

Local research backs potential for ENTEC in vegetables



By Rob Dwyer - Technical Agronomist

Improved fertiliser efficiency and reduced nitrogen losses could be just the start for vegetable growers adopting ENTEC[®] as part of their fertiliser programs.



In research conducted over an entire year in the Lockyer Valley, Queensland, researchers found that ENTEC showed great potential for reducing nitrous oxide emissions from vegetable production systems.

Importantly, ENTEC also sustained high crop yields, even at reduced fertiliser rates.

This is one of only a few Australian trials with ENTEC in an intensive vegetable production system and it offers valuable findings for local growers and advisers.

The research paper by Clemens Scheer, Mary Firrell, Peter Deuter, David Rowlings, Ian Porter and Peter Grace was presented at the International Nitrogen Initiative conference in Melbourne and can be read in full [here](#).

Testing ENTEC in vegetables

The trial was established on a farm in the Lockyer Valley. It compared four treatments:

1. Standard grower practice (SGP). Various rates of Nitrophoska[®] Special as a basal application and urea at side dressing.
2. ENTEC added to full SGP rate.
3. ENTEC added to 80% of SGP rate.
4. ENTEC added to 60% of SGP rate.

Using these four treatments, they compared the nitrous oxide losses and yields from sweet corn, broccoli and lettuce crops.

Nitrous oxide is released during a denitrification event, which is one of the major nitrogen loss pathways.

Not only can denitrification leave crops without the nitrogen they need to achieve their productive potential, the release of nitrous oxide contributes to greenhouse gas emissions.

Most of the peaks of nitrous oxide losses in the trial happened when a fertiliser application was followed by significant rainfall - a situation well-known to result in denitrification. There were also some losses following bed preparation.

ENTECS works by stabilising the applied fertiliser in the ammonium form for a period of time. This puts a stop to denitrification during that time, while still providing a source of nitrogen to the crop.

Measuring nitrogen losses

Using ENTEC reduced the peak losses in most situations, sometimes quite significantly, and reduced the total cumulative nitrous oxide emissions.

Cumulative annual emissions were estimated to be 1.37 kg/ha of nitrous oxide for the standard grower practice treatment and 0.98 kg/ha of nitrous oxide for the ENTEC treatment.

Reducing the rate of fertiliser and using ENTEC cut cumulative annual nitrous oxide emissions even further, to 0.8 kg/ha and 0.59 kg/ha for the 80% and 60% rates respectively.

Measuring productivity

In terms of productivity, the results from the trial show ENTEC could be used by growers looking to reduce fertiliser rates while maintaining yields.

In the sweet corn and lettuce crops, the yield from the standard grower practice treatment was statistically equivalent to the yield from the 80% SGP with ENTEC or 60% SGP with ENTEC treatments.

So, with ENTEC, even where 40% less fertiliser was used, the yield was the same.

In the broccoli, using lower rates of fertiliser did reduce yields. The researchers speculate that being a shallow rooted crop, the broccoli wasn't able to forage as effectively for soil nutrients.

This research is a strong endorsement for the potential of ENTEC in intensive vegetable production systems. It presents a win:win situation for growers.

Total yield (t/ha) for the three vegetable crops

Treatment	Sweet Corn	Broccoli	Lettuce
Standard Grower Practice (SGP)	10.9	11.7	68.8
100% SGP with ENTEC	11.7	11.5	65.8
80% SGP with ENTEC	11.3	10.4	68.0
60% SGP with ENTEC	11.3	9.4	61.9
SE	0.20	0.39	1.47
LSD	-	1.05	-

Source: Sheer, C. et al 'Effect of reduced fertiliser rates in combination with a nitrification inhibitor (DMPP) on soil nitrous oxide emissions and yield from an intensive vegetable production system in sub-tropical Australia' published in the proceedings of the 2016 International Nitrogen Initiative Conference.

Many vegetable growers are already experimenting with ENTEC for a range of reasons on farm, whether it is to protect nitrogen from losses and safeguard yield potential, reduce fertiliser rates, improve their environmental performance or improve productivity.

Take the opportunity to try ENTEC on farm this season and see how it can be used to improve results in your crops.

For more information on ENTEC, contact me on 0428 111 471 or rob.dwyer@incitecpivot.com.au.



incitecpivotfertilisers.com.au
nutrientadvantage.com.au

