



Best Practice Organic by-products

Sheet 1.0a

Introduction

Why change?

Managing organic by-products, such as animal manures, slurries, dirty water and crop and produce waste, is a substantial cost to many farming businesses. By careful planning and often simple changes, it is possible to:

- reduce handling, storage and application costs
- make the most of nutrient and soil improvement value
- improve crop yields
- produce compost and energy
- reduce the risk of pollution.
- Reduce greenhouse gas emissions



Steps to Success

1. **Understanding** how best to manage the organic materials that arise on-farm is important in making a success of many livestock and cropping enterprises. Many of the hidden costs and risks arise here. Organic by-products can often mean the difference between profit and loss. Make the most of your opportunities by:

- using an application plan to ensure that the organic materials are applied at rates, times and in areas where you will obtain the most benefit from crop growth, whilst minimising the potential losses of nutrients, as well as air and water pollution and meeting Nitrate Vulnerable Zone (NVZ) requirements (see Information Sheet (IS) 2)
- storing manures and slurries until weather and soil conditions are suitable, and crops can make good use of the nutrients. Review your storage requirements to ensure that you have the flexibility to use the benefits of this important resource and meet NVZ requirements (see IS 3)
- making efficient use of manure and slurries to reduce mineral fertilisers' applications, improve soil structure and reduce the risk of pollution. Make certain you are making the most of this valuable resource and meeting NVZ requirements. Manure from winter housing is worth £90-100/cow (see ISs 4 and 5)
- dealing efficiently with dirty water where there are considerable savings to be made. It is also a common cause of water pollution, with the associated risks of fines and civil damages. Take action to reduce your risks and costs (see IS 6)
- managing silage liquor, which is one of the most polluting organic substances arising on-farm. Ensuring silage liquor production is minimised and securely managed can reduce costs as well as the risk of water pollution and the associated fines and civil damages (see IS 7)
- composting manures and other organic materials arising on-farm. This is often a valuable process since it can reduce storage and application costs, the burden of pathogens and weed seeds, odour, and the need for fertilisers and herbicides, as well as offering a wider window of use than manure or slurries (see IS 8)
- minimising crop and produce by-products, which can comprise between 2%-25% of your marketable produce. There is often considerable scope for reducing spoilage and improving management of wastes (see IS 9).
- reducing the risk of point source and diffuse water pollution, with its potential fines, costs, and bad publicity (see IS 10)

2. **Take a careful look** at your organic by-products to maximise their value, reduce costs and reduce risks.

Practical examples

Livestock manures on arable crops In this actual example, a farm with 300ha of combinable crops, roots and 100 dairy cows spread manure in autumn but did not account for the nutrient value. Problems of lower sugars and higher amino acids occurred in the sugar beet crop, whilst the potato crop suffered from excess nutrients.

After independent advice, the farm developed a nutrient management plan taking full account of organic manure for both previous and future applications.

Soils in all fields were sampled on a three-year cycle, and top-up fertiliser was applied on an individual field basis to exact crop and yield requirements.

The new system saved over £6000/year and made a positive improvement to farm performance.

Pig slurry on winter wheat. In this worked example, pig slurry with 4% DM content is applied in spring as a top dressing to winter wheat, on ground where the previous crop was a cereal. The available nutrients in pig slurry are N 1.8 kg/m³, P 1 kg/m³ and K 2.2 kg/m³. The soil indices of P and K are both assumed to be 2 but soil testing would be undertaken to confirm this.

The nutrient requirements for winter wheat (straw incorporated) are N = £1.42/kg, P = £0.44/kg and K = £0.22/kg. Allowing for the soil reserves a pig slurry application of 50m³/ha, supplies about half the N (90kg/ha) and sufficient P (100kg/ha) and K (125kg/ha).

The saving against the nutrient requirements of winter wheat reduces the NPK fertiliser inputs for this crop at costs of at costs of £0.75p/kg N, £0.67p/kg P and £0.46p/kg K*, by £140/ha. The total saving on NPK fertiliser inputs over the crop rotation, allowing for extra total P and K in soil reserves, is up to £360/ha.

* Prices are subject to change

Managing storage allows flexibility to apply manures when the weather, soils, and crops will benefit most.

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.
- Check watercourses for signs of pollution on a routine basis.