
Off-farm composts: quality, availability and use in agriculture

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www.wrap.org.uk/agriculture

Overview

1. What is compost?

2. The benefits of using quality compost

Evidence from our programme of field research

3. Using compost in practice

Quality standards, financial benefits and how to source compost

4. Future developments

Anaerobic digestate (biofertiliser) and research programme

1. What is compost?

- Controlled biological decomposition of biodegradable materials such as garden and food waste
- Compost produced in either open windrows or enclosed 'in-vessel' systems
- BSI PAS 100 specification to ensure compost is produced in accordance with safety requirements



A success story

- Nearly 2 million tonnes of compost supplied to agriculture during 2008/09
- 60% of all compost produced
- 60% of producers feel that the agriculture market offers a growth opportunity



Compost supply by crop category (2008/09)

Crop category	Number of sites supplying sector
Cereals	109
Other arable (OSR etc)	53
Vegetables	35
Grassland	40

- Compost is increasingly used on land where food crops are grown or livestock grazed

Using green/food compost in agriculture (2008/09)

- **69%** compost made from feedstocks that did not include any waste food
- **18%** compost made from feedstocks that did include some waste food



Quality compost & organic standards

- On-going discussions with the Soil Association and ACOS (Advisory Committee on Organic Standards)
- Commercial green composts already allowed
 - BSI PAS 100 PTE limits apply
- Commercial green/food composts may be allowed in future
 - Declaration re Council Regulation on GM content
 - Awaiting feedback from European Commission



2. The benefits of using quality compost

Recent projects

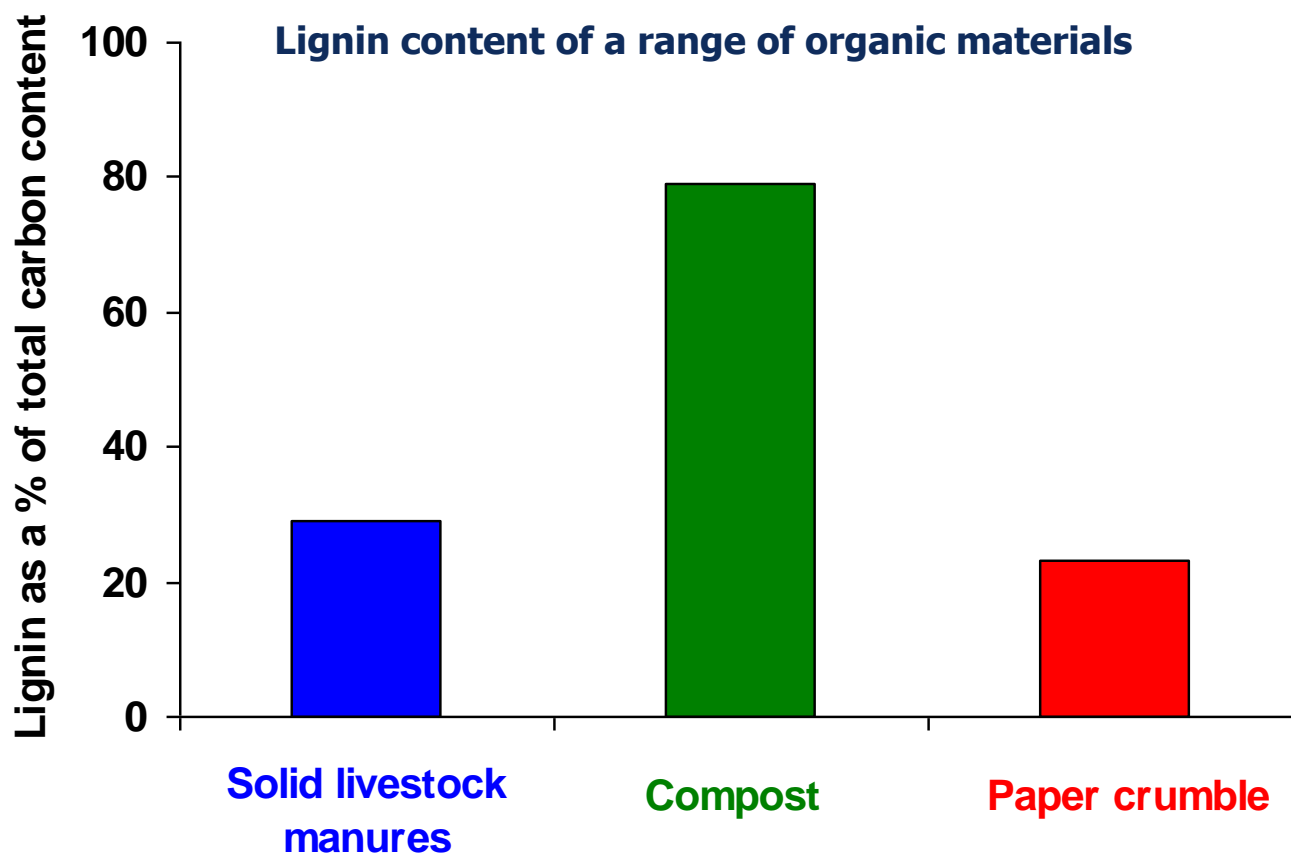
Trials on a range of crops:

- cereals including wheat, barley and rye;
- oilseed rape;
- potatoes;
- vegetables including parsnips, calabrese and cauliflowers;
- fruit, particularly strawberries and apple orchards; others
- including bedding plants and nursery trees

Improved soil structure

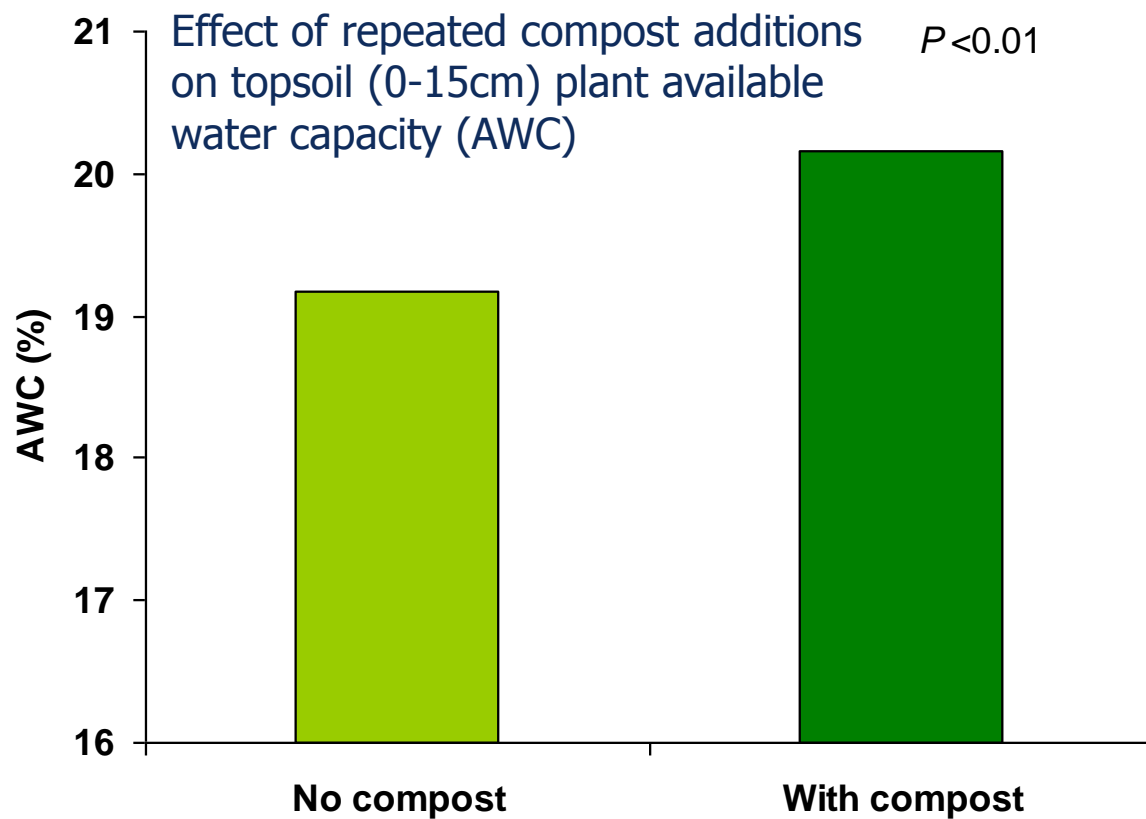
- Compost is high in organic matter
- Increasing soil organic matter improves soil structure
- Improving soil structure brings a number of benefits, including:
 - Better water holding capacity
 - Better drainage
 - Improved nutrient cycling and nutrient use efficiency
 - Better workability

Soil organic matter



Data from Defra SOIL-QC project (SP0530)

Available water capacity



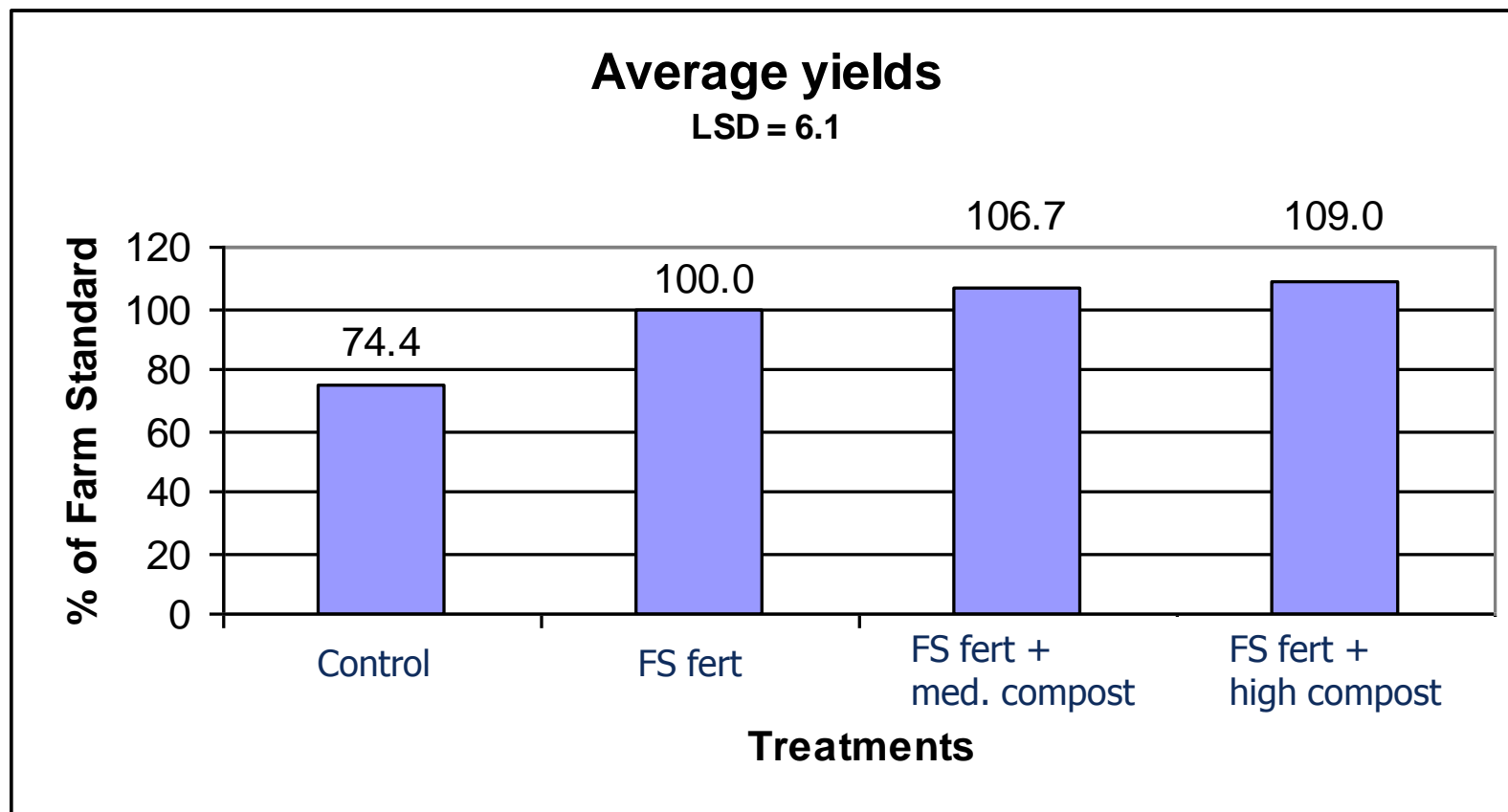
Data from projects: WRAP OAV023-010, ADAS 'ACORE' & Defra SOIL QC (SP0530)

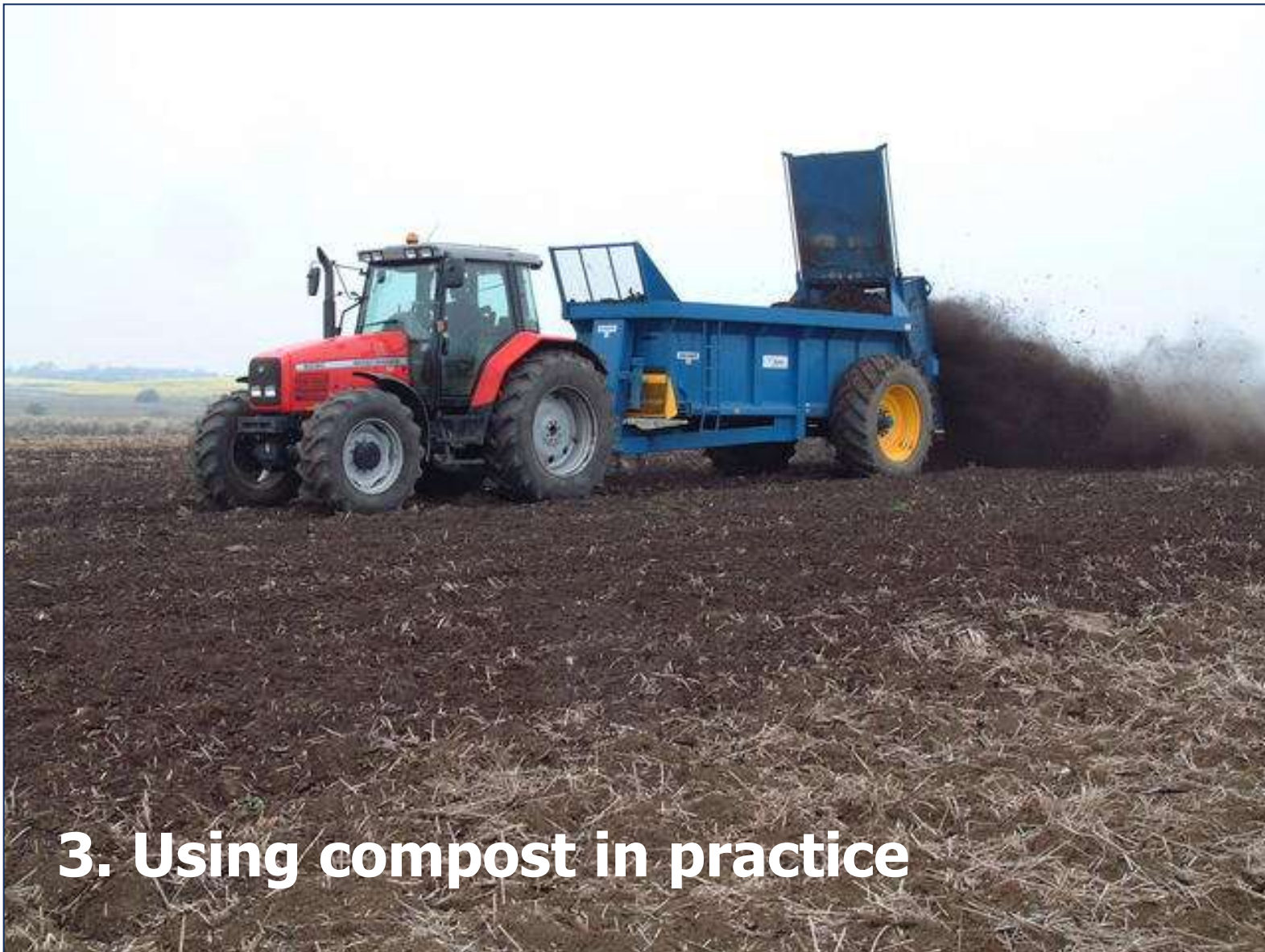
Nutrients

Compost Type	Dry Matter %	Nitrogen (kg/t)		Other Nutrients (total, kg/t)			
		Total	Readily Available	Phosphate (P ₂ O ₅)	Potash (K ₂ O)	Sulphur (SO ₃)	Magnesium (MgO)
Green	60	7.5	<0.2	3.0	5.5	2.6	3.4
Green/Food	60	11	0.6	3.8	8.0	3.4	3.4
FYM (cattle)	25	6	0.6	3.2	8.0	2.4	1.8

RB209 Fertiliser Recommendations, 8th Edition (June 2010)

Yields





3. Using compost in practice

BSI PAS 100 and the Quality Protocol

- Compliant material is a “product” and can be spread without the need for a permit or exemption.
- Source-separated inputs
- A sanitisation stage of $\geq 65^{\circ}\text{C}$ for seven days to eradicate plant, human and animal pathogens and strict limits and testing for:
 - Physical contaminants
 - Potentially toxic elements (PTEs)
- Requires quality management system and staff training
- Online QP Manager
- Update with revised safety limits due imminently



Who should use compost?

- Compost is particularly valuable on soils deficient in organic matter, ie. both heavy and light soils
- Useful source of nutrients, particularly P and K
- Optimal time for application is before planting
- Subsequent benefits to other crops in rotation

Financial benefits – current prices

	Nitrogen (N)	Phosphate (P ₂ O ₅)	Potash (K ₂ O)	Total
Market price of fertilisers (£/kg)	0.87	0.82	0.53	
Green Compost				
Fertiliser equivalent (kg/tonne compost)	0.00	3.00	5.50	
Financial value of nutrients in compost (£/tonne)	0.00	2.45	2.92	5.37
Green/Food Compost				
Fertiliser equivalent (kg/tonne compost)	0.55	3.80	8.00	
Financial value of nutrients in compost (£/tonne)	0.48	3.10	4.25	7.84

Based on RB209 nutrient values and current fertiliser prices provided by FARM BRIEF

How to source quality compost?

For a full list of BSI PAS 100 certified suppliers, visit

<http://compostsuppliers.wrap.org.uk/>





4. Future developments

Anaerobic digestate (biofertiliser)

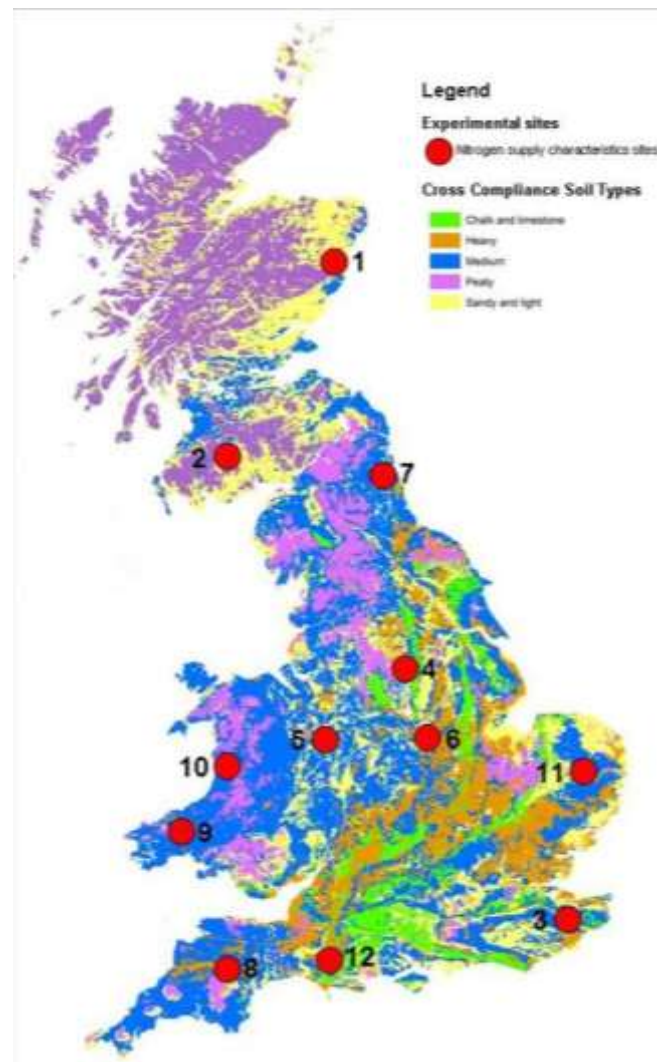
- Produces biogas, a source of sustainable energy, and digestate, a source of sustainable crop nutrients
- High in available N (90%) - this is liquid fertiliser!
- BSI PAS 110



Nitrogen (N) (kg/tonne)	Phosphate (P ₂ O ₅) (kg/tonne)	Potash (K ₂ O) (kg/tonne)
5.92	0.50	1.80

On-going research

- The *Digestate & Compost in Agriculture* project (DC-Agri)
 - Joint WRAP/Defra/Zero Waste Scotland
 - Long term, 2010-14
- Strategic research into use of biofertiliser and compost in agriculture
- Extensive programme of knowledge exchange



Thank you!

Visit our website:

www.wrap.org.uk/agriculture

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