Factsheet

Organic Arable Production – Soil Fertility overview

Healthy crops in organic systems need good soil fertility. This is built and maintained with leguminous and other green manures; Farm Yard Manure (FYM) and compost from the farm.

Green manures

Green manures can be suitable for both short term (months) and long term (years) fertility building.

- High yielding and deep rooting red clovers can be obtained which improve soil structure and add organic matter.
- Other clovers available such as Crimson, Sweet and Persian that are summer only manures being killed off by frosts but have added benefits of improving the environment for pollinators.
- Mixes of green manures containing plants with varying rooting depths that add organic matter through the soil horizon and such mixes may include plants such as deep till radish that can help alleviate soil compaction.

Green manures grown to build soil fertility can be grazed or topped during the growing season and incorporated into the soil ahead of the cash crop.

Some ideas on how to use green manures are included in another of our factsheets on organic arable production - Crop rotations

Animal Manure

Fertility from livestock can improve your nutrient budget. For example:

- You can let out grass and clover leys for grazing to organic livestock farmers
- You could develop other enterprises such as heifer rearing for another farmer's dairy herd.
- You are allowed to graze non-organic animals for 120 days in any one calendar year.
- You can purchase farm yard manure providing it's not from factory farming origin or from units feeding GM.

Organic manure rates

Manure is preferably composted before application. Composting is an aerobic process that causes substantial increases in temperature in the heap. By turning the heap regularly high temperatures are achieved throughout the material. For example, a temperature of 55ºC to 65ºC for three days will destroy most weed seeds, pathogens and chemical or antibiotic residues. Long-term stacking is effective for killing pathogens but the resulting product will have less stable nutrients and disease suppression.

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Excessively high application rates of FYM can result in pollution from nutrients such as nitrates leaching into waterways. This can also result in soft plant growth and very leafy crops with a greater susceptibility to pest and disease attack.

The EU organic regulation has a maximum limit of manure application. It specifies that nitrogen (N) from organic and non-organic manures should not exceed 170kg N/ha, averaged across the entire holding or any linked holdings.

As an example 28 tonnes of cattle manure spread per hectare would contain approximately 170kg of nitrogen, with approximately 6kg of nitrogen per tonne of cattle manure. Your certification officer will be able to help with these calculations.

Soil testing

If you do regular soil testing you will build up a picture of the levels of nutrients in your soil and the organic matter content. This will help you plan your crop rotation by identifying and forecasting any nutrient deficiencies and will give you a guide to soil health.

In England the Farming Rules for Water require soil tests at least every 5 years on cultivated agricultural land to inform application rates of manure and fertility inputs.

Mineral fertilisers

There are a number of permitted slow release mineral fertilisers such as ground rock phosphate that can be used to correct certain deficiencies. You will need to demonstrate in your crop management plan how you identify when fertility inputs are required and agree thresholds for use. Please refer to 2.5.2. for a complete list of permitted fertility inputs.

Other publications in the arable series

Rotations

Weed control

Fertility management

Storage

Pest control

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