

Advisers take in

More than 100 agronomists gathered to hear leading plant nutritionists share information from their experimental work and experience in agriculture, covering topics such as carbon farming, future fertiliser technologies and improving nutrient use efficiency.

Dr **Jim Virgona**, senior lecturer at Charles Sturt University, Wagga Wagga, suggested a model be developed to incorporate evidence-based decision making, similar to the protocol used in medicine.

“The best form of evidence is from replicated, randomised trials, which show the measure of error and have been peer reviewed,” he said.

“If research findings could be centralised and the quality of the evidence ranked, we would have the start of a framework for assessing products and ideas in agriculture.”

He said many farmers adopted products that had no evidence of their effectiveness.

“I believe at the minimum, farmers and advisers should be considering the plausibility and veracity of claims and the applicability of the product or idea to the farming system,” he said.

Dr Virgona spoke after a day of information sharing that gave the group of agronomists the latest research findings on nitrogen, phosphorus and sulphur nutrient use efficiency in cropping and pasture systems.

The conference, hosted by Incitec Pivot Fertilisers, was an opportunity for members of the Agronomy Community to share their experience and knowledge.

With 350 members and growing, the Agronomy Community was created by Incitec Pivot Fertilisers to advance the science of plant nutrition among researchers and agronomists to help Australian farmers.

Dr **Roger Armstrong**, senior research scientist with the Victorian DPI, shared the findings from GRDC funded research into better nutrient management in south-eastern Australian cropping systems.

He showed that the cultivation technique used, the placement of phosphorus in the soil, the combination of nitrogen with phosphorus and the level of soil moisture all affected the overall uptake of phosphorus by the crop.



Advisers were urged to adopt an evidence-based approach in agriculture when they met in Melbourne for the Agronomy Community conference.



“In most cases the research showed much better utilisation of phosphorus fertiliser in wet soils compared with dry soils,” he said.

Using nitrogen with phosphorus also improved phosphorus utilisation, as did zero tillage systems.

“There are significant penalties for overall root growth where the phosphorus was deep banded rather than applied with the seed,” he said.

Dr Armstrong showed that where phosphorus was applied with the seed, the proliferation of roots around the phosphorus band allowed better root development and increased the uptake of phosphorus from the soil as well as improving fertiliser use efficiency.

Left: Dr Jim Virgona, Charles Sturt University, emphasised the importance of evidence-based decision making in agriculture.

latest evidence



Left:
Dr Graeme Blair talked about the importance of sulphur at the Agronomy Community Conference.

reduce the loss of nitrogen through volatilisation of ammonia to the air," she said.

"Nitrification inhibitors are also showing that in certain conditions they

can reduce nitrous oxide emissions from urea applied to pastures.

"There are a number of options for reducing nitrogen losses via runoff, volatilisation, leaching and denitrification and every site is different, so the right option depends on the farming system and region involved."

Dr Suter said it was important to consider the nitrogen cycle as a whole.



1. Jim Laycock, Incitec Pivot Fertilisers with Chris Baker from Ag N Vet and Neale Coutanche from Lachlan Fertilizers Rural.

2. Jason Collier, Rand Ag & Fertilizer with Bruce Ramsey.

3. Shannon McLellan, Agritech Rural and Gerard O'Brien, Western Ag.

4. Rob Dwyer from Incitec Pivot Fertilisers (right) and Agronomy Community board member Dr Bernard Schroeder, BSES.

5. Nigel Bodinnar, Incitec Pivot Fertilisers navigates Sophie Leonard, Vickery Bros through the Nutrient Advantage Advice software program.

Dr **Helen Suter**, research fellow at the University of Melbourne, presented findings from research into reducing nitrogen losses.

She showed research results that supported the efficacy of fertiliser treated with urease inhibitors such as Green Urea fertiliser and nitrification inhibitors, such as Entec treated fertilisers.

"Depending on the conditions and urease activity, Green Urea can



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Right (l-r):
Speakers from the Agronomy Community Conference included Dr Graeme Blair, Dr Doris Blaesing, Dr Roger Armstrong, Associate Professor Richard Eckard, Dr Helen Suter, Charlie Walker and Dr Rob Norton.

◁ “Plugging a hole in one area may make it come out somewhere else,” she said.

Professor **Graeme Blair**, Adjunct Professor of Plant Nutrition, Agronomy and Soil Science at the University of New England, spoke about the differences that can be expected from different forms of sulphur in fertilisers.

“Not all sulphur fertilisers are equal,” he said.

He said sulphur was not a secondary nutrient and should be given as much attention as nitrogen and phosphorus, as a deficiency in sulphur could cause similar production losses. Crops required sulphur at different growth stages, so it was important to understand crop demand when selecting an appropriate sulphur strategy.

“Sulphate sulphur sources such as gypsum, ammonium sulphate and single superphosphate offer immediately available sulphur, but this can be easily leached,” he said.



“Elemental sulphur sources such as most sulphur-coated fertilisers and prilled sulphur must first be oxidised by *Thiomonas* bacteria in the soil, so the sulphur is supplied to plants gradually through the growing season.”

He said trial results showed elemental sulphur often gave better results in pasture than sulphate sulphur over two or more years.

Professor Blair said particle size was particularly important in ensuring elemental sulphur availability to plants, with smaller particles (less than 150 microns) providing better results.

“Fertilisers with two-thirds fine grade elemental sulphur and one-third

sulphate sulphur have also generated good results in a range of recent trials,” he said. “These fertilisers offer the best opportunity for evening out the supply of sulphur, reducing leaching losses and getting some sulphate sulphur to plants early in the season.”

Other speakers at the conference included Dr **Rob Norton**, regional director of the International Plant Nutrition Institute; Associate Professor **Richard Eckard**, interim director of the Primary Industries Climate Challenges Centre; Dr **Doris Blaesing**, RM Consulting Group and Dr **Richard Simpson**, senior principal research scientist, CSIRO Plant Industry. ■



Mitch Hartree and Nathan Smith, Naracoorte Ag Services with Donald Ross, Incitec Pivot Fertilisers.



Tim Pilkington (centre) and Matt Bissett (right), Agrivision with Rik Pumpa, Incitec Pivot Fertilisers.