact course is now made available on-line. Details about the delivery processes will be sent to you in a series of emails.