

# Downpatrick Monitor Farm

Meeting title: Manures and soil

Date: 21 January 2020

Speakers: Philip Wright (Wright Solutions Ltd), Sajjad Awan (AHDB)



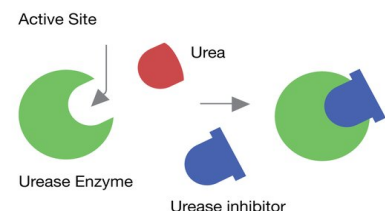
## Clean air strategy: Focus on Ammonia Emissions

- Nitrogen makes up 78% of our atmosphere
- Must reduce Ammonia emissions by 16% by 2030? Which would save economy £5.3billion annually
- Reduce Ammonia losses by; having enough storage facility, covering the surface of heap or lagoon, keeping poultry manure dry
- Keep an eye on changing regulations - Low Emission Slurry Spreading Equipment from 1st Feb 2020  
NAP 2019-2022 (DAERA)
  - Spreading anaerobic digestate
  - Manure from large cattle/pig farms (2000 kg N per year)
  - Slurry contractors from 1st Feb 2021

### Urease Inhibitors

Urease inhibitors are chemical compounds which slow down the rate of urea breakdown into ammonia by occupying/inhibiting the urease enzymes. If left uninhibited the soil born urease enzymes enable, via a hydrolysis reaction, the release of ammonia from soil surface urea.

- Phosphoramidate compounds are extremely potent inhibitors
- NBPT (n-butyl thiophosphoric triamide) marketed as Agrotain
- Phenyl phosphorodiamidate (PPDA) is also a strong UI
- 2-NPT (2-nitrophenyl) phosphoric triamide is a mixture of NBPT and NPPT
- Heavy metals
- Nutrisphere™



### Take-home messages

- When thinking about applying nutrients, remember the following principles – right source, right rate, right time, right place
- Carry out soil sampling
- The best time to apply organic materials is when the crop is growing at its fastest rate

### Further information

- [AHDB Nutrient management guide \(RB209\) Section 2: organic materials](#)
- [Testing soil health](#)
- GREATsoils research and publications can be found at [ahdb.org.uk/greatsoils](http://ahdb.org.uk/greatsoils)

## Soil Structure, Cultivations and Crop Establishment

### Benefits of good drainage:

Air / Water balance  
 Aerobic soil “biology”  
 Extended growing season  
 Improved timeliness  
 Reduced structure damage

Deeper, plant root systems  
 Efficient fertiliser use  
 Reduced environmental impacts  
 Less weeds, pests & diseases associated with wetter soils

### Causes of poor drainage

Compaction  
 Heavy, impervious soil (texture)

High water table  
 Blocked drains, outfalls

### Tines or Discs?

**Tines** - types of soil failure that they can create:

- tensile failure
- shear / compressive failure
- compressive / plastic failure

**Discs** – cutting action:

- high rake angle – compressive action
- risk of smearing
- effective in residues
- low disturbance

### Power Harrows: points to consider

- Capable of completely destroying structure when wet
- Pretty surface often masks problems beneath
- Operate shallow & fast to minimise soil damage
- Use with care when appropriate – remember barriers to water movement!

### Take-home messages

- Yield differences measured – think about the impact of compaction
  - Drill & roll combined can reduce by 6% to 10%
  - Plough based wheeling can be down to 61%
- Soil resistance to compaction is improved by Organic Matter
- Think about the soil plastic limits when planning cultivations
- Roots and metal – it needs to be a combines solution to soil compaction



## Further information

- [Arable soil management: Cultivation and crop establishment](#)
- Soil biology and soil health case studies:
  - [Testing the soil health scorecard](#)
  - [Testing the long-term effect of pH on soil health](#)
  - [Role of molecular indicators](#)

## AHDB resources


- Understand your business costs with AHDB's benchmarking tool Farmbench at [ahdb.org.uk/farmbench](https://ahdb.org.uk/farmbench)
- Monitoring tools are available at [ahdb.org.uk/tools](https://ahdb.org.uk/tools)
- Sign up to market information and research newsletters at [ahdb.org.uk/keeping-in-touch](https://ahdb.org.uk/keeping-in-touch)
- Find out what's going on at other Monitor Farms and Strategic Farms at [ahdb.org.uk/farm-excellence](https://ahdb.org.uk/farm-excellence)
- All AHDB events can be found at [ahdb.org.uk/events](https://ahdb.org.uk/events)
- For guidance on how Brexit will impact your business, see [ahdb.org.uk/brexit](https://ahdb.org.uk/brexit)

## Contact details

**For more information contact:** Michelle Nuttall

E: [Michelle.Nuttall@ahdb.org.uk](mailto:Michelle.Nuttall@ahdb.org.uk)

M: 07778 143404

 [@Cereals\\_NW\\_NI](https://twitter.com/Cereals_NW_NI)