

FACTORS AFFECTING NITROGEN USE EFFICIENCY

Nitrogen use efficiency (NUE) may be defined as yield per unit of N available to the crop. This available N includes fertiliser inputs, atmospheric deposition and mineralisation within the soil. The N available from soil mineralisation is dependent upon soil organic matter and the history of the crop land use. Rotations including leguminous crops will contribute to soil N from biological N fixation.

Components of NUE

- Nutrient uptake efficiency (NU_pE) and nutrient utilisation efficiency (NU_tE)
- NU_pE is primarily a function of a root and is influenced by root architecture (Barraclough et al., 2010). Soil type, soil moisture, variety differences
- NU_tE , on the other hand, is dependent on the photosynthetic efficiency of a crop canopy and the ability to produce grain yield. Variety differences, season (light, temp, moisture)

Factors affecting NUE

- Soil type (physical and non-chemical factors)
- Soil related factors (soil pH, soil water and organic matter)
- Nutrients and soil interaction
- Regional rainfall (leaching, runoff)
- Previous crop e.g. legumes, cover crop, cereals
- Timing of application of the nutrients and frequency e.g. 2 splits, 3 splits, 4 splits
- Total nitrogen fertiliser rate e.g. 300 kg/ha vs 150 kg/ha
- Weather conditions after the application of N e.g. wet or dry weather
- Products (solid vs liquid vs foliar)
- Variety choice, e.g. Crusoe/Nelson vs Skyfall
- Agronomy (drilling date, drilling and cultivation system, PGR, fungicide, herbicide etc)
- Soil biology and soil applied fungal and microbial products e.g. SR3, Tiros, Mycorrhizal fungi
- Seed dressings that increase root growth e.g. phosphite-based products
- Carbon-based fertiliser e.g. QLF Boost

