

Best Practice Information Sheet

Organic by-products

Sheet 2.0a

Application Plans

Why change?

Save money by managing organic materials such as FYM and slurry wisely. If applied at correct rates and in a timely manner the organic material and nutrients each contains is valuable for crop growth. By developing an application plan you can:

- reduce storage and application costs
- make the most of its crop nutrient value
- reduce the risk of surface or groundwater pollution.



Application is key to vegetation growth

Steps to success

1. **Develop a management plan** for organic by-products such as FYM, slurries, poultry litter or spoiled crop materials based on Defra's "Protecting our Water, Soil and Air: Code of Good Practice for farmers, growers and land managers". Using a field map of the farm identify "no go" spreading areas, very high risk areas where organic materials should not be spread in winter, and high risk land for reduced applications. Ensure you have sufficient storage to meet these requirements and reduce costs by keeping clean water out of storage zones.
2. **Check the available nutrient content** of a representative sample of the organic material or use Defra nutrient tables as a guide to availability to crops and benefits to soil reserves throughout the crop rotation.
3. **Take account of crop needs** in deciding your application rate and calibrate your equipment to deliver it evenly.
4. **Consider** rapid incorporation, injection or band spreading of manures. This ensures more nitrogen is available for crops than broadcast spreading because less is lost as ammonia (30-70%), reducing odour and herbage contamination. Use equipment that does not damage soils in the spring.
5. **Identify optimum windows for application.** Slurries, poultry manures and liquid digested sludges with high levels of "readily available" N should be applied in the early spring. Their value is reduced if they are applied in the autumn because of losses by leaching, particularly on sandy or shallow soils. FYM and dewatered cakes can be spread in autumn because they have less "readily available" N and therefore undergo less leaching over winter.
6. **Apply "readily available" N** to satisfy known crop requirements, taking account of soil reserves. Do not apply more than 250kg/ha of total N in organic manures in any 12-month period. The application rate should not exceed 65m³/ha for typical cattle slurry with a dry matter content of 5-6% to avoid scorch and poor silage quality. Rates should not exceed 50m³/ha to minimise risk of nutrient losses from runoff resulting in pollution. **Remember** that manures often supply adequate P and K for crops.
7. **Do not apply** to the selected land if it is flooded, waterlogged, frozen or snow covered, or when rain is forecast. Remember that GAEC 1 (soil management and protection; general requirements) and GAEC 3 (waterlogged soil) must be adhered to under cross compliance.
8. **Mandatory application rates and timing of application apply** in SMR 4 Nitrate Protection Zones, which have been extended over much agricultural land. Check whether your land is in a Nitrate Vulnerable Zone (www.defra.gov.uk/Environment/water/quality/nitrate).

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Sheet 2.0b

Application Plans - Practical examples

Manure nutrient testing

Manure from a 100-cow dairy herd that was housed during the winter was tested and spread at the correct rate and time. It provided an **available** nutrient benefit worth over £50/cow/year and additional benefits to soil reserves for other crops in the rotation.

The cost of the nutrient testing kit (undertaken by the farmer) was £300.

One dairy cow produces 9.6 tonnes of manure/housing period. The **available** nutrients per tonne of manure are 1.1 kg N, 0.6 kg P and 3.2 kg K. The average prices of inorganic fertilisers are N = £1.07/kg, P = £1.50/kg and K=£0.97/kg. The value per cow is £50, a total of £5,000 for the herd.

The payback period is less than a year if used to offset fertiliser purchase.



N meter and slurry hydrometer.

Soil nutrient testing

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

In this example, soil testing of 10ha of grass silage land that is manured each year showed a phosphate and potash index of over 3.

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 £100/year, provided the farmer collects the samples.

This gives fertiliser savings of £280/ha, a total saving of about £2,800 and a payback period of less than one year.



Silage production using available nutrients.

Remember

- Check soil nutrient reserves and organic materials to get the most from your applications.
- Manure application times and rates in NVZs are mandatory.

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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