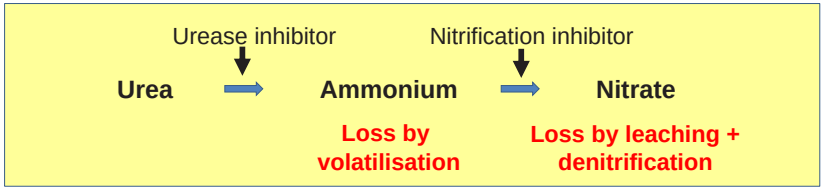
N fertiliser types

	CAN	Urea	Protected urea	UAN (liquid N)*
N content (**straight N**)	27	46	46	28-32
Yield	★★★★★	★★★★½	★★★★★	★★★★½
Cost of N	★★★★	★★★★★	★★★★½	★★★★★
Spread evenness **(wide trams)**	★★★★★	★★★★	★★★★	★★★★★
Greenhouse gas	★★★★	★★★★★	★★★★★	★★★★
Ammonia gas	★★★★★	★★	★★★★½	★★★½

*Based on international data

- Protected urea includes products containing NBPT or 2 NPT
- Some products contain nitrification inhibitors also
- Each product has pros and cons – inform yourself before using
- Gaseous losses will receive more focus in future
- Correct rate and timing is important irrespective of fertiliser type

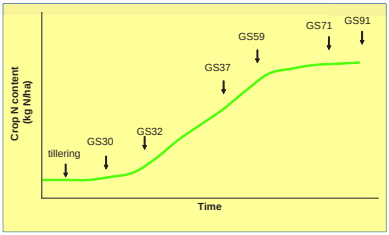


Notes:

N timing and varietal effects

N timing

- Ensure sufficient N to meet crop demand
- Demand is low at early stages
- Most N taken up during stem elongation/heading
- Timing and splitting effects small
  - Provided crop is not allowed to get very deficient



2 split vs 3 split

- Little consistent difference in winter or spring barley
- 3rd split allows final N decision later in season
- Potential for precision ag techniques

Variety effects

- Little difference in N requirement of commercial varieties/variety types

Assuming

- Similar yields
- Same target market

Notes:

Does RYE have a role?

Potential uses

- Distilling/brewing
- Human consumption
- Animal feed, particularly pigs
- Anaerobic digestion

Pros

- Good yield potential
- Good disease resistance
  - Particularly take-all and septoria
- Good drought tolerance
- Lower fertiliser requirement?

Cons

- Tall, lodging is a risk
- Susceptible to ergot
  - Modern hybrids less susceptible
- Sprouting is a risk
- Limited market currently

Knowledge gaps

- Most effective PGR programme?
- Optimum nitrogen rate?
  - Feed vs distilling?
- Optimum seeding rate?
- Optimum sowing date?
  - Vigorous early growth – delay sowing?
- Suitability for Irish pig diets?

Notes: