

MANURE AND COMPOST AS A FERTILISER



Photo: ORC

PROBLEM

Manure and compost are a useful source of nutrient and soil conditioner and could be used better in conventional farming to reduce the reliance on synthetic fertiliser

SOLUTION

Manure and compost act as valuable soil amendments. Manure is a valuable source of nutrients and reduces the reliance on chemical fertilisers. Compost can be a useful soil conditioner, contributing to improved soil health. They are both by-products from other processes.

OUTCOME

When used effectively as part of a Nutrient Management Plan, manure and compost act as a valuable fertiliser and soil conditioner. The nutrients provided by these sources can dramatically reduce the need for bagged synthetic fertiliser and associated costs. It also utilises a by-product from another system. As well as providing nutrients directly to crops, these products can also help increase organic matter within the soil, leading to enhanced water holding capacity and drought resistance of light and heavy soils. The biological activity can also be stimulated by manure additions and in some cases lead to increased earthworm numbers.

APPLICABILITY

Applicable production types



Application time

To make optimum use of the N contained in organic manures, they should be applied at times of maximum crop uptake – generally during the late winter/spring period

Regulatory compliance

Effective use of manures and composts is encouraged by certification schemes such as LEAF Marque and Red tractor. However, there are strict application guidelines to minimise leaching and pollution, especially in Nitrate Vulnerable Zones

Equipment/resource required

Access to manure and compost. Storage, haulage and application material required

Best in

Combinable crops, grassland and field horticulture

PRACTICAL RECOMMENDATIONS

IMPLEMENTATION

- Compost can act as a valuable source of organic matter and soil conditioner. Manure contains a useful source of nutrients
- Consider how you could introduce manure and/or compost into your soil management plan
- Establish a source of product. If not readily available, this could involve introducing your own (or others) livestock onto the farm, finding a local source of compost or importing manure from a local livestock farm.
- For reliable fertiliser planning, it is important to know the nutrient content of applied manures. Manure and compost should be regularly tested for nutrient values.
- Using the values, integrate all compost and manure additions into your wider Nutrient Management Plan. For more information on this see: www.nutrientmanagement.org/home/
- Ensure you consult and adhere to rules and regulations in your area. Pay particular attention if you are within a Nitrate Vulnerable Zone.
- Before applying compost and manure, machinery should be calibrated to ensure accurate application. There is a range of different equipment available. Consider which you use to minimise ammonia emissions.



EASE OF ADOPTION ON NON-ORGANIC FARMS

- Easy to adopt on non-organic farms provided there is access to manure and/or compost

BENEFITS OF IMPLEMENTATION

- Manures and composts are valuable soil amendments. As part of a wider soil management plan, they contribute to enhanced soil health and biology and associated environmental and yield benefits
- Effective and efficient use of manures will reduce the requirement for synthetic fertiliser and reduce costs.

DRAWBACKS OF IMPLEMENTATION

- There could be are costs associated with storage, transport to site and spreading
- In addition to nutrients, livestock manures also contain heavy metals, in situations where pig and poultry manures have been applied to land for a number of years, and will continue to be applied, it is advisable to have these soils analysed to determine their current heavy metal status and to monitor build-up periodically.
- Complaints are commonly received about unpleasant smells from farms, especially from the spreading of manures. Avoid spreading in the evenings or at weekends when people are more likely to be at home, and pay attention to wind direction in relation to neighbouring houses.
- 'Diffuse' pollution can affect water and air and, unlike point source pollution, is not easily seen. The resulting nutrient losses are associated with farming practices over a wide area and extended time, rather than with a particular action or event and may have important long-term effects on the environment. Careful management and application of manure can minimise these risks.
- Spreading manures onto pasture can play a role in transferring disease to healthy stock or weeds to the land. The main risk is from spreading fresh slurry. Risks are reduced by storage, using low application rates and leaving the pasture for as long as possible before grazing. Aerobic composting of solid manures by turning of manure heaps or forced aeration, will significantly reduce the risk of disease transmission. Store slurries and solid manures for at least one month before spreading.

BARRIERS AND RISKS

- Horticulture supply chains inhibit the use of manures and composts. Many customers require a break of between 24 and 48 months between compost/manure and production due to biosecurity risks. This is especially relevant on salad crops.
- Access to manure is required. For those without a livestock enterprise, this would require importing manure if available.
- There could be machinery investment requirements for turning and applying compost and/or investment costs for storage facilities.
- There are temperature requirements for effective composting.
- There are restrictions on application, especially in Nitrate Vulnerable Zones.

FINANCIAL ANALYSIS

As shown in the table below, the overall financial implication of using manure is marginal, as both yields but also ongoing costs increase, cancelling each other out.

Initial investment	Ongoing costs	Yields	Financial output	Expected effect on margin
~	↑	↑	↑	↑

Rating approach used to describe the effect and direction of change (increase or decrease): Unknown = ? None = ~ Low = ∨ Moderate = ∨∨ High = ∨∨∨

The analysis was based on the following assumptions:

- There would be a decrease in phosphate, potash and nitrogen fertilisation due to the readily available form of P, K and N provided by manure, use of contractor assumed
- There would be a potential increase in yield by approximately 10%, after 8-10 years of manure application



RELEVANT LEGISLATION AND CURRENT INCENTIVES

- Environment protection regulations may encourage better composting on farm to manage N and P loads.
- Grants available in NVZ areas

FURTHER INFORMATION

Video

- Nutrient Management Planning with Rob Kynaston
<https://www.youtube.com/watch?v=dVxWHOERSSw>

Further reading and weblinks

- Tried & Tested. Nutrient management website <http://www.nutrientmanagement.org/home/>
- Guidance on manure and slurry management: <https://tinyurl.com/manure-slurry>
- The Farm Crap App <https://www.agricology.co.uk/resources/farm-crap-app>
- AHDB (2017) Nutrient Management Guide (RB209). Section 2: Organic materials
<https://tinyurl.com/RB209-S2>
- WRAP (2016) Digestate and compost good practice guide
<http://www.wrap.org.uk/content/digestate-and-compost-good-practice-guidance>
- Manure use efficiency <https://www.agricology.co.uk/resources/manure-use-efficiency>
- Hitchings R (2009) Compost: The Effect on Nutrients, Soil Health and Crop Production. IOTA Results of Organic Research: Technical Leaflet 5. <https://tinyurl.com/agricology-compost>

CASE STUDY FARMER APPLYING THE PRACTICE: GREAT WOLLASTON FARM

Location: Shropshire

Size: 272 hectares

Enterprises: Dairy and arable

Robert Kynaston:

“We see manure as a valuable resource, it is recycled back onto the land to improve soil structure and fertility. It is a very important nutrient source for this farm. It is very low cost, has a lot of good nutrients in it and reduces my non-organic fertiliser bill.”

<https://www.agricology.co.uk/field/farmer-profiles/rob-kynaston>



ABOUT THIS PRACTICE ABSTRACT

Publishers: **AGRICOLGY** 
THE DAYLESFORD FOUNDATION, DAYLESFORD
ORGANIC FARM, KINGHAM, GLOUCS GL56 0YG

Author: ALICE MIDMER, LEAF

Contact: ALICE.MIDMER [AT] LEAF [DOT] ORG

Publication date: September 2018

Permalink: [WEB LINK TO AGRICOLGY PAGE]

Contributing partners: The Organic Research Centre, Allerton Trust Game and Wildlife Conservation Trust, LEAF, Organic Farmers & Growers, Soil Association, Scotland's Rural College, Agricology

www.agricology.co.uk

Prepared as part of Defra Project OF03111
Organic Management Techniques

