

Fertiliser savings in break crops and by spreading fertiliser evenly

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Three Fertiliser Questions

How do we utilise Oilseed Rape to optimise N use?



Can we save N by using legumes in rotations?

▪



Can we spread all fertiliser types (incl. Urea) evenly?

▪



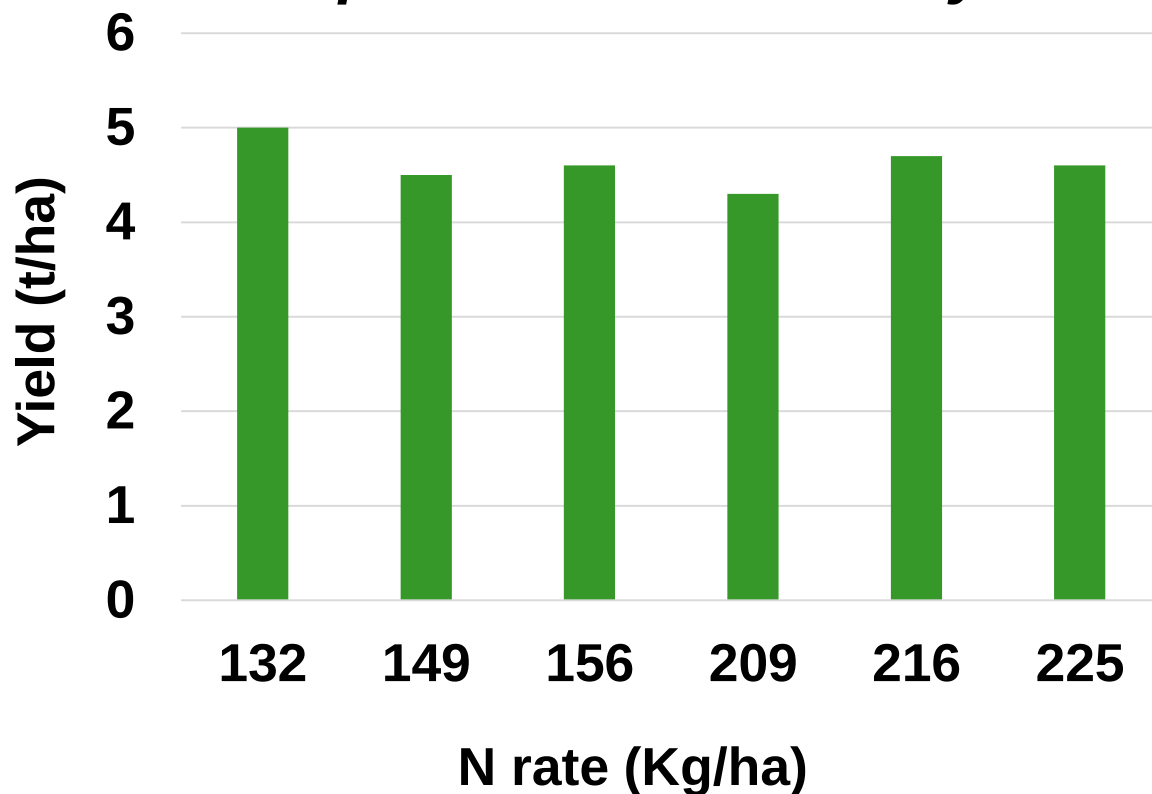
1. Oilseed Rape can capture and use N

Canopy management approach

- ◆ Canopy N (GAI) remains in the crop.
- ◆ Each unit of GAI contains 50kg of N
- ◆ Crop requires 3.5 GAI at flowering
- ◆ Applied fertiliser efficiency of 60%
- ◆ Each 1t yield >3.5t/ha needs 60Kg /ha
- ◆ UK developed system validated.



Fixed and Canopy management impact on N rates and yield



GAI: 0.6



GAI: 2.1



Save Fertiliser N if post-winter crop size allows

Crop	Small	Medium	Large	V. Large
CROP GAI (units)	0.5	1.0	1.5	2.0
Crop N (kg/ha)	25	50	75	100
SMN (estimate, kg/ha)	45	40	35	30
Target N for 3.5 GAI (kg/ha)	175			
Extra N for 4.5t yield (kg/ha)	60			
Required Fertiliser N (kg/ha)	235	202	168	135
Saving in N Cost (€/ha)	-	<u>€83</u>	<u>€168</u>	<u>€250</u>

Conclusions: OSR N

2021 / 2022 season

- ◆ Exploit the N in the crop
- ◆ Do not waste money on excess N that may cause a reduction in yield

Future seasons:

- ◆ Potential will vary with season: sowing early allows it to be exploited
- ◆ But you must reduce N if you have it in the crop or soil
 - ◆ Avoid excessive canopy size at flowering: poor pod fill, lodging.

2. Saving N by using Legumes in Rotations

- ***Legumes fix atmospheric N***
 - N available to growing Legume
 - Residual N available to subsequent crop
 - Grain producing crop (Beans, Peas, Lupins)
 - Cover crop (Vetches, Clovers etc)
- **Europe is deficient in proteins**
 - Protein payment scheme continuing



Legume rotations spare N use

Rotation, crop and applied N (kg N/ha)

Year	Continuous WW	Rotation with OSR	Rotation with Beans
1	WW 230	OSR 225	Beans 0
2	WW 230	WW 200	WW 200
3	WW 230	WO 165	WO 165
4	WW 230	WW 230	WW 230
5	WW 230	WB 200	WB 200
Total N	1150	1020	795
N Saving (%)	-	11%	31%

Change to use more legumes

- ***Rotation limitations (1 year in 5)***
 - Must be respected
- ***Reputation for variable performance***
 - More variation locally than nationally
 - Beans: dry years medium textured soils?
 - Address with research and good management decisions
- ***Inappropriate focus on single year crop performance***
 - Does not value benefits to subsequent crop or rotation:
(Knockbeg research: +19% yield; + €208/ha rotation margin)
 - Focus on entire rotation and long term sustainability.



3. Can we spread Urea evenly

Urea is cheaper!

2021 / 2022 fertiliser prices

- ◆ CAN €675/tonne = €2.50 / kg N
- ◆ Protected Urea €1000/tonne = €2.17 / kg N



Significant annual savings

	CAN	P. Urea	Saving
Winter Wheat 250kgN/ha	€625	€542	€83/ha
Spring Barley 165kgN/ha	€413	€358	€55/ha

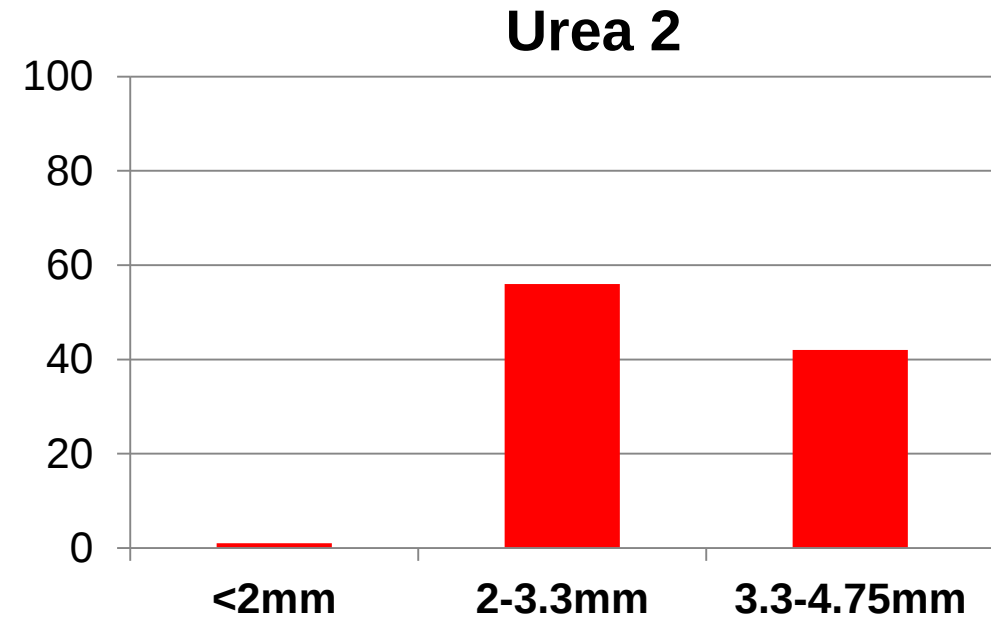
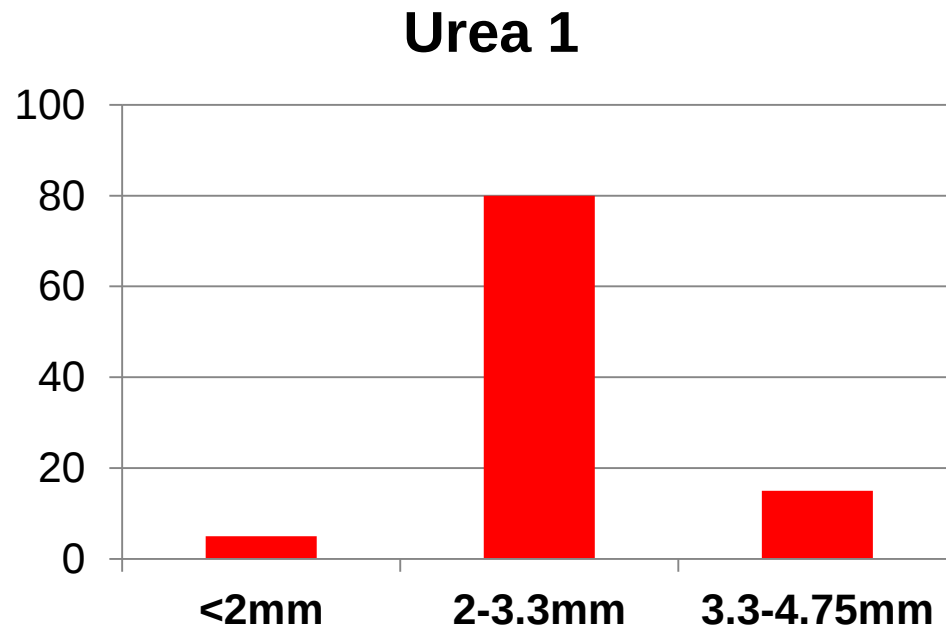
But can we spread urea evenly at wide bout widths?

Urea has a lower density – 80 % of others

- More difficult to throw
- More influenced by wind.



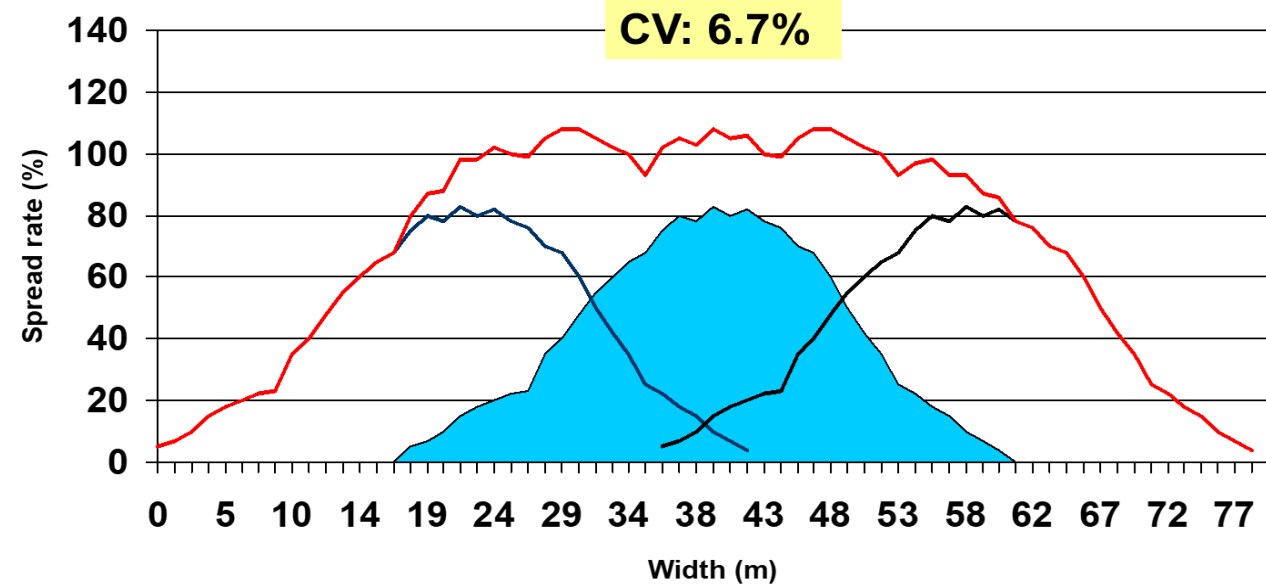
◆ Get good quality UREA – large and strong particles !



Use a Good Spreaderfor Urea!

■ Good basic spread pattern

- Triangular – wide base and overlap
- Capable of bout width with Urea
- Supported by test results COV <7%
- Supported by fertiliser test database



Match Urea to tested product.

Characterise

- Size
- Strength
- Shape
- Density



Match to Database via App / On-line

12345

Machine >> Field settings >> Fertiliser properties >> Fertiliser list >> Chart

RO-M GEOspread - Basic application | 18 mtr | 200 kg/ha | 12 km/h

Granule size (mm)

Distribution (%)

Density

< 2

2-3,3

3,3-4,75

> 4,75

Sum

kg/ltr

[Explanation of distribution \(%\)](#)




☐ Granular


☐ Mineral


☐ Prilled


☐ Crystalline


☐ Blend


☐ Pellets


☐ Seed/Slug pellets


☒ All shapes

Next

>>

Will determine:

- If match available
- Bout width limit
- Specific requirements (discs/vanes)
- Spreader settings for bout



Check Spread and extreme care with Urea

- Check headland settings (40% differences)
- Use trays/mats to verify settings
 - 100ha: SB and WW fertiliser: **€71,383**
 - 3 hrs testing x €50 = €150: **0.2%**
- Be very cautious with wide bouts and wind
- Avoid using Urea 'blends' unless proven, as segregated spread patterns are possible.
(N in different parts to P, K, S)



Conclusions

- **Oilseed rape's ability to capture and utilise N allows N savings**
 - Exploiting these savings will also protect yield potential
- **The use of Legumes can save fertiliser N.**
 - Legumes must be considered on a whole rotation basis
- **Urea can reduce costs but spreading quality is an issue.**
 - Choose urea with large-sized, strong, particles
 - Setting databases based on spreading tests are essential
 - Headland spreading for all fertiliser types needs to be addressed.

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