

Organic matter content and the fertility of arable soils may decline under intensive cultivation. This can lead to soil erosion, surface water run-off and nutrient leaching – and decreasing crop yields. Silage and hay crops remove nutrients from grassland. Adding compost to your soil can reverse these trends and lead to sustainable crop production.

Benefits of Compost

Organic matter in soil is essential for soil structure, water holding properties, microbial activity and soil health. Composts can be used to add organic matter to soils and increase the production of soils through many benefits:

- ▶ Reduced need for fertilisers
- ▶ Reduced nutrient leaching
- ▶ Increased soil cation exchange capacity
- ▶ Increased yielding potential
- ▶ Better soil structure leading to
 - greater workability of soil and
 - increased traffic tolerance
- ▶ Improved water holding in light soils
- ▶ Reduced erosion risk
- ▶ Reduced capping
- ▶ Beneficial soil microorganisms aid
 - Soil aggregation
 - Nutrient recycling
 - Plant disease suppression

Compost contains plant nutrients and organic matter. These ingredients have beneficial effects on the following crop when applied to the soil. Compost contains slow release nitrogen, phosphate and sulphur. It contains readily available potash that can provide all the crop's needs plus smaller but useful amounts of magnesium, calcium and trace elements (zinc, copper, manganese & boron). Compost has a small neutralising value and is about 10% as effective as limestone, tonne for tonne of dry matter. Compost can therefore stabilise soil pH and reduce the acidifying effects of inorganic nitrogen fertilisers.

Compost may be used at rates of up to 30-35 tonnes per hectare. This rate varies as compost is applied according to various crop needs as outlined in the Nitrate Regulations. Recent compost analysis results from the supplier should be used in order to apply and utilise the compost correctly. The availability of nitrogen is based on compost's carbon to nitrogen ratio. Compost may be applied at any time of the year as the nitrogen it contains will not be readily leached, even when applied in the autumn. Phosphate

is the limiting factor in compost application, as the Nitrate Regulations view it as 100% available. Compost has to be managed in accordance with the Code of Good Farming Practice.

CASE STUDIES

Pete Richardson Horticulturalist, Coleshill

Organics, 16 Acre Organic Nursery, Oxfordshire

We specialise in high quality organic hot crops and mixed leaf salad crops, delivering our produce to 250 private customers in and around the Vale of Whitehorse. Five years ago, seeking to improve our soil structure and fertility, we switched from farmyard manure to organic waste derived compost supplied by Worton Farm, who are working towards PAS 100 Certification. The results have been amazing. Certified compost acts as a wonderful disease suppressant, is much more complex than manure and is rich in microbial goodness. The soil gets a great fertility boost, while we get healthier plants and better quality vegetables. We have also found that certified compost is much easier to apply, particularly across our eight poly-tunnels. It shovels well and handles better than any other conditioner.

Crop Trials Using Enviro Grind Compost

Enterprise Ireland funded research into the use of compost (derived from food material) in growing vegetables. The field trials were conducted for Enviro Grind by Klaus Laitenberger, former Head Gardener with The Organic Centre (Rossinver, Co Leitrim) and author of 'Vegetables For the Irish Garden'. The purpose of the field trials was to evaluate the benefits of the Enviro Grind food material compost on the plant yield of potatoes, turnips and lettuce.

The results showed a significant increase in yield of both turnips and potatoes grown with compost compared to treatments which got no compost. Compost increased the yield of potatoes by 148% and the yield of turnips by 134%.

Another trial showed that compost produced the highest yield of lettuce compared to the following treatments (1) no compost, (2) farm yard manure and (3) poultry pellets.

How to Use Compost

As compost works differently to manures, it can have added benefits:

- ▶ Spring application is possible due to the slow-release nutrients in composts, not adversely affecting crop establishment and quality.
- ▶ Autumn application results in less nutrient leaching than from manures and slurries due to the slow-release forms of many of the nutrients in composts. Time compost applications so that increased nutrient availability helps meet the nutrient requirements of your crop rotation programme.

Compost is most easily applied with a spreader that has a moving floor and rear discharge. It is important to mix the compost into the soil and not to invert the compost into a buried layer with the plough. This will maximise the effects of the organic matter on soil structure.

For crops with sensitive seeds, as with manures or NPK fertilisers, it is advisable to mix the compost with the soil at least two weeks prior to sowing in case the germination is affected by any temporary raised salt content of the soil.

Unlike animal manures and inorganic nitrogen fertilisers, the nitrogen in compost is slow release and less subject to leaching over winter. Compost may therefore be applied in the autumn and most of the nitrogen will remain in the soil to benefit crops in the following years.

Arable Agriculture

Compost may be applied to soils on an annual basis. This is especially beneficial to clayey soils that are difficult to work up into a seedbed and for light soils that have low organic matter status and low potassium index. Compost should be screened through a screen size of 40mm.

Root Crops and Vegetables

Valuable root crops are often grown on land with 'light' soil that is responsive to the organic matter and the nutrients contained in compost. Compost may be applied to soils on an annual basis.

Grassland

Compost can be used to add nutrients to established grassland. Using finer grades of composts, screened to less than 25mm, will allow the compost to fall more readily into the sward towards the roots.

Established Fruit Crops

The rows of established fruit crops, whether top fruit or soft fruit, can be mulched with a 25 to 75mm deep layer of compost which was screened using a 25mm screen size. Nutrients will be washed down into the soil to feed the crop and the mulch will aid the suppression of weeds. Planting fruit trees and bushes with compost combats Replant Disease.

Organic Certification

European Union (EU) emphasise that the maintenance of soil fertility and soil biological activity is a fundamental principle of organic farming. A number of treatments that help achieve that principle in practice are listed in the standards, for example: incorporation of organic material (in the form of farmyard manure, composts and slurries) and implementation of appropriate rotations. Organic matter from (non-intensive) non-organic farms, green composting facilities and composted household waste are acceptable within the EU organic standards although some prescriptions on use may be included depending on the material. In April 2010, the Soil Association has approved the use of household food material compost as organic compost. Growers should only use compost which has been certified "suitable for use in organic production".

Compost Network

Cré Compost Skillnet is a training network whose main aim is to train compost operators to produce high quality compost and to train organic farmers/landscapers how to use compost. If you are interested in finding out more about this training network log on www.cre.ie or call 086 8129260.

Cré Compost Skillnet is funded by member companies and the Training Networks Programme, an initiative of Skillnets Ltd. funded from the National Training Fund through the Department of Education and Skills.

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