PINPOINT
Rivers Trusts and Farmers tackling water pollution

Association of Rivers Trusts
where there's water there's life

A clear solution for farmers
ENGLAND CATCHMENT SENSITIVE FARMING DELIVERY INITIATIVE

Farm advice on reducing diffuse water pollution from agriculture, delivered in partnership between Defra, The Environment Agency and Natural England

Best Practice Information Sheet

Nutrient management

Sheet 33.0a

Nutrient planning

Why change?

Good nutrient management aims to meet crop requirements, maximise crop uptake and minimise losses to the environment. Develop a nutrient budget for your farm to integrate available nutrients from a range of sources, reduce the need for supplementary fertilisers, and benefit from:

- improved crop uptake, yields and quality
- reduced cost of fertiliser inputs
- reduced risk of nutrient losses, watercourse pollution and fines
- improved habitat and fishery quality.

Nutrients from all sources should be included in plans

Steps to success

1. **Review the current situation** by examining your nutrient planning system. Consider your fertiliser use and whether you make the most of all available nutrient sources such as soils and organic manures.

2. **Identify potential opportunities** for developing a nutrient budget for your farm. Identify signs of unnecessary fertiliser use such as lodging in cereals, poor fermentation in grass silage and low sugar levels in beet. Look out for pollution and unexploited nutrient sources.

3. **Calculate the cost-benefit of these opportunities** by estimating the cost of developing a nutrient budget, (e.g. soil and manure testing) versus the benefits of improved crop production, reduced inputs and lower risks of pollution.

4. **Develop** a nutrient budget for your farm:
   - plan your nutrient budget using a farm map. Aim to minimise fertiliser inputs by making the most of the full range of nutrient sources on your farm, including soil reserves, manure and slurry and alternatives such as green manures. Keep records of soil type, crop type, crop requirements and applications on a field-by-field basis to aid future planning
   - know the nutrient requirements of your crops throughout the rotation. Calculate crop-specific nutrient requirements rather than using standard figures
   - know the nutrient reserves in your soils. Develop a soil-testing programme to assess nutrient levels and pH on a regular basis. Test soils annually for N, and on a 4-yearly basis for P, K and Mg
   - know the nutrient content of your manures and slurry. Use standard values for general planning purposes or sampling and laboratory analysis for more reliable guidance. Remember to establish the nutrient content that is **available** to the crop
   - know the nutrient content in alternative sources such as green manures
   - calculate your inorganic fertiliser needs by subtracting the value of nutrients in your soils, manures and slurry and alternative sources from the nutrient requirements of each crop
   - Refer to the ***Fertiliser Recommendations*** Handbook Defra RB209
   - Observe mandatory guidelines for application of manures and fertilisers if your farm lies within a Nitrate Vulnerable Zone (NVZ)
   - 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. **Ensure** accurate, well-timed applications of fertilisers and manures using properly calibrated equipment in order to safeguard the environment and save money.

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Nutrient management **Sheet 33.0b**

Nutrient planning - Practical examples

Soil nutrient testing

Regular checking of soil nutrient reserves and pH helps to reduce fertiliser costs and encourage the availability of nutrients.

In this example, soil testing of 10ha of grass silage land, which is manured each year, showed a phosphate and potash index of over three. Using existing soil reserves for two cuts of silage saved 75 kg of P/ha and 175 kg K/ha. Soil testing on 10ha for P, K and pH on a 4-5 year rotational basis costs some £75/year, provided the farmer collects the samples.
This gives fertiliser savings of approximately £85/ha, a total saving of £850. The payback period is less than one year.

Examples of alternative sources of nutrients

- Composted FYM.
- Crop and produce waste.
- Composted green waste.
- Feed waste.
- Sewage sludge.
- Slurry digestate from energy production.
- Milk waste

All should be part of your nutrient budget.

Nutrient planning should include all organic and non-organic sources

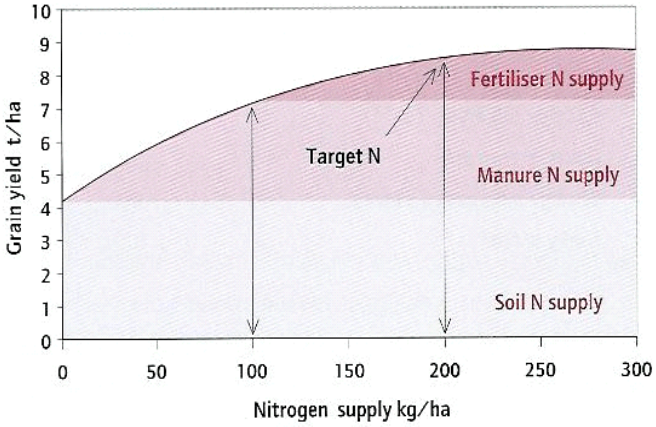
Integrate your nutrient supply and save money

Minimise the need for expensive inputs, and maximise crop yields and quality, by integrating your use of manures and inorganic fertiliser N.

Aim to supply up to 50-60% of your crop's expected N requirement for optimum yield from organic manure, and only use inorganic fertiliser N to top up crop needs.

For example, if winter wheat responds to an optimum rate of 200kg/ha N, supply half of the crop needs from manure and half from inorganic fertiliser N. This would minimise the potential impacts of variations in manure N supply as crop N requirements will be at the top of the yield response curve.

Plan the application rate for total manure nitrogen for each field to ensure that no more than 250kg/ha is applied each year.



Supplying winter wheat requirements from manure and fertiliser sources Source Defra

Remember

- Good nutrient management minimises fertiliser inputs allowing you to maximise economic returns and safeguard the environment. Calculate the nutrient requirement of your crop and then deduct the nutrients supplied from your soils, organic materials and alternative nutrient sources to budget the need for inorganic fertiliser.
- Observe mandatory guidelines for applications of manures and fertilisers if your farm, or part of it, lies within a Nitrate Vulnerable Zone.
  NVZ and cross compliance helpline 0845 345 1302

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)

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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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