

Best Practice Information Sheet

Nutrient management

Sheet 29.0a

Introduction

Why change?

Good nutrient management can save time and money, and protect the environment. Know the value of nutrients in all available sources, (e.g. soils and manures) and balance these with accurate and timely applications of supplementary fertilisers to meet your crop nutrient needs, and benefit from:

- cost savings due to increased efficiency and reduced inputs
- optimum crop yields and quality
- reduced risk of watercourse pollution legal costs and fines
- improved habitat and fishery



Farm nutrients are valuable and need management

Steps to success

- 1. Review the current situation** by examining nutrient management on your farm. As a first step, consider your planning system, your fertiliser inputs and the extent to which you integrate a range of nutrient sources.
- 2. Identify potential opportunities** for improving your nutrient management. If you can identify pollution, make the most of the nutrient reserves in your soils and organic materials you could improve crop production, save money and protect the environment.
- 3. Calculate the cost-benefit of these opportunities** by estimating the cost of improving your nutrient management, (e.g. soil and manure nutrient testing, calibration of machinery) versus the benefits of improved crop production, reduced inputs and lower risk of pollution.
- 4. Develop an action plan** for improved nutrient management on your farm:
 - know the nutrient requirements of your crops on a field-by-field basis
 - know the nutrient reserves in your soils. Develop a soil testing programme to assess nutrient levels and pH on a regular basis (see Sheet 30)
 - know the nutrient content of your manures and slurry. Use standard values for planning purposes and sampling and laboratory analysis for more reliable guidance. Remember to establish the nutrient content that is **available** to the crop and take account of the part released slowly for later crops
 - consider the use of alternative nutrient sources such as green manures arising from cover crops (see Sheet 32)
 - minimise your need for supplementary fertilisers by developing a nutrient budget to integrate the use of all available nutrient resources (see Sheet 33)
 - apply fertilisers accurately, at the right time and with properly calibrated equipment to maximise profits and to minimise losses and environmental impact (see Sheet 34)
 - observe mandatory guidelines under cross compliance if your farm, or part of it, lies within a Nitrate Vulnerable Zone. Be aware that the designated NVZ area was extended in 2009 and now covers nearly 70% of agricultural land in England. Follow NVZ guidance booklets on nutrient management including application and storage of organic manures and calculating crop nitrogen requirements and maximum fertilizer application rates.
 - Make use of nutrient management plans such as 'Tried and Tested' (paper-based or electronic spreadsheets) from www.nutrientmanagement.org or phone 0247 858 8796 or PLANET (computer-based) from www.planet4farmers.co.uk or email: planet.admin@adas.co.uk and take advice from a FACTS adviser (www.facts.org)
- 5. Plan** your nutrient management on a field-by-field basis using a farm map. Review your plan annually.
- 6. Check** the quality of the watercourses and wildlife habitats on your farm regularly for signs of pollution due to nutrient runoff. Aim to minimise nutrient losses to safeguard the environment and save money.

Nutrient management

Sheet 29.0b

Practical example

[adapted from www.nutrientmanagement.org]

A farm with 430 dairy cows and 300 young stock operating over owned and rented land. During the winter, the yearlings and calves are on straw and bulling heifers are on half straw, half slurry. For about 10-12 weeks from November to mid-January, there are 230 ewes grazing on the home farm. Sheep may also graze parts of the rented land. The home farm consists of 20 hectares of feed wheat and 57 hectares of grass, of which three hectares are permanent pasture. There is also nearly five hectares of broadleaved woodland. The rented land is used to grow grass, wheat, maize, fodder beet and oilseed rape.

The farm's policy is to use as little artificial fertiliser as possible by making the most of the slurry and farmyard manure (FYM) generated by the dairy unit. Every field on the home farm can receive slurry via an umbilical system. Slurry is transported several miles to the rented fields by tanker (its value is reduced but the cost of diesel).



Green algae are a sign of excessive nutrient loss to watercourses

The significant nutrient content of the organic manure produced by the dairy unit is taken into account when planning fertiliser applications. To ensure they know how much nitrogen has been applied, the farmers record how much slurry is spread and measure its dry matter (DM) content with a hydrometer before application. Having had a full slurry analysis performed regularly in the past, the farmers are confident that DM content gives them an accurate assessment of nitrogen content.

The farm is in a Nitrate Vulnerable Zone (NVZ) and the rolling annual application is therefore limited to comply with the regulations (153 m³/ha dairy slurry (2 per cent DM), 43.5 tonnes/ha cattle FYM and 33 tonnes/ha of digested sewage sludge (7.4 kgN/tonne fresh weight)).

To obtain greater efficiency from the nitrogen in their slurry, the farmers are considering band spreading or shallow injection as this can reduce ammonia losses by up to a third. More spreading days are also allowed because herbage contamination is less.

There are significant cost savings at the farm from using a nutrient planning tool which considers previous cropping regimes and the nutrient contribution made by organic manures. The farmers buy only limited amounts of manufactured fertiliser, relying instead on the nutrients in their applied organic manures (valued at over £40,000 at March 2008 prices). Purchased nitrogen represents only about a third of the total value of fertiliser application – much less than the industry average. A new slurry lagoon will enable the farm to meet the extended storage period proposed in the new NVZ Action Programme and gives them the flexibility to spread slurry in the spring when nitrogen is used more efficiently.

Remember

- Organic by-products are valuable so aim to make the most of them.
- Making efficient use of organic by-products will minimise the risk of pollution.
- Monitor the effectiveness of your management by checking cost savings and crop yields.
- Remember to check watercourses for signs of pollution on a routine basis.

For further information: Defra (www.defra.gov.uk), Environment Agency (www.environment-agency.gov.uk), ECSFDI (<http://www.defra.gov.uk/foodfarm/landmanage/water/csf/delivery-initiative.htm>), Natural England (www.naturalengland.org.uk), Cross Compliance Helpline 0845 345 1302 (www.crosscompliance.org.uk) and ART (www.associationofriverstrusts.org.uk)



This information sheet is part of a series providing farmers with advice on land management practices to protect water bodies, produced by Association of Rivers Trusts with support from the England Catchment Sensitive Farming Delivery Initiative. The advice will also enable farmers to use farm resources more efficiently and help meet Nitrate Vulnerable Zone and Soil Protection Review requirements under Cross Compliance and environmental regulation.



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