

Cereals

EARLY SEASON

At drilling and/or early tiller development apply 150-200 kg/ha (40-50 kg N/ha).

MID SEASON

Apply ASN Cold Start to optimise milling quality through higher grain protein and improved dough development. ASN Cold Start's N:S ratio of 2.1 provides a good balance of nitrogen and sulphur.

During stem elongation apply 150-200 kg/ha (40-50kg N/ha).

Grass Seed

AUTUMN

To improve tiller initiation apply 115-135 kg/ha (30-35 kg N/ha) of ASN Cold Start.

SPRING

To enhance autumn initiated tiller survival apply 200 kg/ha (50 kg N/ha) ASN Cold Start.

AgResearch trials in 1995 confirmed that:

- ASN produced significantly more pasture dry matter than other N forms
- The positive responses were maintained through to the final cut (57-77 days after application)
- "...it would be fair to conclude that ASN has a significant advantage over Urea... at mean soil temperatures below 6°C"
– Dr AHC Roberts AgResearch Ruakura

In 15 trials throughout NZ, ASN Cold Start™ improved N responses over urea by an average of 75%

Dr Jamie Blennerhassett, Summit Quinphos

Applying ASN at 50 kg N/ha, based on the above findings, would yield a net return /ha of \$196.47* more than urea

*Assumes a dairy payout of \$6.50 / kg MS

ASN COLD START VS AMMO36 2013 INDEPENDENT TRIAL SUMMARY RESULTS

Three Canterbury dairy farms compared over 28 days.
160kg/ha ASN (41.6kgN) with 125kg/ha Ammo36 (45kgN)

Growth rates DM/ha/day were as follows:

ASHBURTON:

ASN @ 36.3kg vs
Ammo36 @ 26.9kg
(+33%)
(\$29,328/100HA)

FAIRLIE:

ASN @ 50kg vs
Ammo36 @ 26kg
(+96%)
(\$74,880/100HA)

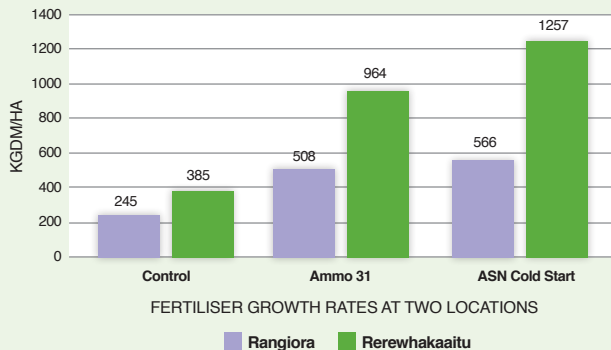
FLEMINGTON:

ASN @44.6kg vs
Ammo36 @29.21kg
(+54%)
(\$46,800/100HA)

An extra 10kg DM/ha @12ME = 122ME/ha/day = an extra \$29,328/100ha
(122 x 100 x 28 days = 341600 MJME. 70MJME to make 1 Milk Solid
= extra 4880 MS @\$6.50/kg MS)

Farms compared 19th Aug to 23rd Sept 2013

ASN Cold Start vs Ammo 31



Ammonium Sulphate Nitrate

26-0-0-13

Immediately effective in **both** cool and warm weather

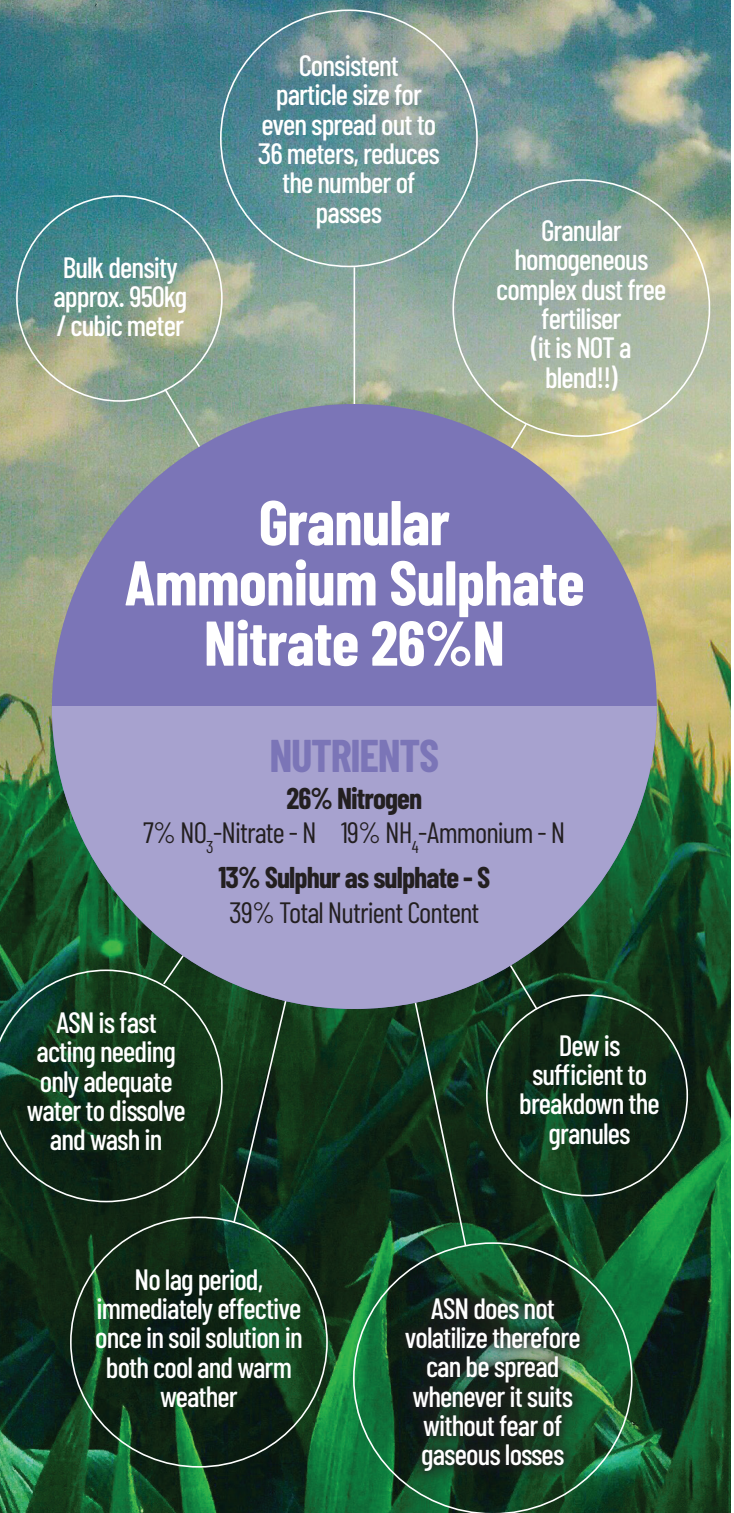
Ideal Nitrogen : Sulphur fertiliser for all crops including process and fresh vegetables, pasture, hay and silage, maize and cereals.

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How does ASN Cold Start™ work??

- Plants absorb most of their N requirements in the Nitrate form, but many fertilisers contain *only* Ammonium N (Ammo, Urea, Ammonium Sulphate, DAP, MAP)
- To supply plants with readily available Nitrate N, the Ammonium N typically undergoes conversion by soil bacteria in a process known as *nitrification*.

Winter Woes

The Nitrification process is dramatically slowed when:

- Soil temperatures fall below 6°C
- Excess soil moisture - high rainfall
- Poor soil aeration - low oxygen levels
- Low soil pH < 5.8

Soil Temperature Influence

[% nitrification of fertiliser NH4-N to NO3-N time in weeks]

SOIL TEMPERATURE	2 w	4 w	8 w
5 °C	6	12	25
10 °C	14	27	55
15 °C*	51	100	100
20 °C	100	100	100

Long term mean monthly soil temperature in °C at 10cm depth

LOCATION	Apr	May	Jun	Jul	Aug	Sep	Oct
Molesworth	7.2	3.4	0.8	-0.1	1.0	3.6	7.6
Lincoln	10.1	7.5	4.6	3.9	5.1	7.5	10.7
Winchmore	10.1	6.4	3.6	2.8	3.9	6.7	10.2
Adair	10.3	6.9	4.0	3.2	4.4	7.1	10.4
Palmerston	9.4	6.0	3.1	2.9	4.0	6.4	9.3
Gore	9.5	6.2	3.4	3.3	3.6	6.1	8.1
Winton	9.2	6.3	3.6	3.1	4.1	6.2	8.6

(NZ Met Service)

Sulphur in the presence of Nitrogen....

- Sulphur is critical for Chlorophyll formation (therefore photosynthesis)
- Sulphur deficient plants can be 40% lower in Chlorophyll
- S Deficiency also leads to accumulation of non-protein N in the form of Nitrates and Amide in plants as they cannot fully process these in the absence of adequate S
- Adequate S is critical to reduce nitrate levels in forage feeds
- Research has shown N inputs can be reduced by up to 20% without loss of production in the presence of adequate Sulphur
- ASN provides S as readily available Sulphate which ensures efficient N utilisation
- The combined package of Nitrate, Ammonium, and Sulphate Sulphur provides superior performance to alternative fertilisers especially in cool conditions
- 1 + 1 = 3 ...The presence of both forms of Nitrogen (Ammonium & Nitrate) in a fertiliser provides for a superior response than either form used alone.

Independent local field evaluation gave between 40 and 96% more dry matter than Ammo 36 at similar N rates over the period 19th Aug -23rd Sept. 2013. Sustained growth rates of 99kg DM /ha / day were recorded on one property!!

Pasture

With Nitrate-N immediately available, pasture production is improved during the cooler autumn and spring periods.

Readily available sulphate sulphur meets immediate pasture requirements in spring, also contributing to soil sulphur reserves.

ASN Cold Start is suited for pastures at drilling, also as a nitrogen/ sulphur fertiliser for hay and silage.

APPLICATION RATES:

Broadcast 125-250 kg/ha
(32-65 kgN/ha)

