





As a market leading provider of agronomy services, technology and customer support, AGS combines a highly qualified regional team with the latest in product innovation, to ensure our customers can meet today's challenges with knowledge and confidence.

With loyal customers from grassroots sport and bowling clubs through to Ryder Cup venues and Premier League football clubs, we can offer help and assistance to improve turf surfaces at all levels.

Our staff hold industry recognised qualifications such as BASIS and FACTS alongside honours degrees in sports turf, soil science and sustainable land management disciplines.

In all aspects of our business we aim to deliver a personal service, share our knowledge and expertise, whilst looking to the latest products and innovations to support customers and provide long term value.

SUPPLY

We provide an extensive range of high quality, sustainable products, delivered promptly and efficiently throughout the UK and Europe via own vehicle, courier and pallet network.

We are exclusive partners for a number of market leading global manufacturers including: Growth Products, Sustane Natural Fertilizers, Polyon controlled release technology and the new Advance range, in addition to well-known UK based suppliers such as DLF Trifolium, Aquatrols, Yara Speciality Products and many more.

CONSULT

Our specialist regional team provide quality, bespoke and value effective solutions for the management of all types of natural sport surfaces.

Frequently a requirement for a specific problem needs to be addressed. Our innovative and flexible approach to 21st century sports turf management will help find a solution. We have provided support to 1000's of clients with durable, high quality surfaces and take very seriously our mission to provide better results.

All our agronomy is based on knowledge. Knowledge derived not just from years of practical and technical experience, but also gained through investing in independent trials and working closely with the leading sporting venues in the UK and Europe

SUPPORT

We believe strongly in being a people-driven company.

Our in-field team of turf specialists are industry leading and are supported by an exceptional level of technical development and training.

They provide an extensive support package ranging from full consultancy services, soil & water analysis, weed, disease & nematode identification to structured nutrient and plant protection programmes, ensuring the very best possible surfaces are achieved and maintained.

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Disclaimer

Any information provided in this publication is given in good faith and to the best of our existing knowledge. Any advice should therefore be taken as a general guide only and not relied upon for all conditions and circumstances. We cannot accept any legal liability for information given in this guide. In any instance where there are shortages in specified products we reserve the right to substitute equivalent products.

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AMENITY GUIDE EDITION **TWO**

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ICON KEY:



LOW SALT INDEX



ROOT ENHANCER



CARBON RICH



DISEASE
SUPPRESSION



RELEASE PERIOD



SOIL HEALTH



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1. FINE TURF FERTILISER

Featured Products:

- Sustane
- Growth Products
- Advance

ICON IDENTIFICATION GUIDE:

LS INDEX
 LOW SALT INDEX

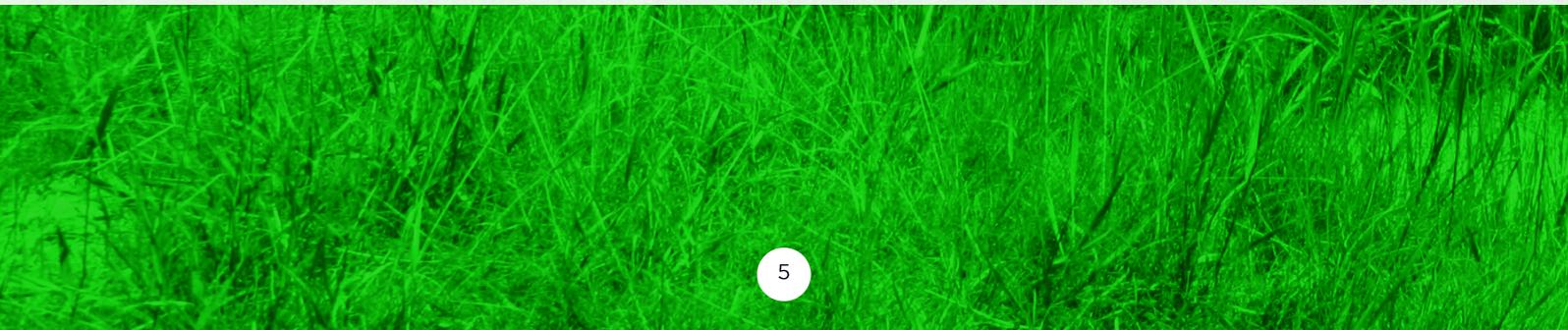
RE
 ROOT ENHANCER

CR
 CARBON RICH

DS
 DISEASE SUPPRESSION

4-6 WEEKS
 RELEASE PERIOD

SH
 SOIL HEALTH





The only natural fertilisers available worldwide, Sustane products are built on research like no other organic. Since 1980 over 500 independent studies on Sustane place it at the top of the most researched organic fertilisers in the world, for proven benefits on turf establishment, disease suppression, colour, quality and environmental impact trials compared to other fertiliser materials.

Why Sustane performs with consistency:

Sustane adds and maintains high microbial diversity index in your soils by beginning with 26-week aerobically stabilized compost. Rich in microbial species diversity, yet low in biological oxygen demand (BOD), Sustane true aerobic compost based fertilisers enhance the “species richness diversity” (SRD) in all growing systems. The microbiology of healthy soils that is critical to all soil and plant functions in a balanced and thriving ecosystem. Sustane compost demonstrates a high biological diversity index of 4.5 such as a rich, active soil system. Sustane assures low environmental impact by providing slow, efficient release of nitrogen to plant life without volatilization, leaching as nitrates or immobilization in the soil environment. Sustane is serious about keeping our environment green. The basic resource is a renewable resource of high quality plant nutrients complexed with organic humus.



Sustane 4.6.4 All-Natural 4% Ca 7% Humic Acid



- Most reliable and universally recognised organic pre-seed fertiliser for golf, sports pitches and landscape
- 80% Slow Release Nitrogen 20% Organic Ammonium N and other Water Soluble Organic N
- Contains all 17 elements essential for plant photosynthesis
- Very popular in high-spec professional sports pitches to increase rooting, boost soil health and reduce disease & plant parasitic nematode issues.
- Used extensively in the UK during winter to enhance natural turf disease suppression
- Suitable for use all year round
- Salt Index 4

Sustane 5.2.4 + 2 Fe Natural Based 3% Ca 7% Humic Acid



- All-purpose balanced fertiliser with 2% organically chelated iron for all turfgrass applications
- 70% Slow Release Nitrogen 30% Water Soluble Nitrogen from Ammonium sulphate
- 2% iron sulphate organically chelated during aerobic composting process
- Contains all 17 elements essential for plant photosynthesis
- Most recognized and researched fertiliser – organic or synthetic
- Suitable for use all year round
- Salt Index 4



Sustane 6.2.4 Turf Revival + 5% Ca + 1.5%Mg + V.A. Mycorrhizae



- UK specific formulation designed to encourage recovery and speed up the introduction of bents and fescues into an existing sward
- Added V.A. Mycorrhizae species mix specifically formulated to benefit perennial turf species over annual
- 58% Slow Release Nitrogen 42% Water Soluble Nitrogen from Ammonium Sulphate
- Heightened calcium content to strengthen cells and encourage strong rooting
- Enough available nitrogen to aid recovery without a surge of growth to crowd out new seedlings
- Boosts soil carbon to enhance existing microbiology and improve soil health and root growth
- Salt Index 4

Sustâne 5.2.10 + 2% Fe Natural Based 3% Ca 7% Humic Acid



- All-purpose broadcast balanced fertiliser with organically chelated iron
- 70% Slow Release Nitrogen 30% Water Soluble Nitrogen from Ammonium sulphate
- 2% iron sulphate organically chelated during aerobic composting process
- Contains 10% potassium from natural sulphate of potash and Sustâne compost for 1:2 N to K ratio
- For building root potash reserves going into winter. Strengthens plant tolerance to stress
- Ideal for autumn / winter application
- Salt Index 5

Sustâne 10.1.4 1% Ca, 7% Humic Acid



- High nitrogen availability for rapid spring green up of turf on cool soils
- 75% Quick Release Nitrogen 25% Slow Release Nitrogen for quick colour and growth in cool climates
- Made with ammonium sulphate, Sustâne organic N, natural sulphate of potash
- The ammonium nitrogen source helps reduce soil pH and aid in suppression of turfgrass diseases
- Available in Greens Grade 1mm particle sizes for Greens, Tees and Tight Cut Fairways
- Salt Index 9

Sustâne 10.2.10 2% Fe, 1% Ca, 7% Humic Acid



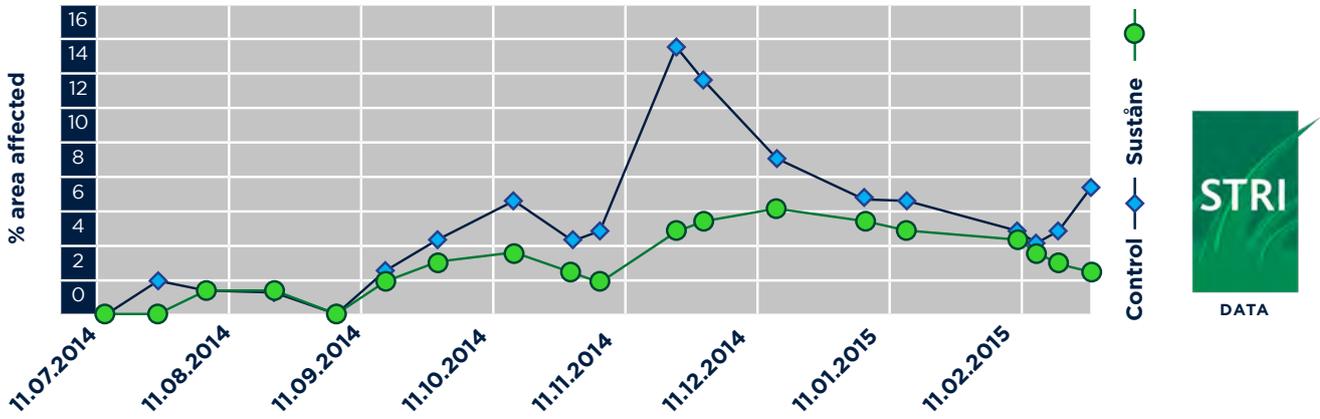
- Sustâne's finest 80% slow release nitrogen greens grade fertiliser
- 80% Slow Release Nitrogen 20% Water Soluble Nitrogen
- Made with methylene urea, ammonium sulphate, and two sources of organic nitrogen
- Provides quick green up on warm soils
- Long-lasting nitrogen release up to 14 weeks depending on soil temperature
- Salt Index 3

Sustâne 15.3.9 + 2 Fe Natural Based 5% S, 1.5% Ca, 0.5% Mg, 7% Humic Acid



- High nitrogen natural base formulation for greens and low mowed turf
- 65% Slow Release Nitrogen and 35% Quick Release Nitrogen
- Made with UMAXX®, am. sulphate, urea, Sustâne organic N, natural S.O.P., and chelated iron sulphate
- Fastest, darkest green-up turf response with 8 - 12 weeks residual nitrogen release
- Applied at 25 to 35 grams per square metre
- Salt Index 4

Effect of Sustane 5.2.4 on incidences of Microdochium patch



Analysis	Pack Size	Rate	Longevity	NPK at 35g/m ² (Kg/ha)			Accupro Setting 35g/m ²		Spread Width
				N	P	K	Single	Double	
4.6.4	22.7kg	20-50g/m ²	4-6 weeks	14	21	14	7, R	7, N	3.6m
5.2.10	22.7kg	20-50g/m ²	4-6 weeks	17.5	7	35	7, R	7, N	3.6m
5.2.4	22.7kg	20-50g/m ²	4-6 weeks	17.5	7	14	7, R	7, N	3.6m
6.2.4	22.7kg	25-50g/m ²	4-6 weeks	21	7	14	7, R	7, N	3.6m
10.1.4	22.7kg	25-50g/m ²	4-6 weeks	35	3.5	14	7, R	7, N	3.6m
10.2.10	22.7kg	25-50g/m ²	8-12 weeks	35	7	35	7, R	7, N	3.6m
15.3.9	22.7kg	25-50g/m ²	8-12 weeks	52.5	10.5	31.5	7.5 R	7.5 N	3.7m

Usage Period												
Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Sustane 4.6.4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Sustane 5.2.4+Fe	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Sustane 5.2.10			✓	✓	✓	✓	✓	✓	✓	✓		
Sustane 10.1.4			✓	✓	✓	✓	✓	✓	✓			
Sustane 10.2.10			✓	✓	✓	✓	✓	✓	✓			
Sustane 15.3.9			✓	✓	✓	✓	✓	✓				
Sustane 6.2.4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓



A high quality, conventional fertiliser utilising micro granular technology, offering superior breakdown when compared to mini alternatives.

The Growth Products range is 100% homogeneous, ensuring even uptake and easy application. Alongside N,P,K, magnesium, iron and calcium; seaweed has been incorporated to offer an added benefit at root level. A comprehensive range of analyses are available to suit all fine and coarse turf situations, across the growing season. The micro granules (0.5-1.5mm) breakdown within 2-3 days, minimising surface disruption.

GP Micro 10.4.4+MgO+Fe+CaO+Seaweed



- Ideal early season product
- Ammonium nitrogen for quick uptake in cool temperatures
- 2% Iron, 4% Magnesium and 8% Calcium
- Seaweed for soil conditioning

GP Micro 8.0.4+MgO+CaO+Seaweed



- Zero phosphate
- Available nitrogen to boost plant health against summer disease
- 2% Magnesium, 8% Calcium and Seaweed
- Iron free

GP Micro 3.0.22+MgO+Fe+CaO+Seaweed



- Low nitrogen formulation
- Excellent post maintenance recovery tool
- High potassium to maintain levels on sand dominated profiles
- 4% Magnesium, 6% Calcium and Seaweed

Analysis	Pack Size	Rate	Longevity	NPK at 35g/m ² (Kg/ha)			Accupro Setting 35g/m ²		Spread Width
				N	P	K	Single	Double	
10.4.4	25kg	20-45g/m ²	4-6 weeks	35	14	14	6, M	6, J	3.0m
8.0.4	25kg	20-45g/m ²	4-6 weeks	28	0	14	5, N	5, K	4.0m
3.0.22	25kg	20-45g/m ²	4-6 weeks	10.5	0	77	7, R	5, K	4.0m
6.5.10	25kg	20-45g/m ²	4-6 weeks	21	17.5	35	7, R	5, K	4.0m
4.0.8	25kg	20-45g/m ²	4-6 weeks	14	0	28	7, R	5, K	4.0m
4.0.4+9Fe	25kg	20-45g/m ²	4-6 weeks	14	0	14	7, R	5, K	4.0m

Usage Period												
Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
10.4.4			✓	✓	✓	✓	✓	✓	✓			
8.0.4			✓	✓	✓	✓	✓	✓	✓			
3.0.22	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
6.5.10	✓	✓	✓	✓					✓	✓	✓	✓
4.0.8			✓	✓	✓	✓	✓	✓	✓			
4.0.4+9Fe	✓	✓	✓	✓					✓	✓	✓	✓

Salt Index – Why It Matters

Scientific research tells us salinity has a negative effect on plant growth; the main issue being excess soluble salts affecting growth by reducing water intake – effectively causing drought symptoms.

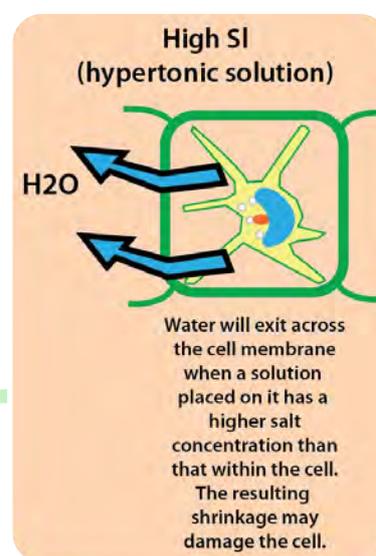
You may remember learning about osmosis back in school; water is drawn from low salt concentrations to high salt concentrations through a permeable membrane.

This is exactly what happens when you apply a high salt fertiliser. When fertiliser salts are added to soil water (as a granular) or directly to the leaf blade (as a foliar), the osmotic pressure changes so there is effectively lower concentrations of water outside the plant; this pulls water out of the plant cell into the soil water (or droplet on leaf surface) to redress the balance – plants cannot efficiently take up nutrients or water in high salinity soils and drought symptoms can be observed even with an ‘acceptable’ moisture content.

Applying a foliar fertiliser with a high salt index can ‘burn’ the leaf. This can be a noticeable yellowing/browning of grass leaves in bad cases, or the damage may not always be visible to the naked eye but reduced plant health, vigour and growth may result from applying a high salt foliar. Water will be drawn out of the plant cell leading to a loss of turgor pressure and reduced plant cell health. There may be no visible damage, but the plant will not be responding efficiently to your fertiliser inputs.

It makes sense then, to be aware of how much salt you are adding to your turf via the products you use and to utilise products that are going to maximise turf health and minimise issues caused by leaf burn and soil salinity. Why apply excess salt when there are low salt alternatives available? Salt build up not only causes issues with plant phytotoxicity and drought symptoms, but also adversely affects soil biology. Good work using organic products and biostimulants may be undone using high salt fertilisers.

All fertilisers will have a salt index based on the amount of salt within them. Once you start to get over a salt index of 40-50 there is potential for negative effects on plant health and above a salt index of 80 is where there is a high potential for plant tissue damage. The salt indices of various common nutrient sources are shown in table 1.



Nutrient Sources:	Salt Index
Urea 46% N	74
Ammonium Sulphate	88
Ammonium Nitrate	104
Growth Products Smart Nitrogen™	4
Potassium Sources:	Salt Index
Potassium Sulphate	43
Potassium Nitrate	70
Potassium Chloride	116
Potassium Carbonate	5

Table 1. Some common nutrient sources in turf management and their salt index

Advance 3.0.3 Humic



A biostimulant-based fertiliser combining a balanced N:K package and elevated levels of amino acids and humic & fulvic acids. Formulated to provide a light balanced feed at any time of the year, combined with the biostimulant effects of the humic base. Contains added calcium and magnesium for strong cell walls, disease resistance and good colour.



- Derived from natural molasses, carbohydrates and plant extracts offering both plant nutrition and biostimulant properties.
- High Amino, Fulvic & Humic acid content.
- 1 - 2 mm mini granules.
- Promotes recovery from stress.
- 4 - 6 week longevity

Analysis	Pack Size	Rate	NPK at 35g/m ² (Kg/ha)			Accupro Setting 35g/m ²		
			N	P	K	Single	Double	Spread Width
Advance 3.0.3 Humic	20kg	30-50g/m ²	10.5	0	10.5	Cone 5, N	Cone 5, L	3.0m

Usage Period												
Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Advance 3.0.3 Humic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Advance 3.0.3 Iron +2% Fe



A turf hardener fertiliser combining a balanced N:K package with added iron for good colour and disease prevention. Formulated to provide a light balanced feed at any time of the year, particularly useful during cold months to boost appearance and reduce disease. Contains added calcium and magnesium for strong cell walls, disease resistance and good colour.

- 2% Iron content to support green up and disease resistance without causing potential issues with excess iron such as black layer and reduced microbial activity.
- 1 - 2 mm mini granules provide even distribution.
- Use throughout the autumn, winter and early spring to harden turf and give good colour.
- Provides recovery without forcing excess growth.
- Can be used on golf greens, tees, approaches, cricket squares, tennis courts, fine lawns and all amenity turf.

Analysis	Pack Size	Rate	NPK at 35g/m ² (Kg/ha)			Accupro Setting 35g/m ²		
			N	P	K	Single	Double	Spread Width
Advance 3.0.3 Iron	20kg	30-50g/m ²	10.5	0	10.5	Cone 6, M½	Cone 6, K	3.0m

Usage Period												
Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Advance 3.0.3 Iron	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓





2. OUTFIELD FERTILISER

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Featured Products:

- Polyon
- Sustane
- Advance
- Tiger 90CR

ICON IDENTIFICATION GUIDE:

LOW SALT INDEX

ROOT ENHANCER

CARBON RICH

DISEASE SUPPRESSION

RELEASE PERIOD

SOIL HEALTH



POLYON® controlled-release fertilisers, with their trademarked green colour, give turf professionals all the things they want from a fertility programme: consistent, predictable feeding that lasts for months with one application—all to help you grow healthy and beautiful turf. Even better is the fact that you'll save money along the way due to its enhanced performance.



Think Green™

Green Means... Best Technology

POLYON® controlled-release fertilisers encapsulate nutrients within a patented polyurethane membrane, feeding the root zone slowly, constantly, daily, for months at a time. The key is the "Reactive Layers Coating" that releases out nutrients via diffusion. The results are astounding: beautiful turf, fewer applications, and no excessive growth, even after irrigation or rainfall.

Green Means... Efficient

Independent research shows POLYON® fertiliser maximizes nutrient-use efficiency. POLYON® fertilisers are engineered to provide 100% controlled-release nutrients with virtually no nutrient lock-off. Numerous university studies measuring leaching and volatilization verify POLYON® fertiliser minimizes nitrogen loss compared with other fertilisers.

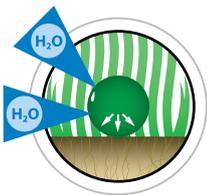
POLYON® fertiliser can be applied in advance of plant demand because cool soil temperatures of early spring will slow nitrogen release. Less nitrogen is released to the soil from which it can be lost. As soils warm, plant growth and nutrient demand increase. Warmer temperatures also increase nitrogen release from POLYON® fertiliser to keep pace with plant needs.

Advanced Technology. Dependable Results

The key to the consistent, gradual release of POLYON® fertiliser is all in the exclusive, polymer membrane that coats each granule.

Green Means... Quality

In addition to its consistent, predictable, long-lasting release, POLYON® fertilisers give you the assurance of quality, because every batch is carefully blended and thoroughly tested. You also get the complete field and technical support of AGS's well qualified staff — it's another way we help make your job easier.



Within a week of application, the polymer coating allows soil moisture in, which activates encapsulated nutrients but doesn't release them.



Over the next several months, the membrane slowly releases dissolved nutrients through diffusion, only when triggered by soil temperature.

Think Green™

What Can GREEN Do For You?

It's an easy choice when you consider the many advantages and benefits of POLYON® fertilisers:

- Efficient fertiliser lowers potential for nitrogen leaching or volatilization
- Fewer applications and no surge growth, saving you labour and money
- Consistent, predictable, dependable feeding
- Safe, dust-free handling thanks to complete, durable coating
- Greener, healthier turfgrass for the ultimate playing surface or lawn



Polyon Range

20.5.8+MgO+Ca



- 3-4 month longevity
- Fast start nitrogen portion
- 65% controlled release nitrogen
- Spring and summer formulation
- 1-2mm prill

12.0.25+MgO+Ca



- 3-4 month longevity
- Autumn / Winter formulation
- High potassium
- 1-2mm prill

24.5.8+MgO+Ca



- 6-7 month longevity
- Spring and summer formulation
- 25% quick release nitrogen
- 1-2mm prill

15.0.30+MgO+Ca



- 6-7 month longevity
- Autumn / Winter formulation
- High potassium
- 1-2mm prill

30.0.5 + 4% MgO



- 4-5 month longevity
- High N, formulation ideal for sports pitches and tees
- 60% Controlled Release with high Mg for excellent colour
- 2-3mm prill

18.0.8 + 4% MgO



- 4-5 month longevity
- Well balanced N:K summer feed
- 60% Controlled Release
- 2-3mm prill

15.0.10 + MgO + Fe



- 4-5 month longevity
- Balanced N:K feed
- Added Magnesium & Iron for colour
- 50% controlled release nitrogen
- 2-3 mm prill

28.0.0 + MgO + CaO



- 4-5 month longevity
- High N with added Calcium and Magnesium
- 60% controlled release nitrogen
- Excellent summer base feed
- Fast start nitrogen portion
- 2-3 mm prill



Analysis	Pack Size	Rate	Longevity	NPK at 35g/m ² (Kg/ha)			Accupro Setting 35g/m ²		Spread Width
				N	P	K	Single	Double	
20.5.8	25kg	25-40g/m ²	3-4 months	70	7.5	28	5, Q	5, M	4.0m
12.0.25	25kg	20-45g/m ²	3-4 months	42	0	87.5	5, Q	5, M	4.0m
24.5.8	25kg	20-45g/m ²	6-7 months	84	17.5	28	5, Q	5, M	4.0m
15.0.30	25kg	20-45g/m ²	6-7 months	52.5	0	105	5, Q	5, M	4.0m
30.0.5	25kg	20-45g/m ²	4-5 months	105	0	17.5	4, T ¹ / ₂	4, O	4.9m
18.0.8	25kg	20-45g/m ²	4-5 months	45	0	28	4, T ¹ / ₂	4, O	4.9m
15.0.10	25kg	25-40g/m ²	4-5 months	52.5	0	35	4, T ¹ / ₂	4, O	4.9m
28.0.0	25kg	25-40g/m ²	4-5 months	98	0	0	4, T ¹ / ₂	4, O	4.9m

Usage Period												
Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
20.5.8			✓	✓	✓	✓	✓	✓	✓			
12.0.25	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓
24.5.8			✓	✓	✓	✓	✓	✓	✓			
15.0.30	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓
30.0.5			✓	✓	✓	✓	✓	✓	✓			
18.0.8	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
15.0.10	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
28.0.0			✓	✓	✓	✓	✓	✓	✓			



KOCH AGRONOMIC SERVICES, LLC

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The only natural fertilisers available worldwide, Sustane products are built on research like no other organic. Since 1980 over 500 independent studies on Sustane place it at the top of most researched organic fertilisers in the world, for proven benefits on turf establishment, disease suppression, colour, quality and environmental impact trials compared to other fertiliser materials.

Sustane 18.1.8 + 1% Fe 8% S and 1% Ca 4% Humic Acid



- Sustane's highest nitrogen natural base formulation for Tees, Fairways and Sports Pitches
- 85% Slow Release Nitrogen and 15% Quick Release Nitrogen
- Made with Sustane organic compost, methylene urea, Polymer Coated Sulphur Coated Urea (PCSCU), ammonium sulphate, potassium sulphate, chelated ferrous sulphate and other organic nitrogen sources
- Two part blend with five-way release of nitrogen for fairways, roughs, lawns and sports fields
- Highest quality coverage of any organic based fertiliser
- Longest lasting slow release nitrogen fertiliser made by Sustane with 12 – 16 weeks release rate
- Available only in 2 mm particle size for Tees, Fairways, and sports pitches
- Applied at 25-40 grams per square metre. Feeds all season long in cool climates

Analysis	Pack Size	Rate	Longevity	Nutrient Level Applied at 35g/m ²			Accupro Spreader Setting for 35g/m ²	
				N	P	K	Single Pass	Double Pass
18.1.8	22.7kg	35-50g/m ²	12-16 weeks	63	3.5	28	Cone 5, U	Cone 5, P

Usage Period												
Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Sustane 18.1.8			✓	✓	✓	✓	✓	✓	✓			

Tiger 90CR

Tiger 90 is a granular elemental sulphur that can be used to discourage worm cast activity, reduce moss invasion and favour fine grasses over Poa annua on coarse turf areas. Sulphur is increasingly found to be in low quantities in soil analyses in recent years due to a reduction of sulphur in the atmosphere meaning natural rainfall provides little 'free' S. Sulphur is required by the plant in order to utilise nitrogen and give healthy growth.



- Slow-release sulphur for 12 months
- Apply in spring/early summer for maximum effect
- Low application rate means economical large area use
- Corrects sulphur deficiencies on high sand sports pitches

Product	Pack Size	Rate	Longevity
Tiger 90CR	25kg	10g/m ²	9-12 months

Usage Period												
Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Tiger 90CR	✓	✓	✓	✓	✓				✓	✓	✓	✓

Advance Pro UFLEXX 46.0.0

UFLEXX® stabilized nitrogen fertiliser is a unique product that helps to protect against all three forms of loss - leaching, denitrification and volatilization - allowing time for nitrogen to move into the rootzone and stay there longer. As a result, there is immediate green-up, followed by sustained turfgrass colour for 2-3 months.

Ideal for use on golf fairways, tees, sports pitches and ornamental lawns, with micro-prills for instant solubility. Tank mixable with PGR's and selective herbicides to provide strong, healthy, weed-free turf without excess growth.

- Flexible application rates from 20 - 40kg/ha.
- Maximum solubility
- Slow release
- Tank mixable



Nutrient Applied at 20kg/ha

Analysis	Pack Size	Rate	Longevity	N	P	K
46.0.0	20kg	20-60kg/ha	2-3 Months	11.5	0	0

Usage Period

Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Advance Pro UFLEXX			✓	✓	✓	✓	✓	✓	✓	✓	✓	

Root Start Plus 10.0.4



A biostimulant-based fertiliser combining a balanced N:K package with organic nitrogen and elevated levels of amino, humic & fulvic acids. Proven to assist with the grow-in of all new surfaces giving enhanced root and shoot growth, leading to quicker establishment. The natural sugar base will feed both new seedlings and soil microbiology.

- 25% Fulvic acid content.
- 11.5% Amino acid package.
- Derived from natural molasses carbohydrates and plant extracts offering both plant nutrition and biostimulant properties.
- 50% immediately available nitrogen to give an instant effect.
- 2 - 4 mm granules.
- Supplied with a full package of 9 species of Mycorrhizae, Trichoderma and Bacillus spp.

Nutrient Level Applied for 50g/m²

Accupro Spreader Setting for 50g/m²

Analysis	Pack Size	Rate	N	P	K	Single	Double	Spread Width
Root Start Bio 10.0.4	20kg	35-50g/m ²	50	0	20	Cone 4, N	Cone 4, S	3.0m

Usage Period

Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Root Start Bio 10.0.4			✓	✓	✓	✓	✓	✓	✓	✓		



Built on our strong heritage as a founder and pioneering company in the mineral fertilizer industry and since 1982 marketed in the UK with the well-known and trusted Viking Ship branding, Yara is a Norwegian based company which converts energy, natural minerals and nitrogen into the full range of nutrition products and a wide range of industrial applications.

Today, Yara retains its global position as a leading provider of nitrogen based mineral fertilizers and industrial products. The company is the global leader in ammonia, nitrates and specialty fertilizers.

With continuous operations in more than 50 countries and sales in 150 countries, Yara enjoys a unique position in the world's fertilizer and industrial market. Together with world-scale plants manufacturing mineral fertilizers Yara's activities today range from phosphate mining and ammonia/urea production, and highly specialized agricultural, horticultural and amenity products. The production and sales are based on deep global insight and local market knowledge.

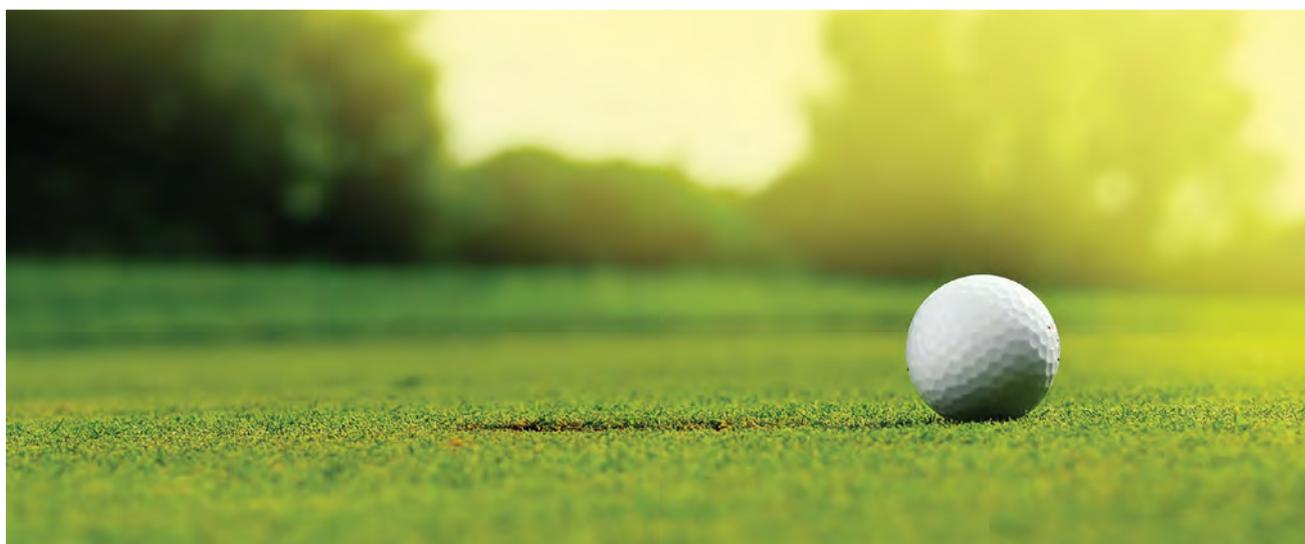


YaraMila 12.11.18 SOP +Mg+Trace Elements 

- Chloride free
- Magnesium and trace elements
- Suitable for Tees, fairways and winter pitches
- Available in 25kg and 600kg bags

Analysis	Pack Size	Rate	Longevity	Nutrient Level Applied at 35g/m ²			Accupro Spreader Setting for 35g/m ²	
				N	P	K	Single Pass	Double Pass
12.11.18+TE	25kg	25-35g/m ²	4-6 weeks	14	24.5	59.5	Cone 3, Q 3/4	Cone 3, M 1/2

Usage Period												
Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
12.11.18+TE			✓	✓	✓	✓	✓	✓	✓	✓		



Yara Krista Urea

- Water soluble Urea
- 46.0.0
- Free flowing, white prills, which dissolves easily in water
- 25kg bag



Yara Krista K Plus

- Water soluble potassium nitrate
- 13.0.46
- Fine, crystalline powder which dissolves rapidly
- 25kg bag



Yara Krista Mag

- Highly soluble magnesium to boost colour
- Directly available for plant uptake
- Tank mix with other fertilisers for a complete nutrient package
- 25kg bag



Nutrient Level Applied at 25kg/ha

Analysis	Pack Size	Rate	Longevity	N	P	K
Krista Urea	25kg	25-50kg/ha	2-4 weeks	11.5	0	0
Krista K Plus	25kg	25-50kg/ha	2-4 weeks	3.2	0	11.5
Krista Mag	25kg	25-50kg/ha	2-4 weeks	2.75	0	0

Usage Period

Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Krista Urea			✓	✓	✓	✓	✓	✓				
Krista K Plus	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Krista Mag	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓



Soluble Yara Fertilisers

Kristalon Lilac 20.8.8 +MgO +micronutrients

- High Nitrogen analysis
- Nitrate-N and Ammoniacal-N for fast and medium release nitrogen
- Fully chelated micronutrients
- Fast dissolving and fully water soluble



Kristalon White 15.5.30 +MgO +micronutrients

- High potassium analysis
- Nitrate-N and Ammoniacal-N for fast and medium release nitrogen
- Very low Sulphur content
- Fast dissolving and fully water soluble
- Fully chelated micronutrients



Kristalon Scarlet 7.5.12.36 +4.5MgO +micronutrients

- Low nitrogen high potassium formulation ideal for autumn/winter application
- High potassium aids turf durability
- Excellent autumn/winter feed
- Fully water soluble and fast dissolving
- Fully chelated micronutrients



Analysis	Pack Size	Rate	Longevity	Nutrient Level Applied at 25kg/ha		
				N	P	K
Kristalon Lilac	25kg	25-50kg/ha	2-4 weeks	5	2	2
Kristalon White	25kg	25-50kg/ha	2-4 weeks	3.75	1.25	7.5
Kristalon Scarlet	25kg	25-50kg/ha	2-4 weeks	1.87	3	9

Usage Period												
Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Kristalon Lilac				✓	✓	✓	✓	✓	✓			
Kristalon White	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Kristalon Scarlet	✓	✓	✓					✓	✓	✓	✓	✓

Yara Liquid Range

In Yara clear liquid solutions, the nutrients are completely dissolved in water. All the nutrients are 100% water soluble and are entirely distributed in solution offering a high quality source of nutrient for all fine and coarse turf situations.



18.9.9

- High N formulation for spring/summer application
- Sulphur free formulation, ideally suited for use in anaerobic soil conditions
- Combination of Nitrate-N for fast release and Ureic-N for medium release
- Clear solution, all nutrients are fully dissolved in solution
- Tank mixable

12.0.12

- Balanced nitrogen and potassium formulation
- Phosphate free analysis
- Sulphur free formulation, ideally suited for use in anaerobic soil conditions
- Tank mixable

2.7.14

- High potassium formulation aids durability and winter hardiness
- Ideally suited as autumn/winter feed
- Sulphur free formulation, ideally suited for use in anaerobic soil conditions
- Tank mixable

Analysis	Pack Size	Rate	Longevity	Nutrient Level Applied at 50L/ha		
				N	P	K
18.9.9	1000L	50-100L/ha	3-4 weeks	9	4.5	4.5
12.0.12	1000L	50-100L/ha	3-4 weeks	6	0	6
2.7.14	1000L	50-100L/ha	3-4 weeks	1	3.5	7

Usage Period												
Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
18.9.9				✓	✓	✓	✓	✓	✓	✓		
12.0.12	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2.7.14	✓	✓	✓						✓	✓	✓	✓



The Growth Products Pro range is a high-quality, blended fertiliser, utilising controlled release technology. A fast start portion derived from ammoniacal nitrogen provides an immediate response, encouraging shoot growth and the in-fill of worn areas, whilst the resin coated material releases over a 3 month period for extended feeding.



21.0.8 +MgO +Ca 

- Fast start portion for immediate response
- High nitrogen formulation for spring application
- Controlled release technology providing 3 months longevity
- Magnesium for enhanced colour
- 2-3mm prill
- Suitable for use on all coarse turf situations

12.5.22 +MgO +Ca 

- High potassium formulation
- Controlled release technology providing 3 month longevity
- Magnesium for enhanced colour
- 25% coated nitrogen
- 2-3mm prill
- Suitable for use on all coarse turf situations

12.12.12 +MgO +Ca 

- All round balanced NPK fertiliser with added calcium and magnesium
- Can be used all year round on sports pitches, tees and fairways
- Controlled release technology providing 3 months longevity
- Boost of phosphorus on newly sown sand rootzone for improved rooting and establishment
- 2-3mm prill
- 25% coated nitrogen



Analysis	Pack Size	Rate	Longevity	Nutrient Level Applied at 35g/m ²			Accupro Spreader Setting for 35g/m ²		Spread Width
				N	P	K	Single Pass	Double Pass	
21.0.8	25kg	25-45g/m ²	2-3 months	73.5	0	28	Cone 5, Q 3/4	Cone 5, M 3/4	4.0m
12.5.22	25kg	25-45g/m ²	2-3 months	42	17.5	77	Cone 5, Q 3/4	Cone 5, M 3/4	4.0m
12.12.12	25kg	25-45g/m ²	2-3 months	42	42	42	Cone 5, Q 3/4	Cone 5, M 3/4	4.0m

Usage Period												
Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
21.0.8			✓	✓	✓	✓	✓	✓	✓			
12.5.22	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
12.12.12	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Bespoke Sports Fertilisers – Polyon Blends

No one piece of turf is the same as another and sometimes a standard analysis fertiliser will not give you the result you want. AGS have the capability to blend a specific fertiliser that is EXACTLY what your turf requires for orders of 40 x 25kg and more.

We can change a number of parameters such as NPK analysis, longevity, prill size, trace elements, nutrient source and release mechanism.

For example, we could blend 30% ammonium sulphate (quick release) with 40% Polyon (temperature and moisture release) and 30% XCU (moisture release only) to give a fast initial response with a trickle of nutrient over a number of months from the slow release portion using both moisture and temperature as the release method. Phosphorus and Potassium levels can be decided upon requirements and nutrients such as Magnesium and Calcium can be incorporated into the blend. You then choose from micro or mini prill to suit your budget and surface.

Many professional football teams are using AGS-blended bespoke mixes for both their training grounds and stadiums with fantastic results.





Advance Range

AGS offer a range of blends and liquids which can be tailored to your specific requirements. Alongside a standard NPK formulation; trace elements, seaweed and organic content can be incorporated to produce the perfect analysis for quality turf all year round.

These include:

- Granular Slow/Controlled Release Fertiliser
- Liquid Product Range
- Soil Amendments/Conditioners/Micronutrients
- Specialist Organic/Bacteria/Mycorrhizal Products
- Conventional Quick Release Fertiliser
- Granular available in 20kg, 25kg and 600kg bags
- Liquids available in 10, 20, 200, 1000ltr containers
- Range of straights: Ammonium Sulphate, Ferrous Sulphate, etc.

Lawn Sands and SSD's

A range of economical lawn sands are available through AGS, including microbial SSD products. We offer a range of different analyses and iron levels for moss reduction and acidifying surfaces to promote finer grasses and discourage worms. Ammonium content gives a rapid green up.

- Traditional greenkeeping product offering economical results
- Can help discourage worm activity
- Provides environmental conditions more conducive to fine grass growth than Poa annua

Ferromel 30

- Iron sulphate monohydrate
- Easy to apply granular
- Highly effective in prevention of silver thread moss (Bryum argenteum)
- Very low rates - 15g/m²

Advance Micronutrients

A range of high quality liquid micronutrients available in 5 litre bottles for instant plant uptake to increase plant health and correct deficiencies. Flexible application rates from 10-50 l/ha depending on site specific conditions. Consult with your Regional AGS representative for advice on adding micronutrients to your programme for increased turf performance.

Calcium	Organically chelated calcium for cell strength and root growth
Copper	Organically chelated. Often low in sand rootzones - important for photosynthesis
Iron + Trace Elements	Chelated iron with added Mg, Mn, Cu & B. Added Yucca for dew dispersal
Zinc	Often low in sandy soils. Chelated zinc for improved metabolic growth and health
Magnesium	6% chelated magnesium for improved colour and efficient photosynthesis
Manganese	Known to reduce Take-All Patch symptoms. Organically chelated 6% Manganese
Potassium	15% potassium solution essential for plant cell water retention and metabolism
Sulphur	Clean air has reduced sulphur levels in soil. Sulphur is essential for nitrogen uptake
Silicon	7% silicon solution to strengthen cell walls & produce an upright leaf



Advance Outfield Range

A range of conventional fertilisers suitable for fairways, sports pitches, lawns, private estates and general amenity areas in a 2-4mm prill. High quality providing a 4-6 week longevity with extended release on heavier soils. Bulk bags available for wider application.

Pre-Seeder 6.9.6

High phosphorus pre-seeder used pre-planting to encourage root growth and fast establishment of newly seeded or turfed areas. Also very effective pre planting fertiliser for shrubs and ornamental areas.

Spring & Summer 9.7.7

Traditional all-round feed used during the growing season for all sports turf, lawns and landscaped areas.

Fairway High N 12.6.6

A higher nitrogen analysis designed to give a growth boost to fairways and sports pitches to encourage an attractive green colour and recovery from wear.

Low N 3.12.12 or 5.12.12

Ideal when leaf growth is not required but additional phosphorus and potassium are required to improve plant health and strength.

Balanced NPK 20.10.10

High nitrogen combined with good phosphorus and potassium levels to give strong growth and recovery to intensively used sports turf and amenity lawns.

Analysis	Pack Size	Rate	Longevity	Nutrient Applied at 35g/m ²		
				N	P	K
Pre Seeder 6.9.6	25kg	35-50g/m ²	4-6 weeks	21	31.5	21
Spring & Summer 9.7.7	25kg	35-50g/m ²	4-6 weeks	31.5	24.5	24.5
Fairway High N 12.6.6	25kg	35-50g/m ²	4-6 weeks	42	21	21
Low N 3.12.12	25kg	35-50g/m ²	4-6 weeks	10.5	42	42
Low N 5.12.12	25kg	35-50g/m ²	4-6 weeks	17.5	42	42
Balanced NPK 20.10.10	25kg	35-50g/m ²	4-6 weeks	70	35	35

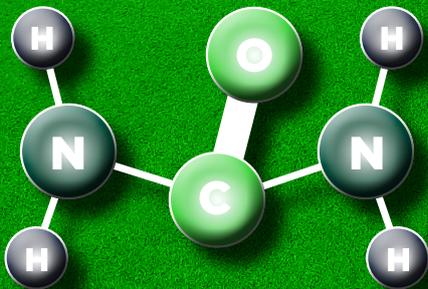
3. LIQUID FERTILISER

Featured Products:

- The Classic
- K Builder
- Quick Response
- Nitro 30
- Pot Carb Max
- Nitro 22
- Ignition

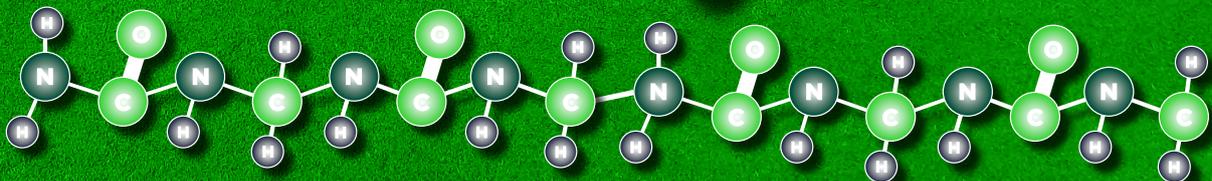
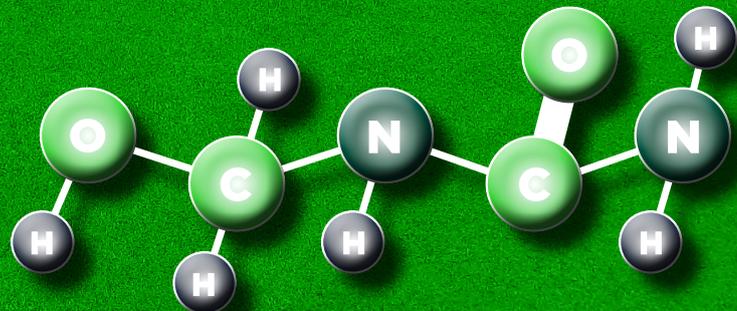
From simple to complex Nitrogen Molecules

UREA, 1 carbon



METHANOL UREA, 3-5 carbon chains

*Form of low burn but slow release



NITRO - 30 (30-0-0) 85% SRN, 7-9 carbon chains

Growth Products SMART Nitrogen™ liquid fertilisers

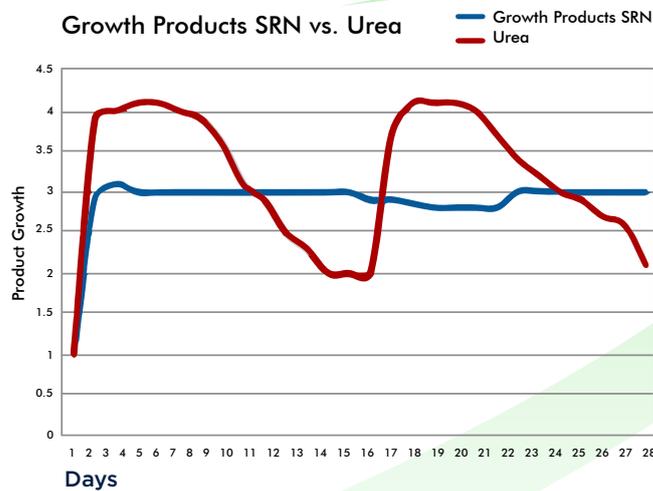
The foundation for quality sportsturf care rests in consistent and reliable nutrition. An excess flush of top growth can lead to problems such as susceptibility to disease, poor root development, annual weed grass invasion and thatch build up. These problems can be avoided by using Growth Products' technically advanced "Smart Nitrogen" products.

Smart Nitrogen™ is a liquid slow release nitrogen (SRN). It provides an even and consistent feed, avoiding the aforementioned issues associated with unwanted growth. The SRN in all Growth Products' fertilisers is **Nitro-30**, a methylene urea nitrogen.

This proprietary **Smart Nitrogen™** has several unique and important properties that make a significant difference in use:

- It is highly tacky/sticky, and will not be washed away by rain or irrigation.
- Fastens to the leaf cuticle, where it is broken down and absorbed by stomatal openings.
- Dual efficiency allows it to be absorbed by both leaves and roots.
- It will not leach or volatilize, making it good for the environment and good for your budget.
- Reduces thatch build up associated with fast release nitrogen products.
- The high carbon content helps feed beneficial soil microbiology.

Studies at leading universities have shown that a slow release nitrogen provides excellent agronomic response, no phytotoxicity, and a better residual release than liquid fertilizers with quick release nitrogen. The key difference between Growth Products Smart Nitrogen™ and other slow release liquids is the length of the carbon chain methylene urea molecules. Growth Products is typically 7-9 carbon chains compared to the usual 3-5 carbon chains. This give Growth Products the unique features and longevity that other liquid nitrogen products cannot match. **Mix and match your Growth Products liquids to give you the exact response and longevity you require.**



Nitrogen Sources

Raw Materials	Salt Index
Nitro-30 SRN 30-0-0	4
Granular Methylene Urea	24.6
MAP	26.7
DAP	29.2
Calcium Nitrate	65
Ammonium Sulphate	68.3
Urea	75.4
Ammonium Nitrate	116.3

Potassium Sources

Raw Materials	Salt Index
*Potassium Carbonate	4.75
Potassium Sulphate	42.6
Potassium Hydroxide	61
Potassium Thiosulphate	62
Potassium Nitrate	73.6
Potassium Chloride	116.3

*Growth Products uses Potassium Carbonate in most of its blends

The Classic 18.3.6



Growth Products 18.3.6 with 50% Slow Release Nitrogen plus micronutrients is a professional liquid fertiliser solution made from only the highest quality N-P-K raw materials and micronutrients to assure a safe, reliable and efficient product. 18.3.6 provides a balance of quick release nitrogen for initial green up and 50% slow release nitrogen for a continuous steady feeding. 18.3.6 contains methylene urea from Nitro-30, which resists leaching and provides a release over 4-12 weeks. The phosphorus and potassium are readily available for both foliar and root uptake.



- Provides green up without a flush of growth
- 50% slow release nitrogen from Nitro-30
- Potassium Carbonate, non-chloride source, very low on salt index
- 4-12 week longevity
- Compatible with fungicides and herbicides

Analysis	Pack Size	Rate	Longevity	Nutrient Level Applied at 20ltrs/ha		
				N	P	K
18.3.6	10ltr	20-30ltr/ha	4-12 weeks	4.5	0.8	1.5

Usage Period												
Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
18.3.6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

K Builder 7.2.21



K-Builder is powered by the most soluble and safe form of potassium available, Potassium Carbonate. K-Builder immediately penetrates leaf tissue, quickly dispersing potassium throughout the plant, increasing drought tolerance and carbohydrates required for healthy turf, all year round.



K Builder also contains Growth Products proprietary Smart N that enhances K absorption due to its adhesive qualities on leaf and soil particles.

- Increases water and nutrient uptake
- Improves drought and disease tolerance
- Boosts plant carbohydrate production
- 50% slow release nitrogen
- Lowest salt index of any potassium

Analysis	Pack Size	Rate	Longevity	Nutrient Level Applied at 20ltrs/ha		
				N	P	K
7.2.21	10ltr	20-30ltr/ha	4-6 weeks	2	0.6	6

Usage Period												
Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
7.2.21	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Quick Response 20.3.3



A high quality, balanced liquid fertiliser that provides an instant plant response when you need to provide a nutritional boost. It can be used as a stand-alone product or tank mixed with other Growth Products liquids to provide the exact longevity you require. Three-way mix of Nitrogen sources for enhanced plant uptake. Utilises ultra-low salt index potassium carbonate to maximize plant health benefits.



- Part ammoniacal N source for instant plant response
- 20% Smart Nitrogen™ slow-release to follow a fast initial green-up with a consistent trickle of nutrition to the plant.
- 2-10 week longevity – dependent upon application rate
- Safe to use all year round – no danger of scorch. No high salt nitrate or chloride sources.
- Can be tank mixed with fungicides and herbicides

Analysis	Pack Size	Rate	Longevity	Water Volume	Nutrient Applied at 20ltrs/ha		
					N	P	K
20.3.3	10ltr & 200ltr	10-50ltr/ha	2-10 weeks	200-600ltr/ha	4.6	0.7	0.7

Usage Period												
Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
20.3.3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Nitro 30 Slow Release 30.0.0



The highest quality, slow-release nitrogen fertiliser available in the UK. It provides excellent colour and plant health without an unwanted growth flush. ULTRA low salt index (4) – very safe to the plant – using Growth Products’ unique methylene urea polymers. Formulated to give a uniform clip rate over a number of weeks with no wasted growth surges that produce weak, soft plants.



- Lowest Salt Index of any Nitrogen with no chlorides and nitrates
- 85% Smart Nitrogen™ slow-release to give a long, consistent trickle of nutrition to the plant. 4-12 week longevity (dependent on rate) is the longest slow release liquid feed available
- Long carbon chain nitrogen molecule breaks down slowly to feed both plant (N) and soil microbiology (C).
- When applied at a low rate (10-30l/ha) it will give a slow, consistent clip rate to help provide steady, consistent growth that keeps plants healthy.

Analysis	Pack Size	Rate	Longevity	Water Volume	Nutrient Applied at 20ltrs/ha		
					N	P	K
30.0.0	10ltr & 200ltr	10-30ltr/ha	4-12 weeks	200-600ltr/ha	7.4	0	0

Usage Period												
Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Nitro 30			✓	✓	✓	✓	✓	✓	✓	✓	✓	

Pot Carb Max 0.0.25



A 100% soluble potassium carbonate liquid with an ULTRA low salt index (4.75) and zero chlorides. The lowest salt index potassium source available giving rapid and efficient uptake through leaf, root and crown. Potassium is an important nutrient for plant cell strength and drought stress tolerance. Recent research also suggests increased potassium leaf tissue levels significantly reduces anthracnose severity. Adding Pot Carb Max to your spring/summer liquid feeding programme helps get turf through high stress summer periods healthy and disease-free.



- Zero-scorch, plant friendly, low salt index pure potassium liquid
- Adds carbon to feed soil microbiology
- Improved plant health during summer stress
- Tank mix with other Growth Products liquids to achieve the exact N-P-K you require

Analysis	Pack Size	Rate	Longevity	Water Volume	Nutrient Applied at 20ltrs/ha		
					N	P	K
0.0.25	10ltr & 200ltr	10-30ltr/ha	4-6 weeks	200-600ltr/ha	0	0	6.7

Usage Period												
Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Pot Carb Max	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Nitro 22 22.0.0



A combined quick, medium and slow-release nitrogen fertiliser utilising the unique Growth Products ultra-low salt index Smart Nitrogen for extended release. 15% instantly available nitrogen gives just enough growth, with 35% slow-release long chain methylene urea to give a long term health boost.



- Contains 4% sulphur – ideal for sand-based rootzones low in sulphur
- Mix and match with the Growth Products range for precision nutrition
- Excellent product for tank mixing with selective herbicide on sports pitches, tees and fairways

Product	Pack Size	Rate	Longevity	Nutrient Level Applied at 20ltrs/ha		
				N	P	K
22.0.0	10 ltrs	10 - 40 ltrs/ha	2 - 4 weeks	5.5	0	0

Usage Period												
Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
22.0.0			✓	✓	✓	✓	✓	✓	✓	✓	✓	



A brand new AGS-exclusive liquid plant-health-solution for sports pitches, tees, fairways, lawns, outfields and fine turf including golf and bowling greens with elevated calcium and magnesium.

The special formulation of this liquid gives ultra-rapid foliar uptake of nitrogen, calcium and magnesium for an all-round turf strengthening package. Achieve an instant boost to plant growth and health all year round, including colder winter months.

Calcium is known for its cell strengthening properties alongside improving nitrogen uptake and stress tolerance. Magnesium gives good colour without lush growth and aids in plant sugar production and new leaf development. Nitrogen is delivered in a form that is instantly available for use by the plant, giving this product perfect characteristics for use throughout autumn, winter and spring.

- Boosts growth, recovery and health in stadiums and training grounds during cooler weather.
- Encourages Poa growth in cold springs to encourage mixed Poa/Bent greens to grow evenly during this awkward cool period.
- Enhances winter and early spring growth of fairways, tees and outfields to improve sward density and health following high use.
- Pre-tournament green-up and health boost for greens, tees and fairways.

Product	Pack Size	Rate	Water Volume
Ignition	5ltr & 200ltr	10 - 20l/ha	200 - 400 ltrs/ha

Usage Period												
Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Ignition	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓





4. PLANT HEALTH

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Featured Products:

- BioRefine
- Essential Plus
- TKO Phosphite
- X-Xtra Iron
- Enhance
- Goëmar Seaweed
- Pure Kelp SA
- Ferrogranul 20

ICON IDENTIFICATION GUIDE:

LS
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ROOT ENHANCER

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CARBON RICH

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DISEASE SUPPRESSION

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RELEASE PERIOD

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SOIL HEALTH



The BioRefine™ range of bio-inoculant are a blend of beneficial Plant Growth Promoting Rhizobacteria (PGPR) supplied in liquid form specifically selected for use on amenity turf. Formulated for use through standard sprayers and supplied as living cultures this product is the result of extensive research into bacteria that offer significant support to sportsturf grasses in the UK climate. Three formulations have been developed to promote the growth and health of targeted turf species:

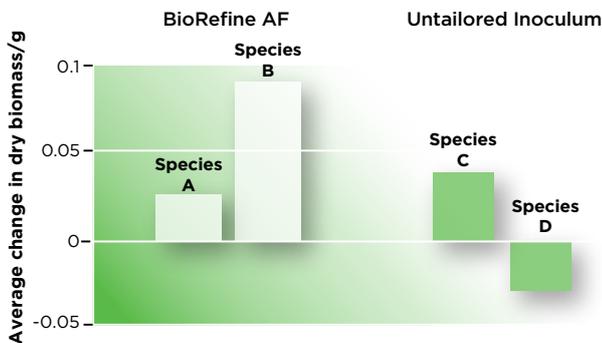
- BioRefine AF-** Promotes the growth of Bent and Fescue (not beneficial to Poa annua)
- BioRefine LP-** Promotes the growth of Lolium perenne (Perennial Ryegrass)
- BioRefine PA-** Promotes the growth of Poa annua (Annual Meadow Grass)

- Suitable for use on both newly seeded and established turf
- Nitrogen fixing (increase N and bioavailability in the soil)
- Better, more uniform growth
- Increases carbon cycling
- Promotes plant health
- Improved plant resilience to stress and disease
- Speed up recovery from stress
- Reduced fertiliser inputs

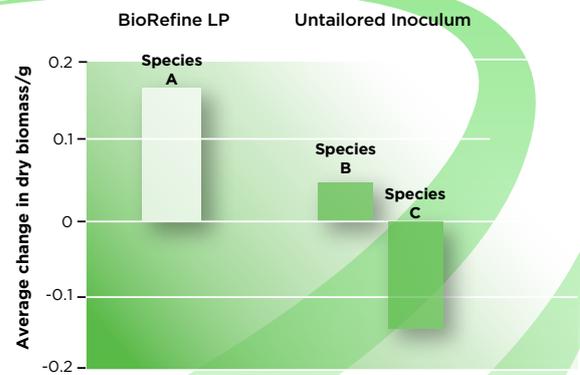


Product	Pack Size	Rate	Water Volume
BioRefine	2 x 1 ltrs + 1 ltr + 1.5mg	1 pack per hectare	400 - 800 ltrs/ha

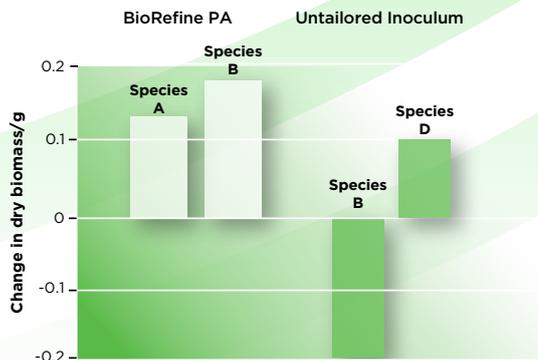
Usage Period												
Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
BioRefine			✓	✓	✓	✓	✓	✓	✓	✓		



PGPR consortium in BioRefine AF increases bent and fescue root and shoot growth while also inhibiting Poa annua growth



Consistent increase in Ryegrass growth with no additional nutritional inputs compared to other blends of 'beneficial' biology



Poa annua root and shoot growth can be improved using correctly tailored PGPR blends where Poa annua-inhibiting microbes are removed

All research work carried out by F.Baylis at Royal Holloway University

ESSENTIAL Plus 1-0-1



- Giberellic Acid
- Wetting Agent
- Natural Rooting Substance
- Magnesium
- North Atlantic Kelp
- Riboflavin B2
- Calcium
- Iron
- Vitamin B6
- Potassium
- Nitrogen
- Lignin
- Ash
- Carbohydrates
- L-Amino Acids
- Mono/Disaccharides
- Humic Acid
- Cellulose Fiber

Essential Plus



100% Natural Organic Soil Amendment with 21 L-Amino Acids

What is Essential?

Essential is a 100% natural organic product derived from plant and vegetative products that provides a rich carbon source of organic matter. Essential is pasteurized and homogenized to be a homogeneous solution. Each ingredient has been selected to provide all the various stages of organic decomposition (from fast decomposers to more complex forms of carbon requiring complex decomposition). Essential contains 21 L-amino acids that promotes nutrient absorption, and stimulates the plants essential metabolic activities. It also becomes an available food source for soil microorganisms. High concentrates of active, soluble humic acid, humus and cellulose fibre will help to replenish soils that have been depleted of organic matter. Essential will improve poor or subsoil condition and compaction, as well as enhance plant physiology with sugars, 21 amino acids and nutrients that are not available in N-P-K fertilizers.

Food Source for Microbial Activity

Beneficial microorganisms need organic matter as a food source to survive and increase their population. Essential has a high carbon content that slowly decomposes, restoring organic matter back into the soil. This is especially important in intensely managed fine turf and sports pitches.

Enhances Plant Physiology

Turf needs more than just N-P-K fertilisers to remain healthy. Essential contains vitamins, enzymes, carbohydrates, sugars, amino acids and root stimulators (from kelp). These nutrients are absorbed and utilized by the plant to enhance growth, vitality and stress resistance.

Rejuvenates Soil Structure

Essential contains high percentages of active, soluble humates, plant extracts, cellulose fibre and a natural wetting agent which are critical to maintain healthy soil. By adding organic matter back into the soils that have been depleted, even the most difficult soil conditions can be improved. These ingredients also reduce compaction and improve cation exchange capacity.

- Rejuvenates soil structure
- Food source for microbial activity
- Contains 21 natural L-Amino Acids
- Root stimulator
- Reduces salts
- High fungal food content to favour perennial species

Analysis	Pack Size	Application Rate	Water Volume
1.0.1	10ltr	4-10ltrs/ha	600ltrs/ha

Usage Period												
Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1.0.1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

TKO Phosphite 0.29.26 

TKO Phosphite is a highly concentrated P/K nutrient solution containing mono and di-potassium salts of phosphorus acid. The clear solution is highly soluble and is rapidly absorbed into the plant tissue. It can be taken up either through leaf tissue or roots, quickly correcting deficiencies and improving plant growth and vigour. Phosphite nutrients are known to improve turf quality and overall plant health, especially in stress conditions. Phosphorus is second only in importance to nitrogen and is known to play a key role in photosynthesis, respiration, energy storage, enzyme and protein formation and root development.



- At 8ltrs/ha delivers 6.6kgs of phosphite
- Rapidly absorbed via leaf or roots
- Highly systemic via xylem and phloem
- Strengthens plants immune system
- Can be tank mixed with Companion and 18.3.6

Analysis	Pack Size	Application Rate	Water Volume
0.29.26	4ltr & 10ltr	4-8ltrs/ha	300ltrs/ha

Usage Period												
Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0.29.26	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

X-Xtra Iron 6.0.0 +9% Fe 

X-Xtra Iron chelate provides 100% soluble Fe in an immediately available form for both foliar and root applications. It is formulated by a unique Iron / Nitrogen complex that converts the iron to a soluble form, which will stimulate fast green up without a flush of growth. X-Xtra Iron contains essential nutrients for photosynthesis: Iron & Nitrogen with citric acid utilized as the chelating agent.



- 9% chelated iron and low nitrogen for fast green up
- 100% soluble for immediate plant availability
- Compatible with Plant Growth Regulators
- Can be safely tank mixed with a wide range of fertilisers and pesticides
- Suitable for all fine and coarse turf

Analysis	Pack Size	Application Rate	Water Volume
6.0.0	10, 200ltr	10-20ltrs/ha	300ltrs/ha

Usage Period												
Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
6.0.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Pure Kelp SA



A seaweed extract from the species *Ecklonia maxima* that offers a range of unique turf health benefits. *Ecklonia maxima* naturally contains a high auxin:cytokinin ratio that elicits cell growth, division and development, stimulating growth of turf. Pure Kelp SA can be applied as a soil drench or foliar spray. When applied as a foliar spray, active metabolites travel down to the root tips encouraging new growth. In the root meristem, the plant produces cytokines which are then transported upwards and initiate corresponding shoot growth. These chemical messengers trigger important growth, promoting leaf extension and prolong the life of the plant tissue, helping slow down biotic and abiotic stress.



- Maintains plant health and growth during times of stress
- Foliar application means it can be tank-mixed with liquid nutrition
- Naturally high polyamine levels known to increase root growth
- Promotes resistance to diseases, pathogens and insect pests

Pack Size	Application Rate	Water Volume
4ltr & 10ltr	2.8ltrs/ha	300-600ltrs/ha

Usage Period												
Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Pure Kelp SA	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Enhance 5.0.0+5% Fe

A complexed nitrogen-iron formulated with Ferric Ammonium Citrate that will safely tank mix with selective weedkillers, PGR's and both liquid and soluble fertilisers. Enhance has been extensively trialled with relevant product combinations to ensure easy application to elevate your turf surfaces ahead of the opposition. Safe to use on fine turf, fairways, tees, approaches, sports pitches and outfields to provide a healthy-looking green-up without excessive lush growth.

- Scorch-free, deep green, long lasting colour
- Tank mixes easily with a wide range of herbicides, PGR's and fertilisers
- Added nitrogen enhances the uptake and efficacy of selective weedkiller applications
- Low water volumes for economical large area applications

Pack Size	Application Rate	Water Volume
200ltr	20-40ltrs/ha	300-400ltrs/ha

Usage Period												
Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Enhance	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Goëmar Seaweed  

Goëmar is a unique liquid seaweed for use on all turfgrass surfaces to maximise plant health and optimise the uptake of minerals and micro nutrients from the root zone. The micro-bursting technique used on *Ascophyllum nodosum* separates the seaweed sap from the cells and results in 100% pure seaweed juices (GA142), which contains a highly concentrated mixture of growth and stress relief hormones, vitamins and physio-activator compounds. When applied to turfgrass surfaces this results in improved rooting efficiency, movement of nutrients in the plant to areas of growth, and stimulates plant defences against disease. The species of seaweed used in Goëmar (*Ascophyllum nodosum*) has been shown to stimulate Systemic Acquired and Induced Resistance that results in much reduced fungicide use, an increasing subject of world-wide plant research.



- Highly concentrated with very low application rate
- Provides phyto-hormones, betaines, amino acids and vitamins
- Encourages higher root mass and reduces plant stress
- Ideally suited for modern stadia and greens

Pack Size	Application Rate	Water Volume
5ltr	3ltrs/ha	400ltrs/ha

Usage Period												
Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Goëmar Seaweed	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Ferrogranul 20 

A high quality, easily-soluble iron derived from ferrous sulphate heptahydrate. Can be mixed at a very low water volume to provide economic large-scale application. Provides a quick green-up and surface acidification for disease prevention and culturally discouraging worm activity.



- Premium product for easy spraying
- Can be tank mixed with liquid fertilisers and PGR's
- Flexible application rates
- Creates conditions less conducive to moss growth

Pack Size	Application Rate	Water Volume
25kg	10-50kg/ha	300-600ltrs/ha

Usage Period												
Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Ferrogranul 20	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Sustane BOLSTER MycoBio



BOLSTER MycoBio promotes vigorous seed & turf establishment and improved nutrient use efficiency. It is a biologically super-charged granular soil amendment and microbial inoculant. Specially formulated with a mix of endomycorrhizae and beneficial bacteria that enhances seed germination and vigorous plant establishment to increase quality and health. BOLSTER MycoBio enhances root growth resulting in plants that are better able to withstand environmental stress.



- Beneficial mycorrhizae and bacteria in one product
- Enhanced seedling establishment

Product	Pack Size	Application Rate
Bolster MycoBio	22.7 kg	15 - 30g/m ²

Usage Period												
Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Bolster MycoBio			✓	✓	✓	✓	✓	✓	✓	✓	✓	

Sustane 4.6.4 Compost Tea Bags



4.6.4 Compost Tea is the result of adding high quality Sustane compost that is rich in beneficial micro-organisms to water with the presence of oxygen and allow it to brew. When these microbes are provided with water, oxygen and a food source they start to multiply rapidly, populating the “tea” with billions of beneficial microbes.



Microbiology from aerobic compost provides numerous benefits to plants and soil. Beneficial micro-organisms compete for resources with the disease-causing bacteria (pathogens) resulting in less disease pressure and healthier plants.

- Individual 2.27kg tea bags
- Each bag brews up to 2200 litres of compost tea
- Brew for 18 - 48 hours
- Use regularly throughout the growing season to boost your healthy, diverse soil microbial population

Product	Pack Size	Application Rate	Water Volume
4.6.4 Compost Tea Bags	2.27 kg	1 bag per ha	600 - 1000 ltrs/ha

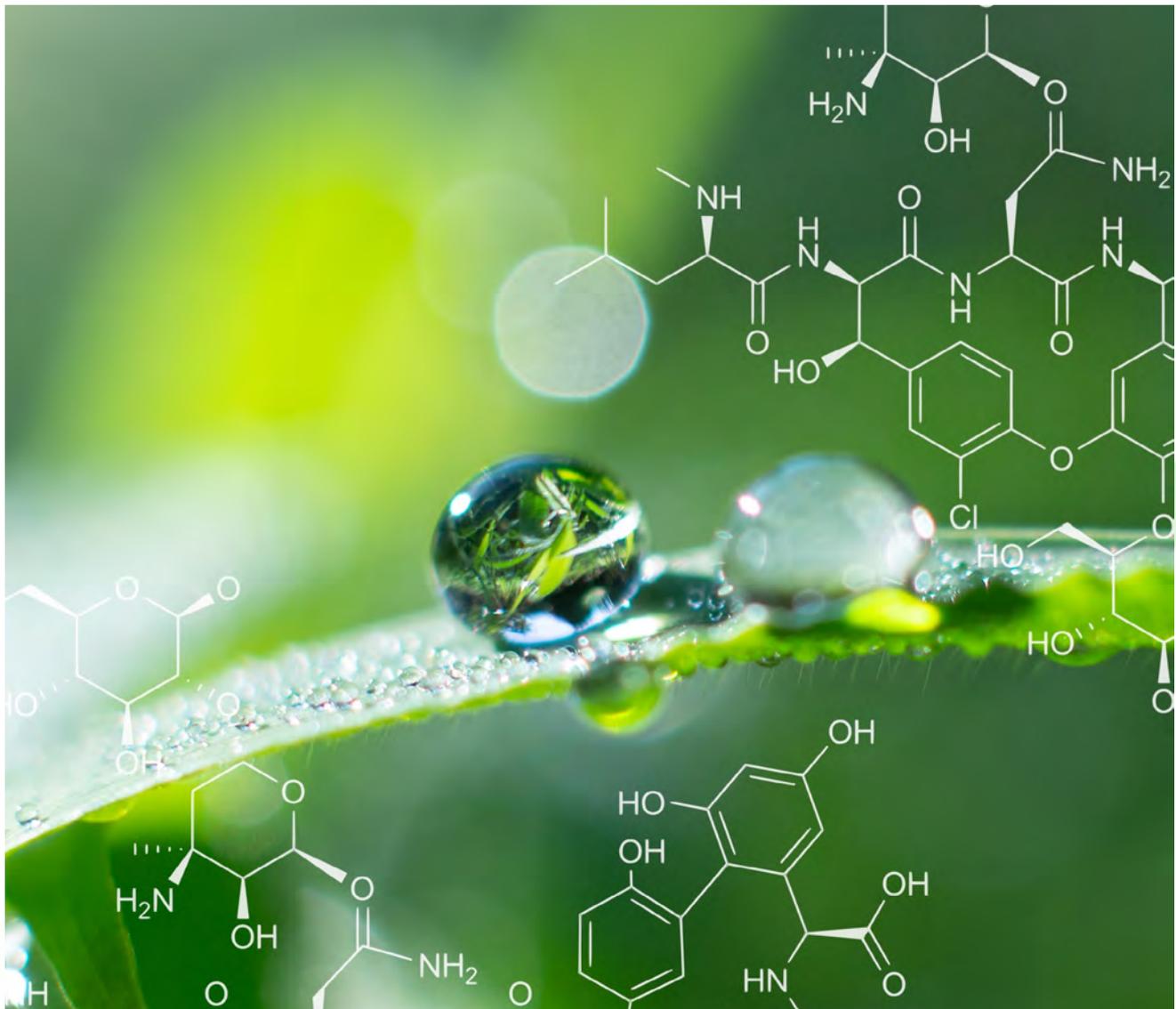
Usage Period												
Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
4.6.4 Compost Tea Bags			✓	✓	✓	✓	✓	✓	✓	✓	✓	

Sustane ReGen 1.1.1



- Structural soil conditioner supplying organic-rich and biologically stable humus, humic acids, beneficial microorganisms, zeolite, mycorrhizae, seaweed and organic nutrients.
- Provides excellent high-carbon microbial food sources for a microbially diverse soil population.
- Increased CEC offering improved nutrient and soil water availability
- Improved permeability and infiltration
- Better oxygen supply to soil – encourages microbial activity, thatch breakdown and root growth
- Excellent alternative to zeolite in high-spec sports pitch constructions
- Work into golf greens at renovations for improved plant and soil health

Product	Pack Size	Rate	Accupro Spreader Setting (50g/m ²)		
			Single	Double	Spread Width
ReGen	22.7kg	50-150g/m ² Up to 1500g/m ² as soil amendment	6,U½	6,P	3.0m



Advance Cal-Mag Max 7.0.3

Calcium and magnesium are very important secondary nutrients and part of the chlorophyll molecule which is necessary for sugar formation. Calcium helps improve nitrogen uptake, plant cell integrity, turgidity and stress tolerance. It benefits soil health by buffering pH, reducing salt build up and encouraging root development. Magnesium is very important for colour, new leaf development and aids sugar (energy) production. Cal-Mag Max works as a very effective autumn/winter 'hardener' by strengthening cell walls and reducing the ability of pathogens to penetrate the leaf.



- Sulphur-free hardener for use all year round
- Magnesium improves colour without any growth flush
- Improves cell turgidity and stress tolerance

Analysis	Pack Size	Application Rate	Water Volume
Advance Cal Mag Max 7.0.3	10ltr	5-10 ltrs/ha	300 – 600 ltrs/ha

Usage Period

Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Advance Cal Mag Max	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Advance Fulvic Acid

Advance Fulvic Acid is a 30% concentrated natural Fulvic Acid solution derived from lignite ore. Fulvic acid carries a number of benefits for plant and soil health and enhances the efficacy of many foliar applications by increasing the uptake by the plant. Fulvic acid is a natural complexing agent and carries the product directly into the leaf.



- It aids the movement of vitamins, coenzymes, auxins and hormones around the plant. During times of stress this can mean plants function at closer to their maximum capacity while still under stress conditions
- Increased oxygen absorption and increased growth has been recorded when compared to control plants
- Stimulates metabolism
- Increased root exudates which acts as a food source for the soil microbial population
- Increased growth under low light conditions

Analysis	Pack Size	Application Rate	Water Volume
Fulvic Acid	10ltr	5-20ltrs/ha	200-600ltrs/ha

Usage Period

Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Fulvic Acid	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Advance Liquid Endo Mycorrhizae



A liquid formulation of endo-mycorrhizal species formulated specifically to promote the establishment and growth of perennial grass. Use in golf and bowling greens to increase bent and fescue within the sward and in sports pitches to help germination and establishment of ryegrass with strong rooting. Mycorrhizal fungi form a symbiotic relationship with perennial grass roots, but offer no benefits to *Poa annua*. Research shows mycorrhizal grasses resist stress better and require less water and fertiliser for healthy growth.



- Contains 220,000 spores/propagules of 4 x mycorrhizal species *Glomus intraradices*; *G. Mossae*; *G. Aggregatum*; *G. Etunicatum* per 200ml pack
- Easy to apply liquid formulation
- Use at overseeding of greens to promote new bent and fescue seed growth
- Apply as a seed coat or spray as a drench

Product	Pack Size	Rate	Water Volume
Liquid Endo Mycorrhizae	200ml & 1ltr	200ml/ha	600-1000 ltrs/ha

Advance Mycorrhizal Inoculant



Advance Mycorrhizal Inoculant is a biological growth activator for sports turf. Newly constructed and renovated sand-based sports pitches are almost sterile. Advance Mycorrhizal Inoculant contains live spores of beneficial mycorrhizal fungi, growth promoting soil fungi, bacteria, carbon and organic soil nutrients to improve rooting and speed establishment. Mycorrhizae form a long-term relationship with perennial grass species to improve nutrient uptake and reduce plant stress and disease. Can also be brushed into aeration holes/lines on established turf to improve new seed establishment and promote perennial species.



- Faster grow-in and establishment of new sports pitches and turf surfaces
- Promotes establishment and longevity of perennial grasses
- Greatly improves root mass and strength
- Healthy grass is less susceptible to and recovers faster from disease

Product	Pack Size	Rate	Accupro Spreader Setting for 50g/m ² (Single Pass)	Effective Width
Advance Mycorrhizal Inoculant	25kg	50g/m ²	4, R	3m

Growth Products SAR Activator



A 10% Salicylic Acid in an easy-to-apply solution that can be tank-mixed with a variety of products to reduce incidence of disease. Salicylic acid induces Systemic Acquired Resistance in plants. Elevated salicylic acid levels in plant leaves produces plants with greater ability to withstand attacks from fungal pathogens. Plants naturally produce defence compounds when under attack from pathogens - salicylic acid induces these compounds to be produced ahead of infection, enabling the plant to resist disease.



- Effective plant tolerance of many biotic stresses - drought, cold, heat, etc.
- Can be tank-mixed with chelated irons, phosphites, fertilisers and fungicides for an improved response
- Can be applied as a foliar or soil-targeted spray as it moves systematically through the plant
- Another tool to help turf managers move away from fungicide reliance

Product	Pack Size	Rate	Water Volume
SAR Activator	10ltr	4-10ltrs/ha	200-600 ltrs/ha

Sustane Bolster



A mix of Ascophyllum nodosum seaweed, humic acid, and soluble carbohydrates. BOLSTER from Sustane prepares plants for stress conditions, increasing root mass and depth without a flush of top growth. BOLSTER has demonstrated improved drought resistance, increased chlorophyll production and delayed senescence. It increases plant health and vigour to offset infection of certain diseases and to guard against effects of plant parasitic nematodes.



- Improves plant tolerance to stress
- Reduces parasitic nematode symptoms and numbers
- Accelerates chlorophyll production, improves turf colour
- Better drought tolerance and improves moisture retention

Product	Pack Size	Rate	Water Volume
Bolster	1 & 10ltrs	10ltrs/ha	500 ltrs/ha

Usage Period

Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Bolster	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Growth Products DeThatcher



A solution containing microbes and enzymes that are known to accelerate the breakdown of thatch.

Also contains a slow-release nitrogen source which has the correct Carbon:Nitrogen ratio to provide an energy source and protein synthesis for the microorganisms. This ensures survival of the microbes for long-term thatch breakdown. An application of DeThatcher doubles up as a feed and thatch digester all-in-one.



- Contains a combination of Bacillus microorganisms and enzymes (protease, cellulase and amylase) to break down specific components of thatch.
- Microbes are specifically targeted to break down lignin and cellulose as in turf thatch these are the hardest to reduce components.
- Once established in the soil, the Bacillus species included in De-Thatcher will produce significant quantities of further enzymes that will digest the protein in thatch and turn organic matter into beneficial humus.
- Can be used to accelerate the breakdown of any organic waste materials.

Product	Pack Size	Rate	Water Volume
DeThatcher 15.0.0	10ltr	10-30 ltrs/ha	600 ltrs/ha

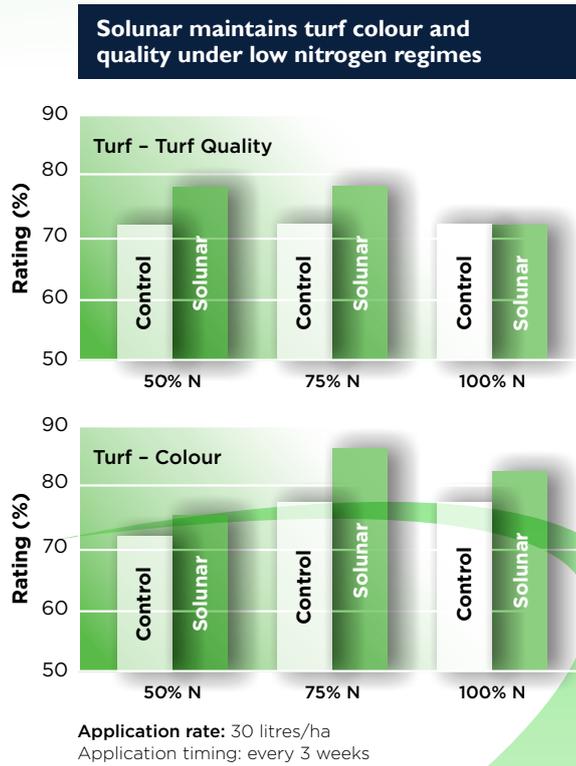
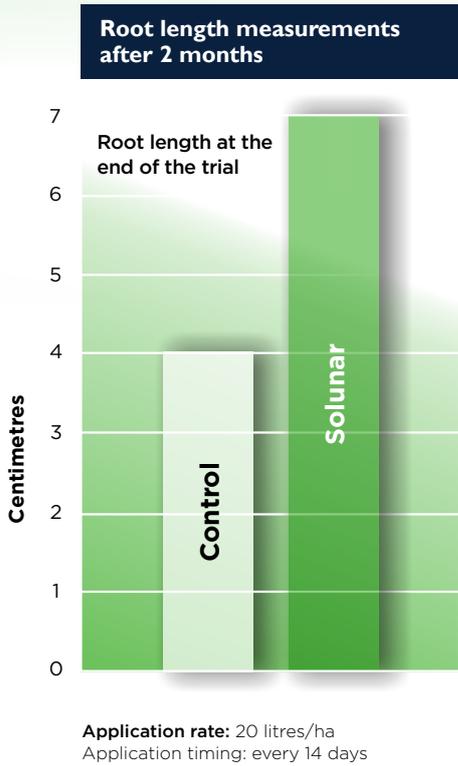
Usage Period

Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
DeThatcher 15.0.0				✓	✓	✓	✓	✓	✓	✓		



A brand new cold-process extract of *Ascophyllum nodosum* from AGS. Solunar is produced from 100% freshly harvested North Atlantic seaweed and contains a wide range of natural compounds such as alginates, amino acids and antioxidants that have well-researched biostimulant and stress-reduction properties for turfgrass.

Specially formulated for sports turf use, it can be applied to golf greens, tees, fairways, sports pitches, and all other sports turf or ornamental lawns. Tank-mixable with a wide range of liquid products such as fertilisers, other biostimulants and fungicides.



Product	Pack Size	Rate	Water Volume
Solunar	10, 200, 1000ltr	10 - 20ltrs/ha	160 - 800 ltrs/ha

Usage Period												
Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Solunar	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

TourTurf TAG



TourTurf TAG is a NPK fertiliser and an organic soil conditioner that improves the surface of the turf on greens, tees, fairways and football pitches. Can be used on all types of other amenity areas too. It also contains magnesium and wetting agent, so it both stimulates the soil and the plant, giving a good green up effect. The product should be used in spring and autumn and during other wet periods. For maximum efficacy the product should be watered in immediately or applied when rain is imminent. Also works well when applied after aeration and brushed down the holes.



- Supplied in Fine Grade (1-2.5 mm)
- Supports a strong sward density
- Strengthens both root and leaf
- Slow release formula for 6-8 weeks

Pack Size	Application Rate	Water Volume
20kg	30g/m ²	6-8 weeks

Advance Sol-U-Sea



Sol-U-Sea - a 100% soluble organic extract of Ascophyllum nodosum seaweed, promoting vigorous grass growth, healthy root systems and resistance to environmental stress. Provides turf with essential trace elements and plant-growth-promoting substances such as 16 amino acids, carbohydrates and alginates. Sol-U-Sea is compatible to tank mix with most things except directly with acids and oxidizing agents e.g. products containing iron, potassium nitrate. If using these, dissolve/mix them first and fill tank 2/3rds full before adding the Sol-U-Sea.



Product	Pack Size	Rate	Water Volume
Advance Sol-U-Sea	800g	1.0 - 1.5kg/ha	Minimum 600 ltrs/ha

Usage Period

Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Advance Sol-U-Sea	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Growth Products Bio Nutrients 3.0.3



A unique blend of organic nutrients, seaweed, humic acid, mycorrhizae, chelated micronutrients and beneficial bacteria in an easy-to-use 100% soluble pack. A cost-effective method of building soil structure and health, improving rooting, reducing stress and improving turf colour. BioNutrients contains 100% 'active' ingredients with none of the inert fillers you find in some soluble products.



- Maintain turf health and colour without forcing unwanted growth.
- Eleven species of mycorrhizal fungi to aid establishment, promote root growth, increase stress resistance and enable plants to extract available nutrients from the soil.
- Rich, organic carbon food sources from Humic Acid, Seaweed and natural sugars to feed beneficial soil biology and promote healthy soils and plants.
- Can be dry mixed with sand at 1-2 packs per cubic metre to enhance seed germination in goalmouths, divot areas, etc.

Product	Pack Size	Rate	Water Volume
Total Pak 3.0.3	250g sachets	1-4 packs/ha	600ltrs/ha

Usage Period

Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Total Pak 3.0.3			✓	✓	✓	✓	✓	✓	✓	✓	✓	

Soil Foundation HFU



Soil Foundation HFU is a premium quality Leonardite granule specially selected from an ultra-high grade deposit of Leonardite. It is a very rich source of humic, fulvic and ulmic acids and contains a very high carbon content to improve soil microbial community populations.

Soil as a system needs buffering and protection from chemical fertilisers and salts – Soil Foundation HFU improves soil characteristics, increases CEC and promotes healthy plants and roots.

- Restore a better carbon:nitrogen balance in your soils
- A rich food source to feed microbial populations for months
- Great product at renovation time to work into the soil
- Drives healthier plants and strong rooting

Analysis	Pack Size	Rate	Accupro Setting for 35g/m ²		
			Single	Double	Spread Width
Soil Foundation HFU	25ltr	25-40g/m ²	Cone 6, R	Cone 6, N	3.0m

AGS 5.0.2



The ultimate molasses based biostimulant and organic fertiliser with 9.2% Amino Acids and 13% Fulvic Acid. Provides a readily available source of carbohydrates to boost plant health and growth during periods of cooler weather and lower light. The perfect liquid for growing in new seedlings on football pitches and fine turf.

- Stimulates soil biology for early spring root and shoot growth
- Rapid assimilation of fertiliser through roots and shoots
- Stimulates photosynthesis and carbohydrate production
- Improves seed germination and survival
- Rich in proteins and amino acids to feed soil fungi for fine grass growth and thatch degradation

Product	Pack Size	Application Rate	Water Volume
AGS 5.0.2	20 & 200ltrs	10 - 100l/ha	400 - 600 ltrs/ha

Usage Period												
Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
AGS 5.0.2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓





5. PLANT PROTECTION

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www.advancegrass.com

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Featured:

- Microdochium Patch
- Red Thread
- Take-all Patch
- Anthracnose Diseases
- Dollar Spot
- Fairy Rings
- Leaf Spot
- Rhizoctonia Blight
- Brown Ring Patch
- Yellow Tuft
- Rust
- Rapid Blight
- Plant Parasitic Nematodes
- Moss
- Plant Protection Product Selector
- Fungicide Selection Chart for Microdochium
- Tank Mix Chart

Featured Products:

- Companion
- Heritage Maxx
- Heritage
- Medallion
- Inter Tebloxy
- Pan Aquarius

UK Turf Disease

The majority of turf diseases are caused by fungal pathogens but some fungi are more strongly pathogenic than others. Many of the common cool season turf diseases are caused by fungi that rely on a weakened plant and therefore reducing disease incidence and severity is often aligned to maintaining a strong sward. With on-going changes to European Legislation relating to pesticide use, it is more important than ever that an integrated approach to disease

management is employed and central to this is an understanding that the cultural conditions can limit disease development. Making use of the genetic variation that exists between grass types and cultivars can also minimise disease development through a sward. By managing rootzone quality and using weather information services, it can also be possible to pre-empt disease outbreaks and plan an efficient integrated management strategy.



Kate Entwistle

Microdochium Patch

Microdochium Patch (aka Fusarium Patch), caused by the fungus *Microdochium nivale*, is arguably the most damaging disease of cool season turf. The fungus can live saprophytically on dead and decaying plant tissues and low levels of disease are possible year-round. Typical symptoms develop on susceptible turf during periods of cool, wet weather and because alternating periods of frost and thaw, drizzle or fog are all ideal for the rapid development of this disease, it tends to be more prevalent during the winter months. During prolonged snow cover, the pale pink fungal mycelium within infected tissues accumulates on the sward and is revealed at snow melt as the typical symptoms of Pink Snow Mould. *Microdochium nivale* is not killed by frost but its growth may be suspended until temperatures start to increase.

All grasses are potentially susceptible to infection but a sward that is growing under conditions of stress is more likely to develop severe disease.

Early symptoms of infection, especially on close mown turf, appear as small mid-brown patches approximately 20mm diameter that will increase to form larger, regular patches that may coalesce to produce large blighted areas of turf. The outer edge of the water-soaked patches may develop aerial fungal mycelium and this can be encouraged by placing a sample of turf in a sealed plastic bag overnight to confirm the activity of the disease. The infected leaf tissue will also support millions of fungal spores that give the turf a slimy feel and they will spread the infection across the



Courtesy of Peter Jones

sward. On low maintenance turf, the sward may appear generally water-soaked with no distinct patch development. Movement of fungal spores and infected plant tissues can easily spread this disease but infection can only occur if the local environmental conditions allow it.

Unbalanced nutrition, especially high nitrogen, can predispose turf to infection and low potassium availability may also affect disease severity. Leaf wetness is essential for fungal infection and thatch can contribute to this requirement as well as providing a good source of saprophytic nutrition for the fungus.

Where required, fungicide applications can be made to manage disease development and areas that are routinely affected by this disease can be monitored for the best time to begin applications. Greater control may well be achieved by employing a preventative fungicide programme as part of the overall disease management strategy where the disease is especially problematic.

Red Thread

Red Thread is caused by the fungus *Laetisaria fuciformis* and is a common disease on any nutrient-stressed turf. Unbalanced nutrition or low nitrogen (and potassium) availability is likely to encourage disease development, especially in Ryegrasses which have a high nutrient requirement. This disease develops almost invariably in the leaf tissues forming diffuse, coalescing patches of bleached turf that support characteristic red needles (sclerotia) of accumulated fungal mycelium as the infection matures. The mycelium in these red needles will either perpetuate infection by allowing the fungus to grow on

to adjacent plants, or will allow the fungus to survive adverse conditions by dropping in to the base of the turf until favourable growth conditions resume.

Red Thread is common during mild, damp weather and leaf wetness is again important for fungal infection.

To minimise disease development, clippings should be removed and scarification or core aeration can help to reduce leaf surface wetness in thatchy turf and reduce the amount of over-seasoning sclerotia that may have accumulated during active disease development. An application of nitrogen to affected turf may be all that is required to allow the



disease to 'grow out' and because the crown tissues are almost never diseased, quick recovery from even the most extensive outbreaks should be achievable.

Fungicides are not generally necessary in an integrated programme for this disease but the available active ingredients will provide control should application be necessary.

Take-all Patch

The fungus that causes Take-all Patch in turf, *Gaeumannomyces graminis* var *avenae*, is a strong pathogen but it has a weak ability to compete with rootzone antagonists. For this reason, Take-all Patch is often seen in new constructions or in turf where sudden changes in rhizosphere pH may rapidly adjust microbial balance. The fungus typically causes disease in bentgrass turf but has become an increasing problem in meadowgrass swards. It is a disease that infects the root and crown tissues, causing a decay which results in bronze-coloured patches of turf that may become dominated by less susceptible grasses or colonised by broad-leaved weeds. The patches tend to have a definite edge where infected turf abuts a healthy sward and the size of the patches can increase annually to approximately 30cm diameter. Initial infection of



the roots will occur during the late spring but turf symptoms will only begin to show during the summer and autumn months.

Infected stem base tissues will reveal mats of dark fungal mycelium and as the infection matures, small flask-like spore-producing structures will develop through the leaf sheaths.

The fungus may go unchallenged by rootzone antagonists for several years but eventually, a matured rootzone will encourage so-called Take-all decline which will limit the further development of this disease. One of the key elements essential in limiting

disease severity is manganese and regular applications of this micronutrient should be considered in susceptible turf.

The disease can be spread by movement of infected plant tissues and dissemination of spores by air and water. The fungus shows increased growth at high pH and avoiding any small but sudden increase in rhizosphere pH can help to lessen disease activity. Application of acidifying fertilisers and increasing surface drainage will help limit conditions favourable for disease. Because this is primarily a root disease, any fungicide application must be taken up by the roots in order to be effective. A late autumn (as plant growth is slowing) and spring application (as growth is resuming) of an appropriate fungicide has been proposed to provide effective management of the fungus during the early season infection.

Anthracnose Diseases

The fungus *Colletotrichum cereale* (formerly *C. graminicola*) causes a Basal Rot and Foliar Blight infection in weak swards. These diseases are strongly correlated with turf stress. Basal Rot infections developing most often in meadowgrass turf during cool, wet weather and Foliar Blight develop on all grasses during warmer conditions. Water is essential for fungal infection and therefore even with the Foliar Blight, a wet leaf is necessary for disease to develop.

Basal Rot infection develops in the crown tissues, reducing water and nutrient movement through the plant and forcing the development of stress-related yellow to orange/red leaf tissues that typify this disease. Large areas of turf can become diffusely affected by this disease and turf loss is not uncommon. During Foliar Blight infections, the sward becomes colonised by the fungus which causes a diffuse, tan/grey leaf



discoloration that appears to darken as the infection matures and as fungal spores are produced on the infected sward. Foliar Blight often develops in turf above a water-repellent rootzone because applied water remains at the base of the turf, allowing development of the humidity required for infection.

Nutrient stressed turf is prone to Anthracnose development and Basal Rot is encouraged by a wet, compacted rootzone. That said, even where Anthracnose is active, water availability must not be restricted because infected

plants will die from drought stress. Therefore, the key to managing Anthracnose is to maintain adequate moisture, apply light, regular applications of balanced and complete nutrition, increase the mowing height and avoid any abrasive grooming or topdressing applications. Anthracnose diseases are stress related and therefore you need to minimise all abiotic stresses. There are no resistant grasses or cultivars but a diverse sward will tend to have less severe infection. Fungicides will be effective if they are applied at the correct time. With this disease, preventative applications can often mean less overall fungicide has to be applied to establish control. A combined application of a systemic product with a contact or localised penetrant will provide control but repeat applications may need to be made in turf that is especially susceptible to infection.

Dollar Spot

Although Dollar Spot has long been recognised as a turfgrass disease, the fungus (or fungi) that cause the disease is (are) still being investigated. Researchers at Rutgers University, New Jersey, have recently renamed the fungus that causes Dollar Spot in turf across the US as *Clarireedia homoeocarpa*. However, there is on-going debate as to whether the causal fungus for Dollar Spot outside the US is the same organism



Courtesy of Mark Hunt

and therefore we will continue to use the name *Sclerotinia homoeocarpa* for the fungus that causes Dollar Spot on turf across the EU. Historically Dollar spot was considered to be a disease of slender creeping red fescue, but across Europe it is recorded as causing damage to most turf species (especially bentgrasses) and it now appears likely that different fungi will be named for causing the disease in cool and warm season turf.

Dollar Spot Continued...

Typical Dollar Spot symptoms of straw-coloured turf in coalescing patches (approximately 20mm diameter) tend to develop very rapidly during periods of high daytime and low evening temperatures and the presence of dew on the sward. Individual leaves may demonstrate so-called hourglass lesions where the pale and constricted leaf blade is bordered by a darker

band of tissue. However, this symptom is not often seen in affected meadowgrass plants. When the disease is active, fungal mycelium will grow out of infected tissues towards adjacent healthy plants and in doing so, form 'cobwebs' of mycelium across the turf. Often the disease is more severe when it develops on nutrient and drought stressed turf but the

damage is generally confined to the leaf. This is a reoccurring disease and management of the symptoms should begin by ensuring adequate water and nutrient availability. Preventative fungicide applications are most effective and access to disease forecasting programmes will be important where this disease routinely reoccurs.

Fairy Rings

There are known to be over 50 Basidiomycete fungi that can cause the development of fairy rings and the severity of the symptoms expressed on the turf will depend on the fungus that is causing the problem. These fungi will colonise either the base of the turf (superficial fairy rings or thatch fungi) or the rootzone and when colonising the rootzone, may result in a range of above-ground symptoms. We tend to refer to the most damaging rings as Type 1 and in these, the accumulation of fungal mycelium can eventually lead to areas of dying turf or bare ground that are bordered on both sides by stimulated turf growth and on their outer edge, may become colonised by fungal fruiting bodies (mushrooms / toadstools). Slightly less damaging to turf quality are the Type 2 rings where stimulated rings or arcs of turf may or may not be associated with fungal fruiting bodies and the least damaging of all are the Type 3 rings that show no change in turf quality but are visible only by the development of the



Type 2 Fairy Ring

mushrooms / toadstools. In all cases, removal of the immature fruiting bodies by mowing or brushing will help to limit further spread of the fungus.

Some fairy ring fungi can grow to several meters in depth in open, high sand content rootzones and here the symptoms on the overlying turf can become extreme.

All of these fungi obtain nutrition from dead and decaying plant material and in breaking down the plant remains, the released nutrients are taken up by the fungus for its growth. Some

nutrient will also be taken up by the turf roots and this results in some of the stimulated plant growth. The developing fungus grows radially outwards from a central point, increasing in mass as it does so. The old fungal mycelium towards the centre of the rings will eventually die and release nutrient back in to the soil. This release of fungal cell contents is also responsible in part for the stimulated plant growth.

The fairy ring fungi will cease growth only if they run out of nutrient on which to feed, a solid barrier or disturbed ground. If two rings grow in to one another, they 'mutually inhibit' each other's growth and a figure of eight will develop. If similar growth continues to occur, arcs and ribbons of fairy rings will develop.

One of the main problems with fairy ring growth is the development of water-repellent soil and this can result in the turf being unable to access water

Fairy Rings Continued...

and nutrient. Management of fairy rings is strongly aligned to managing rootzone repellence. The sward in fairy ring affected areas can often develop foliar fungal diseases including Microdochium Patch, Red Thread and Anthracnose Foliar Blight as a result of the stimulated plant growth or water related stress that is associated with different phases of fairy ring development.

Management of fairy ring symptoms includes being aware of the depth of fungal infection

through the rootzone. Rootzone core samples taken to depth can be used to determine the depth of water-repellence through the profile and any applied wetting agent (surfactant) will need to be watered in sufficiently to penetrate the affected depth. Often, wetting agents will need to be routinely re-applied to affected areas and the initial application should be made prior to the rootzone becoming dry. Any applied fungicide with labelled efficacy against fairy rings will need to be positioned

sufficiently deep in the profile as to reach the fungal mycelium. Due to the observed mutual inhibition of fairy rings, there is a possibility that removal of the turf and rotovation of the affected rootzone could lead to the fungus effectively killing itself out. There is always the possibility that this approach will result in the occurrence of an increased number of small rings so care should be taken before this is considered!

Leaf Spot

All turfgrasses are susceptible to infection by one or more fungi that cause leaf spot diseases. Most Leaf Spot diseases on cool season turfgrasses are caused by Drechslera species of fungi and foliar infection will result in the development of small, discrete spots or lesions that often have a dark coloured border. The size of the lesions or severity of the overall infection will depend on the relative susceptibility of the host plant and virulence of the specific fungus. Certain diseases, such as Red Leaf Spot, develop only on one grass type (Agrostis) and therefore identification of the affected grass can often help with the identification of the disease. Symptoms can develop at any time of the year but a wet leaf surface is required to enable infection and this often means that symptoms become increasingly apparent during



the spring and autumn months or on shaded turf. Quite often, disease develops rapidly in a dry, thatchy turf that is rewetted due to rainfall or irrigation. The fungi that cause these diseases are capable of living saprophytically in dead plant tissues and previously infected material acts as a good source of inoculum. In certain Leaf Spot infections, the fungus can develop in to the crown

tissue and this will result in a decay or 'melting out' of the affected areas of turf.

Most leaf spot infections will not cause severe damage to the turf and can be effectively managed by application of balanced nutrients to encourage the turf to grow away from the disease and removal of infected clippings when mowing. However, if Leaf Spot is a problem in stadia, for example, where shade and humidity may not be easily managed, application of fungicides may be needed to prevent continued disease development and loss of visual turf quality.

Since the fungi that cause Leaf Spot disease may be relatively host plant specific, the use of different grass types or cultivars can help to reduce disease severity in a given area.

Rhizoctonia Blight (Brown Patch)

This disease, caused by the fungus *Rhizoctonia solani*, is not too common across the UK because high temperatures (20 to 30C) and high humidity (leaf surface wetness) are required for infection and disease development. That said, it may occur during the summer months and has often been seen in stadia environments. All grasses may be affected but the development of symptoms will vary with grass type and height of cut. On close-mown fine turf, tan coloured circular patches may develop a dark, water-soaked appearance and can be anywhere between

5cm and 60cm diameter. On longer swards, the water-soaked plants may collapse and form large areas of blighted turf, usually without a darker border. Patches can increase in size and coalesce if conditions remain favourable and will be spread by movement of infected leaf tissue (mycelium) and mycelial mass (sclerotia). The disease most often develops on turf that has received high levels of nitrogen application but infection seldom develops in to the crown tissues.

The disease incidence can be minimised by maintaining

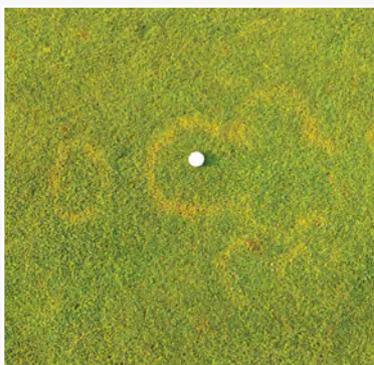


adequate & balanced nutrition and by reducing the period of leaf surface wetness. Fungicides are generally not required to manage this disease.

Brown Ring Patch (Waitea Patch)

The fungus *Waitea circinata* var *circinata* causes the development of tan/yellow - brown rings on cool season turf from late spring to late summer when temperatures reach approx. 16C. It is often referred to as a *Rhizoctonia*-like fungus due to its formal classification and the 'typical' *Rhizoctonia* mycelium appearance under the microscope. The symptoms tend to develop more severely under conditions of low nutrition and on turf maintained under moisture stress. In the UK, symptoms have so far only been seen on *Poa* turf, but *Agrostis* has also been recorded as being susceptible to this disease.

The symptoms appear very similar to those of superficial fairy rings but the typical fairy



Courtesy of Stephen Privett, Arlesford GC

ring smell is not present in turf affected by this disease. The fungal mycelium tends to develop rapidly around the leading edge of the symptoms following overnight incubation of a turf sample under humid conditions.

Disease development can be minimized by maintaining

adequate rootzone moisture and nitrogen input and where the disease is expected (or following initial symptom development) weekly applications of low amounts of nitrogen can significantly reduce severity of the disease. Fungicide applications may be required as part of the management programme and DMI fungicides have been shown (through US research) to provide good long term control although if applied alone, they may take a while to kick in. Applying combined products should provide good initial control of the symptoms and lasting control of disease development.

Yellow Tuft (Downy Mildew)

This disease is caused by the fungus *Sclerophthora macrospora* and is most commonly seen affecting bentgrasses although it often develops in *Poa annua* plants and can affect all cool-season grasses. The most advanced symptoms of this disease are generally expressed in the spring or autumn months as excessive tillering through infected plants, giving the sward a mottled, tufted appearance. Typically, affected plants are chlorotic and have noticeably diminished root development allowing them to be pulled easily from the sward. Symptoms develop rapidly if there is free water around the base of the turf. Poor surface drainage will exacerbate the symptoms. Because *S. macrospora* is an



obligate parasite, the fungus will always remain inside infected plant tissues but will only cause significant symptom expression when environmental conditions are favourable. In the early stages of development, the presence of the fungus may be expressed as small, red-brown marks on the leaf blade with no apparent effect

on tillering and this symptom can be mistaken for Leaf Spot disease. Yellow Tuft is most often seen on close mown fine turf and because fungal activity increases with water availability, areas that tend to sit wet or that are in the path of water movement across a surface, will be first to express the symptoms.

Control of this disease should focus on water management around the base of the turf and through the upper rootzone profile. The severity of the symptoms will increase as water availability increases and therefore, by focusing on improved water management, the symptoms will be reduced. Fungicide application is not necessary.

Rust

Rust diseases are generally caused by fungi in the genus *Puccinia* but some *Uromyces* species of fungi can also cause rust disease in cool-season turf. These fungi are so-called obligate parasites and only develop in living plant cells. For this reason, although the symptoms may appear severe (due to the quantity of spores that the fungus can produce), turf is not likely to be killed as a result of a disease outbreak. Rust fungi are extremely well specialized parasites and may have a life cycle that includes up to 5 different spore types. However, when disease is active in turf, there tends to be a cycling of one spore type which allows



rapid development and spread of the fungus. Disease may develop in all turfgrasses but it is perhaps more common (and important) in *Poa pratensis* and in *Lolium perenne*. Initial symptoms appear as a slight leaf chlorosis but rapidly, small blisters (pustules) will be seen along the leaf blade and these eventually rupture to release their orange

fungal spores. Symptoms begin to develop through the warm, dry summer months and typically show on nutrient and / or moisture stressed turf. The disease can generally be managed effectively by removing clippings and adjusting nutrient and water input. That said, the fungi can develop a specific relationship with their host and individual 'strains' or races of the fungus may develop on a specific grass cultivar. For this reason, including more than one cultivars in area that is prone to Rust infection can help to minimize the development of disease symptoms. Fungicides are rarely necessary to control Rust diseases.

Rapid Blight

This is a relatively new turf disease to affect cool-season grasses and it is caused by an organism that is not a fungus. *Labyrinthula terrestris* is the only known species of the genus *Labyrinthula* that causes disease in terrestrial plants. Other pathogenic species cause disease in marine environments and therefore unsurprisingly, Rapid Blight development in turf is strongly correlated to rootzone salinity. Individual cells of *L. terrestris* are spindle-shaped and colonise plant root and leaf tissues. They cause an initial watersoaking of the plant which may lead to areas of infected turf with general symptoms similar to those of Anthracnose or Microdochium Patch and *Poa* is the most susceptible grass type.

Other grasses including ryegrasses and most bentgrasses may also become badly affected but salt-tolerant bentgrass cultivars and fescues appear to be less susceptible. Depending on the sward composition, height of cut and salinity level, the disease may spread rapidly to kill an entire putting surface in a few days. Symptoms can develop at any time but as rootzones dry out during the summer months, symptoms development can be rapid. Early diagnosis of the symptoms is crucial for the management of this disease because only pyraclostrobin, mancozeb* and trifloxystrobin have so far shown good control (in US trials) and efficacy increases if applied early in disease



Courtesy of David Stansfield Ltd

development. Management of soil and water salinity is important and rainfall remains the best method of control.

*mancozeb is not currently approved for use on Managed Amenity turf in the UK

Plant Parasitic Nematodes

Over the last decade, we have become increasingly aware of the potential problems to turf caused by high populations of plant parasitic nematodes (PPN). PPN are obligate parasites, feeding only on living plant tissues. They have long been recognised as causing damage to warm-season grasses but research has now identified many different species that are frequently present in cool season turf. PPN populations will naturally rise and fall during the year and population growth is strongly affected by temperature. They are able to migrate vertically or horizontally to avoid unfavourable conditions or to locate more productive feeding sites. PPN are aerobic organisms that require a film of water



through which to move and their populations can rapidly build in high sand content rootzones.

PPN can be divided in to either endo-parasites that spend most of their life within plant tissues or ecto-parasites which remain in the rootzone whilst feeding on plant cell nutrients. They may also be migratory or sedentary in their feeding habit and most PPN that affect turfgrasses, do so by

feeding on or within the roots. There are a small number of PPN that colonise the stem base or leaf tissues but little is currently known about relative population damage.

PPN feed by inserting a hollow spear (stylet) in to the plant tissues, introducing compounds to maintain their feeding sites and removing the plant cell content. They can significantly and adversely affect the plants biochemical balance to sustain their parasitic behaviour.

The most damaging PPN are the so-called sedentary endo-parasites known as the Root-knot (*Meloidogyne* spp.), Cyst (*Heterodera* and *Punctodera* spp.) and Root Gall

Plant Parasitic Nematodes Continued...

(Subanguina sp.) nematodes. The Root Gall nematode is largely restricted to infection of Poa species but all grasses are susceptible to infection by the other two. Induced changes in root structure and function directly affect plant growth and development, resulting in a weak sward that is likely to show symptoms of stress. The lesion nematode (Pratylenchus spp.) is a migratory endoparasite

that causes significant damage to root cortical tissues. There are a large number of migratory (and occasional sedentary) ecto-parasites that can feed on turfgrass roots and some can benefit from endo- and ecto-parasitic behaviour. Because most PPN affect water and nutrient uptake, visible turf symptoms often resemble drought or nutrient stress. By maintaining a strong and healthy

sward, the turf is more capable of tolerating the feeding activity of high PPN populations. Recent research has shown that reducing turf stress through biostimulant application, can reduce the damage done by these parasites.

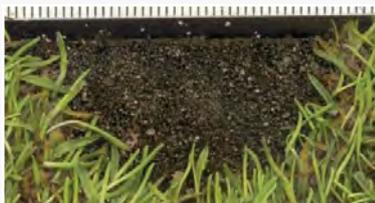
There is presently one product available with approval to control PPNs but several soil amendments have been seen to suppress PPN populations.

Moss

There are several different types of moss that can cause problems in amenity turf, but they generally colonise a weak sward. These are usually scalped, worn, nutrient deficient, drought stressed or wet turfgrass areas.

Mosses belong to a group of plants called Bryophytes which like most plants contain chlorophyll and photosynthesise to facilitate their growth and development. However they do not have typical roots but possess so-called rhizoids that help to anchor them to the ground and take up water directly through their leafy surface. Moss plants don't produce seed but release microscopic spores that can easily be spread across the turf and enter the profile to depth. The vegetative parts of the moss plants can also serve to increase its composition in an infected sward.

Moss can be a problem in turf all year round but its presence in



the sward will be more apparent if turf becomes weak. The silver thread moss *Bryum argenteum* is a common problem on weak or worn turf areas and once in the sward, it can rapidly become established and very difficult to remove. This moss in particular can have a significant and detrimental effect on the visual and playing quality of a close-mown, fine turfgrass surface. Other moss species have a more open growth habit than that of *B. argenteum*, but all moss invasions will change the quality of the playing surface and should be targeted for removal as soon as they are seen.

Effective and long-term control of moss in turf relies heavily on producing a strong sward that will

out-compete the moss plants. It is often said that 'moss invades a problem and then becomes a problem'. Products aimed at weakening the moss plants should be applied when the rootzone is moist and when the moss is actively growing. One to two weeks after application, the moss plants should become darker in colour or show reduced vigour. These weakened plants can be removed by scarification and the sward encouraged to fill in through the thinned areas, thus reducing the conditions favourable for re-establishment of the moss. Since moss rhizoids can typically colonise the upper 20-30mm of the rootzone, deeper scarification will be necessary to remove the moss fragments and reduce its impact on the sward. The upright and compact nature of *B. argenteum* in particular makes this a challenging moss to remove because applied products are not likely to wet / penetrate the plants but be dispersed across their surface.

Managing Turf Disease on Reduced Fungicides

With the withdrawal of curative fungicides and user reports of limited control with some of the new preventative technologies, what does the future look like for the management of turf diseases?

There is no silver bullet, there is no such thing as magic or sunshine in a bottle to solve all your problems. At AGS we believe that by good cultural work, optimising nutritional inputs, maximising the benefits of soil microbiology and increasing soil health we can radically reduce the requirements for fungicide use.

Clipping Yield & Nitrogen Inputs

By using a nitrogen fertility regime that is designed to only produce enough growth to maintain surface smoothness and no more, we can reduce unnecessary growth that slows green speed, increases thatch build up and increases disease incidence. Consider measuring clipping yield to improve accuracy of your nitrogen inputs and ensure you only fertilise when the plant needs it.

Once you know your nitrogen inputs you can use MLSN guidelines to measure other nutritional inputs. Careful measurement of your nutrition programme will not only save money, but will also maximise plant health and reduce reliance on chemical intervention.

MLSN

All our soil samples now offer MLSN values as well as traditional guidelines for your soil. MLSN stands for Minimum Levels of Sustainable Nutrition. These are new guidelines that have been developed to be turf-specific. Traditional guidelines are based on agricultural templates to produce wheat, barley, hay, pasture, etc and research suggests these over-estimate what turfgrass actually needs to perform healthily. These crops are looking to maximise yield – we want to optimise yield and maximise health. Although there are differences in various soil lab extraction methods, we are guided by MLSN principles to ensure we do not over-apply any nutrient without risking deficiencies.

The old guidelines were a target to try and hit between a low and high threshold. The MLSN principle is that if you stay above the MLSN level for each element, then the grass plant will not be deficient in that particular nutrient and applying more of that nutrient will have limited or no effect. MLSN is not a target – just keeping soil levels above the guidelines is sufficient. Please see www.asianturfgrass.com and www.paceturf.org for more information as these are the organisations who developed them and information there is completely independent.

Soil Health

Is your soil working for you? The soil is a massive resource which can be tapped into by all turf managers. By nurturing and promoting a balanced soil microbiological system we can further reduce plant stress and disease. Carbon is the key to feeding beneficial soil microbes. Make sure your 'organic' fertilisers actually have a high carbon input and have been aerobically composted to ensure they offer the greatest boost to microbial populations possible. A high carbon content soil will assist the breakdown of nutrients into a plant-available form and reduce stress. Use very high-quality products such as Sustane organic fertiliser and Essential Plus liquid biostimulant to maintain these high carbon, high microbe soils. High microbial activity will break down thatch and convert the material into humus that will increase C.E.C, improve water regulation and provide a better soil structure.

Microbial Inoculants

Companion is a strain of *Bacillus subtilis* (GB03) that is classified as a PGPR (Plant Growth Promoting Rhizobacteria). This has well researched plant health benefits that increase root growth and fight off pathogens to reduce plant disease susceptibility. Like all soil microbes *Bacillus subtilis* feed on carbon compounds, so to maximise the effect of Companion ensure you combine it with carbon-based fertilisers and biostimulants in your programmes.



Geoff Fenn BSc (Hons)
UK Technical Manager

BioRefine has been developed as a result of a PhD project carried out by Francesca Baylis at Royal Holloway University. Her research identified specific strains of microbiology that promoted the growth of individual turf species. This led to the production of individual strains or consortiums targeted at specific species. The PA (*Poa annua*), LP (*Lolium perenne*) and AF (*Agrostis & Festuca*) will improve plant health and allow consistent growth whilst reducing stress and diseases. The AF is particularly interesting as it offers benefits to fine grasses, but nothing to *Poa annua*. This will be another weapon in the battle to promote fine grass domination on golf greens.

Phosphite

Growth Products TKO Phosphite is well-researched and performs extremely well in independent testing compared to other phosphite products. Incorporating this into your programme alongside more traditional methods such as chelated irons to reduce leaf and surface pH, dew control, shade removal, air movement and a good aeration programme are vital pieces in the turf disease management jigsaw.

Overseeding Strategy

Look at your overseeding programme. Are you getting good long-term results from your seed? It may be prudent to reduce nitrogen inputs at renovation time to allow Bents and Fescues enough space in the sward to germinate and establish if you can withstand the increased recovery period. Is the sward in a condition to grow the new species?

There is little point in sowing Fescue in a poorly draining, thatch surface. It has very little chance of long-term survival. Drainage and thatch reduction must come first.

When overseeding look at using either granular or liquid mycorrhizal treatments to favour the growth of perennial grasses to out-compete annuals. By reducing quick release nitrogen and adding mycorrhizae, species like Bent, Fescue and Ryegrass stand a much better chance of producing a deep-rooted healthy sward that keeps *Poa annua* out.

Use of Fungicides

Turf managers will no longer have the ability to use effective curative fungicides following the withdrawal of iprodione, so understanding which active ingredient to use and when best to apply, will be key to a cost-effective strategy. First use of some of the new SDHI chemistries has not been successful and understanding how these products work is more important than ever. Use the guide on page 54 when dealing with microdochium and always consult your AGS representative if in doubt, who will be able to offer practical help on the correct choice of active ingredient and any beneficial tank mixes that will help keep your turf healthy.

AGS Principles

AGS can help with full agronomic support to not only supply the right products at the right time of year, but also ensure you are not over-applying products in a manner that will cause more issues than it solves. A balanced approach using well-researched methods alongside a solid cultural programme will reap the greatest rewards.

Committees and management must understand that chemical legislation is changing, and the golfing and wider sporting public must adapt and accept that turf managers are professionals who know best how to manage turf in the long term and that quick fixes are never a long term solution.



Successful Programmes

Golf Tournament Prep Programme

Timing	Product mix	Water Rate/ Application Rate	Nozzle Selection/ Spreader Setting	Notes
3 weeks prior	10l/ha Essential + 4l/ha Companion	600l	Coarse nozzles, root drench	Root stimulant, stress reliever & disease prevention
2 weeks prior	20l/ha Classic 18.3.6 + 4l/ha TKO Phosphite	300l	Fine nozzles, foliar target	Slow release nutrition & stress relief
1 week prior	10l/ha HydroSmart	600l	Coarse nozzles, root drench	Moisture control
5 days prior	10l/ha Essential + 4l/ha Companion	600l	Coarse nozzles, root drench	Root stimulant, stress reliever & disease prevention
3 days prior	20l/ha Xtra Iron + 10l/ha pH Reducer	300l	Fine nozzles, foliar	Healthy colour and disease prevention

Thatch Reduction Programme

Timing	Product mix	Water Rate/ Application Rate	Nozzle Selection/ Spreader Setting	Notes
Spring	Sustane 4.6.4	35g/m ²	Accupro Double Pass Cone 7, N	Enhance and build indigenous soil microbial population
June	30l/ha DeThatcher + 10l/ha Essential	600l	Pencil tine before. Coarse nozzles, root drench	Thatch degrading bacteria & enzymes with a microbial food
July	30l/ha DeThatcher + 10l/ha Essential	600l	Pencil tine before. Coarse nozzles, root drench	Thatch degrading bacteria & enzymes with a microbial food
August	30l/ha DeThatcher + 10l/ha Essential	600l	Pencil tine before. Coarse nozzles, root drench	Thatch degrading bacteria & enzymes with a microbial food
September	Sustane 5.2.4	35g/m ²	Accupro Double Pass Cone 7, N	Nutrition, disease prevention and microbial food source

*Maintain healthy nutrition throughout as required with Growth Products slow-release fertilisers

Anthracnose Prevention Programme

Timing	Product mix	Water Rate/ Application Rate	Nozzle Selection/ Spreader Setting	Notes
Early Spring	Sustane 4.6.4	35g/m ²	Accupro Double Pass Cone 7, N	Enhance and build indigenous soil microbial population
May - July	20l/ha K-Builder 7.2.21 every 2 weeks. Add 4l/ha TKO Phosphite monthly.	300l/ha	Fine nozzles, foliar target	Slow-release N, low salt potassium & phosphite all reduce summer turf stress
May - July	10l/ha Essential + 4l/ha Companion monthly	600l/ha	Pencil tine before. Coarse nozzles, root drench	Healthy, balanced microbial food source plus beneficial bacteria reduce diseases
Late July	500g/ha Pure Azoxy	300l/ha	Fine nozzles, foliar target	Preventative fungicide
August	Sustane 5.2.4	35g/m ²	Accupro Double Pass Cone 7, N	Nutrition, disease prevention and microbial food source

*Adjust nutrient inputs to match growth requirements

Overseeding Programme (Bent/Fescue into mixed Poa sward)

Timing	Product mix	Water Rate/ Application Rate	Nozzle Selection/ Spreader Setting	Notes
4 weeks prior	20l/ha Classic 18.3.6+ 0.4l/ha Maintain NT	300l/ha	Fine nozzles, foliar target	Slow release nutrition & growth regulator to slow Poa growth
1 week prior	10l/ha Classic 18.3.6 + 0.4l/ha Maintain NT	300l	Fine nozzles, foliar target	Slow release nutrition & growth regulator to slow Poa growth
Overseeding	Advance Mycorrhizal Inoculant	50g/m ²	Accupro Double Pass Cone 4, N	Beneficial fungi that promotes growth of perennial grasses and not Poa
2 weeks after	BioRefine AF	1 pack/ha	Coarse nozzles, root drench	Beneficial bacteria blended to promote only bent/fescue species
3 weeks after	20l/ha Classic 18.3.6 + 10l/ha Essential	300l/ha	Fine nozzles, foliar target – irrigate once leaf has dried	Slow release nutrition & microbial food source

Autumn Microdochium Prevention Programme

Timing	Product mix	Water Rate/ Application Rate	Nozzle Selection/ Spreader Setting	Notes
Growing Season	Apply only enough nutrition for required growth. Maintain soil health. Reduce thatch build up.			
Late August	Sustane 5.2.4	35g/m ²	Accupro Double Pass Cone 7, N	Nutrition, disease prevention and microbial food source
Sept - Dec Monthly	10l/ha Essential + 8l/ha Companion	600l/ha	Coarse nozzles, root drench	Healthy, balanced microbial food source plus beneficial bacteria reduce diseases
Sept - Oct every 2 weeks	20l/ha Classic 18.3.6 + 2l/ha TKO Phosphite	300l/ha	Fine nozzles, foliar target	Slow-release nutrition & phosphite for plant resistance
Nov - Dec every 2 weeks	10l/ha X-Xtra Iron + 10l/ha pH Reducer	300l/ha	Fine nozzles, foliar target	Iron & citric acid to stop disease spread and dry leaf out
Oct - Dec every 2 weeks	10l/ha AquaRapido	600l/ha	Fine nozzles, foliar target	Stop dew formation that leads to disease ingress

Companion



What is Companion?

Companion is a broad spectrum microbial inoculant designed to improve overall plant growth and increase root mass by protecting the roots and stimulating new growth.

Companion's fast colonizing beneficial rhizobacteria, *Bacillus subtilis* GB03, produce powerful enzymes and auxin-like metabolites which stimulate root growth, increase nutrient uptake and promote turf vigour, and make plants less vulnerable to invading pathogens by increasing the diversity of beneficial microbes.



COMPANION

Multiple Modes of Action

- Directly competes against soil-borne pathogens by quickly colonizing a plant's root hairs with beneficial bacteria, creating a 'shield' to protect plants.
- Produces strong metabolites that make the root hair environment hostile to other bacteria and fungi.
- Creates a highly beneficial Induced Systemic Resistance (ISR) by stimulating the plant's phytohormones and natural immune system to better resist stress.
- Acts as a Plant Growth Promoting Rhizobacterium (PGPR) that stimulates rooting and better overall growth.
- Contains gram-positive (spore forming) bacteria which survive in even extreme environmental conditions including heat and drought, making it a durable and reliable product that turf managers can trust.
- Rich organic solution acts as a food source to help the *Bacillus subtilis* multiply and establish colonies.

Cultural Management

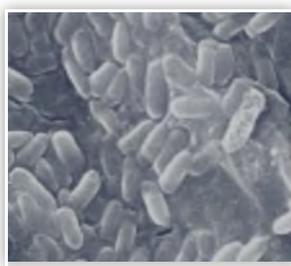
As a 100% natural and organic microbial inoculant, Companion® is an important tool in a turf manager's Integrated Pest Management (IPM) Programme. By populating the soil with these beneficial bacteria, resistant pathogens are less likely to occur as with chemical fungicide products. Companion's multiple and unique modes of action inhibit the pathogen's ability to develop resistance.

Easy to use, store and handle, Companion can be tank mixed with most fertilisers, micronutrients, wetting agents, contact and systemic fungicides.

Companion is most effective when applied prior to the onset of environmental stresses. Can be used in combination and rotation with preventative and curative fungicides.

Pack Size	Application Rate	Water Volume
4ltrs	Foliar 4ltrs/ha	300ltrs/ha
	Root Drench 8ltrs/ha	600ltrs/ha

Usage Period												
Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2.3.2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓



Bacillus subtilis GB03 from Companion® on Root Surface



Roots Colonized By Bacillus subtilis GB03 from Companion®



Heritage Maxx

MAPP No: 14787

Contains 95g/l azoxystrobin

Heritage Maxx has taken the highly effective active ingredient, azoxystrobin, to a new level to consistently deliver exceptional turf quality. The new Maxx formulation provides rapid uptake and longer lasting disease control of seven turf diseases.



- Broad spectrum of disease control – Fusarium, Anthracnose, Take All Patch, Leaf Spot, Fairy Ring, Brown Patch and Rust.
- Faster and more complete uptake by leaf and root
- Active ingredient recycling gives better longevity
- Maximum of 4 applications per year

Pack Size	Application Rate	Water Volume
3ltrs	2.5ltrs/ha	300-400ltrs/ha

Instrata Elite

MAPP No: 17976

Contains 80.3g/l fludioxonil & 80.3g/l difenoconazole

Instrata Elite is a new formulation containing fludioxonil and difenoconazole. This combination of two active ingredients gives reliable turf protection inside and outside the plant. The complimentary actions of the two active ingredients help tackle disease effectively. Fludioxonil targets disease spores in the thatch as well as on the plant. Difenoconazole will fix onto the waxy cuticle and slowly release into the leaf itself to provide ongoing protection.



- Very effective when applied as a preventative
- Rainfast within 30 minutes of application
- Optimum use period in mid/late autumn and early spring
- Some curative action to reduce symptoms when plant is already infected

Pack Size	Application Rate	Water Volume
3ltrs	3ltrs/ha	125-500ltrs/ha

Heritage

MAPP No: 13536

Contains 500g/kg azoxystrobin

Heritage is the only systemic strobilurin fungicide which effectively protects turf as it grows. The active is rapidly taken up by actively growing plants and moves through the xylem system, combating disease infection from within the plant. Heritage is a protectant (preventative) fungicide with early curative and eradicator activity.



- Broad spectrum of disease control – Fusarium, Anthracnose, Take All Patch, Leaf Spot, Fairy Ring, Brown Patch and Rust.
- Systemic movement
- Natural origins – ideal for ITM programmes
- Maximum of 4 applications per year

Pack Size	Application Rate	Water Volume
100g & 500g	500g/ha	300-400ltrs/ha

Inter Tebloxy

MAPP No: 15412

Contains 200g/l tebuconazole and 100g/l trifloxystrobin

Inter Tebloxy is a contact and systemic turf fungicide which both cures and prevents Fusarium Patch (*Microdochium nivale*), Red Thread (*Laetisaria fuciformis*), Anthracnose (*Colletotrichum cereale*), Dollar Spot (*Sclerotinia homoeocarpa*), Leafspot (*Drechslera* spp.) and Rust (*Puccinia* spp).



It can be applied year round to managed amenity turf sites including; golf courses, residential lawns, sports fields, parks, bowls, cricket pitches and municipal grounds.

Particularly effective for *Microdochium nivale* prevention in golf greens when used in the autumn months and applied to clean surfaces, as part of an integrated approach.

- Contact and systemic turf fungicide
- Rapid, long lasting and rainfast in 1 hour
- Controls Leaf Spot and Anthracnose
- Maximum of 2 applications per year

Pack Size	Application Rate	Water Volume
250ml & 1ltr	1ltrs/ha	400-500ltrs/ha

Medallion

MAPP No: 15287

Contains 125g/l fludioxonil

Medallion TL offers an exciting option to provide high levels of disease control and long-lasting results from a modern bio-inspired fungicide. The exciting Contact+ activity of Medallion TL can tackle damaging pathogens on the leaf, thatch and the soil surface.

- New active with outstanding disease control and exceptional long term results.
- Rainfast in one hour
- Bio-inspired by naturally occurring soil organisms which stop fungi developing
- Maximum of 4 applications per year



Pack Size	Application Rate	Water Volume
3ltrs	3ltrs/ha	125-500ltrs/ha

Pan Aquarius

MAPP No: 13018

Contains 500g/kg trifloxystrobin

Pan Aquarius is a highly active, strobilurin fungicide providing preventative and curative control of a broad spectrum of turf diseases.

Utilising a revolutionary mesostemic mode of action, trifloxystrobin controls Fusarium, Red Thread, Leaf Spot, Brown Patch, Take All and Rust in the UK climate.

Very effective in the winter months when growth has slowed, offering up to 56 days longevity.

- Both curative and preventative action
- Highly effective in cool conditions
- Will act immediately on leaf contact due to retentive properties
- Maximum of 2 applications per year



Pack Size	Application Rate	Water Volume
700g	700g/ha	400-500ltrs/ha

Fungicide Tank Mixes

Microdochium prevention: - Maintaining sensible nutrition levels and optimum plant health coming into stress periods will help reduce disease outbreaks. Use Sustane composted organics and high quality biostimulants, such as Essential Plus, to build healthy soils that offer maximum plant health. This will reduce disease infection prior to the high pressure seasons. TKO Phosphite is a well-researched and proven method of microdochium reduction and X-Xtra Iron assists this process with it's very low pH of 1.5 to prevent pathogen populations expanding. Cal Mag Max contains elevated calcium and magnesium for cell wall strength and good winter colour. Fulvic Acid is an organic complexing agent which assists the uptake and movement of products around the leaf - particularly useful in times of low temperature and light when plants struggle to metabolise efficiently.

Microdochium preventative tank mixes:

Mix 1: Summer Stress

Products	Rate	Water Volume	Timing													
			JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC		
Pure Azoxy	500g/ha	300 - 400l/ha														
Companion	4l/ha						✓	✓	✓	✓	✓	✓				
Solunar	20l/ha															

*Labelled for control and prevention of waitea patch, thatch fungus and fairy ring.

Mix 2: All Rounder

Products	Rate	Water Volume	Timing													
			JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC		
Inter Tebloxy	1l/ha	400l/ha														
X-Xtra Iron	20l/ha				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
pH Reducer	20l/ha															

Mix 3: Spring & Autumn

Products	Rate	Water Volume	Timing													
			JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC		
Inter Tebloxy	1l/ha	400 - 500l/ha														
X-Xtra Iron	10l/ha				✓	✓	✓				✓	✓	✓	✓		
pH Reducer	10l/ha															
TKO Phosphite	4l/ha															

Mix 4: Winter Special

Products	Rate	Water Volume	Timing													
			JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC		
Pan Aquarius	700g/ha	400l/ha														
X-Xtra Iron	20l/ha		✓	✓									✓	✓		
pH Reducer	10l/ha															
Fulvic Acid	5l/ha															

Microdochium curative tank mixes:

Mix 5: Cure & Repair

Products	Rate	Water Volume	Timing													
			JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC		
Instrata Elite	3l/ha	400l/ha														
X-Xtra Iron	20l/ha				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Pure Kelp SA	4l/ha															
Ignition	20l/ha															

Anthracnose prevention: - Research suggests that light and frequent top dressing can build protection around the crown of the plant to help prevent serious damage from anthracnose infection. There is also evidence that increasing the potassium content of the leaf tissue significantly reduces anthracnose development. STRI trials showed a significant reduction in disease when Sustane 5-2-4 was applied before the onset of summer stress. Use a combination of cultural top dressing practices combined with the use of targeted low salt fertilisers like Sustane 5-2-4 and Pot Carb Max 0-0-25, to prevent disease developing. Good quality biostimulants such as Essential Plus will always be beneficial in reducing stress, which is a big factor in anthracnose development.

Anthracnose preventative mixes:

Mix 6: Two-pronged defence

Products	Rate	Water Vol	Timing												
			JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
Sustane 5.2.4	35g/m ²	400l/ha				✓	✓	✓	✓	✓	✓				
Azoxystrobin	500g/ha					✓	✓	✓	✓	✓	✓				
Pot Carb Max 0.0.25	30l/ha														

Mix 7: An Essential mix

Products	Rate	Water Volume	Timing												
			JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
Inter Tebloxy	1l/ha	400l/ha				✓	✓	✓	✓	✓	✓				
Essential Plus	20l/ha					✓	✓	✓	✓	✓	✓				

Essential Plus has been found to be highly effective in reducing stress and disease symptoms all year round under UK conditions. Use as part of a structured programme to boost soil microbial populations, feed beneficial fungi and increase the competitiveness of perennial grass species. Field trials have also shown that nematode stress symptoms can be alleviated very quickly with a targeted application of Essential Plus, leading to greener turf and stimulated root growth in as little as one week. Essential Plus is not a nematicide – it improves plant and soil health to create conditions of very low plant stress which enable the plant to naturally fight off pathogens and plant parasitic nematodes.

Leaf Spot Curative mix:

Leaf Spot is associated with leaf wetness and humid atmosphere and is often a problem in stadia where heavy shade and lack of air movement heightens disease pressure. X-Xtra Iron helps prevent injury through a combination of pH reduction and 'drying' the leaf to reduce further spread of infection.

Mix 8: Stadium Special

Products	Rate	Water Volume	Timing												
			JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
Inter Tebloxy	1l/ha	400 - 500l/ha				✓	✓								
X-Xtra Iron	30l/ha		✓	✓	✓	✓	✓				✓	✓	✓	✓	

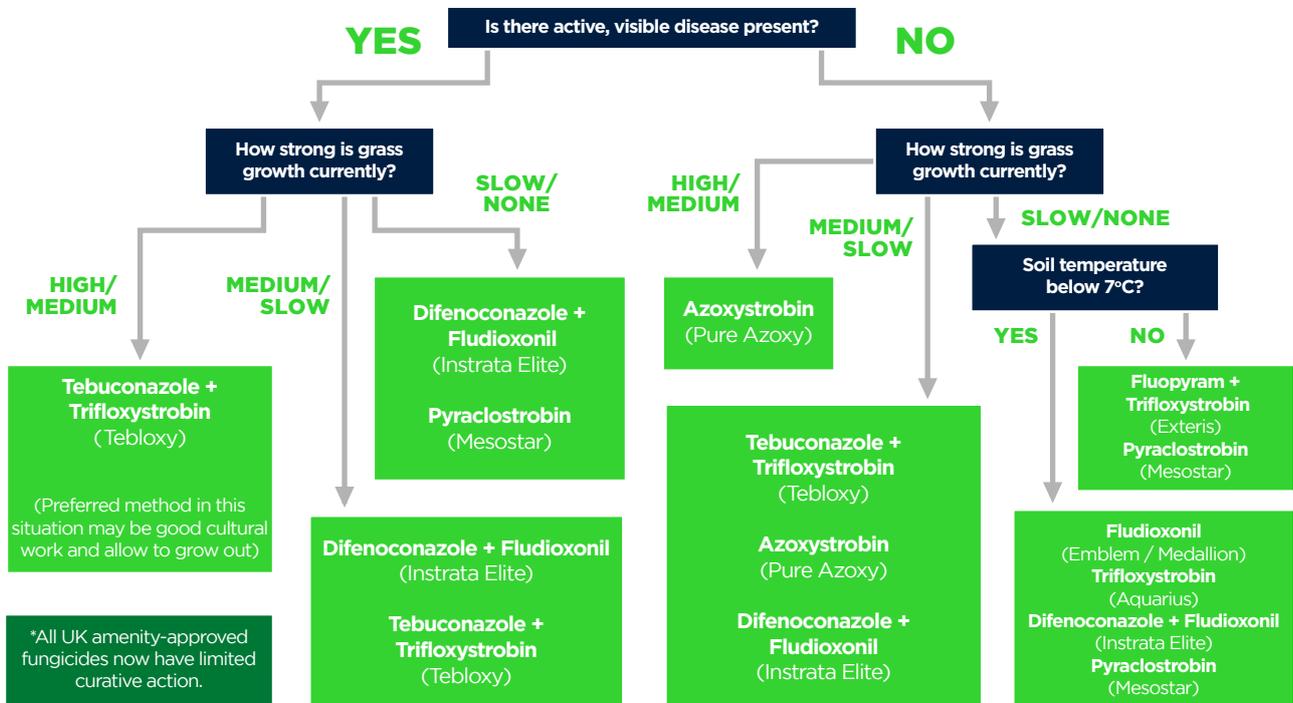
These recommendations are produced in good faith as a guide only. Always read the product label before tank-mixing. It is good practice to jar test any tank mix when used for the first time to ensure it is suitable for your individual circumstances. When a product is used in a mixture not specifically recommended by the product manufacturer, it is at the user's risk. Please speak to your Regional AGS Technical Sales Manager to ensure you are using the best products for your situation.

Plant Protection Product Selector

Fungicide	Mode of Action	Microdochium	Anthr-anose	Dollar Spot	Red Thread	Take-all	Leaf Spot	Brown Patch	Rust	Fairy Ring
Fortitude	Systemic	✓	✓	✓	✓		✓		✓	
Inter Tebloxy	Systemic	✓	✓	✓	✓		✓		✓	
Pan Aquarius	Mesotemic	✓			✓					
Heritage	Systemic	✓	✓			✓	✓	✓	✓	✓
Pure Azoxy	Systemic	✓	✓			✓	✓	✓	✓	✓
Medallion	Contact	✓	✓				✓			
Emblem	Contact	✓	✓				✓			
Mesostar	Mesotemic	✓	✓				✓	✓		

*Always read the product label and follow specific instructions before using any plant protection product

Fungicide Selection Chart for Microdochium



- Initiate an IPM programme to minimise use of fungicides.
- Rotate different fungicide GROUPS to minimise resistance issues.
- This is a guide only. If in doubt, please consult your AGS regional technical representative for the best advice on disease identification, prevention and cure.

Tank Mix Chart

Important: This chart is produced in good faith as a guide only. Always read the product label before tank-mixing. It is good practice to jar test any tank mix when used for the first time to ensure it is suitable for your individual circumstances. When a product is used in a mixture not specifically recommended by the product manufacturer, it is at the user's risk.

CHEMICALS	Classic 18-3-6	TKO Phosphite	Companion	Essential Plus	pH Reducer	Sodium Knockout	BioBoost	K Builder 7-2-21	X-Xtra Iron	Green Speed Si	De Thatcher	Yara Soluble Fertilisers	Yara Liquid Fertilisers	Quick Response 20-3-3	Pot Carb Max 0-0-25	Nitro 30-0-0	Cal Mag Max
Primo Maxx / Maintain	300 ←	300 ←	300 ↑	300* ←	300 ↑	300* ←	X	300 ←	300 ↑	300 ←	300* ←	300 ←	300 ←	300 ←	300 ←	300 ←	300 ←
Relay Turf Elite	300 ↑	300 ↑	X	300* ↑	300 ↑	300* ↑	X	300 ←	300 ↑	X	X	300 ↑	300 ↑	300 ←	300 ←	300 ←	300 ↑
Interfix	300 ↑	300 ↑	X	300* ↑	300 ↑	300* ↑	X	300 ←	300 ↑	X	X	300 ↑	300 ↑	300 ←	300 ←	300 ←	300 ↑
Mogul	X	X	X	X	300 ↑	X	X	X	X	X	X	X	X	X	X	X	X
Banner Maxx	400 ←	400 ↑	400 ↑	400* ↑	400 ↑	400* ↑	X	400 ←	400 ↑	400 ←	400* ←	400 ←	400 ←	300 ←	300 ←	300 ←	300 ↑
Chipco / Iprodione	4-500 ←	4-500 ↑	4-500 ↑	4-500* ↑	4-500 ↑	4-500* ↑	X	4-500 ←	4-500 ↑	4-500 ←	4-500* ←	4-500 ←	4-500 ←	4-500 ←	4-500 ←	4-500 ←	4-500 ←
Instrata Elite	125-500 ←	125-500	125-500	125-500	125-500	125-500*	X	125-500	125-500	125-500	125-500	125-500	125-500	125-500	125-500	125-500	125-500
Heritage Maxx	3-400 ←	3-400 ↑	3-400 ↑	3-400* ↑	3-400 ↑	3-400* ↑	X	3-400 ←	3-400 ↑	3-400 ←	3-400* ←	3-400 ←	3-400 ←	3-400 ←	3-400 ←	3-400 ←	3-400 ←
Medallion	2-500 ←	2-500 ↑	2-500 ↑	2-500* ↑	2-500 ↑	2-500* ↑	X	2-500 ←	2-500 ↑	2-500 ←	2-500* ←	2-500 ←	2-500 ←	2-500 ←	2-500 ←	2-500 ←	2-500 ←
Pan Aquarius	4-500 ←	4-500 ↑	4-500 ↑	4-500* ↑	4-500 ↑	4-500* ↑	X	4-500 ←	4-500 ↑	4-500 ←	4-500* ←	4-500 ←	4-500 ←	4-500 ←	4-500 ←	4-500 ←	4-500 ←
Pure Azoxy	3-400 ←	3-400 ←	3-400 ↑	3-400* ↑	3-400 ↑	3-400* ↑	X	3-400 ←	4-500 ↑	3-400 ←	3-400* ←	3-400 ←	3-400 ←	3-400 ←	3-400 ←	3-400 ←	3-400 ←
Tebloxy	4-500 ←	4-500 ←	4-500 ←	4-500* ←	4-500 ↑	4-500* ↑	X	4-500 ←	4-500 ↑	4-500 ←	4-500* ←	4-500 ←	4-500 ←	4-500 ←	4-500 ←	4-500 ←	4-500 ↑

NUTRITION & BIOSTIMULANTS	Classic 18-3-6	Quick Response 20-3-3	Nitro 30-0-0	TKO Phosphite	Companion	Essential Plus	Cal Mag Max	pH Reducer	Sodium Knockout	BioBoost	K Builder 7-2-21	X-Xtra Iron	Green Speed Si	De Thatcher	Yara Soluble Fertilisers	Yara Liquid Fertilisers	Pot Carb Max 0-0-25
Classic 18-3-6	300 ←	300 ←	300 ←	300 ↑	3-600 ↑	3-600 ↑	300 ↑	300 ↑	3-600* ↑	3-600* ↑	300 ←	300 ↑	300 ←	3-600* ←	3-600 ↑	300 ↑	300 ←
Quick Response 20-3-3	300 ↑	300 ←	300 ↑	300 ↑	3-600 ↑	3-600 ↑	300 ↑	300 ↑	3-600* ↑	3-600* ↑	300 ←	300 ↑	300 ←	3-600* ←	3-600 ↑	300 ↑	300 ←
Nitro 30-0-0	300 ↑	300 ↑	300 ←	300 ↑	3-600 ↑	3-600 ↑	300 ↑	300 ↑	3-600* ↑	3-600* ↑	300 ←	300 ↑	300 ←	3-600* ←	3-600 ↑	300 ↑	300 ←
TKO Phosphite	300 ←	300 ←	300 ←	300 ←	3-600 ↑	3-600* ↑	300 ↑	300 ↑	X	3-600* ↑	300 ←	300 ↑	300 ←	3-600* ←	3-600 ↑	300 ↑	300 ←
Companion	3-600 ←	3-600 ↑	3-600 ↑	3-600 ↑	600 ←	600 ←	3-600 ↑	3-600 ↑	600 ←	X	3-600 ←	3-600 ↑	3-600 ←	600 ←	3-600 ↑	3-600 ↑	3-600 ↑
Essential Plus	3-600* ↑	3-600* ↑	3-600* ↑	3-600* ↑	600 ←	600 ←	3-600* ↑	600 ↑	600 ←	600 ↑	3-600* ↑	3-600* ↑	X	600 ←	3-600* ↑	3-600* ↑	3-600 ←
Cal Mag Max	300 ←	300 ←	300 ←	300 ←	3-600 ↑	3-600 ↑	300 ←	300 ↑	X	300 ↑	3-600 ←	300 ↑	3-600 ←	3-600* ←	300 ←	300 ←	300 ←
pH Reducer	300 ←	300 ←	300 ←	300 ←	3-600 ↑	600 ←	300 ←	600 ←	600 ←	600 ←	300 ←	300 ←	300 ←	600 ←	3-600 ↑	3-600 ↑	3-600 ↑
Sodium Knockout	3-600* ↑	3-600* ↑	3-600* ↑	X	600 ↑	600 ↑	X	600 ↑	600 ←	600 ↑	3-600* ↑	X	X	600 ←	3-600* ↑	3-600* ↑	3-600* ↑
BioBoost	3-600* ↑	3-600* ↑	3-600* ↑	3-600* ↑	X	600 ←	3-600* ↑	600 ←	600 ←	600 ←	3-600* ↑	3-600 ↑	X	X	3-600* ↑	3-600* ↑	3-600* ↑
K Builder 7-2-21	300 ↑	300 ↑	300 ↑	300 ↑	3-600 ↑	3-600* ↑	300 ↑	300 ↑	3-600* ↑	3-600* ↑	300 ←	300 ↑	300 ←	3-600* ←	3-600 ↑	3-600 ↑	300 ←
X-Xtra Iron	300 ←	300 ←	300 ←	300 ←	3-600 ↑	3-600* ↑	300 ←	300 ↑	X	3-600* ↑	300 ←	300 ←	X	3-600* ←	3-600 ↑	3-600 ↑	300 ←
Green Speed Si	300 ↑	300 ↑	300 ↑	300 ↑	3-600 ↑	X	300 ↑	300 ↑	X	X	300 ←	X	600 ←	X	X	X	X
De Thatcher	3-600* ↑	3-600* ↑	3-600* ↑	3-600* ↑	600 ↑	600 ↑	3-600* ↑	600 ↑	600 ↑	X	3-600* ↑	3-600* ↑	X	600 ←	3-600* ↑	3-600* ↑	3-600* ↑
Yara Soluble Fertilisers	3-600 ←	3-600 ←	3-600 ←	3-600 ←	3-600 ↑	3-600* ↑	3-600 ↑	3-600 ↑	3-600* ↑	3-600* ↑	3-600 ←	3-600 ↑	X	3-600* ←	3-600 ←	3-600 ←	3-600 ←
Yara Liquid Fertilisers	3-600 ←	3-600 ←	3-600 ←	3-600 ←	3-600 ↑	3-600* ↑	3-600 ↑	3-600 ↑	3-600* ↑	3-600* ↑	3-600 ←	3-600 ↑	X	3-600* ←	3-600 ←	3-600 ←	3-600 ←
Pot Carb Max 0-0-25	300 ↑	300 ↑	300 ↑	300 ↑	3-600 ↑	3-600 ↑	300 ↑	3-600 ↑	3-600* ↑	3-600* ↑	300 ↑	300 ↑	X	3-600* ←	3-600 ↑	3-600 ↑	3-600 ←

400 Can be tank-mixed at 400l/ha water volume, **400*** Can be tank-mixed at 400l/ha water volume, but there is target incompatibility (soil-target product mixed with leaf-target product), **2-500** Can be tank-mixed at 2-500l/ha water volume, but products should be applied at different soil temperatures/climate/plant life cycle, etc, **X** Do not tank-mix, **↑** Add the product on the upper row first, **←** Add the product on the side column first.



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6. SELECTIVE HERBICIDES

Featured Products:

- Relay Turf Elite
- Depitox
- Interfix
- Mogul
- Jewel
- Compitox Plus
- Vitax RTU

Selective Herbicide Usage Guide

1. Timing

Best results will always be achieved when weeds are actively growing, with good levels of soil moisture and the forecast suggesting good growth for the next few days ahead. This is so the weed takes in the chemical and moves it all round the leaves and roots for a complete kill. The best kill rate will be achieved when plants are not well-established – ideally from the stage between the first 2 true leaves until the 6-leaf stage.

Once weeds get beyond this maturity they become progressively harder to eradicate and multiple applications are required.

2. Water Quality

Water usually makes up over 90% of the spray that is applied and has a huge effect on herbicide efficacy. Amine herbicides (such as dicamba, 2,4-D, MCPA & mecoprop-p) are particularly affected. Amines can react with Calcium and Magnesium in high pH hard water and fertilisers. High pH and hard water act together to reduce herbicide effectiveness. High pH causes more of the herbicide to dissociate while high concentrations of cations bind with the dissociated herbicide to reduce its effectiveness.

You can effectively lose a huge amount of active ingredient if mixing with high pH, high bicarbonate water. pH and bicarbonates can be reduced using Growth Products pH Reducer – slowly add pH Reducer

to the tank (60ml per 400l to start) and test until a pH of 6 is reached. A floating pH tester can be supplied from the Turf-Tec tools range and can potentially save thousands by preventing binding up of active ingredients in the tank and may well be saving second and third applications.

3. Adjuvants

Using a good quality adjuvant with selective herbicides has been shown in research to increase chemical absorption by 15-20%. Driftmaster not only helps the chemical penetrate the leaf cuticle to enhance efficacy but helps prevent spray drift too. Driftmaster is cost-effective and increases uptake of active ingredients, reduces drift, prevents foaming and maximises your spray to prevent repeat applications.

4. Correct choice of product

Firstly, make sure the product is approved to kill the weeds specified. The selective herbicide product selector on page 64 of the brochure gives a list of the approved chemicals.

When there is a mix of weeds on a site a tank mix of products is often the best way to go to ensure the best kill.

A few suggested mixes are below:

“Broad Spectrum”

4l/ha Relay Turf Elite

1.2l/ha Optica/Duplosan

1.5l/ha Depitox

4 litres Driftmaster

Effective against 50 common turfgrass weeds.

“Daisies and Clover”

2.4l/ha Optica/Duplosan

3.3l/ha Depitox

4 litres Driftmaster

A cheap and effective mix against two of the most common turf weeds. Also effective against over 30 other turfgrass weeds.

“Tough to Kill”

4l/ha Interfix

2.8l/ha Depitox

4 litres Driftmaster

Effective against Yellow Suckling Clover, Pearlwort, Yarrow and over 20 other turf weeds.

Relay Turf Elite

MAPP No: 17192

Contains 19.5g/l dicamba, 245g/l MCPA and 43.3g/l mecoprop-P

Relay Turf Elite is a market leading, broad spectrum, selective herbicide for turf and professional lawn care.

- Broad spectrum selective weed control
- Mecoprop-P content for clover control
- Low application rate



Pack Size	Application Rate	Water Volume
5ltr	5ltrs/ha	200ltrs/ha

Depitox

MAPP No: 13258

Contains 500g/l 2,4-D as the dimethylamine salt

Depitox is a single active, selective herbicide controlling a host of key weeds in general turf and amenity grassland.

- Low application rate
- Controls key turf weeds including plantain and creeping buttercup
- Tank mixable with Relay Turf Elite



Pack Size	Application Rate	Water Volume
5ltr	2.8ltrs/ha	200-700ltrs/ha

Interfix

MAPP No: 15762

Contains 20g/l clopyralid, 40g/l fluroxypyr and 200g/l MCPA

Interfix is a highly effective selective herbicide for use on all sports turf areas including golf greens. Utilising 3 modern active ingredients - fluroxypyr, clopyralid and MCPA, Interfix kills a broad range of weeds via systemic and residual action.

- Micro-emulsion technology increases uptake
- Controls a wide range of weeds, including Daisy and Chickweed
- Can be used on young grass only two months after sowing



Pack Size	Application Rate	Water Volume
5ltr	4ltrs/ha	200-700ltrs/ha

Mogul

MAPP No: 17289

Contains 144g/l fluroxpyr, 80g/l clopyralid and 2.5g/l florasulam

Mogul is a systemic post emergence herbicide combining three modern active ingredients and two different modes of action. Mogul rapidly enters target weeds travelling through the whole plant to give complete weed destruction.

- Selective, systemic post emergence herbicide
- Rainfast in one hour
- Flexible application rates



Pack Size	Application Rate	Water Volume
2ltr	1-2ltrs/ha	200ltrs/ha

Compitox Plus

MAPP No: 14390

Contains 600g /l mecoprop-P

Compitox is a selective herbicide for the control of a wide range of broad-leaved weeds in amenity grassland and managed amenity turf.

The active ingredient is absorbed by both the leaf and roots and is rapidly translocated throughout the target weed.

- Can be tank-mixed with Depitox and Relay Turf Elite for broader spectrum control
- Works in cooler conditions
- Excellent clover control



Pack Size	Application Rate	Water Volume
10ltr	1.5-2.4ltrs/ha	200-400ltrs/ha

Vitax Lawn Clear RTU

MAPP No: 15195

Contains: 6.3g/l clopyralid, 27g/l 2,4-D and 31.5g MCPA

Vitax lawn clear RTU is a powerful weed treatment in an easy to use, pre-mixed solution for application to all areas of fine and coarse turf.

- Controls clover, dandelion, daisy, buttercup and plantain
- Suitable for localised application to golf greens
- Regular use through the growing season reduces the need for blanket application
- RTU - simply pump trigger and adjust nozzle accordingly



Pack Size
12 x 750mls

Herbicide Guide	Depitox	Jewel	Mogul	Relay Turf Elite	Interfix	Compitox Plus
Autumn Hawkbit	✓					
Bird's foot-trefoil		✓	✓			
Black Medick			✓			
Bristly Oxtongue		✓	✓			
Cat's ear	✓		✓			
Charlock				✓		✓
Cleavers				✓		✓
Common Chickweed	✓			✓		✓
Common Mouse-ear	✓		✓		✓	✓
Common Sorrel	✓		✓			
Creeping Buttercup	✓	✓	✓	✓	✓	✓
Creeping Cinquefoil		✓	✓			
Daisy	✓	✓	✓		✓	
Dandelion	✓		✓		✓	
Docks	✓					✓
Fat Hen				✓		✓
Field Penny-cress				✓		✓
Forget-me-not				✓		✓
Groundsel				✓		✓
Heath Bedstraw	✓					
Hogweed						
Knotgrass				✓	✓	✓
Lesser Celandine	✓					
Mayweed						✓
Mouse-ear Hawkweed	✓					
Nettle						✓
Pearlwort	✓					
Plantain spp	✓	✓	✓	✓	✓	✓
Ragwort	✓					
Rough Hawkbit	✓					
Selfheal	✓					
Shepherd's-purse				✓		✓
Silverweed						
Slender Speedwell		✓		✓	✓	
Smooth Hawk's-Beard	✓					
Sow				✓		✓
Thistle	✓					✓
Thrift	✓					
White Clover		✓	✓	✓	✓	
Yarrow	✓				✓	
Yellow Suckling Clover					✓	

This table is a guide only. Please consult your regional AGS technical representative for the best advice on rates, timing of application, tank mixing and adjuvant options.





7. TOTAL HERBICIDES

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Featured Products:

- Roundup Pro Biactive
- Pistol
- Paradise
- Gallup 360
- Knapsack Rate Guide

Roundup Pro Biactive

MAPP No: 10330

Contains 360g/l glyphosate

Roundup Pro contains two Biactivators in addition to the 360g/l glyphosate formulation. These adjuvants provide increased retention, longer period of uptake and increased penetration, ensuring that more glyphosate reaches the site of action.

- Unique bioactive formulation gets more glyphosate into the plant
- Superior long term control of difficult perennial weeds
- Degraded by micro-organisms/microbes in the soil, excellent rainfastness



Pack Size	Application Rate	Water Volume
5ltr	5-10ltrs/ha	250ltrs/ha

Pistol

MAPP No: 12173

Contains 40g/l diflufenican and 250g/l glyphosate

Pistol is a barrier acting non-selective herbicide for the control of annual and perennial weeds and grasses in amenity situations. It will give initial 'knockdown' and residual control for up to six months.

- Long lasting - prevents germination for up to 6 months
- Controls a wide range of weeds
- Rainfast in 1 hour



Pack Size	Application Rate	Water Volume
5ltr	4.5ltrs/ha	200-400ltrs/ha

Paradise

MAPP No: 14504

Contains 25% w/w flazasulfuron

Paradise is a residual, non-selective herbicide popular with contractors for weed control on industrial areas and landscaped sites that include; natural surfaces not intended to bear vegetation, and permeable surfaces overlying soil and railway ballast.

- Can be tank mixed with glyphosate
- Long term residual material
- Convenient, water dispersible granule



Pack Size	Application Rate	Water Volume
150g	150g/ha	200-600ltrs/ha

Gallup 360

MAPP No: 16489

Contains 360g/l glyphosate

Gallup 360 is a non-selective herbicide for the control of grasses and broad-leaved weeds in an amenity situation. The product is absorbed by the foliage and translocated throughout the plant and root systems.

- Non-Hazardous (Clean Label) formulation
- Inactivated on contact with soil – no residual build up in profile
- Visible symptoms of uptake within 3-7 days



Pack Size	Application Rate	Water Volume
5, 20ltr	1.5-5ltrs/ha	80-250ltrs/ha

New Way Weed Spray

MAPP No: 12328

Contains 240g/l acetic acid

New Way Weed Spray is the first natural based non-selective herbicide for amenity and industrial weed control in the UK. Containing a high concentration of acetic acid, it is extremely fast and is active against most soft plant tissue. It controls grasses, broad leaved weeds and moss.

- Contains acetic acid – one of only two active ingredients approved for hard surfaces
- Controls moss
- Fast acting – weeds die 1 to 2 days after treatment



Pack Size	Application Rate
5ltr	1 part to 3 parts water



Knapsack Rate Guide

The table below is for guidance only and shows the amount of chemical required for knapsack sprayers of different capacities.

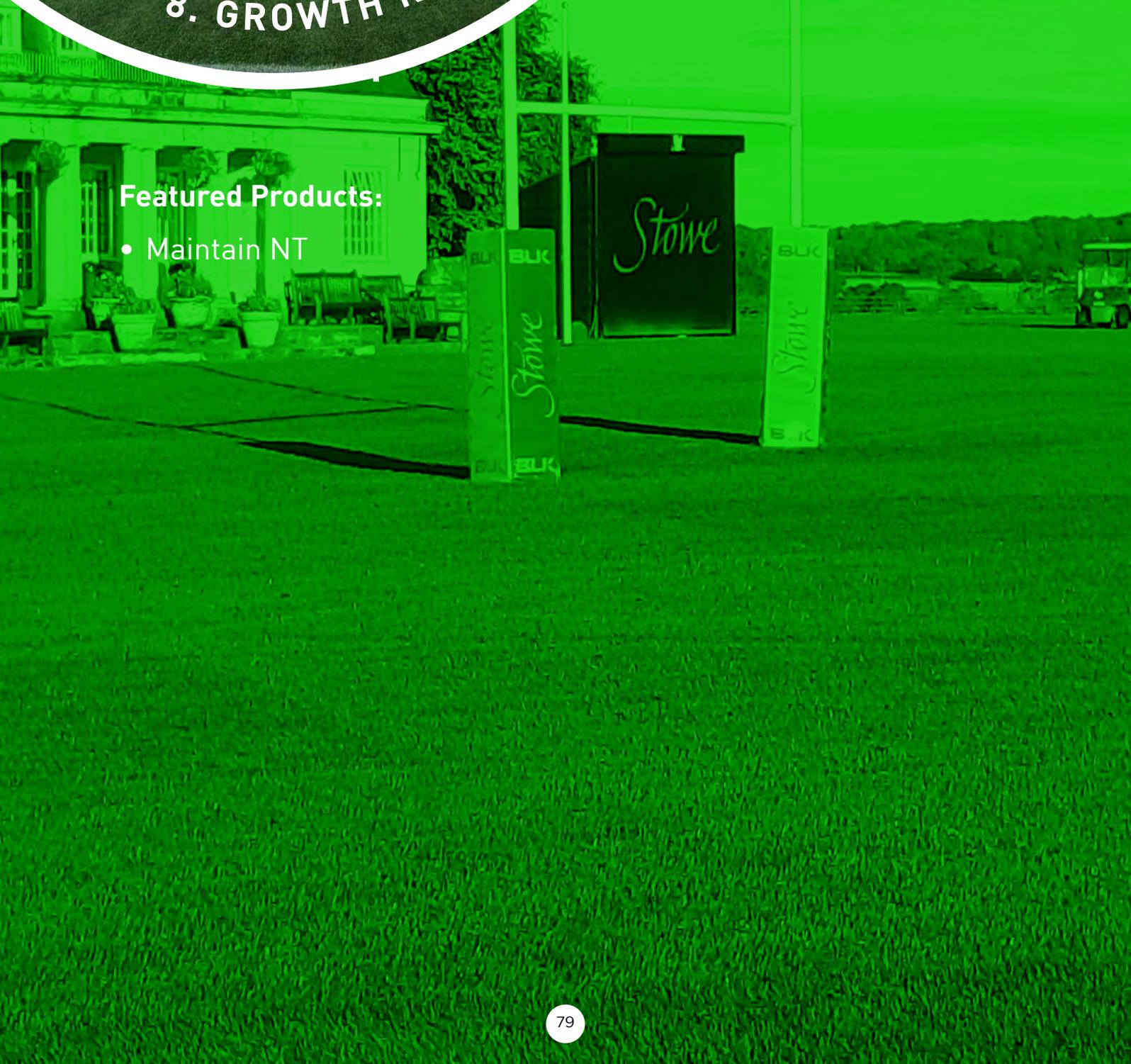
Knapsack sprayer size	5 Ltr	10 Ltr	15 Ltr	20 Ltr
Area sprayed	250 m ²	500m ²	750m ²	1000m ²
Dose rate l/ha				
1.0	25 ml	50 ml	75 ml	100 ml
1.25	31 ml	62 ml	94 ml	125 ml
2.5	62 ml	125 ml	187 ml	250 ml
2.8	70 ml	140 ml	210 ml	280 ml
3.3	82 ml	165 ml	247 ml	330 ml
4.2	105 ml	210 ml	375 ml	500 ml
5.0	125 ml	250 ml	375 ml	500 ml
5.5	138 ml	275 ml	413 ml	550 ml
7.0	175 ml	350 ml	525 ml	700 ml





8. GROWTH REGULATORS

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Featured Products:

- Maintain NT

Maintain NT

MAPP No: 18081

Contains 120g/l trinexapac-ethyl

Maintain is a plant growth regulator that reduces vertical growth producing a more compact sward, enhancing playing surface and reducing yield. Not only does Maintain inhibit vertical growth, it also diverts plant growth laterally and into the root system to produce increased food reserves and improve anchoring. This process produces a thicker, healthier sward that enhances the turf's ability to withstand weather extremities, traffic and weed ingress.



Maintain NT is tank-mixable with a range of soluble and liquid fertilisers, for use on a range of turf situations.

- Reduces mowing frequency
- Produces a more compact sward, improving playing surface
- Enhanced colour and visual appearance
- Increases root mass and lateral growth

Pack Size	Application Rate	Water Volume
5ltr	0.2-3.2ltrs/ha	200-500ltrs/ha





9. WETTING AGENTS, SOIL PENETRANTS,
SPRAY AIDS & ADJUVANTS

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Featured Products:

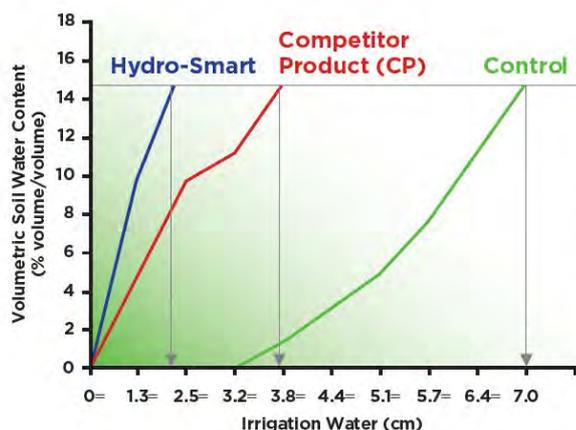
- Growth Products HydroSmart
- Aquatrols
- AquaRapido
- Advance



Growth Products HydroSmart

A unique combination surfactant to both prevent and cure hydrophobic soil. HydroSmart optimises soil moisture to maximise plant health and turf performance. Available in liquid, granular and hose-end pellets.

- A high quality new generation wetting agent containing both penetrant and multi block co-polymer technology to cure and prevent localised dry patch issues.
- By maintaining correct moisture balance in the soil, plant health is maximised and results in strong healthy turf resilient to stress and disease.
- Gives an improved air to water ratio to maximise oxygen supply to the soil, increase rooting and soil microbiological activity leading to enhanced thatch breakdown and reduced plant stress.
- Extremely safe non-phytotoxic formulation due to its high quality molecular construction which will not damage plant cells.
- Hydro-Smart is proven in scientific trials to reduce irrigation requirements compared to competitor products:



— Hydro-Smart 67% water saving
— CP 46% water saving
— Control



Product	Pack Size	Rate	Longevity
Hydro-Smart Liquid	10ltr	5-20ltr/ha	500-900ltr/ha
Hydro-Smart Granules	20kg	30g/m ²	Water in after application
Hydro-Smart Pellets	6x250g	4-7 greens per pellet avg.	Apply at 6 -8.5 bar

Usage Period

Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Hydro-Smart		✓	✓	✓	✓	✓	✓	✓	✓	✓		

Issue	Suggested Tank Mix (per ha)
Monthly programme of optimizing soil moisture and minimizing dry patch.	Apply monthly at 5-15 l/ha depending on dry patch severity at individual sites. Apply first application early in the season before any drought stress occurs for maximum benefit.
Re-wetting hydrophobic soil to eliminate dry patch and increase grass health.	Apply 20l/ha initially to re-wet the soil and then drop back to 10-15l/ha while the possibility of drought stress remains. Always begin a programmed approach early in the season on problem soils.
Maintaining correct soil moisture on hard-to-spray areas (bunker banks, etc.) or where no sprayer is available.	Apply Hydro-Smart Granular at 30g/m ² when there is adequate soil moisture before drought stress appears (March/April). Re-apply 3 months later to maintain correct soil moisture balance. (June/July).



Advance Wet-X

A concentrated wetting agent specially formulated for use on all fine turf for the prevention and alleviation of hydrophobic conditions in all turf grass situations. Ideal for use on large areas such as football training grounds and fairways, but safe to use on golf and bowling greens.



Product	Pack Size	Rate	Water Volume
Wet-X	5l & 200l drums	10l/ha	600 - 1000 ltrs/ha

Usage Period

Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Wet-X	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Advance HydroForce

Utilising market-leading surfactant research, HydroForce is based on non-ionic surfactant reverse-block co-polymer technology. Ideal for programmed use on fine turf and sports pitches. Can be tank-mixed with many soil-targeted products such as seaweeds, etc. Safe to use with no scorch.



Product	Pack Size	Rate	Water Volume
HydroForce	5l, 20l & 200l drums	10-40l/ha	400 - 800 ltrs/ha

Usage Period

Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
HydroForce		✓	✓	✓	✓	✓	✓	✓	✓			

Advance InfloForce

An economic all-round wetting agent for fairways and sports pitches. InfloForce aids penetration of water through the surface and aids the even distribution of plant-available moisture throughout the rootzone. Acts as a penetrant in winter while preventing hydrophobicity in summer.



Product	Pack Size	Rate	Water Volume
InfloForce	20l & 200l drums	10-20l/ha	200 - 800 ltrs/ha

Usage Period

Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
InfloForce	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Revolution

Unique technology extends turf natural antioxidant activity and significantly increases stress tolerance by balancing air to water ratios in the soil.

- Balances air to water ratio in the soil
- Increases turf resilience and stress tolerance
- Increases chlorophyll production for consistent colour



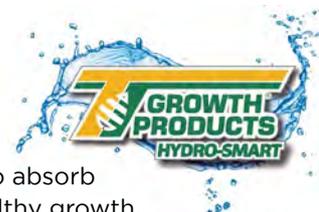
Pack Size	Application Rate	Water Volume
10, 208 & 1022ltr	19ltrs/ha	800ltrs/ha

Hydro Smart Irrigation Tank Tablet

A 3kg large tablet for addition to irrigation tanks. The tablets will dissolve slowly and uniformly, reducing the surface tension of applied water.

HydroSmart's unique dual action will improve applied irrigation water's ability to absorb into the rootzone evenly, giving reduced localised dry patch and promoting healthy growth.

- Increases the wetting power of irrigation water
- Tablets dissolve uniformly and do not break up or disintegrate
- 100% surfactant tablet - no binders



Pack Size	Application Rate	Water Volume
3kg tablet	Single tablet per hectare	N/A





AGS is proud to supply the full range of innovative Aquatrols products such as industry-leading surfactants, Revolution and Zipline. In addition to the premium water management technology, Aquatrols have developed the cutting edge bionutritional Attain and a complete range of nutritional liquids.

For all turf situations, there are solutions available in the Aquatrols range to provide optimum playing surfaces, for all sports.

Attain

Attain, powered by AquaVita™ Technology is a highly refined proprietary bio-nutritional formulation containing both compost and kelp solution bio-extracts.

Specifically designed for professional turf managers, Attain is the future of organics, derived from natural sources. This unique bio-extraction process promotes optimal plant and soil health for all turf types, including greens, tees, fairways, and sports turf.

Pack Size	Application Rate	Water Volume
10 or 110 ltr	10l/ha	300 - 600l/ha

Zipline

Zipline powered by AquaVita™ is a soil surfactant that contains Aquatrols' cutting edge, proprietary technology specifically designed to aid turf care professionals to consistently deliver Fast, Firm, Fine Turf with soil resource enhancement.

Pack Size	Application Rate	Water Volume
10l & 110l drum	6.5 - 25.5l/ha	190 - 800l/ha

Aqueduct Flex Granular

Aqueduct Flex provides rapid recovery of stressed turf, with visible results in as little as 3 days when applied at the treatment rate. Aqueduct Flex also provides up to 30-day protection against the development of localized dry spot when applied on a monthly basis.

Aqueduct Flex is safe to use on all turf varieties and areas, including golf course greens, tees, fairways, sports pitches and residential lawns. It can also be used on ornamental gardens, landscapes, trees, and shrubs.

Pack Size	Application Rate
20kg	0.5 - 1.25 kg/100 m ²

Surfactant	Nutrition
Revolution	CalSea Extra
Zipline	Complete 30.7.22
Firmway	NK Special 31.0.26
Fifty 90	Potash Plus 2.5.0.25
Primer Select	Spring & Summer 36.0.12
Dispatch Sprayable	Premium N 35.0.0
Aqueduct	Super Nitrogen 38.0.0
Aqueduct Flex	Premium K 0.0.25

Envy

Envy is a green pigment specifically designed for turfgrass to give a natural looking green colour whilst both protecting turf from harmful UV rays and maximising PAR (photosynthetically active radiation) during low light periods to improve turf health. Light has a huge effect upon grass plant growth and health; too little or too much can have negative effects. Envy helps protect the plant from high stress periods in summer months and helps maximise available PAR in low-light periods of the year when plant growth is slow.



- Improved natural-looking aesthetic appearance.
- Improved pick-up of growth in spring to help reduce early-season differential growth between different species.
- Improves appearance of turf without 'forcing' growth with excess nitrogen.
- Up to 2 months longevity out of growing season.

Product	Pack Size	Rate	Water Volume
Envy	1 ltr	1ltr/ha	300- 600 ltrs/ha

Usage Period

Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Envy	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

BioCure



Designed to aid in spring, summer and autumn recovery and for improvements of fairways, tees, surrounds and outfield areas. An all-round wetting agent designed to penetrate the soil, re-wet and spread moisture evenly throughout the rootzone. Combined with this advanced wetting agent is a full biostimulant package to aid establishing new grass root and shoot growth. Chelated iron and magnesium combine to boost grass colour, while carbohydrates and amino acids give great recovery to stressed turf.



- Help fairways infill and recover from dry, hot summers and/or cold, wet winters.
- Aid with the establishment of new grass when overseeding fairways, cricket pitches, outfields, sports pitches and all other outfield surfaces.
- Ensure early season rainfall will be absorbed into the soil and distributed evenly allowing healthy growth.
- Keep fairways and sports pitches healthy all summer long with a unique, high quality biostimulant/wetting agent combination.

Product	Pack Size	Rate	Water Volume
Advance BioCure	200 ltrs	20ltr/ha	400 - 800 ltrs/ha

Usage Period

Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Advance BioCure			✓	✓	✓	✓	✓	✓	✓	✓		

Growth Products Hydro-Max



Hydro-Max is a natural wetting agent and soil penetrant derived from the Mohave Desert Yucca plant to optimise water content in sports turf soils. Hydro-Max can be mixed with N-P-K fertilisers to improve foliar uptake and is environmentally friendly and safe for soil microbes. It is non-phytotoxic and can be applied even in hot, dry weather.



- Natural wetting agent
- Added 2% Humic Acid
- Tank-mixable with herbicides, fungicides and all nutrition
- Alleviates localised dry spot
- Helps leach salts

Product	Pack Size	Rate	Water Volume
Hydro-Max	10ltr	10l/ha	600 - 800ltrs/ha

Usage Period

Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Hydro-Max			✓	✓	✓	✓	✓	✓	✓	✓		

Growth Products HydroFlo

A next-generation penetrant surfactant to efficiently move excess surface moisture down through the soil profile. Increase oxygen in the upper rootzone and firm up surfaces during periods of wet weather using Hydro-Flo's unique action.

Advanced surfactant's and penetrants reduce the surface tension of water to allow fast removal of surface water and even distribution of moisture throughout the profile.



- Promotes even distribution of soil moisture throughout the entire soil profile rather than simply removing surface water like competitor products.
- Extremely safe non-phytotoxic formulation due to its high quality molecular construction which will not damage plant cells.

Product	Pack Size	Rate	Water Volume
Hydro-Flo	10ltr	5-10ltrs/ha	500-700ltrs/ha

Usage Period

Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
HydroFlo	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Driftmaster

A combined drift reducer, adjuvant, anti-foam agent and pH buffer that enhances the efficacy of all your spraying operations. By reducing spray drift you target only the areas you need, minimising waste and environmental pollution. Driftmaster produces a more uniform droplet pattern for even and accurate application combined with increased leaf absorption to ensure higher product efficacy and reduced overall costs.

- Reduces drift by 65-70%
- Increases pesticide absorption into the leaf by up to 10%
- Prevents lock up of pesticide active ingredients in hard water areas

Pack Size	Application Rate
5ltr	0.5-1ltr per 100ltrs water



AQUARAPIDO™

Moves Water Fast



AquaRapido

A highly concentrated surfactant designed to aid the penetration of water through turf surfaces with unrivaled dew suppression. AquaRapido draws water from the soil surface and moves through the profile, ensuring you can keep your facility open through wet periods. Due to its penetrative nature, AquaRapido can be applied in light drizzle or when rain is forecast, providing a much bigger spraying window when compared to competing dew control products.

Prevents dew formation for up to 21 days in UK climate and used extensively in disease prevention strategies.

- Rapid surface dry down and standing water reduction
- Unrivaled dew suppression longevity
- Key tool in disease prevention strategies
- Reduced run-off on sloped areas
- Compatible with root targeted bio-stimulants

Product	Pack Size	Rate	Water Volume
AquaRapido	20 ltr	5-10ltrs/ha	600 ltrs/ha

Usage Period

Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
AquaRapido	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓



Penterra

Penterra is an effective soil penetrant and soil surfactant product for addressing hydrophobic profiles and horizons. Penterra keeps soils from locking up, aggregates clay soils, improves soil structure and allows water and oxygen to better reach plant roots by reducing the surface tension between the water and the soil, while improving the growth and activity of aerobic micro-organisms necessary for a healthy soil environment. It has a beneficial secondary effect on LDS (Localized Dry Spot), so you are adding long term soil management to the turf and plants to make them healthier and increase its disease tolerance.



Product	Pack Size	Rate	Water Volume
Penterra	10ltr	1.6-4ltr/ha	300-600 ltrs/ha

Usage Period

Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Penterra	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Blue Spray Plus

Blue Spray Plus is a superior, efficient and accurate visual application colourant for professionally managed turf. Blue Spray Plus is 90% dye with no dispersing aids, fillers or unnecessary surfactants.

- Higher pigment load – 10-20% more than competitive colourants, lowering usage rates
- Inert, so will not react with commonly used tank mix products
- Cost effective



Pack Size	Application Rate
10ltr	100-150mls per 200ltr

All Clear Extra

All Clear Extra® is a specially formulated liquid sprayer cleaner which removes pesticide deposits and other debris, including oily substances, from tanks, booms, hoses, filters and nozzles.

- Won't block filters and nozzles
- High pH neutralizes organic acids
- Contains corrosion inhibitors to protect equipment



Pack Size	Application Rate
5ltr	500ml per 100ltr of water

H2Pro DewSmart

H2Pro DewSmart is a newly formulated dew dispersant product for turf grass areas. It is designed to prevent or reduce the formation of dew on the grass leaf. The formulation contains specifically selected sticking and spreading surfactants that bond to the leaf surface and prevent moisture droplets from forming. Keeping dew from the leaf helps reduce incidence of disease by preventing the spread of pathogenic fungal spores and reduce formation of guttation fluid which acts as a fungal food source.



- 3 - 4 week longevity in ideal conditions (see directions for use)
- When used as part of an integrated disease management programme DewSmart can help reduce the risk of disease attack
- Dew removal has been found to help promote higher levels of turf vigour
- Reduces the need for regular early morning switching of dew from greens
- Specially formulated to avoid scorch

Pack Size	Application Rate	Water Volume
10ltr	10ltrs/ha	300-400ltrs/ha

Usage Period												
Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
DewSmart	✓	✓	✓							✓	✓	✓

No Foam

No Foam is a superior concentration of de-foaming agents formulated to give fast, effective and economical control of foaming during spray tank filling. Foaming can considerably slow down the filling process, lead to loss of product and leave residues on the tank walls.



- Ensures accuracy by allowing accurate measuring and filling
- Use as a preventative or curative
- Supplied in ready to use 1 litre packs

Product	Pack Size	Rate
No Foam	1 ltr	10-25ml per 100l of spray

Trail Tracks

Trail Tracks assists the sprayer operator by clearly indicating the line of travel needed to ensure all ground is covered without misses or overlaps. Trail Tracks from De Sangosse is a superior spray bout marker that produces a high quality, thick-bodied long lasting foam.



- Advanced bout marker giving long lasting and clearly visible white foam.
- Safe on all turf
- Can be used with all water types

Pack Size	Application Rate
3ltr	10ml per ltr



10. SOIL & LAKE TREATMENTS

0118 3914540
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Featured Products:

- Advance Zeolite Range
- Advance Greens Gypsum
- Advance Caligreen
- Sodium Knockout
- pH Reducer

Advance Zeolite Range



Advance zeolite amendment is a naturally occurring non-toxic mineral rock of volcanic origin. It has the ability to absorb and retain water and via its unique crystalline structure, it releases nutrient into the root zone when the plant demands.

- Boosts cation exchange capacity
- Improves percolation rates
- Relieves compaction
- 100% natural
- Available in either greens or outfield grade



Pack Size	Application Rate
25kg	70-140g/m ²

Advance Greens Gypsum



Advance Gypsum is a greens grade granular gypsum for use on all fine and coarse turf areas. Advance Greens Gypsum granular is a natural calcium sulphate that helps to flocculate the soil to improve soil structure and drainage. It is also a rich source of calcium which is important in buffering pH, helps control soil water movement and is crucial in plant cell construction and root development.

- Flocculate soils
- Recovers structure lost in high salt situations
- Increases plants ability to uptake nutrients
- Does not alter soil pH



Pack Size	Application Rate
25kg	25-50g/m ²

Advance Calcigreen

Advance Calcigreen is a premium limestone-based formulation to increase calcium content of soils, buffer pH to make nutrients more available, improve rooting and increase soil microbial activity. Many sports turf sites suffer from a very low pH due to over-application of high-sulphur fertilisers over many years. Calcigreen 39% will gently raise pH back to a healthier level with no ill-effect on soil or plant

- Greens-grade granules works into aeration holes easily
- Effective on fine or coarse turf



Pack Size	Application Rate
25kg	28-100g/m ²

Usage Period												
Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Calcigreen	✓	✓	✓	✓	✓				✓	✓	✓	✓

Sodium Knockout 5.0.0 +6% Ca



KnockOut is a new and unique combination product that contains readily available calcium and a natural surfactant/wetting agent from yucca. It is an effective tool to reduce sodium levels in soils or bicarbonate accumulation from irrigation water. KnockOut quickly penetrates even the most difficult soils. It will also increase the permeability of soils while reducing soluble salts that build up in soils from high water salinity. It can be used on soilless media where excessive salt accumulation (rather than build up) often occurs from continued use of pesticides and high salt fertilisers.

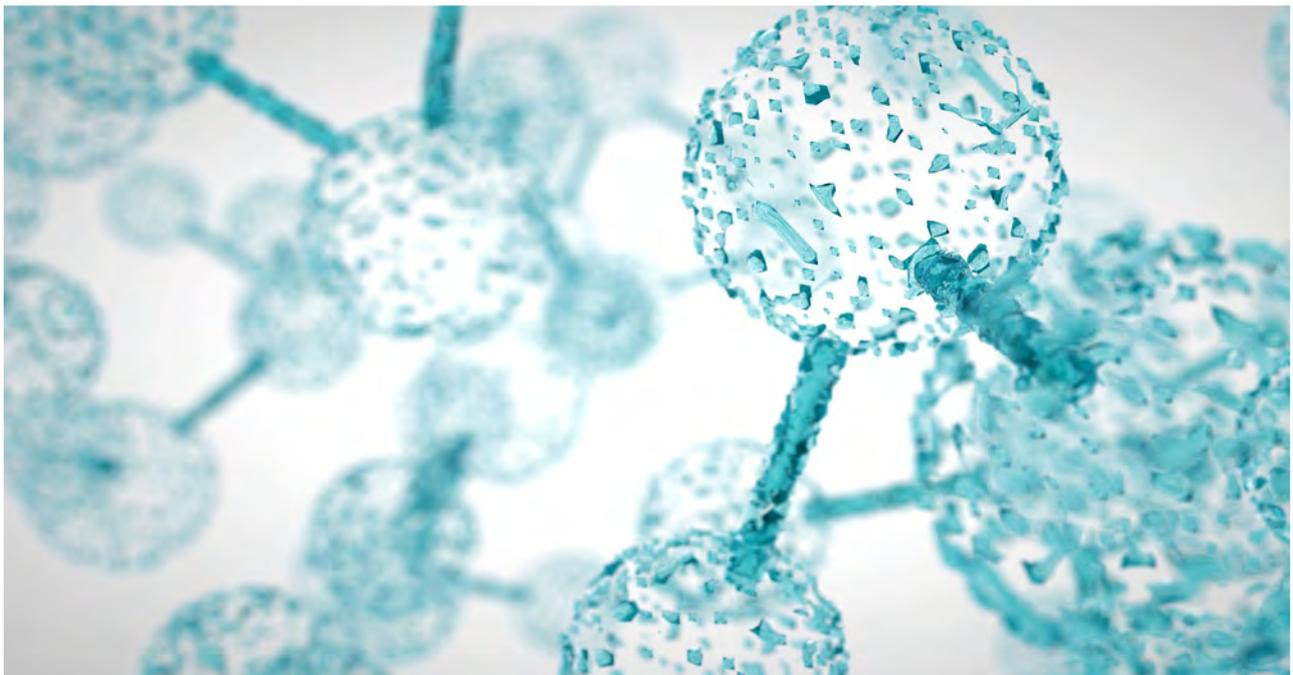


KnockOut's calcium is in a 100% soluble form that is immediately available to react with the sodium, unlike gypsum based products. Calcium cation ranges between 65 - 70% (Cation Exchange Capacity - CEC). CEC measures the soil's ability to hold nutrients such as potassium (K), magnesium (Mg), and calcium (Ca) as well as other positively charged ions such as sodium (Na) and hydrogen(H). It is a much safer alternative to chlorides and sulphates. KnockOut will improve soil structure, enhance better rooting, water infiltration and improve overall turf quality.

- Reduces soil and water salinity
- Reduces dry spots and improves water filtration
- Improves soil structure
- Enhances root growth & nutrient uptake
- Reduces Bicarbonates

Analysis	Pack Size	Application Rate	Water Volume
5.0.0	10ltr	10-20ltrs/ha	600ltrs/ha

Usage Period												
Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
5.0.0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓



Growth Products pH Reducer

pH Reducer is designed for soil, water and foliar applications, where the pH needs to be lowered into a more acidic range. Citric Acid solution is an organic based material that is a natural and environmentally sound management tool for lowering alkaline soil conditions and acidifying soil and leaves. The addition of a natural surfactant in the formulation enables the product to be absorbed into the leaf, aiding disease prevention.



Disease Management

pH Reducer has been found to be very effective as a Microdochium management aid. The low pH reduces the spread of mycelium on the leaf and dries it out to prevent re-infection. Although not a fungicide, many Turf Managers have found they are able to stretch out the intervals of fungicide applications by applying pH Reducer in between applications.

Soil Conditioner

Many calcareous soils have very high pH ranges (above 7) that make turf grass maintenance difficult. This also tends to tie up many micronutrients, leaving turf grasses chlorotic. USGA spec sands and top dressings usually have a high pH and need to be lowered to an ideal range of 6 to 6.5 pH. Some soils contain high levels of minors that are often in an unavailable, oxidized form not available for plant uptake. By applying citric acid solutions, minors can be chelated and made more available for turf grasses. pH reducer can be used in place of sulphuric acid and ammonium sulphate.

Water pH Reducer

Many water supplies have very high pH levels, and continuous application of this water will tend to raise the pH of many soils. By adding citric acid solution, hard water levels can be lowered. This will also reduce the possibility of soil pH drifting upwards. The buffer capacity of every water supply differs. Slowly add citric acid to a tank mix and check with a pH meter or litmus paper until the desired pH is reached. If tank mix is not used the same day it is mixed, check pH again and adjust if necessary.

Worm cast suppression

It is well known that reducing the pH of upper soil layers reduces worm activity and associated casting damage. Selected applications of pH Reducer in early autumn in susceptible areas will acidify the soil and deter worms from casting in that area. Used in conjunction with other cultural methods such as top dressing, removing clippings etc, a reduced level of worm casts can realistically be achieved.

Application	Product	Rate	Water Volume
Microdochium Reduction	pH Reducer + X-Xtra Iron	10l/ha + 20l/ha	200-300ltrs/ha
Water pH reducer	pH Reducer	100ml	300ltr
Soil Conditioner	pH Reducer	20l/ha	600-800ltrs/ha
Disease Suppression	pH Reducer	10l/ha	300ltr

Usage Period

Product	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
pH Reducer	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓



11. GRASS SEED

0118 3914540
www.advancegrass.com
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Featured Products:

- Advance Range
- J Range
- Masterline Range
- Pro Flora Range





AGS are distributors of DLF Seeds, including their premium range Johnsons Sports Seed, Masterline and our own Advance range of high-quality cultivar blends.

Advance Range

A select range of seed mixtures for the turf manager with a range of unique blends exclusively available through AGS. High-ranking cultivars from the STRI booklet make up all our mixtures to guarantee great results.



	Cricket	Tennis	Winter Sport	Multi-Sport Renovation	All Bent	Economy All Bent	Golf & Bowling Green	Tough Tees	Fescue	Rye Fairway	Fairway	Amenity Shade & Finest	Amenity General
Golf & Bowling Greens					✓	✓	✓		✓				
Tees, Fairways & Roughs	✓							✓	✓	✓	✓	✓	✓
Football & Rugby			✓	✓									
Tennis Courts		✓						✓				✓	
Racecourses, Polo & Gallops				✓									
Winter Rescue Mixtures				✓				✓					
Cricket Wickets & Outfields	✓			✓				✓		✓	✓	✓	
School & College Sportsfields			✓	✓				✓		✓		✓	✓



DLF's premier range blends the best cultivars in the market to produce the finest sports surfaces in the world. With DLF Select, these now offer the purest seed product on the market. As a professional amenity-turf manager you can rely on DLF Select to deliver the high purity seed you require.

Product Focus

J Premier Pitch is specified at many Premier League football stadiums and training grounds all the way down to local leagues and schools. The 5-cultivar blend incorporates Europe's highest rated cultivars to produce the best pitches in the world

J All Bent sets a new standard for density and visual quality. Utilising top-rated cultivars Arrowtown and Manor it helps to reduce invasion by Poa annua when used regularly throughout the growing season to produce fast, sustainable greens.

J Rye Green contains 60% ultra-fine-leaved Rye combined with Browntop Bent and Slender Creeping Red Fescue for those looking for a hard-wearing alternative to Bent/Fescue mixes for fine turf. Fast establishment and disease tolerant.

J Tee contains both diploid and tetraploid Rye for fast-establishment and excellent wear-tolerance. Also contains Fescue and Rough-Stalked Meadow Grass for a exceptional disease resistance, high shoot density and good shade tolerance for attractive tees in hard-wearing and shady environments.

J 4 Turf is a 50/50 tetraploid/diploid Ryegrass blend for use all year round with exceptional drought tolerance and rapid establishment in very cold conditions (down to 3oC). Ideal for equestrian use and training grounds demanding high wear tolerance or where irrigation may be restricted.



	J Green	J All Bent	J Links	J Rye Green	J Fescue	J Premier Green	J Premier Fairway	J Fairway*	J Tee	J Rye Fairway*	J Roughs	J Intense	J Premier Pitch*	J Pitch	J 4 Turf	J Rescue Stadium	J Rescue 100	J Premier Wicket*	J Wicket	J Multi Sport	J Outfield		
Golf & Bowling Greens	✓	✓	✓	✓	✓	✓																	
Tees, Fairways & Roughs			✓		✓		✓	✓	✓	✓	✓	✓											
Football & Rugby													✓	✓	✓	✓							
Tennis Courts												✓					✓	✓					
Racecourses, Polo & Gallops														✓	✓								
Winter Rescue Mixtures															✓	✓	✓						
Cricket Wickets & Outfields										✓		✓						✓	✓	✓	✓		
School & College Sportsfields										✓				✓									✓

* ProNitro coating available

Masterline Range

The Masterline range covers everything from high-quality fine turf sports mixes to land reclamation, parks, verges and airport blends. Masterline uses the DLF range of cultivars to produce cost-effective, but high-performing products.

PM5 Economy Green	Traditional 80:20 Fescue/Highland Bent mix offers good results at a reasonable price.
PM10 Traditional Green	80:20 Chewings & Slender Creeping Fescue:Browntop Bent mix
PM13 Fescue Green	100% Chewing & Slender Creeping Red Fescue mix for the finest sward
PM15 Green Allbent	An all browntop mixture, ideal for over sowing of existing greens with quality cultivars
PM20 Fineturf	100% Fescue mix for high quality fine lawns
PM25 Grow-Slow	Low maintenance, poor soils & embankments
PM25R Grow-Slow Plus	As per PM25 but with added Tetraploid Ryegrass for rapid establishment
PM26 Ecosward	Low maintenance landscape mix with microclover
PM27 Ecosward Plus	As per PM27 but with added Tetraploid Ryegrass for rapid establishment
PM28 Wetland	Grass sward capable of withstanding prolonged wet conditions
PM29 All Season	Drought tolerant hard wearing, low maintenance tall fescue mixture
PM35 Universal	70:30 Rye/Fescue for cricket squares, tees and tennis courts
PM36 Wicket	Hard-wearing fine-leaved Rye mix for cricket wicket, tennis and tees renovation
PM40 Tee & Fairway	100% Fescue fairway mixture with improved drought tolerance and disease resistance
PM45 Tee & Fairway Plus	Fescue and Rye ensures a dense, hard-wearing surface with excellent divot recovery
PM50 Quality Lawn	High-quality hard-wearing lawn mix combining Ultra-Fine Rye and Fescue
PM51 Greenscape	A tough lawn mixture that will establish rapidly - fine Rye & Strong Creeping Red Fescue
PM52 Greenfine	Economical, fine textured Fescue mixture, low maintenance, for landscaping and lawns
PM60 Greenshade	Designed to produce an excellent wear tolerant turf under shaded conditions
PM65 Gallop	For new courses/grounds and end of season renovation with added Tetraploid Rye
PM70 Recreation	Rye/Fescue sward with high shoot density suitable for winter & summer games
PM75 Stadia	Sports arenas and heavy duty wear - Rye with 20% Smooth Stalked Meadow Grass
PM79 Playingfield	Renovation mix of 50% Tetraploid Rye and 50% Diploid Rye
PM80 Renovator	20% Tetraploid/80% Diploid Rye renovation mix
PM81 Premier renovation	Diploid Rye mix of high quality cultivars for a premier renovation
PM82 Microclover Sport	Added 5% Microclover to improve turf quality and reduced herbicide and fertiliser use
PM85 Road Verge	Quick establishment, short growth, and some salt and exhaust fume tolerance
PM90 Coastal	Suitable for flat and sloping aspects, able to produce a sward tolerant of salt-laden winds
PM95 Land Reclamation	Land reclamation mixture suitable for landfill/quarry sites and spoil heaps
PM105 Fertility	Clover/Trefoil mix where fertility and soil structure needs to be improved
PM120 Slowgrowth	Low maintenance Rye/Fescue/Bent mix for parkland, verges, play areas, etc.
PM125 Clearsky	Airport landscape birdstrike prevention mixture

Wild Flora

In order to meet with the increasing demand for conservation mixtures DLF have formulated twelve seed mixtures, each designed to recreate a particular habitat.

The wild flowers used in the Wild Flora range (with the exception of Wild Flora 9) are guaranteed to be of native UK origin.

Pro Flora 1 Cornfield Annuals	Native Wild Flowers Grasses	20% 80%
Pro Flora 2 Acid Soils (Below pH 6)	Native Wild Flowers Grasses	20% 80%
Pro Flora 3 Damp, Loamy Soils	Native Wild Flowers Grasses	20% 80%
Pro Flora 4 Calcareous Soils (Chalk)	Native Wild Flowers Grasses	20% 80%
Pro Flora 5 Wet, Loamy Soils	Native Wild Flowers Grasses	20% 80%
Pro Flora 6 Dry, Loamy Soils	Native Wild Flowers Grasses	20% 80%
Pro Flora 7 Hedgerow & Light Shade	Native Wild Flowers Grasses	20% 80%
Pro Flora 8 Country Meadow (General Purpose)	Native Wild Flowers Grasses	20% 80%
Pro Flora 9 Heritage General Purpose (Non Native)	Native Wild Flowers Grasses	20% 80%
Pro Flora 10 Country Meadow (General Purpose)	Native Wild Flowers Grasses	10% 90%
Pro Flora 11 Woodland and Heavy Shade	Native Wild Flowers Grasses	20% 80%
Pro Flora 12 Water Margin & Pond Edges	Native Wild Flowers Grasses	20% 80%
Colour Boost Range For intense, colourful flower schemes	Native Wild Flowers Grasses	100% 0%





Advance Grass Solutions has a relationship with a number of the premier turf growers around the country. We are able to source a wide range of turf for lawns, landscaping, fine turf and outfield turf. Whether it's a fine fescue turf for your golf or bowling green or a hard-wearing ryegrass for domestic lawns or golf tees we can help you choose the right turf for your situation. Please contact your local AGS representative for more details. Example of available turf:.

Sports Range with Ryegrass

Ryegrass-based turf in a straight blend or mixed with smooth-stalked meadow grass, bent and/or fescue. Used for hard-wearing golf tees, aprons, surrounds and sports pitches. Wear resistant and quick recovery.

Fine Sports Mix

Blends containing fine fescues, bents, smooth-stalked meadow grass to give a fine turf appearance with some wear-resistance.

Greens Turf

Mixtures containing bents and fescues to provide the ultimate golf or bowling green surfaces.

General Purpose & Ornamental Lawn Turf

High quality turf for hard wearing lawns utilising ryegrass and strong creeping red fescue. Ornamental lawn turf containing a selection of fescue and bent.





📞 0118 3914540

🌐 www.advancegrass.com

✉ Info@advancegrass.com

Featured Products:

- Bathgates
- Bourne Amenity
- Mansfield
- CML



Through our relationships with market leading manufacturers, AGS offer a comprehensive range of Top Dressings and Aggregates, nationwide. These include:

- Fine Turf Top Dressings
- Rootzones and Divot Mix
- Straight Sands
- Bunker Sands
- Construction Aggregates
- Grade 1 & Recycled Top Soil
- Cricket & Tennis loams
- Greenspread Compost
- Pathways and Sports Surface material
- Bark Woodchip and Mulch
- Railway Sleepers
- Drainage Pipe and Connectors
- Land Drainage material
- Roadstone and Reclaimed materials
- Rock and Marine Salt

All materials are available in small and bulk quantities. Please contact your Regional Sales Manager for the latest prices.



13. SPREADERS, SPRAYERS & STORAGE

0118 3914540

www.advancegrass.com

Info@advancegrass.com

Featured Products:

- Spreaders
- Sprayers

Accupro 2000

The AccuPro 2000 is a professional rotary spreader for multi-use.

- Larger 139 Turf Saver 2 pneumatic wheels for an easier push
- Larger diameter frame is more durable
- Patented Helical Cone for a uniform, consistent spread pattern
- Extended handle with tuff-foam grips for added comfort



SR2000

SR2000 rotary spreader has all the features of the AccuPro plus:

- New and improved larger diameter, more durable stainless steel frame
- Positive on-off side deflector provides effective product delivery control
- Standard port shut-off control for greater application efficiency

SS-2 - Drop Spreader

- Stainless steel frame. Hopper and fasteners provides outstanding durability and corrosion resistance
- Larger 139 Turf Saver 2 pneumatic wheels for easier operator use
- Extended ergonomic handle is more durable
- Lift handles in the front and back for easier loading and unloading
- Not suitable for coated controlled release products



Chapin 62000 Tree & Turf Pro

Chapin are world leaders in the manufacture of compressed air sprayers ever since the first US patented pump sprayer in 1902. World class precision manufacturing, progressive technology, and design methods enables Chapin to provide the best quality and value applicators for their needs.

- 15 litre professional sprayer
- Brass lance
- Plated steel stand and handle
- 4 stage filter system
- Constant flow valve
- Lumbar support and cushioned back support



Chapin Pro 26031

- 11.4ltr professional sprayer
- No leak seals
- Easy pumping







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Featured Products:

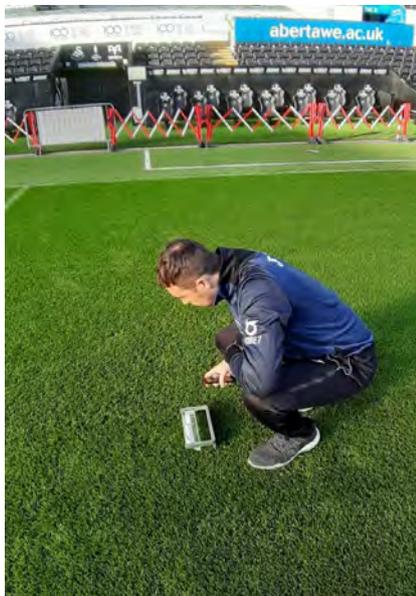
- Turf Tec International
- TJ Golf & Leisure
- Workwear
- Air Seal Products

Sport & Agronomy Equipment

AGS are able to supply all your equipment needs for a wide range of sports from golf furniture such as flags, cups, pins, signage and greenkeeping tools like holecutters, rakes, Accu-Gages and dew switches.

We are also UK exclusive distributors for Turf-Tec's range of high quality agronomic tools to help you measure and improve turf performance such as:

- Digital soil thermometer
- Infiltrometer
- FieldScout TDR 350 Moisture Meter's
- Turf Shear Strength Tester
- Wireless Rain Gauge
- Soil pH Meter
- Macroscopes and IPM Scopes
- Automatic Sprayer Nozzle Calibrator
- Light Meter's
- Verde Sports
- Tildenet Sheets
- Line Marking Aerosols



Collection of data is becoming widespread amongst turf managers at all levels and is highly beneficial in making judgements on maintenance operations and inputs. Data is also invaluable when making a case with management over investments in surface improvements.

Data to back up an argument that a surface needs drainage work or increased aeration or top dressing is not merely subjective and can make all the difference in a project or task going ahead, leading to long term improvements.

The TDR 350 Soil Moisture Meter, for example, takes the guesswork out of irrigation. By knowing exactly what levels of moisture you have and how much these levels change with differing irrigation inputs, you can create exactly the soil environment you require. Those who wish to push out Poa annua and promote Bents and Fescues in fine turf can fine tune soil moisture levels to promote their preferred species. Recording just how high moisture levels are in winter and how long it takes to drop to an 'acceptable' level is also very useful for those looking for investment in drainage.

Used alongside tools such as the infiltrometer and shear strength tester, a set of data regarding entire surface performance can soon be collected and parameters set for optimum levels.

Other useful tools in our range include, soil pH testers, floating water pH testers, light meters, sprayer calibrators, evapotranspiration gauges and soil sieves.

Contact us for details on the full range of tools available.

TJ Golf & Leisure

A full range of specialist equipment for the golf course, sportsground, school, college or any amenity area. Golf course products including flags, pins, cups, tee markers, hazard marker posts, tee mats and hole moving tools including a range of footgolf equipment.

Golf course signage for general course use or bespoke signs including club logos are available. Groundsman and greenkeeping tools such as rakes, shovels, dew and drag brushes, soil samplers, height of cut Accu-Gages and seed slotting equipment are all available using heavy duty stainless construction for long-lasting value. Also available are general amenity supplies such as high quality teak/iroko benches, litter bins, posts and rope or chains for traffic control and grit/salt bins, etc.



Ear Defenders



3M Respirator



Colvett Polo



Chemical Suit

Helly Hansen Jacket



Helly Hansen Trousers



Air-Seal Products

A liquid tyre sealant injected into tyres to seal punctures instantly with no loss of downtime and productivity. Keep mowers and maintenance equipment running all year long with one simple application of Air-Seal. The Heavy Duty grade is suitable for amenity use and will seal punctures up to 15mm in diameter with no loss of pressure.



Workwear & Spray Wear

AGS offer a range of workwear from well-known brands such as Helly Hansen, Dickies, Callaway, Henbury, Regatta, Craghoppers, etc.

Choose from a wide range of styles and colours from our range of hard-wearing practical clothing. Personalised embroidered logos and wording can be added as required.

- Nitrile Spraying Gloves
- Disposable Spray Suits
- Face Shields
- Respirators
- Ear Defenders



Line Marking Aerosols

Xylene-free aerosol paints for marking G.U.R, hazards and traffic control on the golf course or any turf area. 12 x 750ml can packs in a range of colours.

Verde Sports & Tildenet Sheets and Mats

- Economy and heavy duty germination sheets
- Frost protection sheets for sports pitches
- Sports netting and barriers
- Reinforced 'grow-through' matting for wear areas and paths
- Artificial cricket wickets, netting and covers
- Golf tee mats – temporary and built-in



Introduction

Over the past twenty years technological and agronomic advances have seen vast improvements to the way we manage our turf surfaces. Professional clubs, through to Grass Roots sport, are now seeing the benefit of the evolution of the sports turf industry, which has enabled standards to continue to rise beyond expectation.

This increase in quality is being observed across a range of sports turf surfaces which brings an element of pressure to the modern-day turf manager, as this rise in standards sees an increase in expectation from both the viewing public and the participants up and down the country. With turf surfaces now coming under immense scrutiny, due to social media and an increase in TV coverage, it has never been more important

for the turf manager to receive correct and comprehensive advice from their suppliers. At AGS we pride ourselves on being at the cutting edge of industry trends and advances, with a highly trained in field team and portfolio of market leading product technologies, AGS is extremely well positioned to help all end users with whatever their requirements may be.

Over the past four years Phil Garrod, our UK Sports Turf Manager, has developed a specialised national department specifically designed to cater for all Sports Pitch Managers to include Professional Sports Clubs, Independent Schools and localised facilities. This department first-hand has helped to 'raise the bar' on a variety of surfaces regardless on budgetary limitations. The consultancy level advice that



Phil Garrod BSc (Hons)
UK Sports Turf Manager

end users receive has enabled all AGS customers to enhance the playability and aesthetics on all surfaces.



Professional Sports Pitches

With the advances in pitch construction over the past few years there is little doubt that standards on both professional stadia and training facilities are at an all time high. I have worked with various sites who have either DESSO, Fibre Sand, Fibre elastic or SIS pitches and although they perform wonderfully well, they are not always the most conducive surfaces when it comes to nutrition/water retention and plant health. There is no written rule on what is right or wrong when it comes to product selection but one of my

favourite words when it comes to the management of high sand content constructions is 'balance'. Balance can take many facets but my philosophy on sports pitch nutrition is to use a combination of synthetic nutrition with some well-placed organics at various times throughout the season. There are obviously many options to be discussed under the banner of sports pitch nutrition, however, the following pages are a guide to the products that are central to my recommendations at key stages of the season.

Renovation = Key Window

This is the most crucial time of any sports pitch managers year – get it wrong and you must deal with the consequences for a year at least. My combination of mycorrhizae and organic feeds supports the establishment of a well anchored plant. Good rooting is central to the success of a sports pitch, as it enables the plant to withstand stress, disease ingress and be more tolerant of plant parasitic nematode attack, which has become prevalent in recent years with the increase in sand dominated profiles. Research

has shown that mycorrhizae can increase the root surface area up to 1000 times against control, improve germination rates and plants that have been inoculated with mycorrhizae require up to 30% less water. This strategy has been utilised on a number of high-profile stadia and training grounds over the past few years and this strategy has provided some superb services that have been able to cope with adverse climatic conditions.

“Using mycorrhizae as part of our integrated approach to renovation has assisted in producing some excellent surfaces that are able to cope with huge usage demands of our world class venue”

Scott Brooks, Head Groundsman. St. Georges Park



Product Focus

- 1) Advance ENDO-Mycorrhizae Granular @ 50 g/m²
- 2) Advance Liquid Endo Mycorrhizae @ 200 ml per ha
- 3) Sustane 4.6.4 @ 35-50 g/m²

Biostimulants – Plant Health

The ever advancing biostimulant market is now one of the most complicated areas of amenity supplies with a plethora of products that are now promoted compared to five years ago. Biostimulants can include substances like Seaweed, Fish Hydrolysate, Fulvic Acids, Humic Acids, Plant derived extracts, Chitin, to name but a few.

With the new legislation due in 2022 which requires full trial data on any biostimulant to substantiate the product claims it should assist the end user with being able to select a suitable product specific to the individual site requirements. At AGS we are dedicated to ensure that our product range meets with any regulations and our biostimulant range will be fully compliant when the time comes.

When it comes to biostimulant selection, I tend to support research-based materials and many of these studies have shown both humic acids and seaweed

combinations work well synergistically on the plant to improve a range of physical characteristics. I normally recommend Essential Plus 1:0:1 from Growth Products. It provides full derivation on the label (a requirement in the US) so that the end user knows exactly what the product contains. It also has over 25 years of in field trial data and research to give the end user confidence in the quality of the product. In addition to this recently we have developed a new product called Bio Refine which is a PGPR (Plant Growth Promoting Rhizobacteria) that has 3 different formulas to target individual plant species. There is a specific Perennial Ryegrass strain that we sell that has a plethora of data which is UK based to back up its performance. This going forward will be a great tool to work in combination with some of our other biostimulants and low salt fertilisers. Being able to cope with abiotic and biotic stresses will be a definite key benefit of this particular range.

Product Focus

Biostimulant Tank Mix: 10 litres per ha of Essential Plus, 4 litres per ha Companion, 2.8 litres per ha Pure Kelp SA – Growth Products range



Conventional Nutrition Selection

Carefully choosing which synthetic nutrition to use is often overlooked. I see applications of conventional fertilisers on high sand content pitches up and down the country being applied at regular intervals, as much as every 7-10 days in some cases. Therefore, I feel it is important to make sure that through the conventional feeds that we apply, a wide range of diverse sources of nutrition are delivered to the plant.

The Growth Products 10:4:4 plus Mgo, Fe, CaO and seaweed provides a comprehensive array of desirable nutrients, in a high quality, homogenous prill. It contains three sources of nitrogen in the form of ammonium nitrate, ammonium sulphate and urea. This, in addition to a substantial amount of micro and macro nutrients allows for year round application in stadia situations.

Product Focus

Option 1: Growth Products 10.4.4 plus 4% MgO, 8% CaO, 3% Fe and Seaweed @ 20-40 g/m²

Option 2: Growth Products 8.0.4 plus 4% MgO, 8 % CaO and seaweed @ 20-40 g/m²



"Growth Products 10.4.4 is our first-choice conventional feed and helps us to achieve a superb aesthetical appearance all year round"

Steve Gardner – Co Owner of Turf Tonic Sports Turf Contractor

Independent Schools

Estates Managers and Head Groundsman of Independent Schools have an extremely difficult job to fulfil. In the Independent Schools arena, the condition of the sports facilities and pitches form a key lure and consideration for any potential incoming pupils. Therefore, it is vital that the school grounds and pitches

look immaculate all year round; this may sound simple, but fixture congestion coupled with less than ideal pitch constructions can often make this extremely difficult.

It is therefore vital that when a fertiliser or supplement is applied, it is going to give the turf manager the required result, furthermore the longevity of a given

product is extremely important as the numerous fixtures can very much limit the frequency of fertiliser applications that can be made.

Growth Products pioneered the use of slow release liquids and in particular the patented Nitro 30, which contains 80% SRN. This has performed superbly following its introduction to the UK market, specifically in relation to longevity and high quality aesthetics.

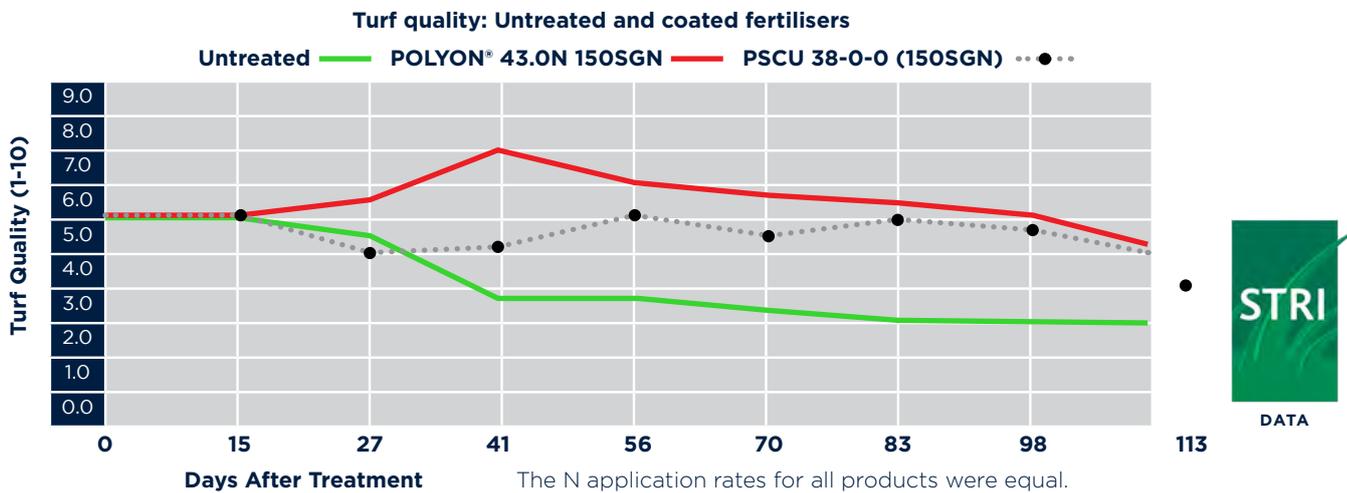
"The combination of the effect on turf quality and the longevity provided by Nitro 30 make this my preferred summer liquid fertiliser"

Daniel Ratling, Head Groundsman of Whitgift School



To keep the turf surfaces in peak condition all year-round, I have found base feeding with a controlled release fertiliser and supplementing good quality liquids intermittently 'over the top' as the best recipe for success. The Polyon brand of controlled release technology is synonymous with excellence, a market leading coated technology in the USA and exclusive in

the UK to AGS. A Polyon trial was conducted by the STRI that shows the effect that it had on turf quality against a market rival controlled release fertiliser. The results show a comprehensive victory for the Polyon technology. I have seen similar results that replicate these findings in-field in the past two years.



"Turf treated with Polyon 150 SGN had significantly greater turf quality, in comparison to the PSCU fertilizer between 27-70 days after application"

Dr. Christian Spring

Product Focus

Granular Application: Polyon 5 month 18.0.8 plus 4 % MgO @ 30 – 40 g/m²

Liquid Application: 20 – 40 litres Nitro 30: 15 -30 litres GP Pot Carb Max: Essential Plus @ 10 litres per ha



Cricket Squares

I get many enquiries about the fertiliser applications on cricket squares at various levels. One of the most common issues I see is the plant health deterioration between the end of season renovations and the beginning of the following playing season. A rye grass plant is inherently hungry and if no supplementary food is given to it over a 6-month period then a deterioration in both its visual and functional performance will be observed. The last thing we need as Cricket Groundsman is to be on the 'back foot' coming into the season and by just maintaining and supplementing small levels of nutrition through the winter months can be the key to starting the season in the correct manner.

Cricket squares naturally have many pros in the support of healthy turf, but through supplementing with a small amount of nutrient, can help to maintain turf health and vigour through both the playing season and winter months.



Product Recommendations:

Annual Cricket Programme for Squares

Timing of Application	Product Name	Unit Size	Rate	Unit Quantity per 1000m ²
End of Season Renovations	Advance Mycorrhizae Granular	25kg	50g/m ²	2 bags
End of Season Renovations	Growth Products 10.4.4 plus MgO and CaO	25kg	30 - 40g/m ²	2 bags
Late October/Early November	Growth Products 4.0.8 plus 4% Fe	25kg	30 - 40g/m ²	2 bags
January	Growth Products 8.0.4 plus MgO and CaO	25kg	30g/m ²	2 bags
March - September (every 6-8 weeks)	Growth Products 10.4.4 plus MgO and CaO	25kg	30g/m ²	2 bags
Optional Liquid Applications	Growth Products Pure Kelp SA	10 ltrs	2.8l/ha	280ml

Polo Grounds and Horse Racing

Probably the single most intensive and destructive type of sports pitch to be managed, due to the damage inflicted on the plant through the nature of the sport. Therefore, the most important factor on surfaces of this type would be the ability to recover and regenerate for the next game or horse racing fixture to occur.

From a nutritional perspective, when our sports turf surfaces need a slight 'perk' up, I often recommend a

mixture of amino acid based products and combine this with a light nitrogen based liquid feed. To create quick recovery, supplementing carbohydrates can also be extremely beneficial.

Below there are two liquid applications that will assist in quick recovery, these can be applied all year round and can rapidly enhance turf health in a short space of time.

Plant Recovery Mixes

Mix 1: 10 litres Essential Plus, 2.8 litres Growth Products Pure Kelp SA, 40 litres AGS 5.0.2

Mix 2: 60 litres AGS 5.0.2 15 litres Growth Products 20.3.3, 10 litres Essential Plus





Product Analysis %	Application rate g/m ²								
	10	15	20	25	30	35	40	45	70
1	1	1.5	2.	2.5	3	3.5	4	4.5	7
2	2	3	4	5	6	7	8	9	14
3	3	4.5	6	7.5	9	10.5	12	13.5	21
4	4	6	8	10	12	14	16	18	28
5	5	7.5	10	12.5	15	17.5	20	22.5	35
6	6	9	12	15	18	21	24	27	42
7	7	10.5	14	17.5	21	24.5	28	31.5	49
8	8	12	16	20	24	28	32	36	56
9	9	13.5	18	22.5	27	31.5	36	40.5	63
10	10	15	20	25	30	35	40	45	70
11	11	16.5	22	27.5	33	38.5	44	49.5	77
12	12	18	24	30	36	42	48	54	84
13	13	19.5	26	32.5	39	45.5	52	58.5	91
14	14	21	28	35	42	49	56	63	98
15	15	22.5	30	37.5	45	52.5	60	67.5	105
16	16	24	32	40	48	56	64	72	112
17	17	22.5	34	42.5	51	59.5	68	76.5	119
18	18	27	36	45	54	63	72	81	126
19	19	28.5	38	47.5	57	66.5	76	85.5	133
20	20	30	40	50	60	70	80	90	140
21	21	31.5	42	52.5	63	73.5	84	94.5	147
22	22	33	44	55	66	77	88	99	154
23	23	34.5	46	57.5	69	80.5	92	103.5	161
24	24	36	48	60	72	84	96	108	168
25	25	37.5	50	62.5	75	87.5	100	112.5	175
26	26	39	52	65	78	91	104	117	182
27	27	40.5	54	67.5	81	94.5	108	121.5	189
28	28	42	56	70	84	98	112	126	196
29	29	43.5	58	72.5	87	101.5	116	130.5	-
30	30	45	60	75	90	105	120	135	-
31	31	46.5	62	77.5	93	108.5	124	139.5	-
32	32	48	64	80	96	112	128	144	-
33	33	49.5	66	82.5	99	115.5	132	148.5	-
34	34	51	68	85	102	119	136	153	-
35	35	52.5	70	87.5	105	122.5	140	157.5	-
36	36	54	72	90	108	126	144	162	-
37	37	55.5	74	92.5	111	129.5	148	166.5	-
38	38	57	76	95	114	133	152	171	-
39	39	58.5	78	97.5	117	136.5	156	175.5	-
40	40	60	80	100	120	140	160	180	-
41	41	61.5	82	102.5	123	143.5	164	184.5	-
42	42	63	84	105	126	147	168	189	-
43	43	64.5	86	107.5	129	150.5	172	193.5	-
44	44	66	88	110	132	154	176	198	-
45	45	67.5	90	112.5	135	157.5	180	-	-
46	46	69	92	115	138	161	184	-	-

Granular Fertilisers - Formula

To calculate the kg of nutrient applied per hectare use;

Application rate (in g/m²) x % Nutrient Content/10

Example:

An application of Polyon 24-5-8 (6-7 month release) applied at 35g/m²

35 x 24/10 = 84kg of N per hectare

35 x 5/10 = 17.5kg of P₂O₅ per hectare

35 x 8/10 = 28kg of K₂O per hectare

Water Soluble Fertilisers - Formula

Application rate (in kg/ha) x % Nutrient Content/100

Example:

An application of Yara Kristalon Lilac 20-8-8 water soluble fertiliser applied at 50kg/ha

50 x 20/100 = 10kg N per hectare

50 x 8/100 = 4kg P₂O₅

50 x 8/100 = 4kg K₂O per hectare

Liquid Fertilisers - Formula

Application rate (in litres per hectare) x Specific Gravity of the liquid = W and then **W x % nutrient content/100**

Example:

An application of 18-3-6 liquid applied at 20 litres per hectare. (S.G. = 1.26)

20 x 1.26 (Specific Gravity) = 25.2

25.2 x 18/100 = 4.5kg N per hectare

25.2 x 3/100 = 0.75kg P₂O₅ per hectare

25.2 x 6/100 = 1.5kg K₂O per hectare

Sports Pitch Dimensions (Average)

Golf Green	500m ² /600m ²
Golf Tee	250m ² /500m ²
Football	6400m ²
Rugby	6900m ²
Cricket Square	690m ²
Bowls	1600m ²
Lawn Tennis	262m ²



YOUR AGS TEAM



AGS offer a wide range of nutrient and water analysis to aid the professional turf manager. These include:

- **Soil nutrient analysis**
- **Leaf tissue analysis**
- **Water analysis**
- **Soil and water salinity testing**
- **Physical soil analysis for aggregate compatibility**
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