

Brigg Monitor Farm meeting report

Meeting topic: Phosphate and nutrient management

Speaker: Mike Slater

Date: 21 December 2017

Location: Hibaldstow Village Hall

For more information, visit: cereals.ahdb.org.uk/brigg



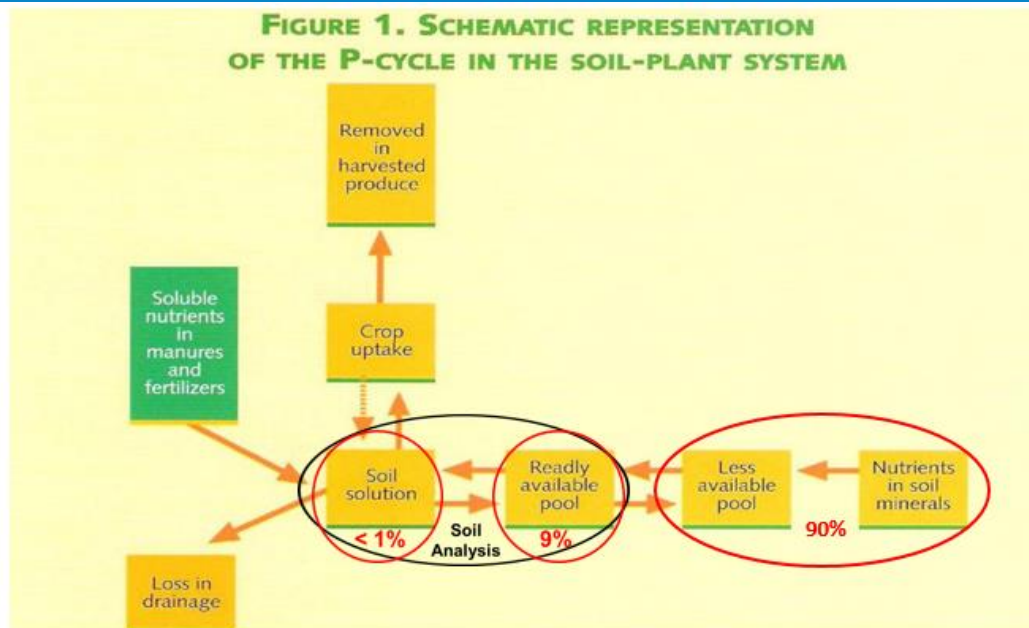
Meeting summary – key messages

- Placing fertiliser is most efficient on almost all crops
- Nutrient management plans can reduce N losses by 2 to 7%
- Phosphorus important for stimulating root development but does not guarantee yield

Sample Ref CARR FIELD **Date Received** 24/02/2017
Sample No E178290 / YBN02V
Crop OILSEED RAPE

Analysis	Result	Guideline	Interpretation	Comments
Nitrogen (%)	7.17	4.00	High	Above normal range.
Phosphorus (%)	0.93	0.35	Normal	Adequate level.
Potassium (%)	3.06	2.80	Normal	Adequate level.
Calcium (%)	0.70	1.00	Low	Low priority. See comments below.
Magnesium (%)	0.22	0.25	Slightly Low	Consider foliar applications of MAGNESIUM
Manganese (ppm)	32.6	30.0	Normal	Adequate level.
Boron (ppm)	43.2	30.0	Normal	Adequate level.
Zinc (ppm)	86.7	25.0	Normal	Adequate level.
Iron (ppm)	207	30	Normal	Adequate level.
Copper (ppm)	9.3	5.0	Normal	Adequate level.
Molybdenum (ppm)	1.34	2.00	Low	PRIORITY FOR TREATMENT.
Sulphur (%)	0.52	0.40	Normal	Adequate level.

Phosphorus



Phosphate is present in the soil in three forms

- Soil solution (soluble and available to the crop)
 - Present in small quantities and needs to be continually replenished if crop growth is to be maintained
- Mineral or inorganic phosphates
 - 65 – 70% of the total soil P, largely insoluble and only slowly released into soil solution
- Organic phosphate
 - 25 – 30% of total soil P, to become available to crop has to be mineralised by microbes

P supply from the soil

- Total phosphate in top soil can be 3 to 7 tonnes of which
 - only 0.01 to 0.3 mg/l in soil solution
 - 0.5 to 3 mg/l in the readily available pool
- Plants take up 0.1 to 0.5 kg P/ha/day in active growth
 - P ions only diffuse 0.13 mm/day
- Therefore to ensure a good supply of P to the plant
 - Good supply of P in the soil profile in soil solution
 - Good root architecture

Labile P

- P loosely bound (Adsorbed) as sparingly soluble compounds
 - Iron, aluminium and mono calcium phosphates
- P pool that is measured for soil analysis

- Replenishes P removed from soil solution
- Different soils adsorb different quantities of P e.g. sands – small quantities, clay – large quantities
- In Scotland new '[Sorpton](#)' guide now in use.

Non Labile P – fixation

- Precipitation depends on soil type and pH
- Acid soils – fixed as aluminums and iron phosphates
- Calcareous soils (alkali)
 - fixes as apatites di calcium phosphates
 - including fluoride, chloride and bromine ions

Wheat	MARCH	APRIL	MAY	JUNE	JULY	AUG
Phosphate (P_2O_5)	20	30	50	70	85	80
Potash (K_2O)	50	80	150	240	300	140

Oilseed Rape	MARCH	APRIL	MAY	JUNE	JULY
Phosphate (P_2O_5)	25	40	70	90	80
Potash (K_2O)	90	120	180	300	210

Find out more – Links to AHDB information sheets or research

[AHDB Nutrient Management Guide \(RB209\)](#)

[Wheat growth guide](#)

[Barley growth guide](#)

[Oilseed rape guide](#)

[Cost-effective phosphorus management on UK arable farms \(Sustainable-P\)](#)

[Improving the sustainability of phosphorus use in arable farming – 'Targeted P'](#)

[Understanding phosphorus and its use in agriculture – European Fertilizer Manufacturers' Association](#)



For more information on nutrient management, visit cereals.ahdb.org.uk/crop-management/nutrient-management

Next meeting

Date: 25 January 2018

Topic: Fit for farming and future prosperity

Time: 10.00

Location: Hibaldstow Village Hall, Station Road, Hibaldstow, DN20 9DY

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 [Cereals EM](#)

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