

Best practice management of nitrogen and sulfur for canola and cereals.

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Dookie Field Day, October 31, 2013

<http://anz.ipni.net/article/ANZ-3151>



Nutrition in the high rainfall zone

- Fertilize to the yield potential as set by rainfall and accessible stored water and consider subsoil limitations such as sodicity or acidity.
- Ensure the soil pH is right – low pH is a major cause of micronutrient deficiency and strategic lime use should be considered if the soil pH_{Ca} is below 5.0.
- Adjust the management to within paddock yield potential
- Roll nutrients out as the season develops. At sowing, application (especially of N and S) should aim to meet the crop demand until stem elongation in either canola or wheat, and then reassess the yield potential and nutrient demand in the light of the seasonal forecast.

N is linked to S demand in many ways. They are both important in protein metabolism demand is typically in the ratio of the N:S in those proteins. Cereals typically have a grain N:S ratio of 15:1 while canola grain have a N:S of 7:1.

	Canola (3 t/ha)	Wheat (5 t/ha)
Nitrogen	105	125
Phosphorus	15	15
Potassium	21	18
Sulfur	15*	8

So, the relative S removal of canola is twice the removal of cereals, and this is why we need to consider S particularly for canola.

Demand by the crop for N and S can be twice the amount removed.

Overview of N and S management for wheat and canola

The 4-R Nutrient Stewardship Principles are that the Right Source of Nutrient is applied at the Right Rate, Right Time and Right Place to supply crop nutrient needs. N and S can be added in different sources and many sources can be effective if managed in the right way. Application of ammonium sulfate in the seed-row of canola could be very effective, but because required rates cause the N in the ammonium sulfate to exceed the ammonia tolerance of canola, seed can be damaged and plant establishment reduced.

The following are alternative ways of applying the 4-R principles to supply adequate amounts of N and S needed for the canola crop by changing the form and or placement of the S-containing product.

- *Spread out the needed application of S through the whole crop rotation, for example using good quality gypsum.*
- *Deep soil test for N and S, the topsoil can be deficient while there may be adequate in the subsoil*
- *Apply the N and S in a band away from the seed-row.*
- *Provide the crop is not grossly deficient early, N and S can applied later without penalty.*
- *Apply a source of S that has both sulfate and fine-particle sized elemental S in the seed-row. Top-dressed S should be in the sulfate form.*
- *There are some agronomic differences among different N sources, but in most cases, choose*