

How often should compost be applied?

Compost has a pleasant earthy smell and is easy to spread. The project has been designed to look at the practical benefits of carrying out applications every year or applying a double quantity every two years in the rotation. One end goal will be to provide clear guidance on the best practical use of compost. Regular compost additions may give the best effects through the addition of organic matter and maintenance of soil fertility.

What application rate for compost?

The application rate for a particular compost will be determined by crop nutrient requirement and the compost content and application rate, balanced with fertilizer supply.

The nitrogen in compost is in stable, organic forms and only around 10% or 25kg/ha will be released in the year to the crop, when 30t/ha is applied.

In the project, replicated trials currently test eight treatments on which full reports will be provided at the end of the crop season in December 2004. With the compost used, the project is applying either 50t/ha of compost annually or 100t/ha every two years, with or without fertilizer treatments.

What is clear from the project to date is that regular applications of compost can build up soil organic matter levels and soil fertility.

Where can good quality compost be obtained?

The compost in these trials was obtained from County Mulch Co. Ltd. www.countymulch.co.uk. A supplier list of accredited compost producers is available at www.wrap.org.uk and also www.remadessex.org.uk, or contact The Composting Association on 0870 160 3270, or your local authority.

Project partners

The project is managed by Phil Wallace of Enviro Consulting Ltd with the trials run by Iain Turner of Envirofield. Reading University and Rothamsted Research carried out microbiological and physical analyses on the soils. Fieldfare Associates carried out farmer surveys and dissemination with the British Potato Council.

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From typical analysis, compost contains and applies the following total nutrients in kg/tonne of fresh compost at 35% moisture content and at 30 t/ha.

	kg/t	total kg/ha
N	8.1	250
P ₂ O ₅	3.3	100
K ₂ O	6.6	200
MgO	3.3	100
SO ₃	2.5	75
Organic matter	200	6200



Compost use in agriculture

Improve your soil with compost and reap the rewards

A three-year project investigating the use of compost derived from green waste will be completed in 2004. Preliminary benefits from using compost have already been demonstrated. The project is funded with landfill tax credits through the shanks.first fund with third party funding from the British Potato Council.

Key benefits of compost

Compost not only provides valuable organic matter but also acts as a slow release supply of nitrogen, phosphate, magnesium and sulphur and provides a readily available source of potash. The project is investigating, and finding, key additional benefits including:

- Increased soil organic matter,
- Increased water holding capacity,
- Increased soil available potassium and other nutrients,
- Stabilised soil pH,
- Improved soil biology with increased microbial activity,
- Compost working beneficially with fertilizer to improve nutrient use and supply to the plant, and
- Increased yields.

Which soils will benefit the most?

Seven trial sites have been established in eastern England for the project on varying soil types. Soils that are low in organic matter, available phosphate and potash will respond to a greater degree. Many of these soils are those with a 'light' soil texture i.e. have a high sand content. Compost can raise a soil pH when it is low and stabilise it when it is at or above neutral. This can counteract the effect of inorganic fertilizers, which tend to lower soil pH over time.

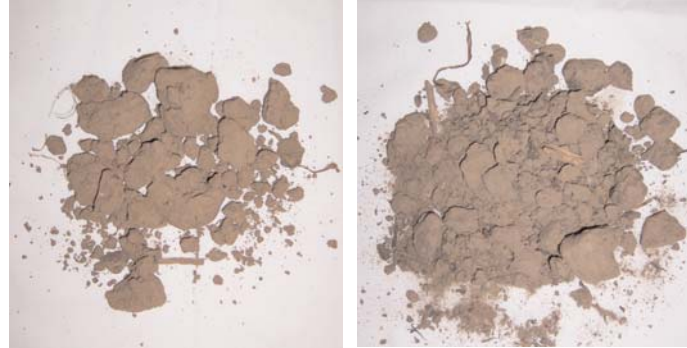
A large proportion of high value crops such as potatoes, salad crops and vegetables are grown on these particular soil types.

Clay soils will also benefit due to the extra organic matter inputs giving improved seed bed conditions leading to better germination and establishment and early root growth.



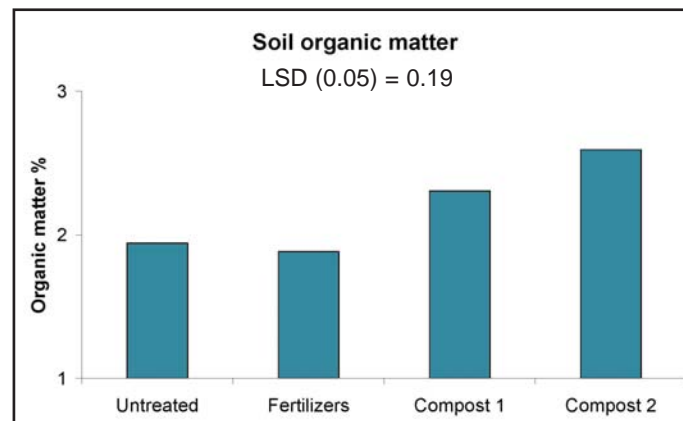
Soils have been visibly improved by adding compost

Without compost (left) the soil is cloddy. Where compost has been added, the soil is darker and the soil has more crumb structure due to the organic matter.

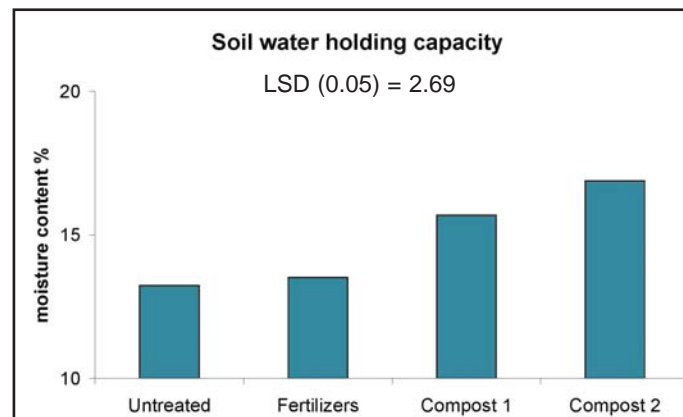


On a site where compost, at rates of a total of 200 tonnes (Compost 1) or 300 tonnes (Compost 2) has been applied per hectare over a period of 5 years, the following benefits have been measured.

Soil organic matter has been improved

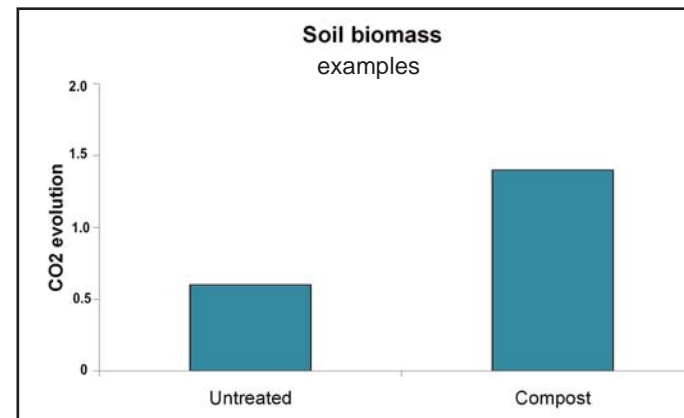


Soil water holding capacity has been increased



This has the effect of holding an extra 12.5 mm (½") of rainfall or irrigation water in the rooting zone during heavy rainfall events. Water infiltration rates are also improved leading to less run-off and erosion.

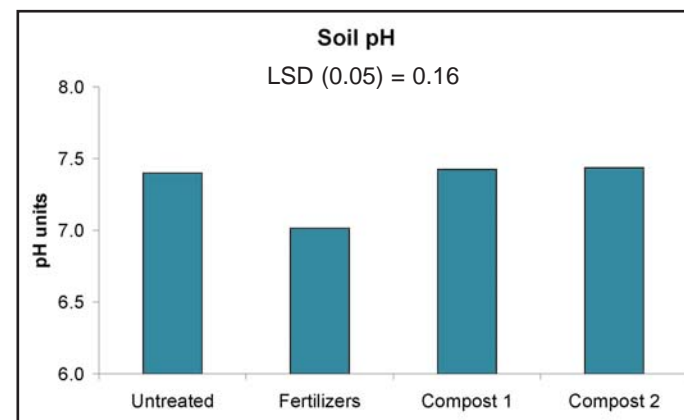
Soil microbial activity has been increased



Compost can add life to soils through the beneficial microorganisms that it contains. These microorganisms increase the nutrient cycling in the soil and may aid the suppression of soil-borne plant diseases.

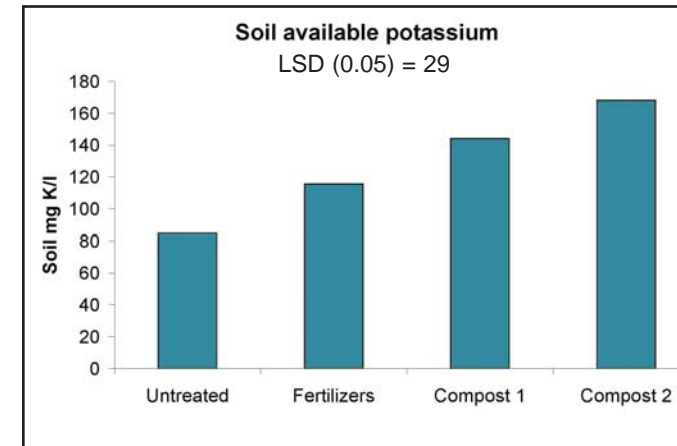
Composts have been tested in the project and disease-suppressive microorganisms detected in the more stable products.

Soil pH has been buffered and stabilized by compost



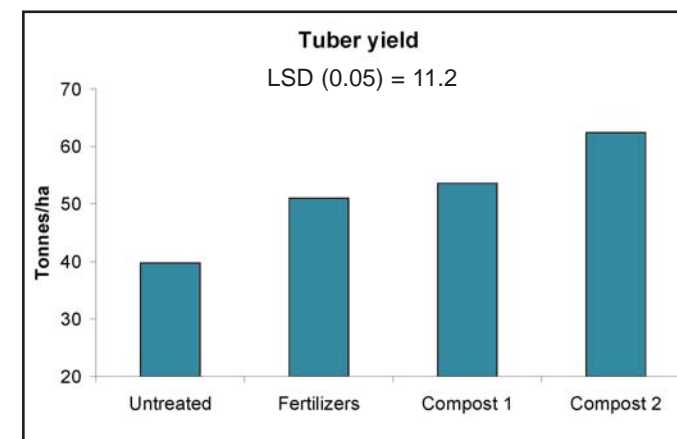
Fertilizers have an acidifying effect on soil over time and so lime needs to be applied. Compost can counter this effect when applied with nitrogen fertilizers.

Soil available potassium levels were raised



The potassium in compost is only 50% readily available to plants and so is slowly released over the growing season, with reduced losses from leaching. High potassium supply improves nitrogen use efficiency by the crop and benefits crop partition (more tubers, less top growth).

Potato crop yields were raised by compost with N fertilizers reduced



In Compost 1 and 2 treatments, nitrogen fertilizers were reduced by 25 kg/ha and P and K cut out altogether (200 kg/ha nitrogen, 50 kg/ha phosphate and 300 kg/ha potash applied in the 'Fertilizers' treatment).

How is compost produced?

Compost is a different product to organic manures and slurries used on farm. It is a product in its own right. Its organic matter and nitrogen are in stable forms and safe to use in the environment with many beneficial properties to agriculture.

Compost is produced by the controlled biological decomposition of biodegradable materials under managed conditions, as defined by the British Standards Institution's Publicly Available Specification for Composted Materials - BSI PAS 100 available from www.wrap.org.uk.

Compost is most commonly made from gardeners' and landscapers' plant trimmings and prunings. If other source-separated materials are included, such as kitchen wastes, these must be specified and declared by the compost producer as there are additional requirements on recording and the use of such materials on farmland.

Compost quality

High temperatures and moist conditions sustained during managed composting processes ensure that weed seeds and any plant and human pathogens are destroyed. The organic matter in compost is stable such that plant pathogens cannot become re-established after mixing it with the soil. Because compost is in a stable state when used, it is not a pollution hazard for leaching of nutrients.

The Composting Association's Compost Certification Scheme is the only one in the UK that gives third party assessment and verification of conformity with BSI PAS100. Composts certified under this scheme are quality assured and traceable.

In addition, compost can be sieved to produce various grades. Many general arable soils can benefit from less than 40mm screened compost whereas crops requiring a finer seed bed may benefit from less than 25 or 15mm screened product.

The value of compost

The total nutrient content of compost is worth £5 per tonne but, as much is in slow release form, is worth £2.50 to the crop after application. Irrigated crops benefit from the reduced number of applications required, saving labour costs and water potentially worth £4.75 per tonne of compost applied. Many benefits from the organic matter in compost are long term and are found from repeated applications building up soil fertility.