

ProloNg® technology

Nitrogen efficiency

ProloNg® fertilisers are formulated to overcome the problem of loss of applied nitrogen (N) by volatilisation, de-nitrification and subsequent leaching and are ideal for all sports turf applications.

Researchers estimate up to 50% of nitrogen applied worldwide is lost to the environment rather than utilised by ***plants. The naturally occurring enzyme 'urease' works to break down ure****a into a form that can volatilise causing a loss of nitrogen. Leaching of nitrate can also be a significant loss and damaging to the environment.* **ProloNg®** ***uses technology that actively shields and manages nitrogen in the soil at molecular level.*** *The shield prevents the action of urease on applied nitrogen and slows nitrification. This allows the plant improved access to stable forms of nitrogen throughout the growing season and without destroying the spectrum of naturally occurring soil bacteria and enzymes.* ProloNg® *technology is biodegradable, water soluble and leaves no adverse environmental footprint.*

ProloNg®, by preventing nitrification, eliminates lush plant uptake of nitrates. This results in less flushes of unwanted growth, and reduction in soft tissue (stored protein in leaves) and therefore reduced disease susceptibility. ProloNg® manages your nitrogen increasing nitrogen use efficiency, enabling prolonged availability of applied nitrogen and ensuring root zone bio-diversity is maintained.

Benefits of **ProloNg®** include:

- **Prolonged nitrogen availability from single application**
- Improved utilisation and plant take up of applied nitrogen
- **Promotion of tillering, increasing sward density**
- Reduced waste nitrogen resulting in improved cost efficiency and reduced environmental impact by:
  - **Preventing volatilisation** ○ **Slowing down nitrification** ○ **Preventing leaching**
- **Reduces unwanted growth flushes**
- Safe, reduced scorch susceptibility formulations
- **Reduces soft lush growth and disease susceptibility**
- Protects water courses from nitrate pollution (less algae growth in ponds/lakes)
- **Discourages annual grasses in greens (e.g. Poa annua) – promotes perennial grasses**
- Can safely be applied at any time of year when conditions allow
- **Low salt formulations improving root zone environment and enhancing root activity**
- Full range of granule sizes, pricing and formulations, to meet every turf managers requirements
- **Proven technology, with scientific explanation; ProloNg® technology really works!**
- Excellent grass colour

Many times over, users have reported healthier swards of better colour; this is due to the fact that when nitrogen is applied, at whatever time of year, with ProloNg® technology the plant will only assimilate its nitrogen requirements in the form of ammonium. The plant therefore has enough, but not too much nitrogen and is stronger/sturdier, healthier/less susceptible to damage (physical or disease pressure) and of improved appearance. **There's no more requirement for 'artificial green-ups' us**ing harmful products like iron sulphate.

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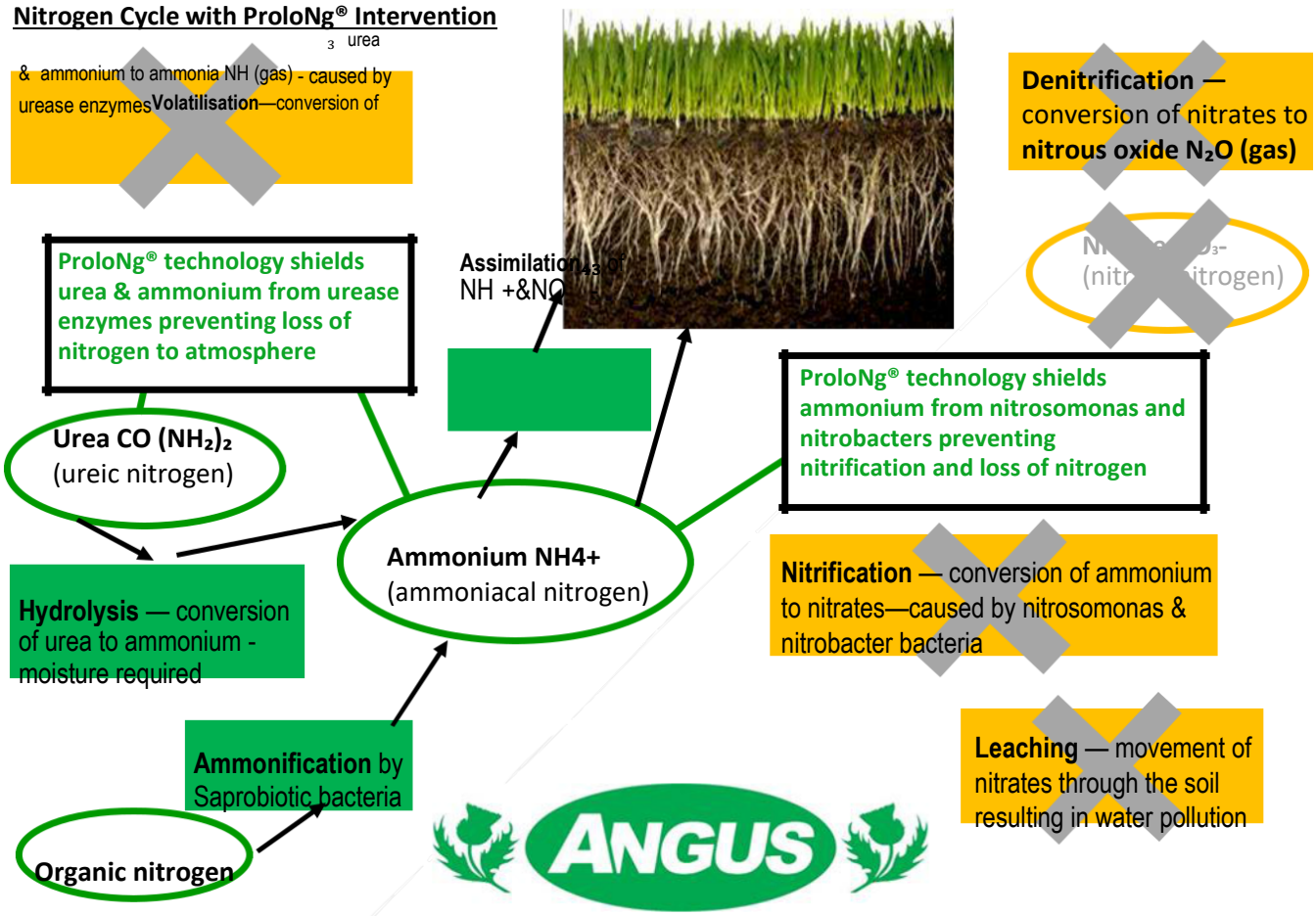
ProloNg® fertilisers

Nitrogen efficiency

Below is a diagram showing how **ProloNg®** effectively interrupts the nitrogen cycle demonstrating the benefits for turf management.



The Benefits:
- All applied Nitrogen is utilized by the plant
- No N loss to atmosphere or water courses
- Long lasting, so less applications required
- No lush uptake of Nitrates
- Promotes tillering, increasing sward density
- economic to budget and environment protecting environment and budget labour efficient & cost saving healthier & stronger plants
- improved playing surfaces

The solution: ProloNg®

Economically,
Agronomically &
Environmentally the best!



BioActive ProloNg® mini

Nitrogen efficiency

ProloNg® technology in our high quality, homogenous, mini granular fertiliser range, specifically formulated for high quality fine turf. These BioActive ProloNg® mini fertilisers offer:

Low salt formulations

Especially formulated to encourage and maintain healthy root zones, looking after the biota 100% of Nitrogen is treated with ProloNg® technology Safe to use throughout the year

BioActive ProloNg® mini **Greens & Tees**	**16 - 2 – 10 + 3% CaO + 2% MgO + 6% SO_3** 64% of nitrogen (N) as ammonium with ProloNg® technology 36% of nitrogen (N) as urea with ProloNg® technology 100% of potassium from potassium sulphate	
*Potential longevity:	spring/summer application, 2-3 months autumn/winter application, 5-6 months	
Rates of Application:	50g/m²	20kg bag treats 400m²
Nutrients applied per m² @ 50g/m²	8g N **– 1g P_2O_5 - 5g K_2O + 1.5g CaO + 1g MgO + 3g SO_3**	**1-2.5mm granules**

BioActive ProloNg® mini **Greens & Tees**	**12 - 0 - 15 + 4% CaO + 3% MgO + 6% SO_3 + 1% Fe** 75% of nitrogen (N) as ammonium with ProloNg® technology 25% of nitrogen (N) as urea with ProloNg® technology 100% of potassium from potassium sulphate	
*Potential longevity:	spring/summer application, 8-10 weeks autumn/winter application, 4-5 months	
Rates of Application:	50g/m²	20kg bag treats 400m²
Nutrients applied per m² @ 50g/m²	6g N **– 7.5g K_2O + 2g CaO + 1.5g MgO + 3g SO_3 + 0.5g Fe 1-2.5mm granules**	

ProloNg® Soluble

ProloNg® Soluble **Greens, Tees, Fairways, Pitches**	**46-0–0** 100% of nitrogen (N) as urea with ProloNg® technology	
*Potential longevity:	spring/summer application, 10-12 weeks autumn/winter application, 5-6 months	
Rates of Application:	20kg / ha in 200 litres of water	20kg bag treats 10,000m²
Nutrients applied per m² @ 20g/m²	9.2g N	approx. **1 mm soluble prills**

*Longevities quoted are based on recommended application rates & are purely a guide, as plant variety, plant density and environmental conditions, as well as timing of application will dictate plant Nitrogen use and therefore the speed in which applied Nitrogen is utilised.

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ProloNg® mini

Nitrogen efficiency

- **High quality homogenous mini granules for greens, tees and all sports surfaces**

ProloNg® mini	**24 - 3 – 7 + 3% CaO**	
Spring/Summer Fairway Sports Pitches	44% of nitrogen (N) as ammonium with ProloNg® technology 56% of nitrogen (N) as urea with ProloNg® technology 100% of potassium from muriate of potash	
*Potential longevity:	spring/summer application, 3-4 months autumn/winter application, 5-7 months	
Rates of Application:	50g/m²	20kg bag treats 400m²
Nutrients applied per m² @ 50g/m²	12g N **– 1.5g P_2O_5 - 3.5g K_2O**	**1-2.5mm granules**

ProloNg® mini	**14 - 1 - 7 + 4% CaO + 3% MgO + 2% Fe**	
Tees & Approaches	90% of nitrogen (N) as **ammonium with ProloNg™ technology** 10% of nitrogen (N) as urea with ProloNg® technology 100% of potassium from muriate of potash	
*Potential longevity:	spring/summer application, 2-3 months autumn/winter application, 5-6 months	
Rates of Application:	50g/m²	20kg bag treats 400m²
Nutrients applied per m² @ 50g/m²	7g N – 0.5g **P_2O_5 - 3.5g K_2O + 2g CaO + 1.5g MgO + 1g Fe 1-2.5mm granules**	

ProloNg® mini	**11 - 5 - 5 + 3% CaO + 8% SO_3**	
Spring greens & tees	100% of nitrogen (N) as ammonium with ProloNg® technology 100% of potassium from muriate of potash	
*Potential longevity:	spring/summer application, 8-10 weeks	
Rates of Application:	50g/m²	20kg bag treats 400m²
Nutrients applied per m² @ 50g/m²	5.5g N **– 2.5g P_2O_5 - 2.5g K_2O + 1.5g CaO + 4g SO_3**	**1-2.5mm granules**

ProloNg Fairway High N	**12-6-6 + 3% SO^3**	
Spring/Summer	**Fairways & Sports Pitches**	
*Potential longevity:	10 – 12 weeks	
Rates of Application:	35-50g/m²	20kg bag treats 571 - 400m²
Nutrients applied per m² @ 50g/m²	6g N **– 3g P_2O_5 - 3g K_2O**	

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BioActive ProloNg® fairway + sports pitches

Nitrogen efficiency

- **Homogenous 1-3mm granules for good granule/nutrient distribution**
- **Ideal for fairways, outfields & sports pitches**
- **Low salt formulation for healthy root zones**

BioActive ProloNg® fairway & sports pitches **18 - 2 - 18 + 2% CaO + 8% SO_3**

	100% of nitrogen with ProloNg® technology; 12% ureic, 6% ammoniacal 100% of potassium from potassium sulphate – low salt formulation	
*Potential Longevity:	Spring/Summer, 3-4 months or autumn/winter, 6-8 months	
Rate of Application:	50g/m^2	20kg bag treats 400m^2
Nutrients applied per m^2 @ 50g/m^2	9g N – **1g P_2O_5 - 9g K_2O + 1g CaO + 4g SO_3**	**1-3mm granules**

- **Blended 2-4mm granules**
- **Ideal for fairways, outfields & sports pitches**
- **Low & reduced salt formulations for healthy root zones**

BioActive ProloNg® Pre-Seeder 12 - 10 - 18 + 4% MgO + 12% SO_3 + humates + seaweed

Blended Pre-seeder	80% of Nitrogen as urea with ProloNg® technology & 20% of N as ammoniacal 100% of Potash from Potassium Sulphate – low salt formulation	
*Potential Longevity:	Spring/Summer, 6-8 weeks or autumn/winter, 4+ months	
Rate of Application:	50g/m^2	20kg bag treats 400m^2
Nutrients applied per m^2 @ 50g/m^2	6g N – **5g P_2O_5 - 9g K_2O + 2g MgO + 6g SO_3**	**2-5mm granules**

BioActive ProloNg® Grow-In 20 - 4 - 20 + 3% CaO + 1.5% MgO + 8% SO_3 + seaweed

	92% of nitrogen as urea with ProloNg® technology & 8% of N as ammoniacal 52% of potassium from sulphate of potash – reduced salt formulation	
*Potential Longevity:	Spring/Summer, 2-3 months or autumn/winter, 5-6 months	
Rate of Application:	50g/m^2	20kg bag treats 400m^2
Nutrients applied per m^2 @ 50g/m^2	10g N – **2g P_2O_5 - 10g K_2O + 1.5g CaO + 0.75g MgO + 4g SO_3**	**2-5mm granules**

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BioActive ProloNg®

Nitrogen efficiency

BioActive ProloNg® Just N 46-0-0

100% of nitrogen as urea with ProloNg® technology

*Potential Longevity: spring/summer application, 6-8 months

Rate of Application: 50g/m² — 20kg bag treats 400m²

Nutrients applied per m² @ 50g/m² 23g N — **2-5mm granules**

BioActive ProloNg® s/s high N 28 - 3 - 15 + 1.5% CaO + 1% MgO + 5% SO_3

96% of nitrogen as urea with ProloNg® technology & 4% of N as ammoniacal

52% of potassium from sulphate of potash – reduced salt formulation

*Potential Longevity: spring/summer application, 4-5 months

Rate of Application: 50g/m² — 20kg bag treats 400m²

Nutrients applied per m² @ 50g/m² 14g N – **1.5g P_2O_5** - **7.5g K_2O + 0.75g CaO + 0.5g** MgO + 2.5g SO_3 **2-5mm**

BioActive ProloNg® Late Summer 16 - 5 - 25 + 3.5% CaO + 1.5% MgO + 12% SO_3

88% of nitrogen as urea with ProloNg® technology & 12% of N as ammoniacal

52% of potassium from sulphate of potash – reduced salt formulation

*Potential Longevity: September application, 4-6 months

Rate of Application: 50g/m² — 20kg bag treats 400m²

Nutrients applied per m² @ 50g/m² 8g N – **2.5g P_2O_5** - **12.5g K_2O +1.75g CaO + 0.75g MgO + 6g SO_3** **2-5mm**

BioActive ProloNg® High K 15 - 0 - 25 + 4% CaO + 3% MgO + 10% SO_3 + seaweed

100% of nitrogen with ProloNg® technology

57.65% of potassium from sulphate of potash – reduced salt formulation

*Potential Longevity: Spring/Summer, 6-10 weeks or autumn/winter, 5-6 months

Rate of Application: 50g/m² — 20kg bag treats 400m²

Nutrients applied per m² @ 50g/m² 7.5g N – **0g P_2O_5** - **12.5g K_2O + 2g CaO + 1.5g MgO + 5g SO_3** **2-5mm granules**

BioActive ProloNg® Autumn High K 10 - 0 - 30 + 7% CaO + 2% MgO + 10% SO_3 + seaweed

100% of Nitrogen with ProloNg® technology

52% of Potassium from Sulphate of Potash – reduced salt formulation

*Potential Longevity: October application, 5-6 months

Rate of Application: 50g/m² — 20kg bag treats 400m²

Nutrients applied per m² @ 50g/m² 5g N – **0g P_2O_5** - **15g K_2O + 3.5g CaO + 1g MgO + 5g SO_3** **2-5mm granules**

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Turf Rise MU

Slow Release Nitrogen with Methylene Urea

For many years Angus Horticulture has manufactured granular fertilisers containing methylene urea (MU), these

products have proved popular and successful in many situations where an extended availability of nitrogen (N) **is required. They're used on greens, t**ees and approaches as well as fairways and sports fields.

- **Methylene urea (MU) reduces the loss of available nitrogen for plants**
- **Reduces potential of nitrate ground water pollution**
- **Increases natural soil/root zone fertility (source of organic carbon)**
- **Reduces phytotoxicity and scorch potential**
- **Rapid root development**
- **Long lasting nitrogen up to 24 weeks**
- **Nitrogen availability is synchronized with plant demand**
- **Less nitrogen is lost to leaching and volatilisation, which reduces environmental impact**
- **Predictable results for healthy, green grass plants**
- **This range complements our ProloNg™ range of nitrogen efficient fertilisers**
- **Very low salt index**

Nitrogen sources:

Nitric N is immediately available to the plant and offers a quick response. Susceptible to leaching, nitrates are easily lost to the environment with damaging effects. Lush uptake of nitrates assimilated by the plant means that the grass plant will be more prone to disease due excess proteins stored in the leaf. The use of Turf Rise MU will substantially reduce these problems.

Ammonium N is plant available and unlike nitrates will only be assimilated when the plant requires the nitrogen. Nitrification converts ammonium to nitrates. Ammonium is subject to volatilization.

Urea while plant available as a foliar spray through the foliage, isn't plant available in the root zone. Hydrolysis takes place with the presence of soil moisture converting urea to ammonium. Urea is also subject to volatilisation – loss of N to the atmosphere.

Methylene urea (MU) on the other hand is an extremely safe way of feeding nitrogen to plants offering a truly controlled release pattern over a period of weeks. The mineralization of MU nitrogen to ammonium depends on the soil micro-biology. Our MU, rather than inhibiting the activity of the microbes, improves the natural fertility, increasing and sustaining the population of beneficial micro-organisms.

The environmental conditions (temperature & moisture) that affect the growth and activity of the grass plant also regulate the activity of the micro-organisms. This means that the MU nitrogen is made available at the time when the grass plant most requires it for optimal root and shoot development.

Turf Rise MU	**15 - 1 - 15 + 1% MgO + 2.5% CaO + seaweed**
55% of N as MU 12/18 week*	ammoniacal N 6.75%, ureic N 8.25% including 8.25% N as MU 50% of potassium from potassium sulphate
Rate of Application:	35-50g/m² — 20kg bag treats 400-571m²
Nutrients applied per m² @ 50g/m²	7.5g N **– 0.5g P_2O_5 - 7.5g K_2O + 0.5g MgO + 1.25g CaO**
1-2.5mm granules	suitable for greens, tees and all sports turf

**Longevities quoted are based on recommended application rates & are purely a guide, as plant variety, plant density and environmental conditions, as well as timing of application will dictate plant Nitrogen use and therefore the speed in which applied Nitrogen is utilised.*

Angus Horticulture's Turf Rise MU promotes high quality & healthy grasscombined with encouraging healthy micro biology in your root zone.