Soil pH and Nutrients

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Soil Analysis

- A sampling tool (a soil auger or corer is best, but a spade can be used)
- A clean bucket
- Clean plastic sealable sample bags and a waterproof marker
- In a W pattern take at least 20 sub samples 10-20cm depth to make up one sample about 500g in weight

Example Soil Analysis

pH	5.9	
Lime req Arable	5t/ha.	
Lime req Grass	0	
Ext Phosphorous	3.5mg/l	Low
Ext Potassium	116mg/l	M(-)
Ext Magnesium	301mg/l	High

soil pH

- Soils below about 5.6 have higher soluble aluminium which inhibits growth of susceptible plants.
- Optimum pH Levels
  - Grassland 5.8-6.0
  - Arable 6.2-6.5
- Peaty soils – Plants can tolerate a lower pH

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Effect of low pH Barley

- Lime deficiency in Barley – stubby roots / Yellow leaves / stunted plants

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Too High pH

- Can reduce availability of certain trace elements
  - Eg Mangenese deficiency in barley
  - Pale leaves intervenal brown spots

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Raising pH

- Consider Neutralizing Value and fineness of limestone
- Common lime sources are Magnesium limestone and Calcium limestone
- Spread 6-12 months before sowing a susceptible crop if pH is very low
- Max applications would be 7.5t/ha. in one application

SRUC Technical Note

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Technical Note TN656

SRUC

January 2014 • All

Soils information, texture and liming recommendations.

SUMMARY

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Nitrogen

- Plants need nitrogen to make chlorophyll and amino acids.
- Sources are
  - Organic N eg manures / soil residues
  - Inorganic N eg Ammonium Nitrate 34.5% N
  - Atmospheric N

Nitrogen Cycle

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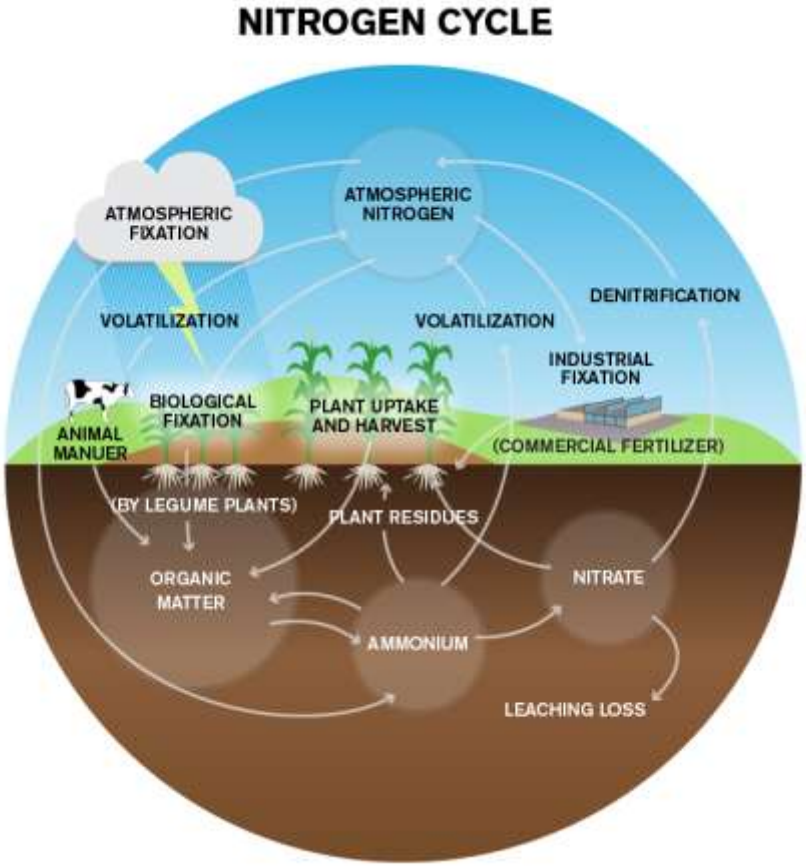

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Potassium (K)

- “Potash” – essential nutrient with many functions
- Animal manures high in K
- Crops remove high levels of K
- Grazing animals return most of the K
- Very soluble
- Luxury uptake

Phosphorous

- Essential nutrient particularly for root development
- Not as soluble as K so easier to raise levels
- Livestock farms often low in P
- Fertiliser types include acid soluble or water soluble.

Other Elements

- Sulphur
- Trace Elements

Inorganic Fertilisers

- Can be sold as compounds
- N:P:K se 20:10:10
- Or straights
  - eg Ammonium Nitrate (34.5%)
  - Muriate of Potash (KCl) is 60% K_20
  - Triple super phosphate is 46% P_2O_5

Organic fertilisers

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Nutrient Planning

- Crop requirements - SRUC technical notes
- PLANET Scotland software
- Take account of
  - previous crop,
  - removal of P&K,
  - expected yield,
  - soil type,
  - soil status