

CROP NUTRITION FOR THE LONG RUN.

- ✓ Keeping nitrogen where it's needed
- ✓ Driving phosphorus uptake
- ✓ Protecting nutrients when you need them most
- ✓ Potential for improved yields and quality
- ✓ Unique patented formulation

DOES YOUR NITROGEN SUPPLY MATCH YOUR CROP'S DEMAND?

HERE'S THE PROBLEM:

In most vegetable and summer crops, nitrogen demand increases after planting as the crop grows – with N-demand peaking 40-70 days after planting. Yet traditionally, up to 70% of nitrogen (N) fertiliser gets applied at planting or within the first 30-40 days – when it's convenient and easier to get N close to the plant, but also when an early vegetative crop stage means N uptake is limited.

THE RESULT: A 'mismatch' in N supply v. demand that can cost you in:

WASTED NITROGEN

Conventionally, what isn't taken up may be lost through leaching – excess irrigation/rainfall in lighter soils or any soils with a cation-exchange capacity (CEC) of 4 or less – or denitrification in any soil texture that becomes waterlogged or deprived of oxygen.

PRODUCTION INEFFICIENCIES

With conventional fertilisers (i.e. non-enhanced efficiency fertilisers), higher N rates may be needed, incurring added labour and fertiliser cost for multiple top-ups by sidedress N applications.

REDUCED YIELD AND QUALITY

With conventional fertiliser, crop nutrition can be less than optimal and growth development may suffer as a result.

GET N TO YOUR PLANTS WHEN THEY NEED IT MOST WITH ENPOWER™18:20

eNpower™18:20 is an Enhanced Efficiency Fertiliser (EEF) containing DMPG, a patented nitrification inhibitor that gives nitrogen fertilisers weeks and even months, with more critical staying power.

WITH ENPOWER18:20, SUPPLY MORE CLOSELY MATCHES NITROGEN DEMAND

In comparison, when applied at the same time as conventional fertiliser, eNpower18:20 keeps nitrogen in the stable ammonium form for longer – so it remains in the soil and is available to the crop from application, until the growing crop really demands it.

WITH ENPOWER18:20, YOU COULD GET A LOT MORE FROM YOUR NITROGEN APPLICATION

More N utilised – potential for improved uptake, better nitrogen efficiency, better growth, and greater uptake of phosphorus and other nutrients such as zinc, copper, iron and silicon being promoted.

Better N efficiency – helps reduce losses through leaching, runoff and denitrification.

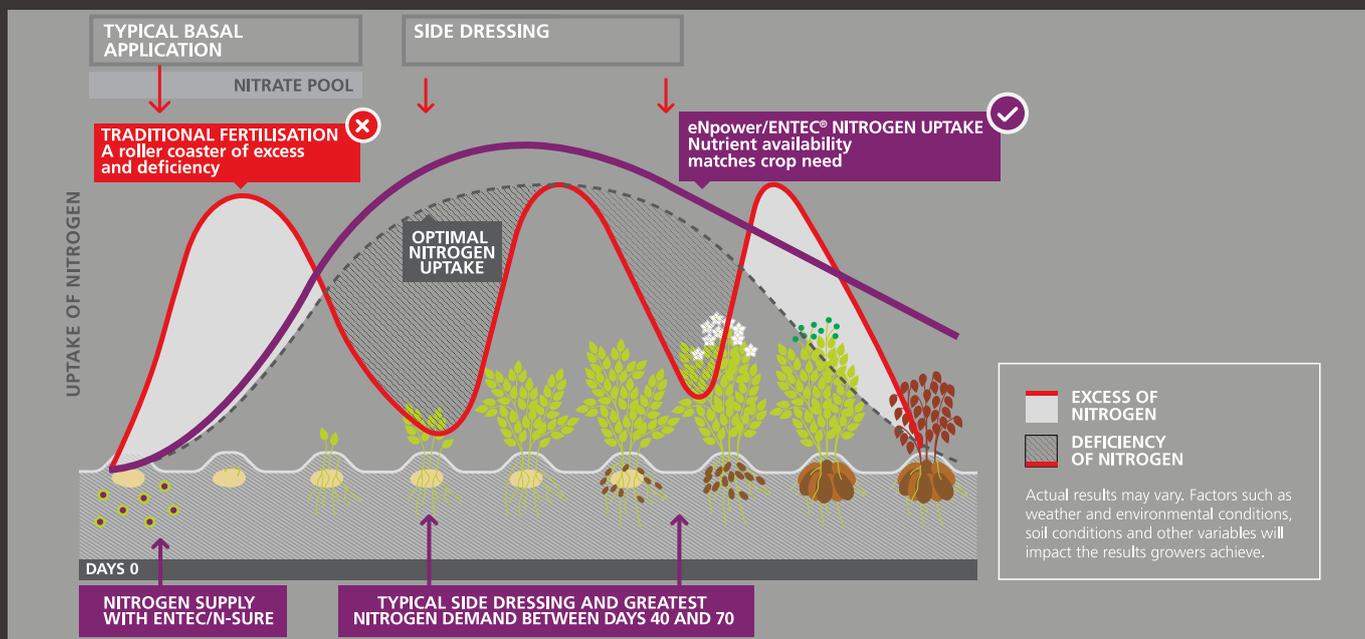
Better in the wet – helps protect from waterlogging, with steady N availability in the face of excess rain or irrigation. Nitrogen in the Ammonium form is not subject to denitrification.

More N for less – potential for reduced N side dress applications.

Potential improvements to crop return – potential for higher yields and increased tuber size in potatoes.

eNpower™
18:20

ENTECC®



HOW ENPOWER/ENTEC DOES IT

eNpower18:20 contains our patented DMPG, a unique formulation of DMP that, for the first time ever, remains stable on DAP. Other IPF nitrogen fertilisers such as Urea, Nitrophoska® Special, MAP and GranAm® are available with ENTEC® DMPP coating.

The DMPG in eNpower18:20 and ENTEC works by inhibiting nitrifying bacteria in the soil. This slows down conversion of the more stable ammonium form of nitrogen to the nitrate form that's more prone to loss. DMP keeps nitrogen available in the soil longer and available to the plant more continuously throughout the critical weeks of greatest N demand.

ENPOWER/ENTEC STAY ACTIVE LONGER

The cooler the soil, the longer eNpower and ENTEC stays active – up to 10+ weeks if soil temperature is less than 12 degrees.

Type of fertiliser	Time for nitrification to occur*
Conventional untreated nitrogen fertilisers	1-3 weeks
eNpower/ENTEC treated enhanced efficiency fertilisers	4-10 weeks

*Under typical soil condition. Actual results may vary. Factors such as weather and environmental conditions, soil conditions and other variables will impact the results growers achieve.

**A review of the nitrification inhibitor 3,4-dimethylpyrazole phosphate (DMPP) A report prepared for Incitec Pivot Limited by Sultana, H., Suter, H. and Chen, D. (2010). The University of Melbourne.

DRIVING PHOSPHORUS UPTAKE

Phosphorus is essential for photosynthesis, plant growth and crop development; and it is the most expensive macro nutrient. Most phosphorus in the soil can be tied up, so improving and ensuring uptake of P is critical to achieve maximum yields.

AMMONIUM IMPROVES P UPTAKE

With conventional fertilisers, most nitrogen is converted to and taken up as nitrate (NO₃⁻), a negatively charged anion.

Keeping nitrogen as ammonium (NH₄⁺) for longer, means more N is taken up in this form. As the plant absorbs the positively charged ammonium, it compensates releasing another single positively charged cation as hydrogen (H⁺). This resulting localised decrease pH in the rhizosphere improves the availability of phosphorus, silicon, iron, manganese, zinc and copper.

Ammonium stabilisers like eNpower18:20 and ENTEC have the potential to increase uptake of phosphorus and other nutrients in different crops.

INFLUENCE OF THE N-FORM ON UPTAKE OF OTHER NUTRIENTS[^]

N-form	pH value		Nutrient uptake (µg/m root length)						
	Root distant	Rhizosphere	P	Fe	Mn	Zn	Cu	K	
Nitrate	6,6	6,6	123	55	8	7	1,4	903	
Ammonium	5,7	5,6	342	71	20	13	2,0	1127	
Ammonium with N-Inhibitor	6,6	4,5	586	166	35	19	4,6	1080	

[^] Adapted from: Thomson et al. (1993) J. Plant Nutr. 16, 493-506.

PROTECT YOUR NUTRIENTS WHEN YOU NEED IT MOST

Many vegetable and summer crop regions are subject to unpredictable rainfall. In dryland crops, good early rains can set the potential for bumper yields, but heavy rainfall also increases the risk of nitrogen leaching and denitrification. In irrigated crops, excess irrigation or unexpected rain following irrigation can also increase the risk of nitrogen loss. eNpower18:20 and ENTEC can help stabilise nitrogen and improve phosphorus uptake. This gives both dryland and irrigated crops a better chance of making the most of available moisture.

POTENTIAL YIELD AND QUALITY GAINS

A number of demonstration sites and replicated trials have shown gains in yield and quality measures with eNpower18:20 and ENTEC.

ENPOWER18:20 UNIQUE PATENTED FORMULATION

eNpower18:20 contains our patented DMP-G inhibitor. This is a unique formulation of DMP that remains stable on di-ammonium phosphate (DAP), allowing IPF to produce the first N-stabilised 18N:20P fertiliser. With a balance of N and P, along with a stabiliser designed to maximise their uptake, eNpower18:20 helps your crop to make the most of the nitrogen and phosphorus you've applied.

PROTECT YOUR ENTIRE BLEND

eNpower18:20 and ENTEC are available as straight fertilisers, in propriety blends, or as a 'custom blend' to exactly match individual crop nutrient requirements. If your blend requires additional nitrogen components, IPF incubation trials have shown the eNpower18:20 and ENTEC stabilisers to be effective on other nitrogen blend ingredients. This helps protect more of the nitrogen applied.

THE PROOF IS IN THE PRODUCE

A number of demonstration sites and trials have shown just how much more you can get with ENTEC and eNpower.

A POWERFUL DEMONSTRATION

At one WA demonstration site, ENTEC produced not only a substantial increase in potato yield, but also an impressive boost to tuber size.



MORE HEAD-TO-HEAD EVIDENCE

Trial harvested in April 2016 at Pinnaroo, shows the potential for increase in yield from ENTEC treated fertilisers v. their untreated equivalents.

Treatment (at planting)	Fresh yield (t/ha)	Yield increase
Nitrophoska	59.65	13.4 t/ha
Nitrophoska + ENTEC	73.05	22.5%
Nitrophoska + Stockosorb (35 kg)	62.3	14.0 t/ha
Nitrophoska + ENTEC + Stockosorb (35 kg)	76.3	22.5%
LSD	10.55	

Sown with a Nitrophoska Blend at 835 kg/ha (92.5 kgN/ha, 107.2 kgP/ha, 63 kgK/ha) +/- Entec +/- StockoSorb, cv Almira, planted 23/11/16. In crop rainfall of 28mm + 30mm irrigation per week on a sandy loam.
Source: Jamie Clifford, IPF Agronomist, Adelaide



REDUCE NITRATE FLUSHES WITH ENPOWER/ENTEC

eNpower18:20 and ENTEC can assist in reducing the size of nitrate pools in the soil after fertiliser application, helping to minimise flushes of nitrate nitrogen.

Using eNpower18:20 and ENTEC, fertilisers can improve the balance of nitrogen nutrition by increasing the availability of ammonium to the crop.

High nitrate levels in fruit and vegetables is an issue of concern to some growers because it can lead to poorer quality and a reduced shelf-life of produce.

NITRATE CONTENT OF HARVESTED VEGETABLES WITH AND WITHOUT ENTEC

Crop	Number of trials	Ppm nitrate in harvested produce		
		No fertiliser	Fertiliser without ENTEC	Fertiliser with ENTEC
Lettuce	18	336	784	672
Cauliflower	9	118	145	83
Leek	8	46	101	106
Celeriac	5	228	449	393
Chinese Cabbage	4	1030	1365	1295
Cabbage	4	201	258	176
Lambs Lettuce	10	50	913	877
Radish	3	693	1480	1353
Carrot	6	15	52	27
Spinach*	5	49	1438	963

Source: European BASF trials, 1999 and 2000, mean of two nitrogen rates.
*Mean of early year autumn and winter spinach.

ENPOWER TRIAL – BROCCOLI VIC, 2012



cv Viper transplanted 21.2.12 harvest 2.5.12
Total N applied = 79 Kg/Ha N (48 kg basal, plus 2 x 15.5 kg top dress)
In crop rain 208 mm / sandy soil
Source: Peter Melville, Horticulture Australia Ltd 2012



**“If it gets too wet,
side-dressing
compacts the soil,
damages potatoes,
and pulls up clods.**

The potatoes end up smaller and, with more green ones and in wetter patches, you can slide around and destroy some areas totally. Having eNpower treated DAP gives me confidence that the N applied at planting will last longer. This gives us the flexibility to apply side-dress when conditions are suitable. We expect that avoiding the compaction and damage by side-dressing in bad conditions, can add up to 1-2 t/Ha yield.”

Alex Muirhead, Winnaleah TAS



EXACTLY HOW MUCH N DO YOU NEED?

Our Nutrient Advantage® soil and plant tissue testing service can provide precise nutrient analysis and expert, objective recommendations based on your local conditions. When you know exactly what your plants need, targeted blends can be very cost effective. And today, growers around the country are producing higher yields with less fertiliser than in the past.

WANT THE ADVANTAGE?

Visit nutrientadvantage.com.au or call **1800 803 453** and ask about our soil and plant tissue testing services.

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MAKE SURE YOUR BLEND GETS THE ENPOWER18:20 AND ENTEC TREATMENT

Whatever IPF nitrogen fertiliser goes into your blend, an eNpower/ENTEC treated version is likely to be available.

For more information, contact your eNpower18:20 and ENTEC accredited IPF distributor or visit incitecpivotfertilisers.com.au

eNpower™
18:20

ENTEC®



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