

Bridgnorth Monitor Farm meeting report

Meeting 9: Optimising nutrient use and increasing yield

Speakers: Pete Berry (ADAS)

Date: 9 January 2018

Location: Norton Village Hall, Norton, Shropshire
TF11 9EQ

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



Meeting summary – key messages

- Match nitrogen application with the expected yield – high yielding crops need extra nitrogen
- Only adjust nitrogen applications when confident of additional yield – consider yield limiting factors such as pest and disease pressure
- In oilseed rape, applying all nitrogen early can over-shoot the optimum canopy size, especially in high yielding crops or those with a high green area index (GAI)

Wheat harvest 2017

Bridgnorth wheat YEN entry

Cost per hectare	Feed wheat (Farm standard)	Feed wheat (YEN)
Yield	8.171	8.655
Seed	54.46	54.46
Fertiliser	151.36	202.72
Fungicides	104.75	105.33
PGRs	7.06	7.06
Herbicides	58.2	58.2
Trace elements	5.34	5.34
Variable costs	381.17	433.11

Key points

- Achieved 9.0 t/ha (cv Reflection)
- Yield potential: 21.4 t/ha
- Low total biomass (13 t/ha)
- Low total crop N uptake
- Low ear numbers (<400 ears/m²), low grains/m²
- High harvest index (0.59)
- High grain protein
- Generally high grain nutrient levels

Optimising nutrient uptake in wheat

- Crops must take up an extra 25 kg N/ha for each additional tonne of yield
- Nitrogen rates should be adjusted up or down by 20 kg/ha per t/ha increase or decrease in expected yield from:
 - 8.0 t/ha in winter wheat (up to 14 t/ha)
 - 6.5 t/ha in winter feed barley (up to 12 t/ha)
 - 5.5 t/ha in spring barley (up to 10 t/ha)
- When adjusting nitrogen rates for expected yield you must be confident of achieving the expected yield
- Any yield limiting factors must be dealt with including:
 - Disease and weed pressure
 - Supply of other nutrients
 - Poor soil structure
- **If expected yield is unlikely to be high due to *uncontrollable* factors (eg climate, soil type, aspect), then do not increase nitrogen rate for high yield**

Oilseed rape harvest 2017

Bridgnorth oilseed rape YEN entry

Cost per hectare	OSR (Farm standard + trace element)	OSR (Farm standard)	OSR (YEN)
Yield	4.297	4.233	4.94
Seed	60.92	60.92	60.92
Fertiliser	128.22	128.22	148.25
Manure	64.26	64.26	64.26
Fungicides	65.12	65.12	65.12
Molluscicides	6.3	9.6	6.3
Herbicides	80.94	81.08	81.03
Trace elements	10.67	2.88	10.67
Variable costs	355.51	351.16	375.63

Key points

- Achieved 5.0 t/ha, 42% oil (cv DK Imperial)
- Yield potential: 12–13 t/ha
- Low total biomass (9 t/ha)
- Low seed number (87,000 s/m²)
- High harvest index (0.5)
- High TSW of 5.1 g
- High seed protein
- Low seed sulphur and high N:S – indicating S limitation

Optimising nutrient uptake in oilseed rape

- Crops with a yield potential of more than 3.5 t/ha require more nitrogen
- Apply an extra 30 kg/ha for each 0.5 t above 3.5 t/ha
- High yielding crops need extra N to prolong seed filling
- Applying all nitrogen early will often over-shoot optimum canopy size
- Particularly for crops with large GAI or high yield
- Need to apply some nitrogen later
- Nitrogen uptake slows after flowering

Find out more

[Yield Enhancement Network](#)
[Nutrient management guide \(RB209\)](#)
[Using farm experience to improve N management for wheat \(LearN\)](#)
[PR576: Improvement of soil structure and crop yield by adding organic matter to soil](#)
[Automating nitrogen fertiliser management for cereals \(Auto-N\)](#)



Next meeting

Date: 6 February 2018

Topic: Grain marketing post-Brexit ([register to attend](#))

Time: 10.00–13.00

Location: Norton Village Hall, Norton, Shropshire, TF11 9EQ

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To find out more about Farmbench, AHDB's benchmarking tool, contact: Megan Loynes

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