

Farming for the future

In the slide show...

- Plant nutrients
- Green manures

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Healthy soil Healthy plant

- Different geographical areas can have natural deficiencies of different nutrients
- A healthy live soil is active
 - Microbes busy breaking down minerals and organic matter to release nutrients
- Bare soil and annual crops quickly strip soil of nutrients
- To achieve good yields, plants need access to enough nutrients, water and sunlight

Plant nutrients

Major Nutrients

- Nitrogen (N)
- Phosphorus (P)
- Potassium (K)
- Magnesium (Mg)
- Calcium (Ca)
- Sulphur (S)

Minor Nutrients

(Trace elements)

- Iron
- Manganese
- Copper
- Zinc
- Boron
- Molybdenum

Nitrogen (N)

- Needed for leaf growth
- Too much = sappy soft growth prone to P&D
- Easily leached from the soil
- So only apply when plants in active growth
- Released from organic matter
- Materials high in N
 - Grass, wool, nettles, urine

Phosphorous (P)

- Root Growth
- Important for new planting
- Associated with fruit ripening
- In base soil – test to see if deficient

Potassium (K)

- Flowers and Fruit
- Needed for hardening off plants
- Can be deficient if soil lacks in organic matter
- High in K
 - Wood ash, comfrey

N:P:K

Nitrogen: Phosphorous: Potassium



NaPKin

Calcium

- Needed for cell function and growth
- Often deficient in dry soils
 - Cause of blossom end rot in tomatoes
 - Scab on potatoes
- Apply lime or egg shells

Magnesium

- Is needed for the production of chlorophyll
- A lack causes yellowing of the centre of leaves (chlorosis) and early leaf fall
- Epsom salts

Soil pH

- Test your pH
- Extreme pH can lock up nutrients making them unavailable for plants to use
- Acid soils
 - Can particularly restrict Phosphorous uptake
 - Also Calcium and Magnesium
 - Can cause Molybdenum deficiency in brassicas
- Alkaline soils
 - Plants can show Manganese and Iron deficiencies

Organic Fertilisers

- Materials once alive
- Often contain trace elements
- Often slower acting than artificial fertilisers
- Feed the soil as well as the plant
- Less likely to be leached

Some organic fertilisers

- Dried Blood
 - Fast acting nitrogen boost
- Hoof and Horn
 - nitrogen released in 2-3 weeks
- Blood, Fish and Bone
 - Nitrogen and Phosphorous
- Seaweed Meal
 - Potassium, Nitrogen and Phosphorous
- Bonemeal
 - Phosphorus

Make your own fertiliser

Comfrey

- High in potassium, trace elements and growth promoting compounds
- Good for potatoes

Nettles

- High in Nitrogen

Seaweed

- High in Potassium, Iodine & micro nutrients
- Low phosphorous & nitrogen

Coffee

- High in potash, nitrogen, phosphoric acid among other minerals and vitamins

Bio-fertilisers

- Live product
- Full of microbes
 - Good bacteria
- Make on farm
- Small quantities diluted and sprayed on the compost heap or directly onto soil or plants
- Great to use with municipal green waste compost to re-introduce life

Green Manures



What can they do?



Plant grown for the benefit of the soil

- Fix nitrogen
- Nutrient accumulators
- Ground cover
- Protect against losses
- Protect soil structure
- Confusing pests
- Bulky organic matter



When to use them

- Empty beds
 - On soil waiting planting
 - Resting soil
- Poor soil with low fertility
- Soil with poor structure
- Between widely spaced plants



Chose the right green manure

- How long
- Season
- Rotation
- Follow on crop



Fix nitrogen

Legumes

- tares, clovers, alfalfa, lupins
- Nitrogen available to next crop
- N available to companion crops



Nutrient accumulators

Deep rotted

- Lupin
- Alfalfa

Ground cover

- Plant whenever there is bare soil
- Reduces weeding
- Reduces losses
 - Water
 - Nutrients
- Confuses pests

Pests control

- Green cover
 - Cabbages
- Habitat for predators
 - Frogs, beetles
- Flowering Phacelia
 - Flying predators



Phacelia

- May over winter
- Attracts insects



Alfalfa

- Deep rooted
- Cut as mulch
- Avoid acid and wet soil



Tares

- March – may
- July – Sept
- Avoid acid and dry soil

Mustard

- Quick
- Needs fertile moist soil
- Inhibits seed germination



Buckwheat

- Fast growing
- Attracts insects



GREEN MANURE

CROP MIXTURE

CONTAINS: OATS, DUN PEAS, LUPINS
AND RYE CORN.

**GROW OVER WINTER
DIG IN**

- OPENS UP SOIL
- PUTS HUMUS IN SOIL
- ADDS NITROGEN
- SUPPRESSES WEEDS

Perennial Green manures

Can be grown outside the cropping area

- Cut and used as a mulch
- PGM's
 - Grass cuttings
 - Comfrey
 - Alder leaves

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<http://www.ashandelms.co.uk/>