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Soil improvement and green manures



Activities

Introduction

Good soil fertility is essential for healthy plant growth and reduces the instance of disease in crops.

Applications of organic matter, green manures or fertilisers are essential garden tasks which can

improve soil fertility and/or structure.

It is important to improve soil on a regular basis; each bed will need an addition every 2 or 3 years in order to maintain nutrient levels which are depleted with each crop grown.

Know your soil

Most soils are made of a mixture of sand, silt and clay. The proportion of these ingredients affects the soil nutrient content and how easy it is to dig. To identify your soil type please perform the soil test included on the resource sheet Planning the Garden.

Each soil type has its good and bad points.

- Sandy soil is very free draining and easy to dig,

but tends to be low in nutrients and usually requires regular watering through the summer.

- Clay soil is often nutrient rich and retains water, but is heavy to dig and has a tendency to waterlog during winter months.
- An ideal soil is a mid point between these two extremes, called a good loam, easy to dig and rich in nutrients.

How to improve your soil

Before the first frosts in autumn (or in early spring), when the beds are relatively empty, we can begin improving the soil nutrient content (fertility) and structure for next year's crop by adding organic matter.

The addition of organic matter not only improves fertility but also improves soil structure and drainage and promotes soil organisms that are

essential for fertile soil, including worms.

The easiest way to do this is to place a 5cm layer (mulch) of organic matter (home-made compost, leaf mould or well-rotted farmyard manure) onto the bed surface. Leave this as a light excluding, weed suppressing mulch or alternatively dig into the soil.

Organic matter vs fertilisers?

Shop bought fertilisers can also be used to improve the nutrient content of soil and are generally applied during the winter or spring months. However these fertilisers do not improve soil structure and if soil structure is poor nutrients can be lost or cannot be reached by the plant roots.

By adding organic matter through the winter months the addition of humus (decomposed organic matter) allows the soil to retain nutrients for longer which in turn will make any added fertilisers more effective.

Why sow a green manure?

Green Manuring is a process where fast growing plants are sown onto empty beds or open ground. These plants are incorporated into the soil before maturity and thus do not provide a harvest but often improve soil fertility and structure. A green manure crop should be considered whenever an area of ground is to be left free for six weeks or more.

Green manures are effective in mopping up nutrients which remain in the soil after crops are harvested, thus preventing nutrients being washed away by rain. Once the green manure crop

is dug into the soil it begins to break down helping to improve soil fertility by releasing nutrients. Although green manures do not usually add organic matter (and may even decrease organic matter through boosting soil organism activity), the 'workability' of soil is often improved.

Other benefits of green manures include weed smothering, winter soil protection and shelter for beneficial insects such as ground beetles. However you should remember that some green manures harbour vegetable pests and diseases and may require weeding.

Sowing and digging in

Green manure seeds are sown by scattering over the soil (broadcast) and then raked in. They are dug in when lush and leafy, generally before flowering. If digging is not possible, or if they flower and become woody, they can be recycled through the compost bin.

Note

Decaying green manures can suppress plant growth, so allow at least two weeks between incorporation and new plantings or sowing.

What to sow

- Italian ryegrass, and rye sown in September are very hardy, harbour no vegetable pests and diseases, and grow at low temperatures all winter before being dug in during spring.
- Fast growing fodder radish or mustard sown before mid-September can be incorporated in October, or their frosted remains left as a mulch. They are ideal for sticky clay soils that can be hard to dig in spring.
- Summer grown green manures, buckwheat and fenugreek for example, can, if thickly sown,

form dense foliage that is ideal for smothering weeds.

- Legumes have the ability to take up nitrogen from the air, tapping a free source of soil fertility. Field beans and vetches can be sown in autumn for incorporation in spring, but summer crops of lupins, clovers and peas fix more nitrogen. Remember that peas, beans and vetches, (but not lupins), harbour diseases and pests of vegetable peas and beans so be sure to keep these in the legume part of the rotation.