



Premium Compost use
in Agriculture

Keenan (Recycling) Ltd	
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Premium Compost Information Sheet for Farmers

A factsheet produced by Earthcare Technical Scotland, December 2010.

1 What is Premium Compost and why should I use it?

Food-derived compost is a natural product made by mixing, stacking and aerating biodegradable materials under strictly controlled conditions in an in-vessel composting system with a separate maturation phase.

The compost sold by Keenan Recycling Ltd has been made from a mixture of waste food from the human food chain, along with plant materials recycled from parks, gardens and households. This compost has been processed under controlled conditions to produce a high quality product, as defined by the British Standards Institution's Publicly Available Specification 100 (BSI PAS100).

2 Potential benefits of using compost

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

- Reduced need for bagged fertilisers.
- Reduced nutrient leaching.
- Increased yielding potential.
- Potential to improve drainage in heavier soils.
- Improved water-holding in light soils.
- Reduced soil erosion risk.
- Better soil structure leading to:
 - Greater workability of the soil.
 - Increased traffic tolerance.
- Beneficial soil micro-organisms aid:
 - Soil aggregation.
 - Nutrient recycling.
 - Plan disease suppression.

In addition to providing valuable organic matter to soils, composts act as slow release fertilisers for N and P and provide a readily available source of K. Other nutrients, including Mg, S and trace elements are also provided. The efficiency of inorganic N fertiliser use by plants has been shown to be improved following compost application, due to better overall nutrient supply and improved rooting environment. It has up to 15% of the neutralising value of lime on a dry matter basis, but since it tends to be applied at much higher rates than lime, the liming effect of a single compost application can be more than that of a typical application of lime.

3 Premium Compost produced by Keenan Recycling Ltd

The composition of Keenan Recycling food-derived compost will vary slightly, but as a general rule, it has the following characteristics:

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Keenan Recycling Food-derived Compost - typical values for important compost properties

Compost parameter	Reported in fresh compost as (units of measure)	Typical value	Total nutrients/tonne moist compost	
			Kg	Units
pH	pH units (1:5 water extract)	7.6		
Moisture content	%	27		
Organic matter content	% in dry matter	46		
Screen aperture size	mm	40		
C:N ratio	ratio (between % C and % N in dry matter)	11.1		
Electrical conductivity	$\mu\text{S}/\text{cm}$ @ 20°C	4783		
Total N	mg/l	8444	18.4	36.8
Total P	mg/l	1582	7.8 (as P ₂ O ₅)	15.6 (as P ₂ O ₅)
Total K	mg/l	5441	8.3 (as K ₂ O)	16.6 (as K ₂ O)
Total Mg	mg/l	869	2.3 (as Mg)	4.6 (as Mg)
Total S	mg/l	664	1.9 (as S)	3.8 (as S)

Typical application of 13 tonnes of compost/ha (5.9 tonnes/acre) will provide approximately:

Nutrients	Total amount (kg/ha)	Total amount (units/acre)	Available year 1 (kg/ha)	Available year 2 (kg/ha)
Nitrogen as N	239	190	~ 5%	~ 5%
Phosphate as P ₂ O ₅	101	81	50%	
Potassium as K ₂ O	108	86	80%	
Magnesium as Mg	30	24	20%	
Sulphur as S	25	20	10%	

Keenan Recycling's Premium Compost also contains small amounts of trace elements that are essential to plant growth. It typically contains very low levels of potentially toxic elements. The compost has been tested for human pathogens. It was found to contain no *Salmonella* species and was well within the safe limit for *E. coli* according to the tests required under the British Standards Institution's Publicly Available Specification 100 (BSI PAS100). Tests also showed that there was no contamination with weed seeds, and plants grew well in the growing trials specified under the standard.

This compost is stable and mature. It typically contains negligible contamination in the form of plastic, metals and glass.

4 How to use Premium Compost

The total N in compost should be applied according to crop needs in conjunction with bagged fertiliser. The needs of the soil for the full crop rotation should be considered when assessing other major nutrients.

Regulations relating to codes of good agricultural practice should be followed (e.g. NVZ regulations, PEPFAA and the Farm Soils Plan). NVZ regulations and Waste Management Licensing allow a maximum of 250 kg/ha N to be applied from the compost in any 12 month period over the farm as a whole.

Premium Compost is made from materials including animal by-products treated in accordance with Animal By-Product Regulations. It is the responsibility of the compost user to comply with the rules under the above regulations on the recording and use of compost on grazing land or land used for growing fodder crops:

1. Prior to application to land, the compost is stored in a place not accessible by farm animals.

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2. Pasture land shall not be grazed or cropped for feeding stuffs during the following periods after compost application: for at least two months for pigs and at least 3 weeks for any other farmed animals.
3. The occupier of premises on which ruminant animals, pigs or birds are kept shall keep records of application of compost to land. Details of the record keeping requirements will be at the back of a dispatch note given to farmers with the compost sold.

Compost is most easily applied using a spreader with a moving floor and rear discharge. In order to maximise its effects on soil structure, it should be mixed into the soil and not simply inverted into a buried layer by the plough.

Unlike animal manures and bagged nitrogen fertilisers, which are high in available N, compost **N is slow release**. It is therefore safe to apply it in the autumn without the risk of significant leaching. Food-derived compost does contain more N than green compost does and that N is more available to crops (approximately 5% of the N in food-derived compost is available to crops in the year of application). Surface applications of compost to grass immediately after the first cut of silage can be particularly beneficial due to its K and S content, coupled with its slow N release rate. Compost should be applied when grass is actively growing and nutrient demand is high. Grass should not be grazed for 3 weeks after application (or two months in the case of pigs) in line with regulations and to allow grass to grow through the compost.

5 Cost benefits

The direct inorganic fertiliser replacement value of compost is **up to £13 per tonne** of compost depending on fertiliser prices and compost nutrient content. Additional value comes from improving soil health and increasing soil trace element content and organic matter levels. Diminishing world supplies of rock phosphate for fertiliser production are likely to significantly increase the value of the phosphate present in compost in future years. Compost applications can improve the health and quality of soils and the value of land in the longer term. Organic matter greatly improves the quality of many types of soils and thereby improves their ability to support the production of good yields of healthy crops. Improved soil quality can lead to savings in fuel during cultivations, reduce the frequency of irrigations, saving labour and water and can allow machinery on to land on more days in the year without damaging soil structure. These benefits are difficult to quantify, but farmers do tend to notice them when compost has been applied.

Spreading costs are generally about £1 - 3 per tonne depending whether farm machinery is used or contractors employed. Distance from the composting site is a significant factor in the cost of compost and the high cost of transporting compost means that farms close to the composting site will find it easier to justify the cost of using compost.

It makes sense to use compost on both soils and crops, which are likely to show the greatest response.