The Australian Cottongrower

• RESEARCH & EXTENSION BY INCITEC PIVOT FERTILISERS •

SECTION 14
RESEARCH & EXTENSION
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Nitrification inhibitor usage cuts on-farm GHG emissions

New research has demonstrated the ability for farmers, graziers and horticulturalists to reduce greenhouse gas (GHG) emissions associated with nitrogen fertilisation.

The research, undertaken by Incitec Pivot Fertilisers (IPF), studied the impacts of the nitrification inhibitor dimethyl pyrazole glycolate (DMPG), in reducing nitrous oxide (N_20) emissions from nitrogen fertiliser. Nitrous oxide is a potent GHG with a warming potential 273 times that of carbon dioxide (CO_2).

It studied the combination of eNpower, a proprietary nitrification inhibitor formulation containing DMPG, and Easy N, a urea ammonium nitrate solution.

Results showed N_2O equivalent GHG emissions (kg/ha) more than halved over 36 days as a result of applying eNpower on Easy N applied soil, compared to just using Easy N.

N_2O is lost from the soil under high moisture conditions where bacteria use nitrate nitrogen as an oxygen source. This process is termed denitrification and can also result in significant nitrogen losses in the form of dinitrogen. Aside from contributing to GHG, denitrification also denies crops and pastures valuable nitrogen potentially impacting farm production and quality.

IPF Vice President, Agronomy and Innovation, Charlie Walker said IPF was at the frontier of helping farmers to minimise GHG emissions through good agronomy and Enhanced Efficiency Fertiliser (EEF) technology, and research into DMPG was just one aspect of this work.

"DMPG works by inhibiting nitrifying bacteria in the soil, slowing down the conversion of ammonium N to nitrate which is more prone to losses like denitrification and leaching," Charlie said.

"Where nitrogen losses are minimised, there is the potential for growers to have a positive return on investment on the use of inhibitors such as DMPG. Alternatively, growers may be able to reduce nitrogen inputs under some circumstances.

"eNpower is commercially available now and we are optimistic that we will have more technology in the future that will help growers reduce their GHG footprint.

"IPF is continuing to invest in research to drive productivity and environmental outcomes for growers. The ARC Research Hub for Smart Fertilisers is a key investment to address the environmental and economic challenges created by the inefficiencies of traditional N fertilisers."

IPF's latest research into DMPG further adds to previous research which has been undertaken by other sectors into the impacts of EEFs on reducing N_20 emissions in sugarcane, cotton and vegetable crops.

Research conducted in the sugar industry by Wang et al (2016) showed DMP decreased annual fertiliser-induced N_2O emissions by approximately 83 per cent.

A cotton trial near Gunnedah NSW conducted by Schwenke and McPherson in 2016–17 showed anhydrous ammonia treated with DMPS was active in the soil for three months, reducing N_2O by 86 per cent compared with conventional anhydrous ammonia.

Vegetable trials conducted by Riches et al (2016) also showed significant reductions in N_2O emissions with a range of EEFs including DMP.

For more information about eNpower, contact IPF Customer Service on 1800 009 832 or visit *www.incitecpivotfertilisers.com.au*