

Best Practice Information Sheet

Nutrient management

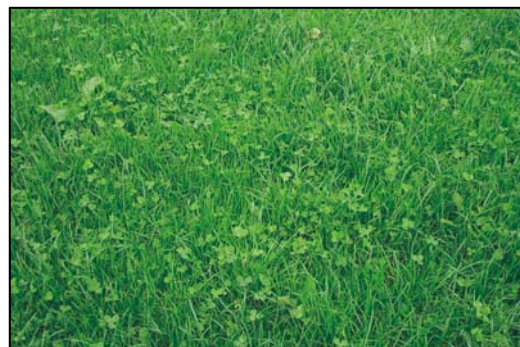
Sheet 32.0a

Alternative nutrient sources

Why change?

Good nutrient management aims to meet crop requirements and minimise losses to the environment. Consider integrating alternative nutrient sources such as green manures into your nutrient budget to reduce fertiliser use and benefit from:

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



Crop rotation can be used to introduce nutrients to the soil.

Steps to success

- 1. Review the current situation** by examining nutrient management on your farm. Consider your use of mineral fertilisers, and the extent to which you make the most of alternative nutrient sources such as legumes and other green manures arising from cover crops.
- 2. Identify potential opportunities** for increasing your use of alternative nutrient sources to reduce the need for expensive fertiliser inputs. To start, take a look at your rotation, and identify the scope for integrating the nutrient resources in cover crops and legumes, which can add nitrogen and other nutrients to the soil.
- 3. Calculate the cost-benefit of these opportunities** by estimating the cost of including alternative nutrient sources, such as rotation changes and cover crop establishment, versus the benefits of improved crop production, reduced inputs and lower risks of pollution.
- 4. Develop an action plan** to make the most of alternative nutrient sources on your farm:
 - use a farm map to help you to plan your use of alternative nutrient sources and integrate all available nutrient reserves on your farm. Review your plan annually
 - identify potential alternative nutrient sources on your farm. For example, consider integrating the nutrient reserves in legumes and green manures arising from cover crops into your nutrient budget
 - estimate the value of nutrients supplied from alternative sources
 - plan rotations to maximise nutrient carry-over. Avoid supplying excess nutrients to following crops.
 - Follow crops such as oilseed rape, legumes and grass with high N demand crops
 - calculate your need for supplementary fertilisers by accounting for the nutrient reserves in your alternative nutrient sources, soils and any organic manure applications, and subtracting these from the crop requirements
 - Refer to the **Fertiliser Recommendations Handbook** Defra RB209.
- 5. Ensure** accurate, well-timed applications of fertilisers and manures using properly calibrated equipment in order to safeguard the environment and save money.

Nutrient management

Sheet 32.0 b

Alternative nutrient sources - Practical examples

Bi-cropping and grain yield

Bi-cropping allows a few years of continuous cropping and, at a yield of 4-5 tonnes/ha, it compares favourably with organically grown wheat. The table below gives the crop yields for an average of three years.

| | Production output £/ha | Variable costs £/ha | Gross margin £/ha | Operating costs £/ha |
|----------------|---------------------------|------------------------|----------------------|-------------------------|
| Silage | | | | |
| Clover bi-crop | 1010 | 180 | 830 | 193 |
| Conventional | 1155 | 293 | 862 | 230 |
| Grain | | | | |
| Clover bi-crop | 698 | 185 | 513 | 198 |
| Conventional | 1102 | 326 | 776 | 254 |



Clover in sward.

Bicropping/reseeding clover

In this example, a farmer decided to review his management of 38 ha of grassland.

Normal practice was to apply 300 units N/acre (375 kg/ha). This cost £6900 a year plus spreading (at £250) = £7150 (£188/ha).

Re-seeding with clover in a 10-year ley provided a saving of £6450 a year from reduced mineral fertiliser applications.

Remember that bi-cropping enables you to reduce the risk of runoff and soil erosion, helping to protect your soil resource for the future.

Alternative sources should all be part of your nutrient budget:

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

Remember

- Good nutrient management minimises fertiliser inputs, maximises economic returns and safeguards 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. 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.associationofrivertrusts.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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