DEFRA ORGANIC TECHNIQUES PRACTICE ABSTRACT NO. 9

USE OF GREEN WASTE COMPOST

Photo: Agricology

PROBLEM

Reductions in soil organic matter in arable soils. Alternative sources of soil fertility. Biodegradable waste going to landfill with associated greenhouse gas emissions.

SOLUTION

Compost produced from landscaping and garden green waste applied to fields as a valuable soil amendment, reducing fertiliser use and improving soil health, whilst also reducing landfill.

OUTCOME

Repeated applications lead to long term improvements in soil organic matter, soil water retention and soil structure and workability.

Reduced overall fertiliser costs, improved soil nutrient status (especially phosphate and potash).

Ultimately increases in crop yield and resilience may be seen particularly in poor growing seasons.

APPLICABILITY

Applicable production types

Application time

Best applied at times of maximum crop uptake, generally late winter/spring. Avoid applying to frozen, snow covered or waterlogged ground

Regulatory compliance

Most UK farm assurance schemes now permit the use of compost certified under the Compost Certification scheme with PAS100 specification

Equipment/resource required

Usually less machinery required though forage crops still require harvesting and storing for winter feed. May be more time-consuming with regular movement of stock.

Best in

Horticultural and combinable crops

PRACTICAL RECOMMENDATIONS

IMPLEMENTATION

- Nearby compost suppliers can be found by entering the holding's postcode at the UK Compost Certification Scheme website (www.qualitycompost.org.uk/producers)
- Check the quality of the product before use, ask the supplier for a copy of recent lab analysis and PAS100 certification. Also check acceptability with buyers or assurance schemes before application
- The weather forecast and soil conditions at time of application and the application equipment available should be taken into account when planning application to minimise soil compaction
- Compost can be spread using most conventional side or rear discharge muck spreaders. Spreading machinery should be calibrated to calculate actual volumes applied
- Application rates should be based on the farms nutrient management plan and calculated from the nutrient requirements of the crop and the typical nutrient contents of the compost

- Green Waste Compost is typically low in crop available N, but relatively high in potash and phosphate.
- Green waste compost also has a liming value - reducing the need for lime applications, with regular compost use monitor soil pH to avoid raising the pH above desirable levels.
- Repeated applications over a number of years will have the most benefits in terms of soil improvements, increasing soil organic matter and nutrient availability.

Typical Green Waste Compost nutrient content*	kg/t (fresh weight)
Dry matter content	60%
Nitrogen	7.5
Phosphate	3.0
Potash	5.5
Magnesium	3.4
Sulphur	2.6
Readily available N	<0.2

**From SRUC technical note 650 https://goo.gl/kZDceZ*

EASE OF ADOPTION ON NON-ORGANIC FARMS

- Low – Medium, providing there is access to material and space for storage if necessary. Some investment in machinery and equipment may be required

BENEFITS OF IMPLEMENTATION

- Improved yields, long term increases in soil organic matter
- Reduced chemical fertiliser use
- Removing biodegradable waste from landfill - reducing greenhouse gas emissions

DRAWBACKS OF IMPLEMENTATION

- Availability of good quality product at sufficient volumes – use recommended and accredited suppliers ask for recent analysis reports, on-farm production can ensure quality and supply as well as making financial sense (see case study below)
- Soil compaction caused by spreading in less than ideal conditions – use low pressure spreaders and alter application timings according to weather and ground conditions

BARRIERS AND RISKS

- Quality concerns. Plastics in compost can be a problem. Heavy metal contamination is also a concern, however trials in the DC-Agri project did not show this
- Some major retailers discourage compost use in horticulture production

FINANCIAL ANALYSIS

An increased margin is associated with green waste compost application, mainly due to a reduction in variable costs, and an increase in yields in the medium to long term.

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 financial analysis was based on the following assumptions:

- There would be a decrease in phosphate and potash fertilisation due to the readily available form of P and K provided by green waste compost
- There would be a potential 10% yield increase after 8-10 years of green waste compost application

RELEVANT LEGISLATION AND CURRENT INCENTIVES

Compost that has been certified under the Compost Certification Scheme does not normally need an environmental permit or exemption to be in place for their application to agricultural land. A core requirement of certification is compliance with the baseline quality specifications set by the British Standards Institute's PAS100.

FURTHER INFORMATION

Video

- Example of compost spreading at Linscombe farm, Devon: www.youtube.com/watch?v=Sc3urvs9HNA&feature=youtu.be
- Grower Phil Thomas from Linscombe explaining the benefits of green waste compost: www.youtube.com/watch?v=AbQvEJAXhx8&feature=youtu.be

Further reading and weblinks

- Best practice guide for digestate and compost use (2016). Available at: http://www.wrap.org.uk/content/digestate-and-compost-good-practice-guidance
- Defra/WRAP-funded Digestate and Compost in Agriculture DC Agri project website. Available at: https://www.agricology.co.uk/resources/digestate-and-compost-agriculture
- AHDB Nutrient Management Guide (2017). Available at: https://ahdb.org.uk/documents/RB209/RB209_Section2.pdf
- GREATSOILS Case Study (2017). Available at: https://ahdb.org.uk/projects/documents/GreatSoils-compost-is-good.pdf
- SRUC technical note detailing amount of crop available nutrients in green waste compost (2013). Available at: www.sruc.ac.uk/downloads/file/1276/tn650_optimising_the_application_of_bulky_organic_fertilisers
- Case study of Devon Vegetable grower who uses green waste compost. Available at: https://www.swarmhub.co.uk/wp-content/uploads/2018/06/Compost-Phil-Thomas.pdf

CASE STUDY FARMER APPLYING THE PRACTICE: DOWN FARM

Location: Hampshire

Size: 160 hectares

Enterprises: Arable

Green waste compost being spread on winter fallow prior to spring barley

Photo: Sally Westaway

"We have a 5000 tonne/annum fully permitted green waste composting facility as one of our diversifications. This has been operating since 2002, taking in waste from local gardeners, landscapers and tree surgeons. We are not PAS 100 registered and are able to spread around 70 tonnes/ha of our compost on the arable fields every year, under deployments issued by the Environment Agency. Over the years we have observed incremental improvements in crop yields, reductions in fertiliser use and fuel consumption. One of the issues with spreading compost is compaction, which we have addressed by getting FGS to do the spreading with their specialist low ground pressure machines and loading them with a 360° excavator standing on the stockpile heap. Another issue we monitor closely is contamination of the compost with plastic. Fortunately, our intake is relatively clean, and we remove plastic at every stage of the process. This diversification has not only boosted the farm income, it is also conferring benefit to the land."

ABOUT THIS PRACTICE ABSTRACT

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www.agricology.co.uk

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