Turf and Amenity

Product guide 2023/24

indigrow
growth through innovation

Growth Through Innovation

Indigrow are specialist manufactures of fertilisers and nutrients for the sportsturf market, with over 75 years' experience of operating around the world. Covering 5 continents and over 40 countries, we employ over 35 staff with qualifications covering all the aspects of agronomy required to promote healthy growth. These include: MSc Agriculture, Soil and Plant Science, MSc Agrifood, BSc (Hons) Horticultural Science, BSc Sports Turf Science, H.N.D. Horticulture (Golf Course Management), N.V.Q. Sports Turf and Horticultural Machinery and IOG National Diploma in Turf Culture. We also have FACTS Qualified Advisers, BASIS Qualified Advisors, FACTS & BASIS Examiners.

We would like to introduce you to our latest catalogue featuring full-page in-depth analysis of different types of products we manufacture. These include fertilisers, bio-stimulants, wetting agents and a variety of the very latest innovative and technical products to promote a healthier sward, no matter the conditions turf managers face all around the globe.

Buying the correct product can be confusing, and we are here to help. Simply email our specialist sportsturf division and we will put you in direct contact with a regional technical manager to assist you with your requirements. Email: **npk@indigrow.com**
to get in touch or contact us on **+44 (0) 1189 710 995**

In addition to our dedicated sportsturf division we also have a specialist agricultural and horticultural division providing crop nutrition and custom solutions for agriculture and horticulture. For further details and advice, please contact us directly on **aghort@indigrow.com** and we will put you in contact with your country's regional technical manager.

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Indigrow are proud to be associated with the following organisations:

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Contents

Bio-stimulant Coated Fertilisers — 4-10
Fine turf fertilisers developed to promote healthy, strong turf which are effective on all soil types

Fertiliser with Humic Acid — 11-17
Encourage microbial growth of flora and fauna with humic acid enhanced fertilisers

Controlled Release Fertilisers — 18-23
PSCU coated fertilisers which provide a consistent, moisture activated, nutrient release

Soil Amendments — 24-27
Products to improve physical soil properties including water retention, drainage and structure

Impact Fertiliser Spreaders — 28-30
Facilitating the accurate application of our granular fertiliser products

Wetting Agents — 31-37
Triple-action, curative and penetrant wetting agents in liquid, granular and pellet formulations

Water Management Products — 38-41
Natural and renewably sourced products to improve irrigation water quality and penetration

Gel Technology Foliar Feeds — 42-49
True NPK and trace element foliar feeds, offering nutrient uptake through the plant leaf

Liquid and Soluble Fertilisers — 50-58
NPK liquids, fully soluble NPK powders, a liquid iron and a trace element package

Seaweed Extracts — 59-63
Products derived from tidal seaweed from unpolluted waters, processed by cold-cell burst technology

Bio-stimulant Plant Health Enhancers — 64-68
Bio-stimulant liquids for increased stress relief, improved turf vigour and stimulated root growth

Amino, Humic and Fulvic Acids — 69-71
Comprehensive amino, humic and fulvic acid packages, supplied in economical, no-mess, sachets

Problem Solving Products — 72-77
Products to help turf managers with a range of diverse and problematic situations

Unique Concentrated Sachets — 78-85
A unique collection of highly concentrated products packed in easy-to-use, no-mess sachets

Colourants and Spray Tank Additives — 86-91
Turf colourants and products which help turf managers improve spraying accuracy

Soil Testing and Product Guidance — 92-99
Our "Quality Master Plan", fertiliser programmes, specifications and compatibility charts

> A plant bio-stimulant contains substances and/or microorganisms that stimulate natural plant processes.

Bio-stimulant Coated Fertilisers

- **Short, medium and long term release nitrogen**
- **Bio-stimulant coating to optimise nutrient uptake**
- **Added trace elements for improved colour and turf health**
- **Organic base for better soil health**
- **Increases growth, recovery and root density**
- **Range of analysis to meet all turf needs**

Enhanced nutrient use efficiency is crucial when choosing the correct fertiliser to maximise return on investment. Indigrow has produced the high quality ImpactPlus range, which combines a range of slow release nitrogen sources in well balanced NPK formulations. It has also been coated in our Asset Gold bio-stimulant to further optimise nutrient uptake from the fertiliser applications.

Balancing utilisation efficiencies is essential to optimising input added value. Maximising the plants uptake of applied nutrients is crucial for both economic and environmental reasons.

The management of nitrogen availability plays a major role in enhancing nutrient uptake. Only applying nutrients to meet sufficiency levels for turf uptake is vital to avoid wastage and negative environmental impact, therefore minimising potential losses via volatilisation and leaching requires fine tuning.

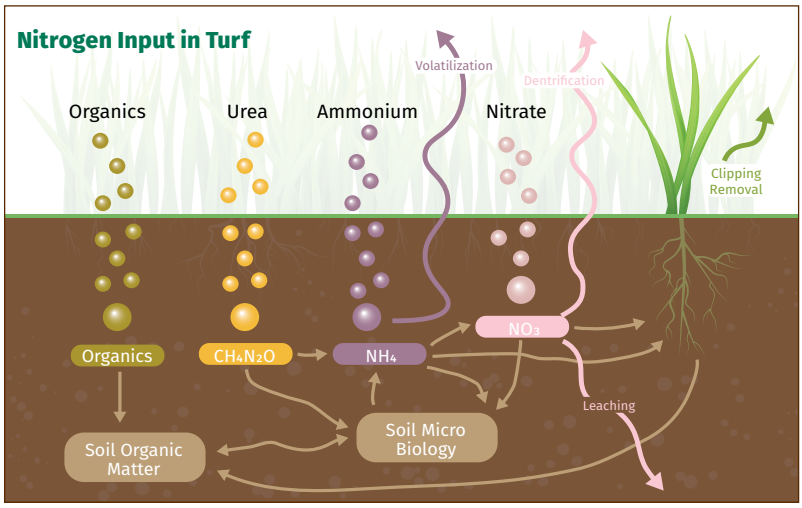
Product Analysis

PRODUCT	ANALYSIS	APPROXIMATE RATE	LONGEVITY	PACK COVERAGE	PACK SIZE
ImpactPlus Accelerate	14-0-12 + 2% Fe	20-40 g/m²	4-6 weeks	500-1,000 m²	20 kg
ImpactPlus Summer Perk	14-0-4 + 6% Fe	20-40 g/m²	6-12 weeks	500-1,000 m²	20 kg
ImpactPlus Vitalize	16-5-16 + 2% MgO	20-40 g/m²	4-6 weeks	500-1,000 m²	20 kg
ImpactPlus All Round	5-5-15 + 10% CaO + 3% MgO + 4% Fe	20-40 g/m²	4-6 weeks	500-1,000 m²	20 kg
ImpactPlus Perk	4-0-14 + 10% Fe	20-40 g/m²	6-12 weeks	500-1,000 m²	20 kg
ImpactPlus Emerge	10-20-10	20-40 g/m²	8-10 weeks	500-1,000 m²	20 kg
ImpactPlus SRF 19-0-19	19-0-19 + 2% Fe	20-40 g/m²	8-12 weeks	500-1,000 m²	20 kg
ImpactPlus SRF 12-0-24	12-0-24	20-40 g/m²	8-12 weeks	500-1,000 m²	20 kg

ImpactPlus Fertilisers

To assist with this, Indigrow developed a range of fertilisers that have not only the higher organic matter content required to encourage microbial activity but also a combination of nitrogen sources that naturally breakdown to release available nitrogen, lengthening the longevity without impacting on the natural nitrogen cycle.

This is achieved by formulating with organic nitrogen for slower release of nitrogen-enhanced microbial metabolism, coupled with other rate s of release, including ammonium and urea to boost short and medium term nitrogen release.



Balanced carbon nutrition fuels the rhizosphere and the availability of organic carbon promotes metabolic efficiency of the flora and fauna. This has been a key consideration in the make-up of all the ImpactPlus products to incorporate high levels of organic nitrogen as well as phosphate and potassium where practicable. Organic forms of fertiliser provide valuable carbon to the rhizosphere to enhance microbial activity and allow a slower breakdown of the organic nitrogen as part of an overall strategy to regulate nitrogen availability for slow strong growth and encourage expansive root mass.

Organo-Mineral Formulation

Organo-mineral fertilisers are a complex fertiliser, manufactured from a mix of organic and inorganic materials into solid (granular) or liquid forms.

The organo-mineral formulation of our ImpactPlus fertilisers takes into account a desire from global greenkeepers and groundspersons to move towards a more balanced approach to nutrition and soil biology. The base material of our ImpactPlus fertilisers is derived from an organic source, rather than the traditional method of using a chemically inert filler. The organic base material will act as a food source for the naturally occurring soil flora and fauna. All of the organic sources used in the manufacture of our products are plant based and do not contain any genetically modified contents.

ImpactPlus with Asset Gold coating

Conventional Fertiliser

The carbon/nitrogen (C/N) ratio of the soil is critical to the amount of nutrients which the turf can utilise. The C/N ratio of all of our ImpactPlus products is extremely low, eliminating the risk that the soil micro-organisms will 'steal' nitrogen from the soil and tie it up as they break down the carbon, which makes the nitrogen unavailable to the turf.

Utilising this organically sourced filler for our products has the added benefit of increasing the organic nitrogen within the total nitrogen contained in the product. An added benefit for all turf managers who are looking to move to an organic-based fertiliser programme.

ImpactPlus and Asset Gold

Our Asset Gold coated fine turf fertilisers have a highly active bio-stimulant coating. They have been developed to promote healthy, strong turf, with the bio-stimulant coating further enhancing these benefits. By carefully selecting a number of different nutrients in a variety of formulations, our Asset Gold coated range of fine turf fertilisers are highly effective on all soil types with differing base nutrient levels, and are proven to help improve turf vigour and root density.

The Asset Gold coating is a formulation of natural sustainable osmolytes specifically chosen to enhance root development and reduce abiotic stress . Through independent trials it has been proven to encourage vigour, recovery and root mass by providing specific amino acids that reduce the turfs own requirement to produce them during development and perturbations.

When stressed, plants naturally produce osmolytes to help combat the environmental stresses. Production is favoured under water-deficit or salt stress as they provide stress tolerance to cells without interfering with cellular function. Asset Gold is one of a group of these osmolyte compounds and is extracted from a plant species which has naturally occurring high levels.

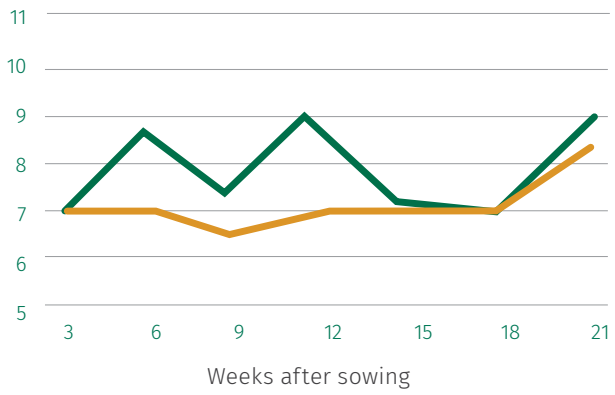
Asset Gold helps overcome plant stress and aids recovery by:

- Osmotic Regulation
- Cell Membrane Protection
- Reduction in Free Radical Production
- Protection of Photosynthetic Biochemical Pathways

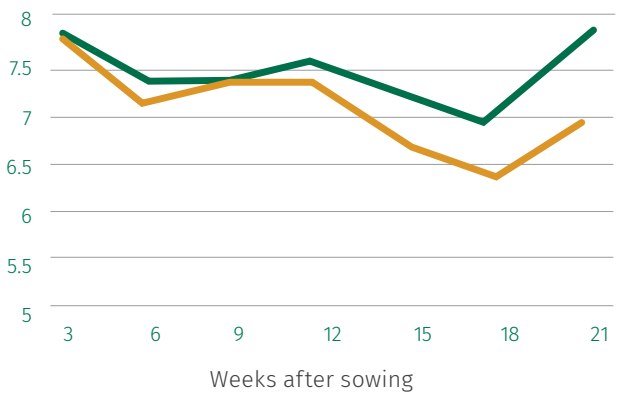
Our bio-stimulant, Asset Gold, has been proven in independent trials to increase ground cover of newly sown seed, increase levels of growth and recovery and improve root density. All of our Fine Turf Fertilisers with Asset Gold contain a plant derived organic base, resulting in a high organic matter percentage. This organic matter acts as a readily available food source for beneficial soil flora.

Independent trial results support the use of the Asset Gold coating which improves osmotic regulation cell membrane protection reduction in free radical production and protection of photosynthetic biochemical pathways.

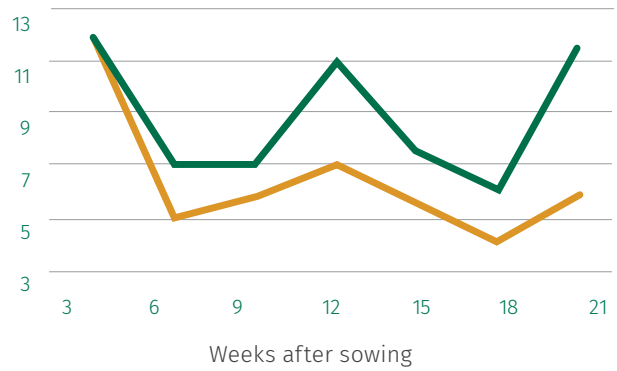
Vigour (Scale 1-10)



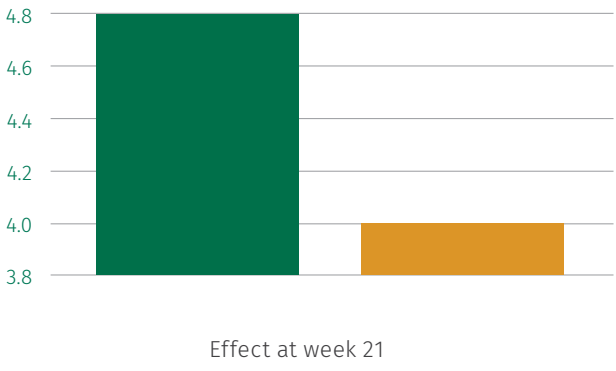
NDVI Readings



Growth and Recovery (height - cm.)



Root density at wk 21



ImpactPlus Control NPK

ImpactPlus Accelerate 14-0-12

Accelerate 14-0-12 has been designed to provide recovery and early green up of greens, tees and fairways. It provides an acidifying effect and can be used on soils with high pH levels. Accelerate 14-0-12 has 1.2% organic nitrogen and contains added potassium for improved wear tolerance and greater disease resistance. Accelerate 14-0-12 is often used as a spring starter in the cooler climates.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Offers excellent response when used as a cold start fertiliser
- Micro-prill homogenous fertiliser
- Swiftly dispersing granule minimises mower pickup
- Helps limit disease during periods of high pathogen activity

SUGGESTED SOIL TEMPERATURES FOR APPLICATION			DISCOVER MORE
Minimum 5°C	Optimum 16°C	Maximum 30°C	

NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
20 g/m²			40 g/m²		
N 28.0	P_2O_5 0.0	K_2O 24.0	N 56.0	P_2O_5 0.0	K_2O 48.0

CHARACTERISTIC	VALUE
Approx. Longevity:	4 - 6 weeks
SGN/Particle size:	100 - 125
Cutting Height:	> 2mm
Nitrogen Source:	1.2% organic, 10.2% ammonium, 2.6% urea
Guaranteed Analysis:	14-0-12
Additional Elements:	2.0% Fe
Organic Matter:	13.7%
Pack Size:	20 kg
Pack Coverage:	500 - 1,000 m²
Application Rate:	20 - 40 g/m²
Water Rate:	-
Application Method:	Spreader
Product Code:	**IG030214**

ImpactPlus Summer Perk 14-0-4 + 6% Fe

The high nitrogen levels in ImpactPlus Summer Perk offer excellent top growth, ideal for the main growing season. With the higher urea content, this top growth is prolonged, minimising the need for regular applications. This mid-season fertiliser also offers potassium for improved disease resistance and iron for excellent colour. It is coated in Asset Gold, our unique bio-stimulant coating for improved stress relief increased root density.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Product of choice for regular use during the main growing season
- 6% phased release iron provides up to 12 weeks of green up
- Helps turf recovery during periods of increased or heavy use
- Consistent granules providing reliable nutrient release after application

SUGGESTED SOIL TEMPERATURES FOR APPLICATION			DISCOVER MORE
Minimum 8°C	Optimum 16°C	Maximum 30°C	

NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
20 g/m²			40 g/m²		
N 28.0	P_2O_5 0.0	K_2O 8.0	N 56.0	P_2O_5 0.0	K_2O 16.0

CHARACTERISTIC	VALUE
Approx. Longevity:	6 - 12 weeks
SGN/Particle size:	100 - 125
Cutting Height:	> 2mm
Nitrogen Source:	3.0% organic, 9.3% ammonium, 1.7% urea
Guaranteed Analysis:	14-0-6
Additional Elements:	6.0% Fe
Organic Matter:	13.7%
Pack Size:	20 kg
Pack Coverage:	500 - 1,000 m²
Application Rate:	20 - 40 g/m²
Water Rate:	-
Application Method:	Spreader
Product Code:	**IG030217**

ImpactPlus Vitalize 16-5-16

Vitalize 16-5-16 has been developed to have a NPK analysis that provides an acidifying response. Vitalize 16-5-16 has organic nitrogen and added magnesium to improve plant stress relief during the main growing season. The technological formulation also provides quick green up as well as slow release technology for added longevity. Vitalize 16-5-16 is based on plant-derived organic materials.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Good cool temperature response
- Improved plant stress control
- Added magnesium for improved stress relief
- Quick breakdown of granules with moisture

SUGGESTED SOIL TEMPERATURES FOR APPLICATION			DISCOVER MORE
Minimum 8°C	Optimum 16°C	Maximum 30°C	

NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
20 g/m²			40 g/m²		
N 32.0	P_2O_5 10.0	K_2O 32.0	N 64.0	P_2O_5 20.0	K_2O 64.0

CHARACTERISTIC	VALUE
Approx. Longevity:	4 - 6 weeks
SGN/Particle size:	100 - 125
Cutting Height:	> 2mm
Nitrogen Source:	1.3% organic, 3.7% ammonium, 11.0% urea
Guaranteed Analysis:	16-5-16
Additional Elements:	2.0% MgO
Organic Matter:	13.7%
Pack Size:	20 kg
Pack Coverage:	500 - 1,000 m²
Application Rate:	20 - 40 g/m²
Water Rate:	-
Application Method:	Spreader
Product Code:	**IG030215**

ImpactPlus All Round 5-5-15

All Round 5-5-15 is a high K, NPK fertiliser. It offers three nitrogen sources to deliver sustained nutrient release to the turf. The high potassium content helps support the plant during periods of stress and offers improved turf hardness during cooler periods. Added magnesium and iron offer improved appearance and turf colour without promoting excessive growth. The organic base provides valuable carbon to the rhizosphere to enhance microbial activity.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- A high potassium formulation for improved early or late season disease resistance
- Improved nutrient uptake in cooler soil temperatures
- Added MgO and Fe for improved appearance without top growth
- Excellent Autumn/Winter turf hardener

SUGGESTED SOIL TEMPERATURES FOR APPLICATION					
Minimum 6°C		Optimum 16°C		Maximum 30°C	
NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
20 g/m²			40 g/m²		
N 10.0	P_2O_5 10.0	K_2O 30.0	N 20.0	P_2O_5 20.0	K_2O 60.0

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	4 - 6 weeks
SGN/Particle size:	100 - 125
Cutting Height:	> 2mm
Nitrogen Source:	1.3% organic, 2.3% ammonium, 1.5% urea
Guaranteed Analysis:	5-5-15
Additional Elements:	10.0% CaO, 3.0% MgO, 4.0% Fe
Organic Matter:	16.8%
Pack Size:	20 kg
Pack Coverage:	500 - 1,000 m²
Application Rate:	20 - 40 g/m²
Water Rate:	-
Application Method:	Spreader
Product Code:	**IG030312**

ImpactPlus Perk 4-0-14 + 10% Fe

ImpactPlus Perk is a superior turf hardening product for use in cooler weather conditions. The combination of manganese, iron and potassium make this an ideal cool season turf hardening formulation but it has also been used as a preseason fertiliser with great success. The 10% slow release iron provides excellent colour without overstimulating top growth. ImpactPlus Perk offers a superior and reliable nutrient release pattern for improved performance, working well at lower temperatures to offer early season growth and increased wear resistance.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- A high potassium formulation with added slow release iron and manganese
- 10% phased release iron provides up to 12 weeks of green up
- An ideal turf hardener to help increase disease resistance
- Contains the Asset Gold bio-stimulant for increased stress relief and turf vigour

SUGGESTED SOIL TEMPERATURES FOR APPLICATION					
Minimum 5°C		Optimum 16°C		Maximum 30°C	
NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
20 g/m²			40 g/m²		
N 8.0	P_2O_5 0.0	K_2O 28.0	N 16.0	P_2O_5 0.0	K_2O 56.0

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	6 - 12 weeks
SGN/Particle size:	100 - 125
Cutting Height:	> 2mm
Nitrogen Source:	0.5% organic, 3.5% urea
Guaranteed Analysis:	4-0-14
Additional Elements:	10.0% Fe
Organic Matter:	22.0%
Pack Size:	20 kg
Pack Coverage:	500 - 1,000 m²
Application Rate:	20 - 40 g/m²
Water Rate:	-
Application Method:	Spreader
Product Code:	**IG030314**

ImpactPlus Emerge 10-20-10

Emerge 10-20-10 is ideal for use prior to seeding or over-seeding of turf. It has been designed to enhance germination and establishment of newly seeded or turfed areas. The high phosphorous content is essential for root development as well as the breakdown of carbohydrates and the transfer of energy. With 2.0% organic nitrogen, Emerge 10-20-10 displays good cool temperature response and the Asset Gold bio-stimulant helps to improve turf vigour and root density.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- An ideal pre-seed or seed starter fertiliser when seeding or over-seeding
- Can be applied directly to the seed bed or on newly laid turf
- The nutrient release pattern matches the demands of new and young turf
- Asset Gold bio-stimulant coating increases turf vigour after establishment

SUGGESTED SOIL TEMPERATURES FOR APPLICATION					
Minimum 8°C		Optimum 16°C		Maximum 30°C	
NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
20 g/m²			40 g/m²		
N 20.0	P_2O_5 40.0	K_2O 20.0	N 40.0	P_2O_5 80.0	K_2O 40.0

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	8 - 10 weeks
SGN/Particle size:	100 - 125
Cutting Height:	> 2mm
Nitrogen Source:	1.3% organic, 8.7% ammonium
Guaranteed Analysis:	10-20-10
Additional Elements:	-
Organic Matter:	13.7%
Pack Size:	20 kg
Pack Coverage:	500 - 1,000 m²
Application Rate:	20 - 40 g/m²
Water Rate:	-
Application Method:	Spreader
Product Code:	**IG030216**

Slow Release from Methylene Urea

In order to provide increased longevity, slow release fertilisers (SRF) have also been incorporated into the ImpactPlus range. Coated with Asset Gold, these provide natural organic, inorganic and methylene urea nitrogen sources, utilising a range of methylene urea chain lengths, to provide consistent and increased nitrogen release for up to 12 weeks.

The nitrogen in our slow release fertiliser (SRF) products is either released by hydrolysis or by microbial activity in the soil. As a result, there is far less nitrogen leaching into the soil, meaning fewer applications, a major benefit to the greenkeeper or groundsperson, as well as increased environmental benefits.

These different methylene urea chain lengths provide different nitrogen release times to ensure the plant always has the required nitrogen input. The organic and urea portions release first, providing initial green up. Mono-methylene urea releases second and methylene diurea third. The final release phase is polymethylene urea. This gives the products a longevity of 8-12 weeks.

ImpactPlus SRF 19-0-19 (63% MU)

ImpactPlus SRF 19-0-19 is a homogenous fine turf fertiliser which provides a slow, gradual and consistent nutrient release to the plant from the high methylene urea content. The balanced NK analysis helps to promote good top growth and recovery during periods of heavy use. The phosphate-free formulation helps prevent the build-up of phosphate in the soil.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Minimal nutrient leaching due to slow nutrient release from methylene urea
- High potassium levels to lessen deficiency and help harden turf during periods of high stress
- Low salt content reduces potential for phytotoxicity
- Contains Asset Gold to improve turf vigour, root density and offer stress relief

SUGGESTED SOIL TEMPERATURES FOR APPLICATION		
Minimum 10°C	Optimum 25°C	Maximum 35°C

NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
20 g/m²			40 g/m²		
N 38.0	P_2O_5 0.0	K_2O 38.0	N 76.0	P_2O_5 0.0	K_2O 76.0

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	8 - 12 weeks
SGN/Particle size:	100 - 125
Cutting Height:	> 2mm
Nitrogen Source:	0.5% organic, 2.0% ammonium, 6.5% urea, 10.0% methylene urea
Guaranteed Analysis:	19-0-19
Additional Elements:	2.0% Fe
Organic Matter:	11.4%
Pack Size:	20 kg
Pack Coverage:	500 - 1,000 m²
Application Rate:	20 - 40 g/m²
Water Rate:	-
Application Method:	Spreader
Product Code:	**IG030522**

ImpactPlus SRF 12-0-24 (68% MU)

ImpactPlus SRF 12-0-24 is a homogenous, phosphate free, slow release fertiliser. The methylene urea N source provides a gradual and consistent nutrient release for up to 12 weeks and reduces the risk of nitrate leaching, scorch and runoff. The faster releasing urea nitrogen helps provides efficient potassium uptake.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- High potassium levels provide improved drought tolerance
- Low salt content reduces potential for phytotoxicity
- Excellent turf hardener when used as a late season application
- Contains the Asset Gold bio-stimulant for plant stress relief and improved root density

SUGGESTED SOIL TEMPERATURES FOR APPLICATION		
Minimum 10°C	Optimum 25°C	Maximum 35°C

NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
20 g/m²			40 g/m²		
N 24.0	P_2O_5 0.0	K_2O 48.0	N 48.0	P_2O_5 0.0	K_2O 96.0

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	8 - 12 weeks
SGN/Particle size:	100 - 125
Cutting Height:	> 2mm
Nitrogen Source:	0.5% organic, 2.0% ammonium, 6.5% urea, 10.0% methylene urea
Guaranteed Analysis:	12-0-24
Additional Elements:	-
Organic Matter:	15.5%
Pack Size:	20 kg
Pack Coverage:	500 - 1,000 m²
Application Rate:	20 - 40 g/m²
Water Rate:	-
Application Method:	Spreader
Product Code:	**IG030524**

Carbon-based Fertilisers

- **Contain naturally occurring high levels of humic and fulvic acids**
- **Offer increased soil health and sustainability**
- **Increase ability to store nitrogen and carbon**
- **Provides fuel for microbes and soil flora and fauna**
- **Four fine turf and four fairway and outfield formulations for greater flexibility**

Humic acid has many functions in the soil both chemical and physical. Chemically it aids in the breakdown of toxins and directly reduces the plants uptake of toxins. It also directly encourages microbial growth of both flora and fauna, which add to general soil fertility and health. Humic acid has also been found to assist in seed germination and plant growth as well as improving resistance to fungal attack.

Humic acids cannot be used as a fix for turf under stress, but can be used to help prevent it. Regular applications of humic acid are the only way to ensure you reduce the risk of stress to the turf to the lowest level.

Product Analysis

PRODUCT	ANALYSIS	APPROXIMATE RATE	LONGEVITY	PACK COVERAGE	PACK SIZE
Humik NPK 5-2-1	5-2-1 + 12% CaO + 2% MgO	20-40 g/m²	6-10 weeks	500-1,000 m²	20 kg
Humik NPK 12-0-12	12-0-12 + 5% CaO	20-40 g/m²	6-10 weeks	500-1,000 m²	20 kg
Humik NPK 14-5-14	14-5-14 + 2% CaO	20-40 g/m²	6-10 weeks	500-1,000 m²	20 kg
Humik NPK 5-3-18	5-3-18 + 4% CaO	20-40 g/m²	6-10 weeks	500-1,000 m²	20 kg
Humik N25	25-0-0	20-40 g/m²	6-10 weeks	500-1,000 m²	20 kg
Humik Boost	30-6-6	20-40 g/m²	6-10 weeks	500-1,000 m²	20 kg
Humik Triple Ten	10-10-10	20-40 g/m²	6-10 weeks	500-1,000 m²	20 kg
Humik Sport	14-5-18	20-40 g/m²	6-10 weeks	500-1,000 m²	20 kg

Organo-Mineral Formulation

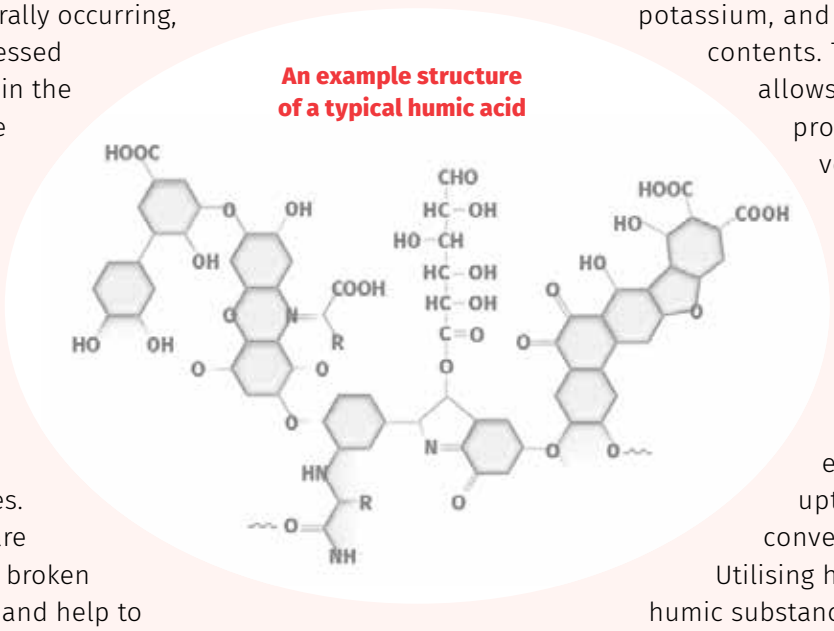
Like our ImpactPlus fertilisers, all of our Humik range products utilise an organo-mineral formulation. Where this differs from our ImpactPlus range is the choice of organic-based raw materials. The naturally occurring raw materials, based on leonardite, are excellent carbon stores. This beneficial carbon assists in providing high levels or organic matter with the products which provides fuel for soil microbes.

Humic Acid

Our fertilisers based on humic acid are produced to have fully homogenous granules ensuring the accurate spread of nutrients. They contain high levels of organic matter to help improve all round soil health, with particularly strong effects on sand-based rootzones.

The humic substances used to manufacture fertilisers are naturally occurring, but are often processed before being used in the manufacture of the finished product. When these natural humic substances are combined with nitrogen, phosphorous and/or potassium, they can form complexes. These complexes are much slower to be broken down by the plant and help to give an extended release period for the nutrients. This offers a range of benefits to the turf manager including greater nutrient use efficiency and a reduction in the number of fertiliser applications.

An example structure of a typical humic acid



Scientific research has found that humic acid applications to sport turf increases soil nutrient contents, including the total soil nitrogen, total phosphorus, total potassium, available nitrogen, available phosphorus, available potassium, and organic matter contents. This research allows us to formulate products which have very high nutrient availability to the plant and, with the addition of the high levels of humic acid content in the product, offer enhanced plant uptake, compared to conventional fertilisers. Utilising humic acid and humic substances also ensure that the urease, sucrase, and phosphatase activities in the soil are significantly increased after applications of humic acid based fertilisers.

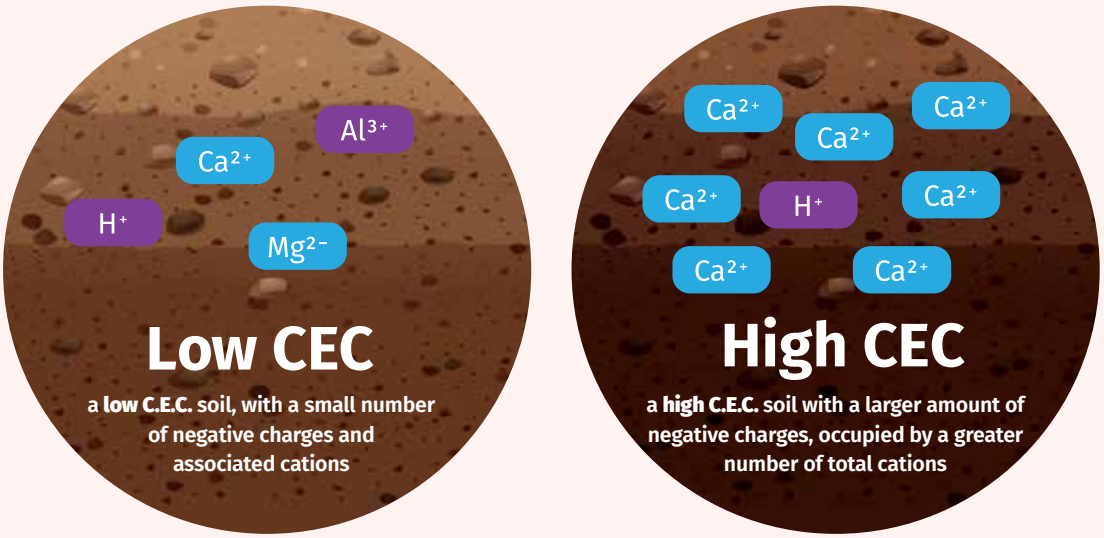
Cation Exchange Capacity

Humic acid can also help to increase the cation exchange capacity (C.E.C.) of the soil. A high C.E.C. helps the soil to cling on to the nutrients, keeping them available to the turf. This is particularly important in climates where regular watering is required.

The Cation Exchange Capacity (C.E.C.) indicates the soils capacity to hold cations (Calcium, Magnesium, Potassium, Sodium). The two main colloidal particles in the soil are clay and humus. The C.E.C. of the soil is determined by the amount of clay and/or humus.

These two colloidal substances act as the cation "warehouse" of the soil. Sandy soils with very little organic matter will have a very low C.E.C. whilst heavy clay soils with high levels of organic matter will have a much greater capacity to hold cations.

Soils with different CEC values



Base cations (Ca, Mg, K, Na) Acid cations (H, Al, NH_4) (Exchangable acidity)

Humic Acid and Nutrient Use Efficiency

Increased bioactivity in the soil, an effect of higher humic-substance levels in the soil, can help to enhance nutrient use efficiency and in some circumstances even reduce the fertiliser requirements. Along with enhancing the nutrient use efficiency, the higher humic-substances in the soil profile can also help to replace synthetic plant regulators as well as increasing water stress tolerance, decrease disease incidence and enhance early season growth.

Humic Substances

The use of humic substances as bio-stimulants in sports turf by mimicking natures processes emerges as a key sustainable technology that could integrate other turf management practices with the aim of making growth more productive and more efficient, whilst having less negative impact on the environment.

There are numerous humic substance-based formulations in the Humik range which can be applied as biologically active natural products in advanced sustainable turf management. The Indigrow range of Humik products is a sustainable option to increase soil health giving the benefits of humates to degraded soils for enhanced nutrient uptake, C.E.C. and overall soil structure to promote healthy turf.

Humik NPK 5-2-1

Humik NPK is derived from plant and organic mineral extracts and contains a wide range of trace elements. It has a 5-2-1 analysis with high levels of naturally occurring humic and amino acids, making this an ideal product to feed fairways and outfields without encouraging excessive growth.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

LOW Cd

KEY FEATURES

- Humic and amino acids and trace elements help to promote all round plant health
- Helps increase the C.E.C. of the soil, keeping trace elements available for longer
- Particularly effective in sand-based rootzones where microbial activity is lower
- Encourages microbial growth of both flora and fauna

SUGGESTED SOIL TEMPERATURES FOR APPLICATION					
Minimum 10°C		Optimum 18°C		Maximum 30°C	
NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
20 g/m²			40 g/m²		
N 10.0	P_2O_5 4.0	K_2O 2.0	N 20.0	P_2O_5 8.0	K_2O 4.0

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	6 - 10 weeks
SGN/Particle size:	100 - 125
Cutting Height:	> 2mm
Nitrogen Source:	1.5% organic, 3.0% ammonium, 0.5% urea
Guaranteed Analysis:	5-2-1
Additional Elements:	12.1% CaO, 2.0% MgO
Organic Matter:	19.3%
Pack Size:	20 kg
Pack Coverage:	500 - 1,000 m²
Application Rate:	20 - 40 g/m²
Water Rate:	-
Application Method:	Spreader
Product Code:	**IG030612**

Humik NPK 12-0-12

Humik NPK 12-0-12 is a balanced NK fertiliser, which is ideal as a first granular fertiliser of the season. It helps to encourage healthy early season growth, whilst improving turf hardness ahead of the season ahead. Humik NPK 12-0-12 contains naturally occurring high levels of humic and fulvic acids which can assist in seed germination and plant growth.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

LOW Cd

KEY FEATURES

- Phosphate free formulation assists in preventing phosphorous build up in the soil
- Helps to break down and minimise plant uptake of toxins
- Offers excellent response when used as a cold start fertiliser
- Humic acid based formulation helps to increase the cation exchange capacity of the soil

SUGGESTED SOIL TEMPERATURES FOR APPLICATION					
Minimum 10°C		Optimum 18°C		Maximum 30°C	
NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
20 g/m²			40 g/m²		
N 24.0	P_2O_5 0.0	K_2O 24.0	N 48.0	P_2O_5 0.0	K_2O 48.0

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	6 - 10 weeks
SGN/Particle size:	100 - 125
Cutting Height:	> 2mm
Nitrogen Source:	0.8% organic, 8.3% ammonium, 3.0% urea
Guaranteed Analysis:	12-0-12
Additional Elements:	5.0% CaO
Organic Matter:	13.4%
Pack Size:	20 kg
Pack Coverage:	500 - 1,000 m²
Application Rate:	20 - 40 g/m²
Water Rate:	-
Application Method:	Spreader
Product Code:	**IG030615**

Humik NPK 14-5-14

Humik NPK 14-5-14 is a balanced nitrogen and potassium fertiliser also containing phosphorous. It offers an excellent cool temperature response, with improves plant stress control from the naturally occurring levels of humic acids. The homogenous granules will break down quickly when exposed to moisture.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

LOW Cd

KEY FEATURES

- High potassium levels to lessen deficiency and help harden turf during periods of high stress
- Excellent cooler temperature response
- Humic acid based formulation helps to increase the cation exchange capacity of the soil
- Helps to release nutrients bound within the rhizosphere

SUGGESTED SOIL TEMPERATURES FOR APPLICATION					
Minimum 10°C		Optimum 18°C		Maximum 30°C	
NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
20 g/m²			40 g/m²		
N 28.0	P_2O_5 10.0	K_2O 28.0	N 56.0	P_2O_5 20.0	K_2O 56.0

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	6 - 10 weeks
SGN/Particle size:	100 - 125
Cutting Height:	> 2mm
Nitrogen Source:	1.2% organic, 8.5% ammonium, 4.4% urea
Guaranteed Analysis:	14-5-14
Additional Elements:	2.0% CaO
Organic Matter:	13.9%
Pack Size:	20 kg
Pack Coverage:	500 - 1,000 m²
Application Rate:	20 - 40 g/m²
Water Rate:	-
Application Method:	Spreader
Product Code:	**IG030618**

Humik NPK 5-3-18

Humik NPK 5-3-18 is a low nitrogen input fertiliser, suitable for both cool season and warm season applications. The low nitrogen formulation is particularly well suited to warm season grasses, such as Paspalum. The high levels of potassium to help improve disease resistance. Humik NPK 5-3-18 contains three nitrogen sources to provide slow and consistent nitrogen release.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- A high potassium formulation which suits warm season grasses such as Paspalum
- Non-acidifying formulation helps to balance rootzone pH
- Increases disease resistance from high potassium content
- Contains naturally occurring high levels of humic and fulvic acids

SUGGESTED SOIL TEMPERATURES FOR APPLICATION					
Minimum 10°C		Optimum 18°C		Maximum 30°C	
NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
20 g/m²			40 g/m²		
N 10.0	P_2O_5 6.0	K_2O 36.0	N 20.0	P_2O_5 12.0	K_2O 72.0

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	6 - 10 weeks
SGN/Particle size:	100 - 125
Cutting Height:	> 2mm
Nitrogen Source:	0.8% organic, 1.2% ammonium, 3.0% urea
Guaranteed Analysis:	5-3-18
Additional Elements:	4.0% CaO
Organic Matter:	13.4%
Pack Size:	20 kg
Pack Coverage:	500 - 1,000 m²
Application Rate:	20 - 40 g/m²
Water Rate:	-
Application Method:	Spreader
Product Code:	**IG030621**

Humik N25 25-0-0

Humik N25 is a new technology slow release outfield fertiliser. Humik N25 is a complex of humates and nitrogen which can only be broken down through microbial activity. Using Impact Humik N25 will provide all the benefits of slow release nitrogen, including; sustained growth, fewer growth flushes and less nitrate leaching. It will also provide the added benefits of humates through soil building and an increase in C.E.C.

Designed for use on:

- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- High nitrogen content for excellent growth with no phosphorous or potassium input
- Positively affects soil chemistry and microbial activity
- Helps hold nutrients and moisture in the rootzone for longer
- Particularly effective in sand-based rootzones where microbial activity is lower

SUGGESTED SOIL TEMPERATURES FOR APPLICATION					
Minimum 10°C		Optimum 18°C		Maximum 30°C	
NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
20 g/m²			40 g/m²		
N 50.0	P_2O_5 0.0	K_2O 0.0	N 100.0	P_2O_5 0.0	K_2O 0.0

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	6 - 10 weeks
SGN/Particle size:	200 – 400
Cutting Height:	> 10mm
Nitrogen Source:	1.0% organic, 11.5% ammonium, 12.5% urea
Guaranteed Analysis:	25-0-0
Additional Elements:	-
Organic Matter:	13.4%
Pack Size:	20 kg
Pack Coverage:	500 - 1,000 m²
Application Rate:	20 - 40 g/m²
Water Rate:	-
Application Method:	Spreader
Product Code:	**IG030610**

Humik Boost 30-6-6

Humik Boost 30-6-6 is a high nitrogen fertiliser with added phosphorous and potassium to offer excellent turf growth. The nitrogen is complexed with humic acid resulting in slow release characteristics which makes it available to the plant for a prolonged period of 2-3 months. The high nitrogen content helps to promote excellent top growth and recovery during periods of heavy wear.

Designed for use on:

- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- High nitrogen content for excellent top growth and turf recovery
- Particularly effective in sand-based rootzones where microbial activity is lower
- High organic matter content provides fuel source for microbes and soil flora and fauna
- Humic acid based formulation helps to increase the cation exchange capacity of the soil

SUGGESTED SOIL TEMPERATURES FOR APPLICATION			DISCOVER MORE
Minimum 10°C	Optimum 18°C	Maximum 30°C	

NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
20 g/m²			40 g/m²		
N 60.0	P_2O_5 16.0	K_2O 16.0	N 120.0	P_2O_5 32.0	K_2O 32.0

CHARACTERISTIC	VALUE
Approx. Longevity:	6 - 10 weeks
SGN/Particle size:	200 – 400
Cutting Height:	> 10mm
Nitrogen Source:	0.5% organic, 3.5% ammonium, 26.0% urea
Guaranteed Analysis:	30-6-6
Additional Elements:	-
Organic Matter:	13.4%
Pack Size:	20 kg
Pack Coverage:	500 - 1,000 m²
Application Rate:	20 - 40 g/m²
Water Rate:	-
Application Method:	Spreader
Product Code:	**IG030601**

Humik Triple Ten 10-10-10

Humik Triple Ten 10-10-10 is a perfectly balanced NPK feed which will offer a strong growth response and a boost in colour throughout the growing season. The perfectly balanced analysis ensures a supply of nitrogen, phosphorous and potassium to the plant to correct any deficiencies. Humik Triple Ten contains naturally occurring humates which can only be broken down by microbial activity within the soil profile.

Designed for use on:

- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Offers excellent plant stress relief from high humic acid content
- Helps to break down and minimise plant uptake of toxins
- Humic acid based formulation helps to increase the cation exchange capacity of the soil
- Particularly effective in sand-based rootzones where microbial activity is lower

SUGGESTED SOIL TEMPERATURES FOR APPLICATION			DISCOVER MORE
Minimum 10°C	Optimum 18°C	Maximum 30°C	

NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
20 g/m²			40 g/m²		
N 20.0	P_2O_5 20.0	K_2O 20.0	N 40.0	P_2O_5 40.0	K_2O 40.0

CHARACTERISTIC	VALUE
Approx. Longevity:	6 - 10 weeks
SGN/Particle size:	200 – 400
Cutting Height:	> 10mm
Nitrogen Source:	0.5% organic, 9.5% ammonium
Guaranteed Analysis:	10-10-10
Additional Elements:	3.0% CaO
Organic Matter:	13.4%
Pack Size:	20 kg
Pack Coverage:	500 - 1,000 m²
Application Rate:	20 - 40 g/m²
Water Rate:	-
Application Method:	Spreader
Product Code:	**IG030604**

Humik Sport 14-5-18

Humik Sport 14-5-18 is a well-balanced NPK fertiliser for use in challenging sports pitch scenarios. The different nitrogen sources offer an initial growth boost, whilst maintaining consistent feeding levels after application, with extended longevity provided by the methylene urea content. The added trace elements, including magnesium and calcium, help to boost turf colour, reduce turf stress and improve disease resistance.

Designed for use on:

- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Contains different nitrogen sources to provide stable and consistent growth
- Particularly effective in sand-based rootzones where microbial activity is lower
- Directly encourages microbial growth of soil flora and fauna
- Excellent nutrient availability in cooler temperatures

SUGGESTED SOIL TEMPERATURES FOR APPLICATION			DISCOVER MORE
Minimum 10°C	Optimum 18°C	Maximum 30°C	

NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
20 g/m²			40 g/m²		
N 28.0	P_2O_5 10.0	K_2O 36.0	N 56.0	P_2O_5 20.0	K_2O 72.0

CHARACTERISTIC	VALUE
Approx. Longevity:	6 - 10 weeks
SGN/Particle size:	200 – 400
Cutting Height:	> 10mm
Nitrogen Source:	0.5% organic, 9.4% ammonium, 4.1% urea
Guaranteed Analysis:	14-5-18
Additional Elements:	-
Organic Matter:	13.4%
Pack Size:	20 kg
Pack Coverage:	500 - 1,000 m²
Application Rate:	20 - 40 g/m²
Water Rate:	-
Application Method:	Spreader
Product Code:	**IG030607**

> A controlled release fertiliser is a granular fertiliser that releases nutrients gradually into the soil.

Controlled Release Fertilisers

- **Based on polymer sulphur coated urea**
- **Four different release periods**
- **Fully bio-degradable membrane**
- **Moisture activated**
- **Up to 24 week nitrogen release**

Slow and controlled release fertilisers reduce the speed of release of plant nutrients from fertilisers to the plant. This can be achieved by different means.

With controlled release fertilisers, the principle method is to cover a conventional soluble fertiliser with a protective coating (known as encapsulation) of a water-insoluble, semi-permeable or impermeable-with -pores material. This controls water penetration and thus the rate of dissolution, and ideally synchronises nutrient release with the plants' needs.

The use of controlled release fertilisers has increased over recent years not just due to the environmental benefits that they give but also for the economic and timesaving attributes. These specially formulated fertilisers are available with several technologies, one of which is the PSCU coating used in the Impact range.

PRODUCT ANALYSIS

PRODUCT	ANALYSIS	APPROXIMATE RATE	LONGEVITY	PACK COVERAGE	PACK SIZE
Impact CGF 15-5-15	15-5-15 + 15% CaO	20-40 g/m²	8-10 weeks	500-1,000 m²	20 kg
Impact CGF 25-5-10	25-5-10 + 7% CaO + 2% MgO	20-40 g/m²	8-12 weeks	500-1,000 m²	20 kg
Impact CGF 26-5-8	26-5-8 + 6% CaO + 2% MgO	20-40 g/m²	12-14 weeks	500-1,000 m²	20 kg
Impact CGF 28-8-8	28-8-8	20-40 g/m²	18-24 weeks	500-1,000 m²	20 kg

PSCU (Polymer Sulphur Coated Urea)

Our polymer sulphur coated urea (PSCU) fertilisers are a hybrid of both sulphur and polymer options, known to us as PSCU.

The sulphur is applied initially as a thinner layer which reduces the chances of “lock off” which occurs when the coated granule fails to release its nutrients more prevalent when the sulphur coating is too thick.

The granule is then coated with a polymer. This reduces the potential of catastrophic “burst” (premature release of nutrient) prevalent in sulphur coated urea products due to imperfections in the coating.

The PSCU coatings can be built up in layers the overall thickness dictates the longevity and diffusion rate which is dependent on moisture as the layers of polymer increase this extends the release time.

The longevity is regulated by moisture which is highly correlated with nutrient availability and uptake this ensures that when water availability initiates gradual breakdown of the polymer coat the osmosis increase the internal pressure on inner pool of nutrient slowly releasing the nitrogen to the rhizosphere.

Nitrogen losses occur in many ways. Controlled release fertilisers can reduce volatilisation by ensuring the urea fertiliser is intact not broken down by urease enzymes. These can cause volatilisation of ammonia gas via ammonium carbamates conversion to ammonia and carbon dioxide if there is inadequate moisture. The coating breakdown releases the urea once sufficient moisture is available for the conversion of ammonia gas to ammonium ions which then due to their positive charge are attracted to the soil cation exchange complex.

Coating Levels

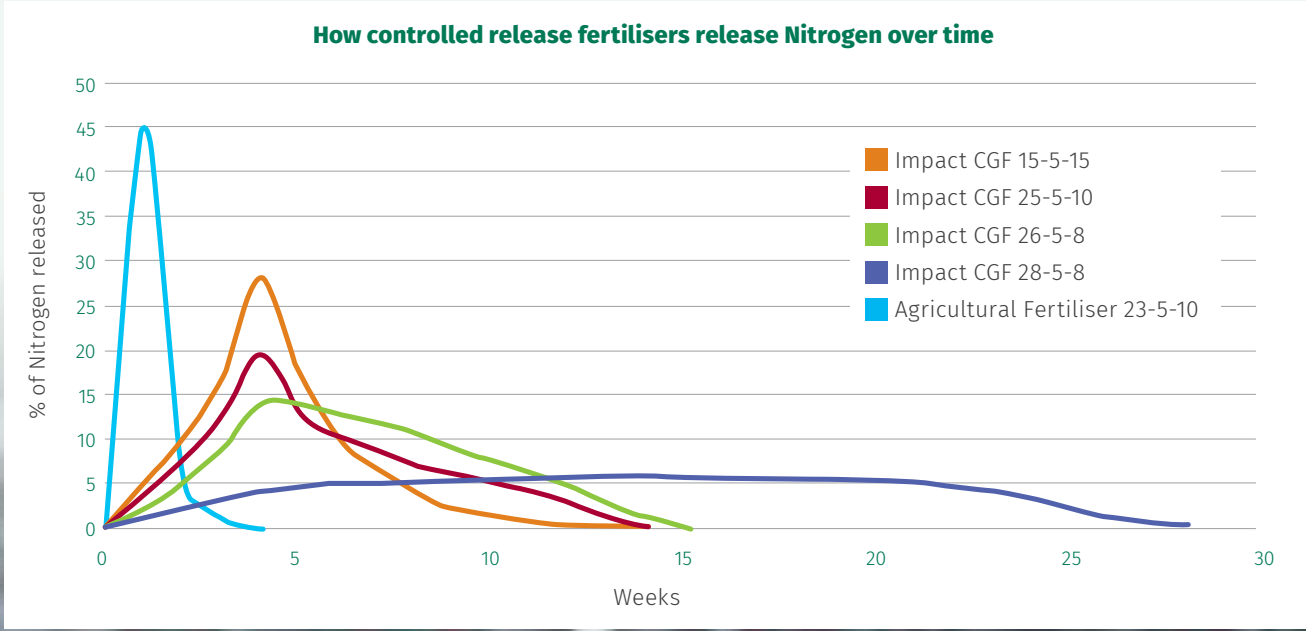
The PSCU range is a major part of most turf managers armoury when trying to maintain quality aesthetics for long periods under time constraints.

Longer periods between applications ensure that the playing surface is available more regularly to the clubs, due to the reduced number of applications required to maintain the same nutrient input.

Our range of products contains coating from as low as 20% to as high as 93% inclusion, giving an expected release period from 8 to 24 weeks, depending on the coating level.

The range of longevity options allows for flexible medium and long term management whilst not demanding frequent allocation of time.

The graph below shows how the different inclusion levels on our CGF range of fertilisers release their nutrients over time, comparing them against a conventional release agricultural fertiliser.



> Reduced nutrient loss to the environment is a major benefit of enhanced efficiency fertilisers, which also offer an increase nutrient availability to the plant.

Impact CGF 15-5-15 (20% PSCU)

Impact CGF 15-5-15 is suitable for fairways and outfields and is an all year round product due to the balanced nitrogen/potassium analysis. The high levels of uncoated nitrogen provide the turf with good green up and an initial growth response. Impact CGF 15-5-15 is a very economic approach to feeding large areas and the added PSCU provides increased longevity.

Designed for use on:

- Tees
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- 20% PSCU coating for increased longevity; 2+ months nitrogen release
- Consistently sized granules for accurate and consistent application
- Small granule size ensures the product disappears in the sward
- Contains 12.6% calcium to help reduce salt levels in the soil profile

SUGGESTED SOIL TEMPERATURES FOR APPLICATION					
Minimum 10°C		Optimum 16°C		Maximum 30°C	
NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
20 g/m²			40 g/m²		
N 30.0	P_2O_5 10.0	K_2O 30.0	N 60.0	P_2O_5 20.0	K_2O 60.0

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	8 - 10 weeks
SGN/Particle size:	120 - 160
Cutting Height:	> 6mm
Nitrogen Source:	3.3% ammonium, 11.4% urea, 0.3% urea formaldehyde
Guaranteed Analysis:	15-5-15
Additional Elements:	15.0% CaO
Organic Matter:	-
Pack Size:	20 kg
Pack Coverage:	500 - 1,000 m²
Application Rate:	20 - 40 g/m²
Water Rate:	-
Application Method:	Spreader
Product Code:	**IG030808**

Impact CGF 25-5-10 (40% PSCU)

Outfield 25-5-10 provides excellent nutrient availability in cool temperatures. The unique formulation process ensures free release of ammoniacal and ureic nitrogen immediately after application, providing an initial effect on growth. The added 2% MgO provides excellent green up, and the PSCU coating ensures very low nitrogen leaching.

Designed for use on:

- Tees
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- 40% PSCU coating for increased longevity; 2-3 months nitrogen release
- Excellent nutrient availability in cooler temperatures
- Prevents scorch and minimises nutrient leaching
- Contains added magnesium for improved turf colour and reduced turf stress

SUGGESTED SOIL TEMPERATURES FOR APPLICATION					
Minimum 10°C		Optimum 16°C		Maximum 30°C	
NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
20 g/m²			40 g/m²		
N 50.0	P_2O_5 10.0	K_2O 20.0	N 100.0	P_2O_5 20.0	K_2O 40.0

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	8 - 12 weeks
SGN/Particle size:	120 - 160
Cutting Height:	> 6mm
Nitrogen Source:	1.3% ammonium, 23.3% urea, 0.4% urea formaldehyde
Guaranteed Analysis:	25-5-10
Additional Elements:	7.0% CaO, 2.0% MgO
Organic Matter:	-
Pack Size:	20 kg
Pack Coverage:	500 - 1,000 m²
Application Rate:	20 - 40 g/m²
Water Rate:	-
Application Method:	Spreader
Product Code:	**IG030810**

Impact CGF 26-5-8 (60% PSCU)

Outfield 26-5-8 is a balanced summer feed that provides steady growth response. The free release of ammoniacal and ureic nitrogen provides an initial growth effect. The two step manufacturing process ensures a far more predictable nutrient release pattern in comparison to other blended PSCU products available.

Designed for use on:

- Tees
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- 60% PSCU coating for increased longevity; 3+ months nitrogen release
- Reduces time and labour costs compared to conventional granular fertiliser
- Helps prevent scorch and will not produce excessive growth
- Contains added magnesium for improved turf colour and reduced turf stress

SUGGESTED SOIL TEMPERATURES FOR APPLICATION						DISCOVER MORE
Minimum 10°C		Optimum 16°C		Maximum 30°C		
NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION						
20 g/m²			40 g/m²			
N 52.0	P_2O_5 10.0	K_2O 16.0	N 104.0	P_2O_5 20.0	K_2O 32.0	

CHARACTERISTIC	VALUE
Approx. Longevity:	12 - 14 weeks
SGN/Particle size:	120 - 160
Cutting Height:	> 6mm
Nitrogen Source:	1.2% ammonium, 24.4% urea, 0.4% urea formaldehyde
Guaranteed Analysis:	26-5-8
Additional Elements:	6.0% CaO, 2.0% MgO
Organic Matter:	-
Pack Size:	20 kg
Pack Coverage:	500 - 1,000 m²
Application Rate:	20 - 40 g/m²
Water Rate:	-
Application Method:	Spreader
Product Code:	**IG030814**

Impact CGF 28-8-8 (93% PSCU)

Impact CGF 28-8-8 contains a high proportion of controlled release nitrogen from the 93% PSCU coating. This high nitrogen product is ideal for turf areas where continual feeding throughout the growing season is required. This environmentally friendly product has minimal nutrient losses through leaching, preventing environmental contamination and maximising the nutrients available to the plant.

Designed for use on:

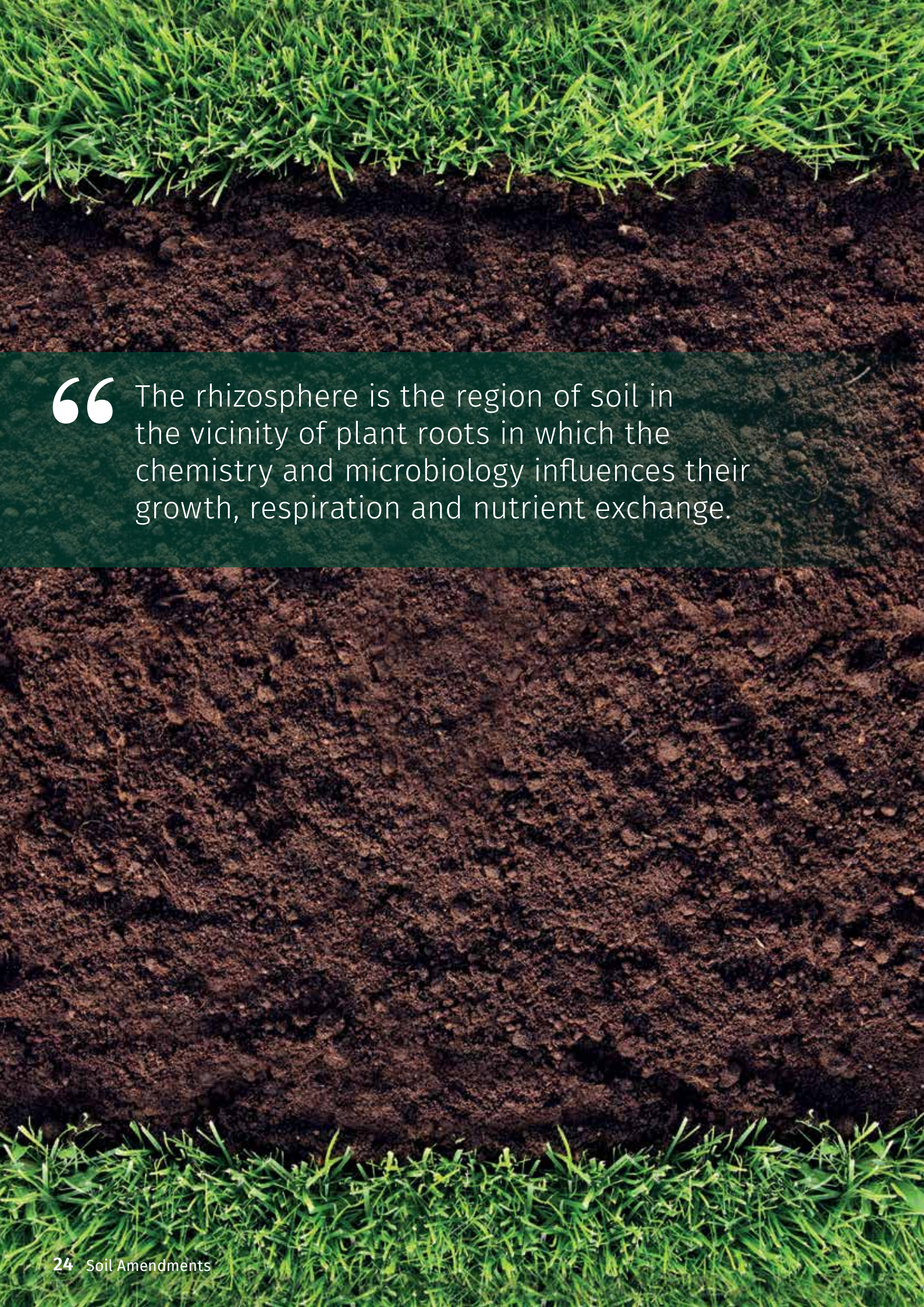
- Tees
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- 93% PSCU coating for increased longevity; 4-6 months nitrogen release
- A single application provides nutrition for the full growing season
- Nutrients are release to match the turf's requirements throughout the growing cycle
- Helps prevent scorch and will not produce excessive growth

SUGGESTED SOIL TEMPERATURES FOR APPLICATION						DISCOVER MORE
Minimum 10°C		Optimum 16°C		Maximum 30°C		
NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION						
20 g/m²			40 g/m²			
N 56.0	P_2O_5 16.0	K_2O 16.0	N 112.0	P_2O_5 32.0	K_2O 32.0	

CHARACTERISTIC	VALUE
Approx. Longevity:	18 - 24 weeks
SGN/Particle size:	120 - 160
Cutting Height:	> 6mm
Nitrogen Source:	1.9% ammonium, 25.5% urea, 0.6% urea formaldehyde
Guaranteed Analysis:	28-8-8
Additional Elements:	-
Organic Matter:	-
Pack Size:	20 kg
Pack Coverage:	500 - 1,000 m²
Application Rate:	20 - 40 g/m²
Water Rate:	-
Application Method:	Spreader
Product Code:	**IG030821**



> The rhizosphere is the region of soil in the vicinity of plant roots in which the chemistry and microbiology influences their growth, respiration and nutrient exchange.

Soil Amendments

- **Improve soil properties**
- **Increase water holding capacity**
- **Greater cation exchange capacity**
- **Better nutrient uptake**

Soil amendments are materials which when added to the soil improve these physical properties. When applied they can help reduce the impact of low water retention, permeability, water infiltration, drainage, aeration and structure. The aim is to enhance the rhizosphere and create an environment more conducive for turf roots with increased water and nutrient capacity.

Indigrow has two specialist soil amendment products which are aimed at enhancing quality sports turf and as part of an integrated approach by groundspersons and turf managers to maximise water and nutrient efficiency across a range of soil profiles and in the challenging climatic variations prevalent in recent years.

PRODUCT ANALYSIS

PRODUCT	ANALYSIS	APPROXIMATE RATE	LONGEVITY	PACK COVERAGE	PACK SIZE
Impact Enhance	27% CaO	35-100 g/m²	4-6 weeks	200-575 m²	20 kg
Impact ZeoZone	-	200-400 g/m²	-	50-100 m² 2,500-5,000m²	20 kg 1,000 kg

Further soil improver products, Compass Composted Seaweed and Compass Lite, can be found on page 63

Calcium

Calcium is vital to turf grass. It helps with the uptake and movement of other nutrients around the plant. As a major constituent of cell walls, it also assists with respiration particularly during periods of humidity and high heat.

Impact Enhance is a high-quality calcium sulphate in an extremely soluble micro-prill form. As well as providing the essential calcium input whilst having no effect on soil pH, it offers a solution to many amenity turf soils with challenging physical structures.

The major benefits are due to its chemistry which encourages aggregation of soil particles which has a positive effect on the structural properties of the soil. These larger aggregates increase pore size allowing greater water percolation and aeration. This also provides a more conducive environment for turf root development in the rhizosphere and increased access to nutrition.

Using Calcium to Remove Soil Salts

High sodium levels can have a major impact on soil and turf performance. Excessive sodium levels can prevent nutrient uptake, leading to reduced root growth and poorer quality turf. These high sodium levels are often found in warmer climates and coastal areas where seawater is used for irrigation. Our solution is to use high calcium products to help "pull" the sodium through the soil profile.

Removing excess sodium from the soil profile helps to strip nutrients from occupied soil colloids, which can be flushed through the profile with irrigation. Oxygen replaces the excess sodium in the soil pores. This oxygen can help enhance root growth, which in turn improves soil structure. Removing sodium also gives microbial populations a chance to thrive.

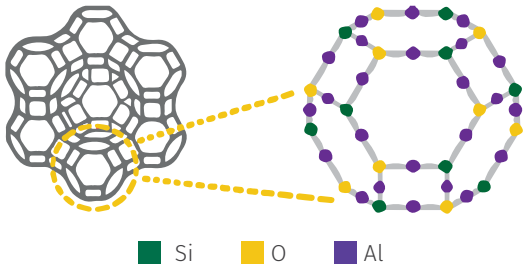
Zeolite

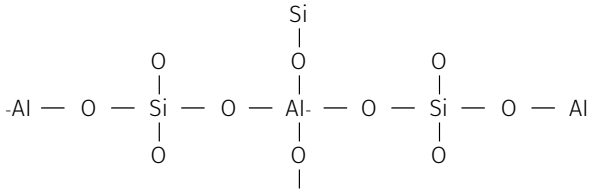
Many amenity and Sports turfs are based on sand to allow year-round utilisation. This provides many challenges as the benefits of a free draining medium also has poor water and nutrient retention due to the low cation exchange capacity (C.E.C.).

Zeolite, from which Impact ZeoZone is produced, is described as a crystalline, hydrated aluminosilicate of alkali and alkaline earth cations having an infinite, open, three dimensional structure. It is able to lose and gain water reversibly and to exchange extra framework cations, both without change of crystal structure. The large structural cavities and the entry channels leading into them contain water molecules, which form hydration spheres around exchangeable cations.

Zeolite is like a magnet that can hold cations like heavy metal, ammonia, low level radioactive elements, toxins, several odours, petrochemicals, many different type of gases and a multitude of various solutions. It is a highly porous sponge with a large surface area that can absorb water up to 40% of its weight, and up to 100% of its own mass. The most important element of this mineral lies at its cage structure and at its aluminium and silicon content which enables the mineral a high cation exchange capacity.

Basic Zeolite Structure





Impact Enhance

Impact Enhance is an effective method of adding calcium and sulphur to the plant, without altering the NPK balance. It can also be applied to counteract problem soil conditions. Impact Enhance is produced from mined calcium sulphate and its controlled particle size ensures optimum plant availability. Applications of calcium help to remove the built up soil salts, commonly found where turfgrass is irrigated with sea water.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Calcium helps plants to absorb nutrients more efficiently
- Aids cell division and cell wall formation, critical for plant respiration during periods of high heat and/or humidity
- Beneficial in leaching soluble salts from the rootzone
- Breaks down rapidly with light irrigation

SUGGESTED SOIL TEMPERATURES FOR APPLICATION		
Minimum 8°C	Optimum 16°C	Maximum 30°C

NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
35 g/m²			100 g/m²		
N 0.0	P_2O_5 0.0	K_2O 0.0	N 0.0	P_2O_5 0.0	K_2O 0.0

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	4 - 6 weeks
SGN/Particle size:	100 - 125
Cutting Height:	> 2mm
Nitrogen Source:	-
Guaranteed Analysis:	0-0-0
Additional Elements:	27.0% CaO, 36.0% SO_3
Organic Matter:	-
Pack Size:	20 kg
Pack Coverage:	200 - 575 m²
Application Rate:	35 - 100 g/m²
Water Rate:	-
Application Method:	Spreader
Product Code:	**IG030308**

Impact ZeoZone

Impact ZeoZone is a Non-hazardous natural volcanic alumina-silicate mineral, with a minimum purity of 85%. It is extremely porous and absorbent which allows for the efficient movement of water to turf and plants. It is produced from Clinoptilolite, which has a very high cation exchange capacity of up to 170 meq/100g, and has a high specific surface area, up to 60 m²/g. Incorporating Impact ZeoZone into the soil profile increases the water retention and CEC of the soil leading to better water and nutrient management.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

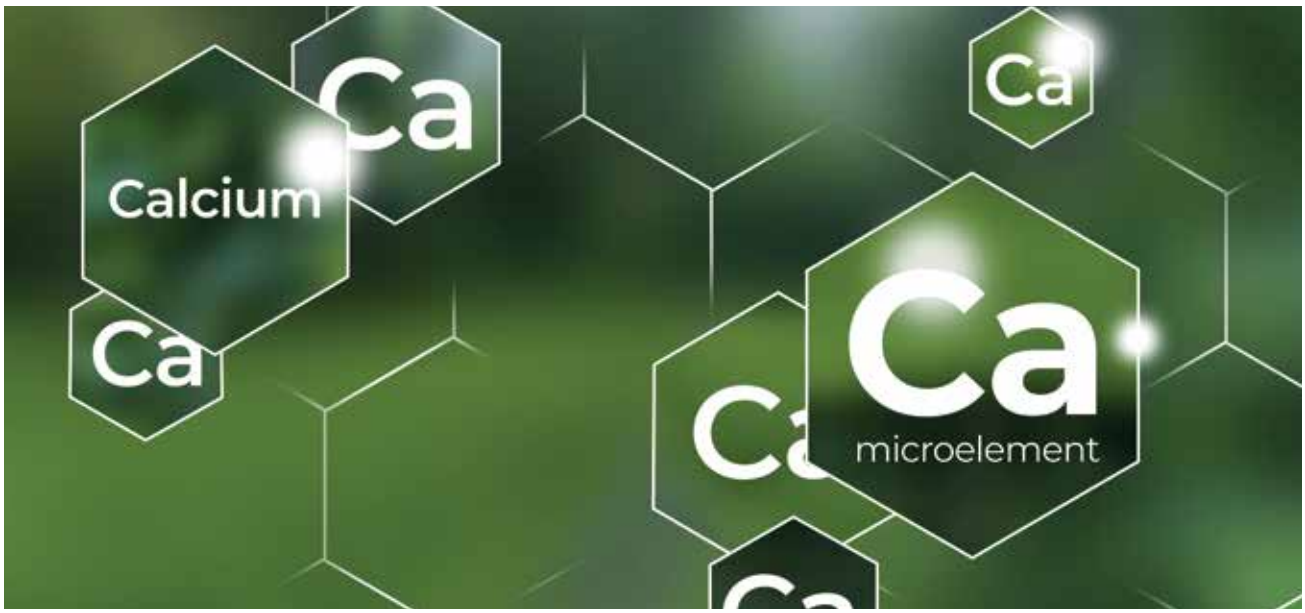
- Tests show it will retain between more than 100% of its own molecular weight in water
- Provides the majority of available moisture slowly to the plant when required
- It ensures consistent delivery of moisture to the plants root system
- Helps to reduce localised dry spots and irrigation requirements

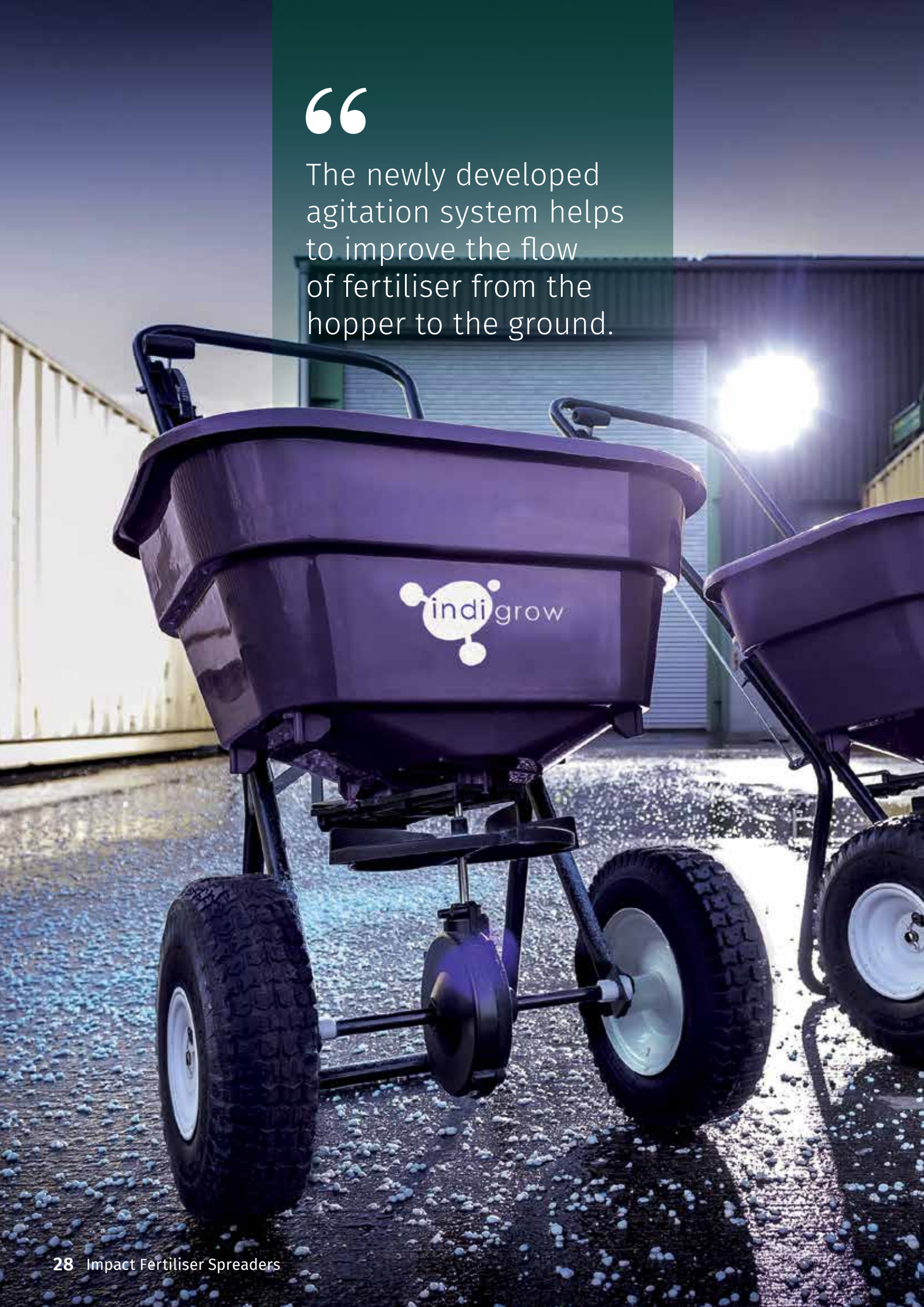
SUGGESTED SOIL TEMPERATURES FOR APPLICATION		
Minimum 8°C	Optimum 16°C	Maximum 30°C

NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
35 g/m²			100 g/m²		
N 0.0	P_2O_5 0.0	K_2O 0.0	N 0.0	P_2O_5 0.0	K_2O 0.0

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	-
SGN/Particle size:	70 - 160
Cutting Height:	> 6mm
Nitrogen Source:	-
Guaranteed Analysis:	-
Additional Elements:	-
Organic Matter:	-
Pack Size:	20 kg
Pack Coverage:	50 - 100 m²
Application Rate:	200 - 400 g/m²
Water Rate:	-
Application Method:	Spreader
Product Code:	**IG030500**





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The newly developed agitation system helps to improve the flow of fertiliser from the hopper to the ground.

Impact Fertiliser Spreaders

- **Offers accurate fertiliser application**
- **Help to maximise nutrient use efficiency**
- **Applies small or large granules with ease**
- **Large 45kg hoppers and ergonomic handles**

The Impact Spreaders are our latest innovation to ensure accurate spreading of Indigrow fertilisers, helping to ensure maximum nutrient use efficiency. The newly developed agitation system helps to improve the flow of fertiliser from the hopper to the ground, whilst the ergonomic handles and large pneumatic wheel ensure that the Impact Spreaders are easy to use.

All of the materials to build our fertiliser spreaders are of the highest quality and each product is tested before it leaves the factory. The products were rigorously tested during the development and design phase to ensure that there are no weak points and the products are of the highest expected standard.

A spreader settings chart is available for the use of all Indigrow fertilisers in the Impact Spreaders. This can be found on page 92 in this catalogue or by scanning this QR code

Impact P45 Fertiliser Spreader

The Impact P45 Spreader is our latest innovation to ensure accurate spreading of Indigrow fertilisers, helping to ensure maximum nutrient use efficiency. The newly developed agitation system helps to improve the flow of fertiliser from the hopper to the ground, whilst the ergonomic handles and large pneumatic wheel ensure that the Impact P45 spreader is easy to use.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Painted frame
- Slide system ensures accurate application of small and large granules
- Large 45 kg hopper
- Easy to assemble and use

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	-
SGN/Particle size:	-
Cutting Height:	-
Nitrogen Source:	-
Guaranteed Analysis:	-
Additional Elements:	-
Organic Matter:	-
Pack Size:	Each
Pack Coverage:	-
Application Rate:	-
Water Rate:	-
Application Method:	-
Product Code:	**IG030101**

Impact S45 Fertiliser Spreader

The Impact S45 Spreader is our latest innovation to ensure accurate spreading of Indigrow fertilisers, helping to ensure maximum nutrient use efficiency. The newly developed agitation system helps to improve the flow of fertiliser from the hopper to the ground, whilst the ergonomic handles and large pneumatic wheel ensure that the Impact S45 spreader is easy to use.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Stainless steel frame protects against corrosion giving longer product lifespan
- Slide system ensures accurate application of small and large granules
- Large 45 kg hopper
- Easy to assemble and use

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	-
SGN/Particle size:	-
Cutting Height:	-
Nitrogen Source:	-
Guaranteed Analysis:	-
Additional Elements:	-
Organic Matter:	-
Pack Size:	Each
Pack Coverage:	-
Application Rate:	-
Water Rate:	-
Application Method:	-
Product Code:	**IG030103**

Wetting Agents

- **Prevent or cure dry patch**
- **Increase water penetration**
- **Improve water holding capacity in the rootzone**
- **Reduce dew formation**
- **Target localised dry spots**

Wetting agents have a vital role in turf management. For the benefit of turf managers, Indigrow has developed Magnum, our range of specialist wetting agents. Magnum wetting agents can work in a number of ways. Curative wetting agents are designed to be applied to an existing hydrophobic condition, whilst preventative wetting agents are applied in the spring and repeated throughout the season to balance moisture in these potentially hydrophobic areas. Penetrant wetting agents open up the soil profile and allow excessive water to drain away and dispersant products help prevent the build-up of dew.

Indigrow's Magnum range of wetting agents has been formulated to work in conjunction with one another to provide a complete solution for the turf manager. Our Magnum wetting agents also take on a further role in water management. By helping to improve water conservation, particularly during periods of drought, our wetting agents can help to maintain or improve turf health and quality.

PRODUCT ANALYSIS

PRODUCT	ANALYSIS	APPROXIMATE RATE	LONGEVITY	PACK COVERAGE	PACK SIZE
Magnum 357 Calibre	triple action	10-20 lt/ha	4–8 weeks	5,000–10,000 m² 6–12 ha	10 lts 120 lts
Magnum CO	curative	10-20 lt/ha	4–8 weeks	5,000–10,000 m² 6–12 ha	10 lts 120 lts
Magnum Forty-Four	penetrant	20-40 lt/ha	2–4 weeks	2,500–5,000 m² 3–6 ha 25-50 ha	10 lts 120 lts 1,000 lts
Magnum Forty-Four OneShot	penetrant	2-4 sachets/ha	2–4 weeks	5–10 ha	20 sachets
Magnum Granular	penetrant	10 g/m²	4–6 weeks	1,000 m²	10 kg
Magnum Recoil	dew dispersant	10 lt/ha	10–14 days	10,000 m²	10 lts
Magnum Applicator Pellet	penetrant	1 pellet / 2,000-3,000 m²	2–4 weeks	10,000–15,000 m²	5 pellets
Magnum Blaster Pellet	penetrant	1 pellet / min. 2,500 lt water	8–12 weeks	-	1 pellet
Magnum Pellet Applicator	-	-	-	-	Each

Magnum 357 Calibre Triple Action Penetrant

Our most recent and advanced formulation wetting agent is Magnum 357 Calibre.

Magnum 357 Calibre is a blend of non-ionic surfactants and contains 100% active ingredients. With three active ingredients and three modes of action, this 100% biodegradable product is ideal to maintain the correct balance of water in the soil profile.

The three active ingredients are:

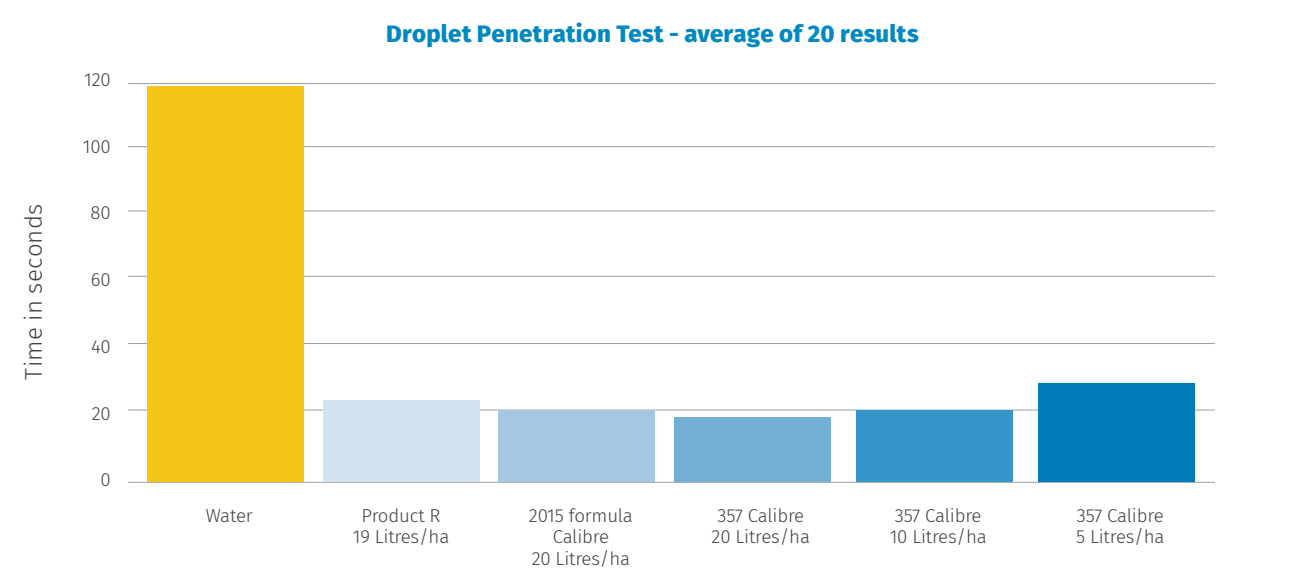
- A glycol based ingredient which spreads across surface of turf
- A block co-polymer which aids water penetration
- A reverse block co-polymer which helps balance water within the rootzone

This triple action wetting agent combines three different surfactant technologies to provide:

- Even spreading of water over the turf surface
- Efficient water penetration through advanced penetrant technologies
- Improved water holding capacity through the use of reverse block co-polymers

Tried and tested spreading agents ensure that the applied spray is evenly distributed across the surface of the turf and at the same time aids in penetration into the rootzone. Improvements in penetration are significant when compared to untreated soils and Magnum 357 performs favourable to other products even at relatively low application rates.

By using wetting agents such as Magnum 357 Calibre, the amount of irrigation or rain water require to bring rootzones back to acceptable moisture contents is greatly reduced. Typically there is a saving in water of 30 – 40 %.



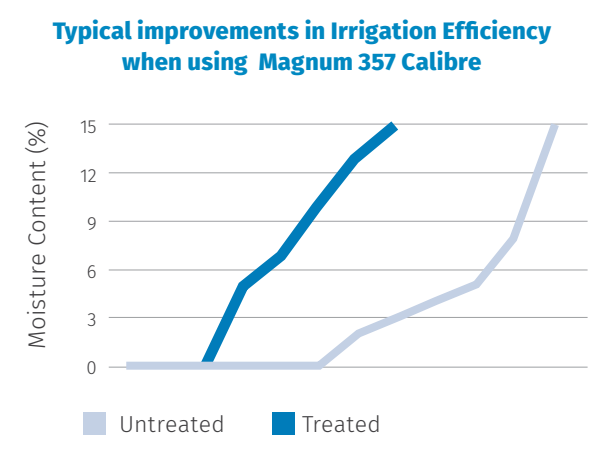
Magnum CO – Curative

Magnum CO contains an organic acid designed to clean the sand particle and flush unwanted waxes, hydrocarbons, bicarbonate salts and minerals through the soil profile. Waxy organic layers on soil particles shed water and do not allow water to hold in rootzone. Poor water infiltration caused by hydrophobic waxes, fats or other organic debris that form water repellent "coatings" on soil or sand particles. Magnum CO contains a cleansing agent which solublises the waxy deposits and flushes them away.

Once the sand particles have been 'cleaned', it's important not to allow these hydrophobic waxes, fats or other organic debris from building up again.

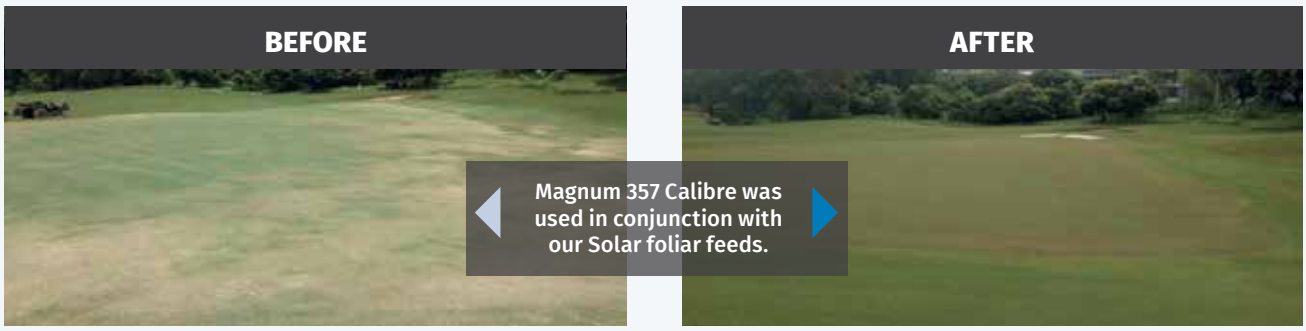
Improving Water Penetration

Tried and tested spreading agents ensure that the applied spray is evenly distributed across the surface of the turf and at the same time aids in penetration into the rootzone. Improvements in penetration are significant when compared to untreated soils and Magnum 357 performs favourable to other products even at relatively low rates.



How Effective Are They?

By using wetting agents such as Magnum 357 Calibre, the amount of irrigation or rain water required to bring rootzones back to acceptable moisture contents is greatly reduced. Typically there is a saving in water of 30 – 40 %.



Targeted Wetting Agent Programmes

Wetting agent programmes are essential in achieving a reduction in dry patch and fairy ring outbreaks. By alternating curative (Magnum CO) and preventative (Magnum 357 Calibre) products, the waxy coating covering soil and sand particles is broken down. This process also helps with the re-wetting of the soil profile. This approach helps to eradicate plant stress, providing a more consistent playing surface.

Applying the two products, Magnum 357 Calibre and Mangum CO in a targeted wetting agent programme will offer the most effective results against dry patch and other water-related turf management issues. Our recommended programme, based on a European climate is below:

Product	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Total
Magnum CO	20 lt/ha	-	-	-	-	20 lt/ha	40 lt/ha
Magnum 357 Calibre	-	20 lt/ha	10 lt/ha	10 lt/ha	10 lt/ha	-	50 lt/ha

More information on our research and trials work on this subject are available on request. Please contact us on: growth@indigrow.com

Magnum Forty-Four - Penetrant

Water management on managed turf grass is extremely important to ensure adequate water in the rhizosphere for nutrient uptake and overall metabolic function. Conversely ensuring rapid movement of excess water from surfaces is vital to maintain suitable playing surfaces. This is due to the fact that the balance of moisture plays a key role in reducing abiotic stress and preventing conditions that encourage biotic stress leading to conditions detrimental to turf quality.

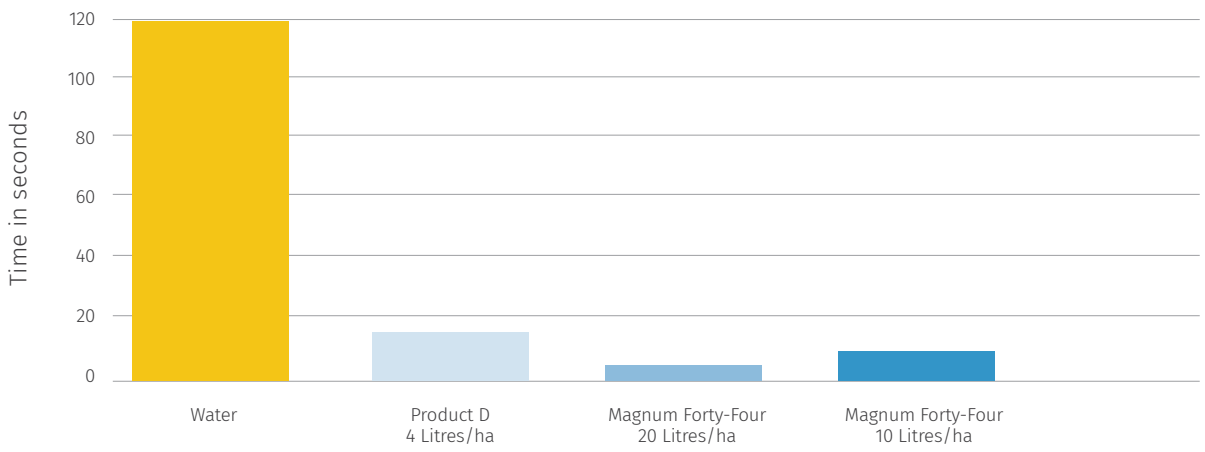
The historical build-up of certain surfactant molecules that are not biodegradable in soil profiles has been a concern therefore every effort has been made to prevent this with Magnum Forty-Four. To that end it has been specifically designed and formulated as a biodegradable penetrant wetting agent with specific surfactant technology to open hydrophobic soil profiles and rapidly reduce excessive surface water.

Penetrant wetting agents, like Magnum Forty-Four, help each water droplet penetrate the soil more easily, helping water to move through the surface layer quickly, and keep the top surface dry. On hydrophobic soils, water remains on the surface in large droplets which cannot penetrate into the soil profile. Magnum Forty-Four helps to break down this large droplets, so that the water is spread more easily and thinly, allowing it to penetrate the soil profile and work its way through the rootzone.

The research and development behind surfactant technologies has now provided molecules that are able to reduce the effects of hydrophobic soils to increase wetting and provide rapid even movement of moisture through the profile to prevent puddling and dry patches, particularly important in periods of excess rainfall or drought. Magnum Forty-Four is specifically designed to work as a penetrant wetting agent to encourage even quick water movement through hydrophobic soils.

Trials were undertaken at an independent laboratory to analyse the effectiveness of Magnum Forty-Four against a competitor product. The "droplet penetration test" method was used to evaluate the products, which were compared to water. Magnum Forty-Four outperformed the competitor product, even at lower than the currently recommended rates of application.

Droplet Penetration Test - comparing Magnum Forty-Four with a competitor product



Magnum Forty-Four also increases the efficacy of irrigation water movement and enhances spread pattern and penetration of liquid fertilisers. It is fully tank mix compatible with the vast majority of the Indigrow range, including the Asset, OneShot, Solar and Fusion products.

Full tank mix compatability of our products can be found on page 98.

Magnum 357 Calibre

Magnum 357 Calibre combines three different surfactant types to provide even water spreading over the turf surface, efficient water penetration and water holding capacity through the use of reverse block co-polymers. Magnum 357 Calibre will regulate the moisture content to give more uniform moisture percentages across the turf surface, through the soil profile, holding water on a molecular level. Once the ideal 15-20% moisture content has been reached, 357 Calibre will ensure even water flow throughout the rootzone, so preventing excess moisture build-up.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Prevents dry patch and helps to aerate soil
- Holds water in rootzone for longer to improve plant health
- Provides deeper roots and improves root mass and consistent plant health
- Helps reduce irrigation requirements

SUGGESTED SOIL TEMPERATURES FOR APPLICATION					
Minimum 8ºC		Optimum 15ºC		Maximum -ºC	
NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
10 lt/ha			20 lt/ha		
N 0.0	P_2O_5 0.0	K_2O 0.0	N 0.0	P_2O_5 0.0	K_2O 0.0

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	4 - 8 weeks
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	-
Guaranteed Analysis:	-
Additional Elements:	-
Organic Matter:	-
Pack Size:	10 lt
Pack Coverage:	5,000 - 10,000 m²
Application Rate:	10 - 20 lt/ha
Water Rate:	300 - 600 lt/ha
Application Method:	Sprayer
Product Code:	**IF020101**

Magnum CO

Magnum CO is a blend of ingredients designed to tackle the problems associated with localised dry spots and dry patch. Magnum CO contains an organic acid designed to clean the sand particle and flush unwanted waxes, hydrocarbons, bicarbonate salts and minerals through the soil profile. This process allows the plant roots to be able to scavenge for and uptake water more efficiently.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Curative wetting agent for localised dry patch
- Flushes unwanted waxes, hydrocarbons, salts and minerals through the soil profile
- Opens soil to water and air penetration to help improve turf health
- Use with Magnum 357 Calibre as part of a targeted wetting agent programme

SUGGESTED SOIL TEMPERATURES FOR APPLICATION					
Minimum 8ºC		Optimum 15ºC		Maximum -ºC	
NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
10 lt/ha			20 lt/ha		
N 0.0	P_2O_5 0.0	K_2O 0.0	N 0.0	P_2O_5 0.0	K_2O 0.0

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	4 - 8 weeks
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	-
Guaranteed Analysis:	-
Additional Elements:	-
Organic Matter:	-
Pack Size:	10 lt
Pack Coverage:	5,000 - 10,000 m²
Application Rate:	10 - 20 lt/ha
Water Rate:	300 - 600 lt/ha
Application Method:	Sprayer
Product Code:	**IF020103**

Magnum Forty-Four

Magnum Forty-Four is an economic turf penetrant wetting agent ideally suited for opening the soil profile, maximising water penetration and dispersing excessive water away from the surface. Where excessive salts are a problem, it can also be used as part of flushing program. Magnum Forty-four can be used in a targeted program to aid in the dispersal of heavy rainfall.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Reduces excessive surface water, to create playing surfaces which can be used all year round
- Assists in reducing excessive salts in the soil profile
- Allows more efficient utilisation of irrigation or rainfall
- Can be used in spray solutions to improve tank mix penetration

SUGGESTED SOIL TEMPERATURES FOR APPLICATION					
Minimum 8ºC		Optimum 15ºC		Maximum -ºC	
NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
20 lt/ha			40 lt/ha		
N 0.0	P_2O_5 0.0	K_2O 0.0	N 0.0	P_2O_5 0.0	K_2O 0.0

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	2 - 4 weeks
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	-
Guaranteed Analysis:	-
Additional Elements:	-
Organic Matter:	-
Pack Size:	10 lt
Pack Coverage:	2,500 - 5,000 m²
Application Rate:	20 - 40 lt/ha
Water Rate:	300 - 600 lt/ha
Application Method:	Sprayer
Product Code:	**IF020130**

Magnum Forty-Four OneShot

Magnum Forty-Four OneShot is a highly concentrated penetrant wetting agent designed to give economical yet superior turf wetting and water penetration on hydrophobic soils. The highly concentrated formula ensures significantly lower application rates than a conventional liquid. It can be used to aid the spread and penetration of foliar fertilisers. Magnum Forty-Four OneShot is contained in a sachet for large scale economic use and tank mixing.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Reduces excessive surface water, to create playing surfaces which can be used all year round
- Use prior to rainfall to aid irrigation and water movement
- Sachet provides an environmentally friendly and biodegradable, no mess solution
- Can be used in spray solutions to improve tank mix penetration

SUGGESTED SOIL TEMPERATURES FOR APPLICATION					
Minimum 8°C		Optimum 15°C		Maximum -°C	
NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
2 sachets/ha			4 sachets/ha		
N 0.0	P_2O_5 0.0	K_2O 0.0	N 0.0	P_2O_5 0.0	K_2O 0.0

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	2 - 4 weeks
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	-
Guaranteed Analysis:	-
Additional Elements:	-
Organic Matter:	-
Pack Size:	20 sachets
Pack Coverage:	5 - 10 ha
Application Rate:	2 - 4 sachets/ha
Water Rate:	300 - 600 lt/ha
Application Method:	Sprayer
Product Code:	**IF020108**

Magnum Granular

Magnum Granular is an innovative spreadable wetting agent containing a blend of super surfactants for fast water penetration into localised dry spots and hydrophobic soil or thatch. Magnum Granular utilises Zeolite technology as a carrier. The micro-pores are infused with a new generation blend of super surfactants, giving preventative and curative activity. These surfactants help outperform conventional wetting agents by as much as 25 to 1. This product does not need to be watered in, but will only be activated with irrigation or rainfall.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Designed for use in all fine turf environments, particularly in areas only accessible with a spreader
- Provides preventative and curative activity against dry patch
- Helps reduce the amount of irrigation required
- Only activated by irrigation or rainfall

SUGGESTED SOIL TEMPERATURES FOR APPLICATION					
Minimum 8°C		Optimum 15°C		Maximum -°C	
NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
10 g/m²			20 g/m²		
N 0.0	P_2O_5 0.0	K_2O 0.0	N 0.0	P_2O_5 0.0	K_2O 0.0

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	4 - 6 weeks
SGN/Particle size:	100
Cutting Height:	> 2mm
Nitrogen Source:	-
Guaranteed Analysis:	-
Additional Elements:	-
Organic Matter:	-
Pack Size:	10 kg
Pack Coverage:	1,000 m²
Application Rate:	10 g/m²
Water Rate:	-
Application Method:	Spreader
Product Code:	**IF020150**

Magnum Recoil

Magnum Recoil is a dew dispersant. It contains a specific blend of adjuvants, spreading agents and oils which form a barrier on the leaf blade, helping to disperse dew. Applications will aid plant stress relief and reduce disease risk due to lower moisture levels on the leaf. The longevity of Magnum Recoil is dependent on the rate of grass growth and frequency of cutting. The product is more effective at lower water rates.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Dew dispersant - applications prevent dew from forming on the turf surface
- Can be used as part of an organic fertiliser programme
- Applications will aid plant stress relief and reduce disease risk
- Prevents the need to manually remove dew from the turf surface daily, saving labour hours

SUGGESTED SOIL TEMPERATURES FOR APPLICATION					
Minimum 4°C		Optimum 10°C		Maximum -°C	
NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
10 lt/ha			20 lt/ha		
N 0.0	P_2O_5 0.0	K_2O 0.0	N 0.0	P_2O_5 0.0	K_2O 0.0

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	10 - 14 days
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	-
Guaranteed Analysis:	-
Additional Elements:	-
Organic Matter:	-
Pack Size:	10 lt
Pack Coverage:	10,000 m²
Application Rate:	10 lt/ha
Water Rate:	100 - 200 lt/ha
Application Method:	Sprayer
Product Code:	**IF020110**

Magnum Applicator Pellet

Magnum Applicator Pellets are designed to spot treat hydrophobic soils, hot spots and dry patch. They are applied through hand held applicators allowing them to be precisely targeted at localised problems, particularly dry patch. As Magnum Applicator Pellets are used in a targeted application, they help to reduce irrigation requirements.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- A highly concentrated formulation, ideal for syringing localised dry spots
- Flexible application rates for preventative or curative modes of action
- Environmentally friendly and biodegradable
- Can be used as a stand-alone treatment, or in conjunction with other Magnum wetting agents

SUGGESTED SOIL TEMPERATURES FOR APPLICATION			DISCOVER MORE
Minimum 8ºC	Optimum 15ºC	Maximum -ºC	

NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
-			-		
-	-	-	-	-	-

CHARACTERISTIC	VALUE
Approx. Longevity:	2 - 4 weeks
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	-
Guaranteed Analysis:	-
Additional Elements:	-
Organic Matter:	-
Pack Size:	5 pellets
Pack Coverage:	10,000 - 15,000 m²
Application Rate:	1 pellet / 2,000 - 3,000 m²
Water Rate:	-
Application Method:	Magnum Desert Eagle Pellet Applicator
Product Code:	**IF020201**

Magnum Blaster Pellet

Magnum Blaster Pellets are designed for use in the storage tank or in irrigation systems and will improve water penetration into the turf. Magnum Blaster Pellet will ensure wetting agent is applied each time the irrigation is used, helping to prevent dry patch. The surfactant package contained in the Blaster Pellet gives the added advantage of lubricating sprinkler heads.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Wetting agent applied with every irrigation to help prevent dry patch
- Environmentally friendly and biodegradable
- Easy to use, highly concentrated formulation
- Lubricates sprinkler heads at the same time as applying wetting agent to the turf

SUGGESTED SOIL TEMPERATURES FOR APPLICATION			DISCOVER MORE
Minimum 4ºC	Optimum 10ºC	Maximum -ºC	

NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
-			-		
-	-	-	-	-	-

CHARACTERISTIC	VALUE
Approx. Longevity:	8 - 12 weeks
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	-
Guaranteed Analysis:	-
Additional Elements:	-
Organic Matter:	-
Pack Size:	1 pellet
Pack Coverage:	-
Application Rate:	1 pellet
Water Rate:	minimum 2,500 lt water
Application Method:	directly into irrigation tank
Product Code:	**IF020205**

Magnum Pellet Applicator

The Magnum Pellet Applicator is designed to apply Magnum Applicator Pellets to turf while connected to an irrigation system. Compared to the more common type of pellet guns, its ergonomic handle design gives much better control and comfort to the user. The new full size top mounted on/off lever makes the Magnum Pellet Applicator able to be used whilst wearing work gloves.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Ideal for treating localised dry spots and hydrophobic soils
- For applying wetting agent pellets
- Supplied with a nozzle and geka hose end connector

SUGGESTED SOIL TEMPERATURES FOR APPLICATION			DISCOVER MORE
Minimum 4ºC	Optimum 10ºC	Maximum -ºC	

NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
-			-		
-	-	-	-	-	-

CHARACTERISTIC	VALUE
Approx. Longevity:	-
SGN/Particle size:	-
Cutting Height:	-
Nitrogen Source:	-
Guaranteed Analysis:	-
Additional Elements:	-
Organic Matter:	-
Pack Size:	Each
Pack Coverage:	-
Application Rate:	-
Water Rate:	-
Application Method:	-
Product Code:	**IF020450**

> The quality of a soil or root zone is determined by a combination of physical, chemical, and biological properties such as texture, water-holding capacity, porosity, organic matter content, and depth.

Water Management Products

- **Made from plant based materials**
- **Classified as organic**
- **Free up bound nutrients in alkaline soils**
- **Remove unwanted salts**
- **Natural wetting agent**

As water resources become scarcer, an increasing number of boreholes are being used. Often this water is of poorer 'quality' and requires treatment to remove unwanted carbonates and bi-carbonates. Most commonly used acids are nitric, phosphoric and sulphuric – all of which present hazards to turf, the operative and the environment.

Following substantial and recent research into this area of turf management, Indigrow have re-introduced their RePhlex brand and developed a new product to meet the changing climatic demands and the requirements of modern greenkeepers and groundsperson.

PRODUCT ANALYSIS

PRODUCT	ANALYSIS	APPROXIMATE RATE	LONGEVITY	PACK COVERAGE	PACK SIZE
RePhlex LS	1.74% CaO 4.65% SO_3	10-20 lt/ha	4 weeks	5,000–10,000 m² 6–12 ha	10 lts 120 lts

RePhlex LS - Independent Trials

Indigrow has continued the research and development of RePhlex LS, with further independent trials. The initial trial work was based on the speed of water movement within the soil profile and the effectiveness of RePhlex LS in removing soil salts.

With water scarcity impacting across all sectors globally including professional sports turf, the emphasis on water management and the efficient use of grey and brown water is of increased importance.

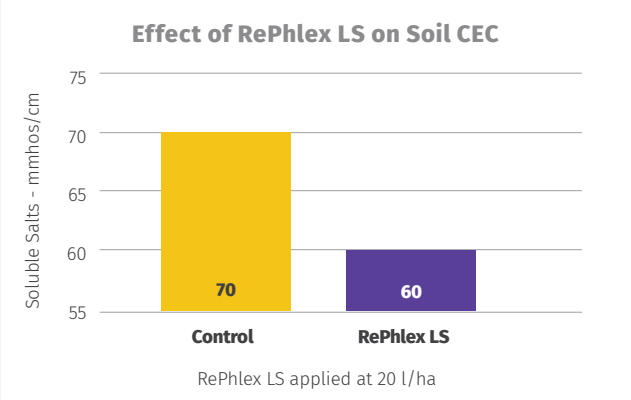
Indigrow commissioned new ongoing independent research in both the UK and Europe looking in more detail at soluble salts, soil cation exchange capacity (C.E.C.), soluble calcium and soil salinity.

The trial work was carried out by a UK University on a range of specific fine turf situations. The focus of the work was to treat poor quality, highly saline soils with RePhlex LS to discover the extent of the positive effect regular applications of the product could have.

This trial work can be found on our website by scanning this QR code

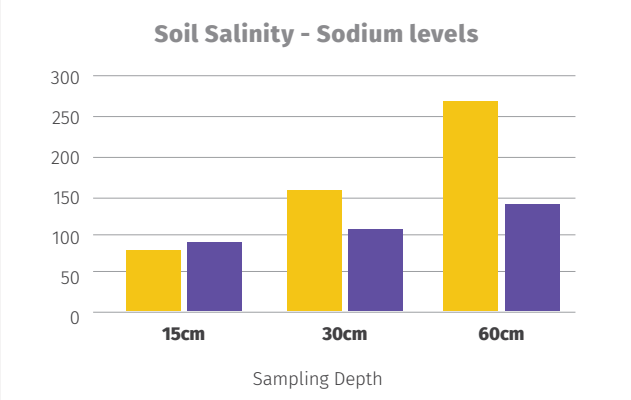
Soluble Salts

One application at 20 lt/ha of RePhlex LS offered a 15% reduction in soluble soil salts.



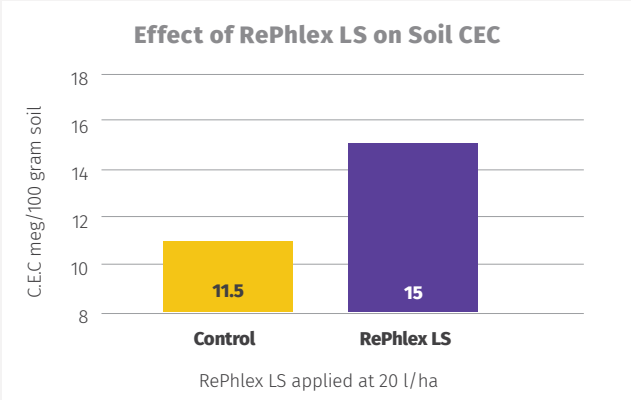
Soil Salinity

RePhlex Ls consistently reduced the sodium levels deeper into the soil profile.



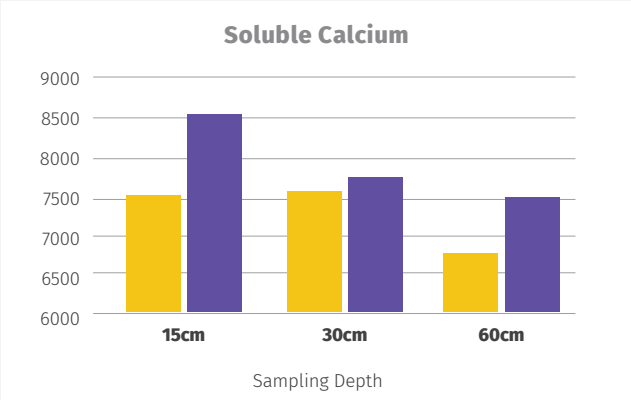
Effect on soil C.E.C.

Increasing the cation exchange capacity (C.E.C.) of a soil assist the soil in clinging to the nutrients required by the turf grass plant. A single application of RePhlex LS increased the C.E.C. by almost 25% in the trial.



Soluble Calcium

The results suggested that the level of soluble available Calcium was increased in the rhizosphere in the upper portion of the root zone, the area where root systems are typically strongest and more able to take up the nutrients.



Control RePhlex LS

RePhlex LS

RePhlex LS is an organic acid derived from lignin, a natural and renewable raw material. RePhlex LS acidifies irrigation water, improves water penetration and helps free up bound nutrients in alkaline soils. It reacts with carbonates and bi-carbonates in the soil to give a number of agronomic benefits, including, improving soil structure, water penetration and gaseous exchange. It can also be used as an irrigation water treatment to reduce the pH and remove unwanted carbonates and bi-carbonates.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Helps to improve soil structure and water penetration
- Manufactured from a natural and renewable source
- Helps free up bound nutrients in alkaline soils
- Can be used as an irrigation water treatment to lower pH

SUGGESTED SOIL TEMPERATURES FOR APPLICATION		
Minimum 6°C	Optimum 15°C	Maximum -°C

NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
10 lt/ha			20 lt/ha		
N 0.0	P_2O_5 0.0	K_2O 0.0	N 0.0	P_2O_5 0.0	K_2O 0.0

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	4 weeks
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	-
Guaranteed Analysis:	1.74% CaO, 4.65% SO_3
Additional Elements:	-
Organic Matter:	-
Pack Size:	10 lt
Pack Coverage:	5,000 - 10,000 m^2
Application Rate:	10 - 20 lt/ha
Water Rate:	300 - 600 lt/ha
Application Method:	Sprayer
Product Code:	**IF010101**

> Photosynthesis is the conversion of solar energy into plant energy.

Gel Technology Foliar Feeds

- **Increased nutrient use efficiency**
- **Low application rates due to highly concentrated formula**
- **Will assist in the reduction of thatch layer**
- **Reduced packaging and transport emissions**

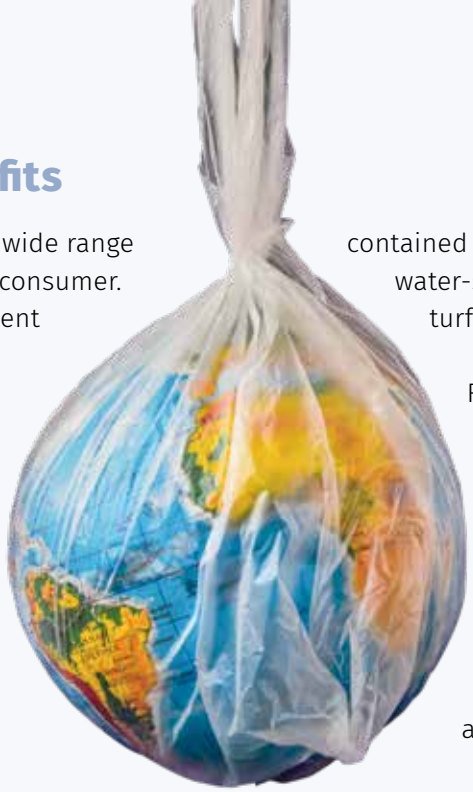
SolarMax is an evolution of our popular Solar foliar feeds. The latest development in our formulation technology allows our SolarMax products to offer a significantly higher level of nutrients within the formulations. In addition to this increased nutrient content, the latest co-formulants used within the formulation ensure an even higher rate of nutrient uptake by the turf grass plant. The new products and latest formulations in the SolarMax range are free from any insoluble particles.

PRODUCT ANALYSIS

PRODUCT	ANALYSIS	APPROXIMATE RATE	LONGEVITY	PACK COVERAGE	PACK SIZE
SolarMax NPK	17-17-17	5-10 lt/ha	2-3 weeks	5,000 – 10,000 m²	5 lts
SolarMax N	33-5-5	5-10 lt/ha	2-3 weeks	5,000 – 10,000 m²	5 lts
SolarMax PK	0-16-28	5-10 lt/ha	2-3 weeks	5,000 – 10,000 m²	5 lts
SolarMax K	0-0-33	5-10 lt/ha	2-3 weeks	5,000 – 10,000 m²	5 lts
SolarMax Ca+Mg	12.8% CaO + 6.4% MgO	5-10 lt/ha	2-3 weeks	5,000 – 10,000 m²	5 lts
SolarMax Mg	10-0-0 + 13.1% MgO	5-10 lt/ha	2-3 weeks	5,000 – 10,000 m²	5 lts
SolarMax Fe	0-0-6 + 6.4% Fe	5-10 lt/ha	2-3 weeks	5,000 – 10,000 m²	5 lts
SolarMax Si	36% SiO2	2.5-5 lt/ha	2-3 weeks	10,000 – 20,000 m²	5 lts
Solar Pro-Active OneShot	5-34-22	2-4 sachets/ha	2-3 weeks	5-10 ha	20 sachets

Environmental Benefits

These latest technologies offer a wide range of environmental benefits to the consumer. The higher concentration of nutrient contained within the product ensures a reduction in water use during production and offers a much lower rate of application compared to conventional liquid fertilisers. The increased nutrient use efficiency from the new technology ensures that nutrient leaching is kept to a minimum, with 100% of nutrients contained within the products being in a water-soluble form and available to the turf grass plant.

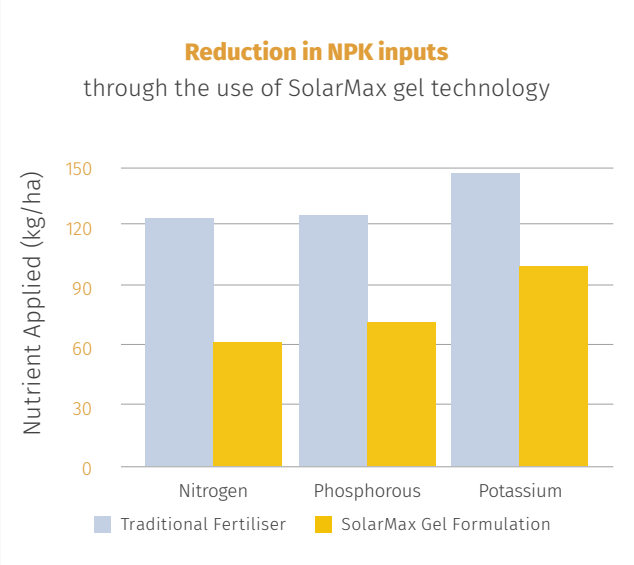


Further environmental benefits are a reduction in packaging used, along with a reduced transport emissions compared to traditional liquid fertilisers. These benefits ensure that our SolarMax range is one of the most environmentally acceptable foliar fertilisers available in the marketplace.

Maximised Nutrient Use

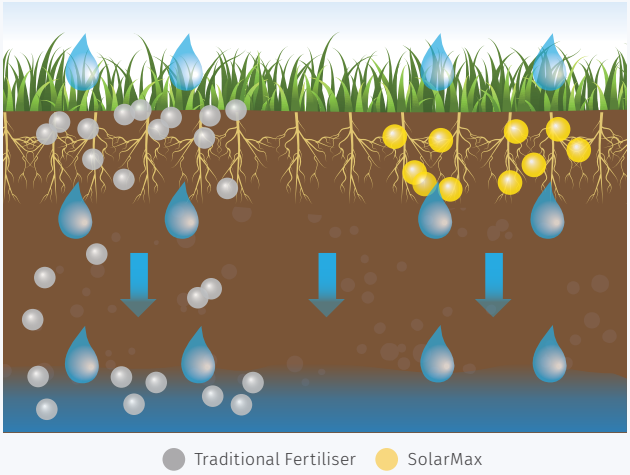
The nutrient use efficiency of the SolarMax gel formulation is greatly improved over our previous foliar feed products, and vastly improved in comparison with traditional liquid feeds. Our latest formulation technology ensures that a much greater proportion of the nutrient applied can be taken up by the plant, leading to a reduction in the amount of nutrient needed to be applied to the turf.

The use of SolarMax products can lead to a reduction of nutrient inputs by up to 25% without affecting growth or overall plant health.



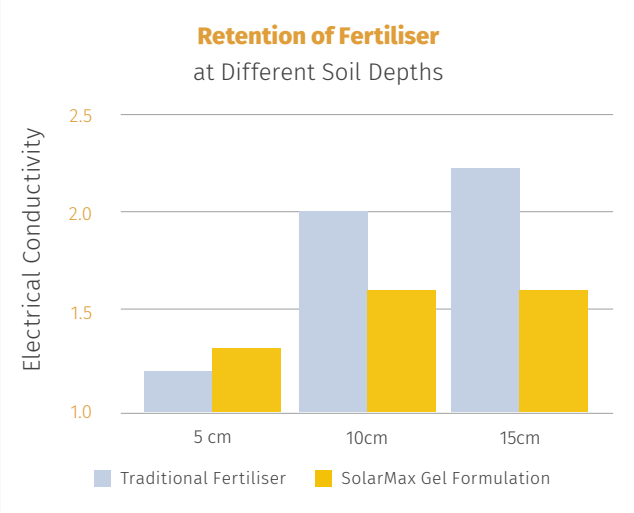
Minimised Nutrient Leaching

Whilst the majority of nutrients applied in the use of SolarMax products will be taken up by the leaf blade, inevitably some nutrients will reach the soil profile. Utilising the latest co-formulant technology, these nutrients will remain in the root zone for longer periods than other foliar feeds or conventional liquid fertilisers. This technology reduces vertical movement of nutrients within the root zone and ensures that these nutrients remain in contact with the root hairs for longer.



Retention of Fertiliser

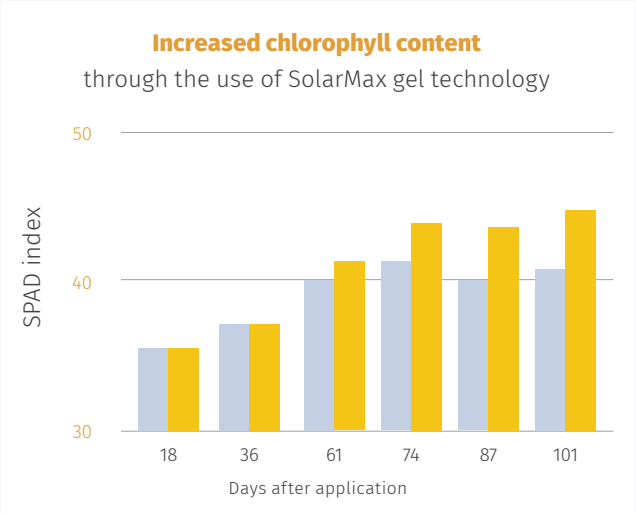
Experiments were set up to measure the movement of the nutrient components after application in the event that they had run off the leaves and entered the soil. This was done by measuring the Electrical Conductivity (an indicator of the presence of nutrients) at various depths. Conventional fertilisers were compared to SolarMax formulations. The results of the trials showed a higher proportion of nutrients are held in the upper levels of the root zone with less nutrient leaching below 10 cm.



Increased Chlorophyll Content

In trials, the chlorophyll content of the turf grass plant was increased by the use of the SolarMax gel products, compared to traditional fertiliser applications. This increase was more pronounced as the number of days after application increased. It is the high nitrogen content in SolarMax N, SolarMax NPK and SolarMax Mg which helps to with increased chlorophyll synthesis along with improved photosynthesis.

The use of SolarMax improves the chlorophyll content of the plant, through improved nitrogen assimilation.



Reduced Thatch Layer

During our trial work, we compared our new SolarMax gel formulation technology with conventional soluble NPK fertilisers. Whilst the objective of the trial was to compare nutrient uptake and our improved nutrient use efficiency through the use of our new gel technology, other observations were also made, including thatch layer levels within the test plots.

When using conventional NPK products, rapid assimilation of nutrients was seen to create peaks in soil salts, which in turn increased plant mass and decreased root growth. The trial plots where conventional NPK products were used therefore had increased thatch layers compared to those plots using the SolarMax products.

As the SolarMax gel formulation products offer a more homogeneous and controlled nutrient release pattern, they do not create any peaks in soil salt content, which assists with minimising any increases in the thatch layer.

Additional Formulation Technologies

Our latest SolarMax formulations also contain a dispersion agent to ensure excellent dissolution within the spray tank to ensure consistent application. The new formulations are also sulphur and chloride free and offer a very low salt index.

These latest formulations will not stress the turf grass plant at any point, regardless of soil or air temperatures at the point of application, ensuring they can be used all year round in all climates.

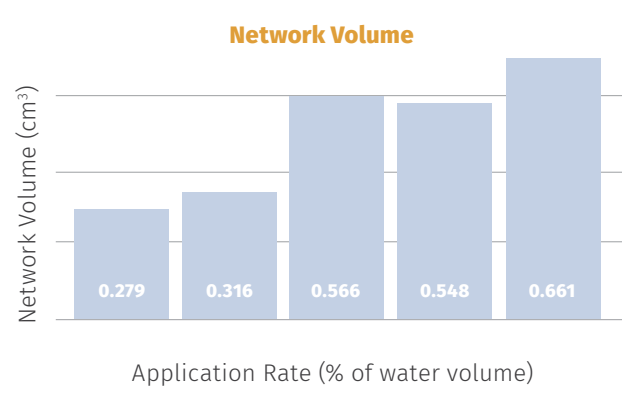
Solar Pro-Active OneShot Trials

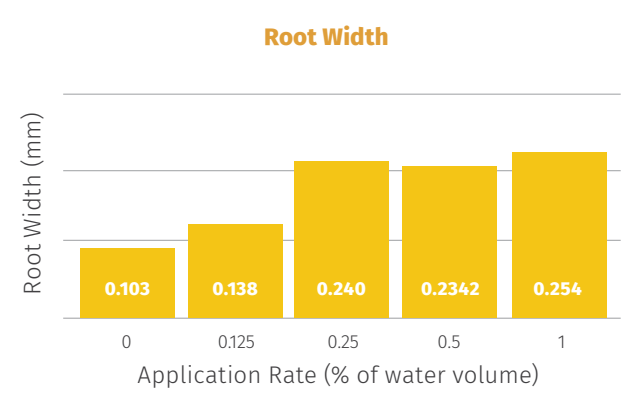
Scientific studies have highlighted the bio-stimulant benefits of using phosphite, rather than phosphate. It is now widely known that phosphite has a positive effect of root growth and development, and this effect is enhanced when foliar applications are used.

Tests were carried out using turf grass species Lolium perenne germinated in an inert medium. The germinated seeds are supplied with Solar Pro-Active OneShot at the recommended application rate, and transferred to an incubator, where they were allowed to grow for 14 days, 14 hours a day at 20 degrees.

In comparison with the control seeds, the germinated roots supplied with Solar Pro-Active OneShot were thicker, more than double the thickness of the control roots. The independent laboratory confirmed that applications of Solar Pro-Active OneShot increased the capacity of the plant to scavenge the soil surface for water, oxygen and nutrients, leading to the significantly increased root volume, when using the recommended application rate.

Solar Pro-Active OneShot therefore increases root volume within the first two weeks after germination, and also increases the growth of tillers when used at the recommended application rate of 2-4 sachets/ha in 300-600 lt water.





Our study, undertaken at an independent laboratory, investigated the benefits to turfgrass of using Solar Pro-Active OneShot, our unique concentrated sachet foliar formulation.

SolarMax NPK

SolarMax NPK offers a balance of nitrogen, phosphorous and potassium, all contained in our latest gel technology formulation. This complete NPK formula is ideal for regular use throughout the duration of the main growing season. The gel technology ensures that nutrients are rapidly absorbed through the plant leaf to minimise nutrient leaching and maximise the efficiency of the product. SolarMax NPK offers excellent recovery after high stress periods.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Helps replenish nutrients lost in grass clippings during the main growing season
- Offers excellent recovery characteristics in turf during periods of increased use
- A high concentration NPK formulation benefitting from our new gel technology
- Used to great effect in both warm and cool climates

SUGGESTED SOIL TEMPERATURES FOR APPLICATION			DISCOVER MORE
Minimum 5°C	Optimum 18°C	Maximum -°C	

NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
5 lt/ha			10 lt/ha		
N 0.9	P_2O_5 0.9	K_2O 0.9	N 1.7	P_2O_5 1.7	K_2O 1.7

CHARACTERISTIC	VALUE
Approx. Longevity:	2 - 3 weeks
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	1.5% ammonium, 15.5% urea
Guaranteed Analysis:	17-17-17
Additional Elements:	0.1% Fe, 0.1% Mn, 0.1% Zn
Organic Matter:	-
Pack Size:	5 lt
Pack Coverage:	5,000 - 10,000 m²
Application Rate:	5 - 10 lt/ha
Water Rate:	300 - 600 lt/ha
Application Method:	Sprayer
Product Code:	**IG040201**

SolarMax N

SolarMax N is a true foliar feed based on our latest gel technology. It contains two nitrogen sources, ammonium and urea. The combination of these allows for initial growth followed by balanced and controlled nutrient release to the plant. It is an ideal early season starter fertiliser, used to great effect in both warm and cool climates, but can also be used later in the season when additional growth is required.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- A high nitrogen formulation with added phosphate and potassium
- Absorbed by the leaf and not by the roots to maximise nutrient uptake
- Offers excellent recovery characteristics in turf during periods of increased use
- A fast-acting and stable tank mixable formulation based on our unique gel technology

SUGGESTED SOIL TEMPERATURES FOR APPLICATION			DISCOVER MORE
Minimum 5°C	Optimum 18°C	Maximum -°C	

NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
5 lt/ha			10 lt/ha		
N 1.7	P_2O_5 0.3	K_2O 0.3	N 3.3	P_2O_5 0.5	K_2O 0.5

CHARACTERISTIC	VALUE
Approx. Longevity:	2 - 3 weeks
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	6.5% nitrate, 6.5% ammonium, 20.0% urea
Guaranteed Analysis:	33-5-5
Additional Elements:	0.1% Fe, 0.1% Mn, 0.1% Zn
Organic Matter:	-
Pack Size:	5 lt
Pack Coverage:	5,000 - 10,000 m²
Application Rate:	5 - 10 lt/ha
Water Rate:	300 - 600 lt/ha
Application Method:	Sprayer
Product Code:	**IG040204**

SolarMax PK

SolarMax PK is contains high levels of phosphorous and potassium which is of major benefit in speeding up seedling plant establishment. It is a high phosphate foliar fertiliser, based on our latest gel technology, which can help boost plant growth, particularly in lower temperatures. SolarMax PK is primarily used to help increase root length and root mass, and regular applications can help increase overall plant health and disease resistance.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- When used after seeding and/or overseeding, it increases rooting and promotes early establishment
- Promotes turf hardness and helps to boost plant health
- Increases the capacity of the plant to scavenge the soil for water, oxygen and nutrients
- A gel formulation which is fully systemic, fast acting and stable

SUGGESTED SOIL TEMPERATURES FOR APPLICATION			DISCOVER MORE
Minimum 5°C	Optimum 18°C	Maximum -°C	

NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
5 lt/ha			10 lt/ha		
N 0.2	P_2O_5 0.8	K_2O 1.4	N 0.4	P_2O_5 1.6	K_2O 2.8

CHARACTERISTIC	VALUE
Approx. Longevity:	2 - 3 weeks
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	-
Guaranteed Analysis:	0-16-28
Additional Elements:	0.1% Fe, 0.1% Mn, 0.1% Zn
Organic Matter:	-
Pack Size:	5 lt
Pack Coverage:	5,000 - 10,000 m²
Application Rate:	5 - 10 lt/ha
Water Rate:	300 - 600 lt/ha
Application Method:	Sprayer
Product Code:	**IG040207**

SolarMax K

SolarMax K is a potassium only feed, primarily used to address potassium deficiency when cooler temperatures are prevalent. It is formulated using our new gel formulation techniques with a potassium source which is immediately available to the plant and can be easily assimilated by the plant leaf. SolarMax K helps with the formation of natural starches and sugars in the plant, also assisting with plant hardiness in colder conditions.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Provides easily available potassium which is quickly absorbed by the leaf
- An ideal plant stress reliver and turf hardener
- Particularly effective on sand-based rootzones when nutrient leaching is an issue
- Aids in improving cell wall strength and increasing disease resistance

SUGGESTED SOIL TEMPERATURES FOR APPLICATION					
Minimum 5°C		Optimum 18°C		Maximum -°C	
NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
5 lt/ha			10 lt/ha		
N 0.0	P_2O_5 0.0	K_2O 1.7	N 0.0	P_2O_5 0.0	K_2O 3.3

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	2 - 3 weeks
SGN/Particle size:	-
Cutting Height:	> 2mm
Potassium Source:	-
Guaranteed Analysis:	0-0-33
Additional Elements:	0.1% Fe, 0.1% Mn, 0.1% Zn
Organic Matter:	-
Pack Size:	5 lt
Pack Coverage:	5,000 - 10,000 m²
Application Rate:	5 - 10 lt/ha
Water Rate:	300 - 600 lt/ha
Application Method:	Sprayer
Product Code:	**IG040210**

SolarMax Ca+Mg

SolarMax Ca+Mg is a gel-based foliar feed, absorbed directly by the plant leaf, to help counteract the effects of calcium and magnesium deficiencies. This highly concentrated formulation can be applied regularly with low application rates, to help provide added colour to the turf, during the cooler seasons. SolarMax Ca+Mg helps strengthens the plant cell walls and provides added green up from the magnesium content.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Improves cell wall strength and helps the plant build up a resistance to disease and stress
- Increases resistance to many plant pathogens
- Helps increase sugar synthesis and starch translocation
- Boosts iron utilisation to ensure maximum impact from applications products like Fusion Liquid Fe

SUGGESTED SOIL TEMPERATURES FOR APPLICATION					
Minimum 5°C		Optimum 18°C		Maximum -°C	
NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
5 lt/ha			10 lt/ha		
N 0.0	P_2O_5 0.0	K_2O 0.0	N 0.0	P_2O_5 0.0	K_2O 0.0

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	2 - 3 weeks
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	-
Guaranteed Analysis:	0-0-0
Additional Elements:	12.8% CaO, 6.4% MgO
Organic Matter:	-
Pack Size:	5 lt
Pack Coverage:	5,000 - 10,000 m²
Application Rate:	5 - 10 lt/ha
Water Rate:	300 - 600 lt/ha
Application Method:	Sprayer
Product Code:	**IG040213**

SolarMax Mg

SolarMax Mg is a gel formulation true foliar feed, containing magnesium in a highly readily available form. This sulphur free formulation containing a high concentration of magnesium is ideal to enhance turf colour through the increased production of chlorophyll. The high magnesium content also helps the turf grass plant to increase protein synthesis and enzyme activity. SolarMax Mg will also improve the utilisation of phosphorous already available in the soil.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Offers excellent turf colour through enhanced chlorophyll production, particularly in shaded areas
- Promotes root development and enzyme activity
- Boosts phosphorous utilisation to help increase nutrient use efficiency
- Non-acidifying and sulphur free formulation based on our latest gel technology

SUGGESTED SOIL TEMPERATURES FOR APPLICATION					
Minimum 5°C		Optimum 18°C		Maximum -°C	
NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
5 lt/ha			10 lt/ha		
N 0.5	P_2O_5 0.0	K_2O 0.0	N 1.0	P_2O_5 0.0	K_2O 0.0

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	2 - 3 weeks
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	10.0% urea
Guaranteed Analysis:	10-0-0
Additional Elements:	13.1% MgO
Organic Matter:	-
Pack Size:	5 lt
Pack Coverage:	5,000 - 10,000 m²
Application Rate:	5 - 10 lt/ha
Water Rate:	300 - 600 lt/ha
Application Method:	Sprayer
Product Code:	**IG040216**

SolarMax Fe

SolarMax Fe is a fully formulated iron foliar feed based on our concentrated gel technology. It contains added potassium which is absorbed through the plant leaf. Regular applications of SolarMax Fe will help stimulate chlorophyll production, giving the turf a great natural dark green colour. It has been designed to provide a rapid and efficient uptake of nutrients to minimise nutrient leaching . The added potassium helps Solar Fe to toughen the sward, giving an increase in disease and stress resistance.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Iron content provides fast green up without stimulating unwanted growth
- Gel technology ensures nutrients are rapidly absorbed through the leaf
- Potassium levels provide added cell wall strength and disease resistance
- Helps to stimulate chlorophyll production encouraging great natural colour

SUGGESTED SOIL TEMPERATURES FOR APPLICATION			DISCOVER MORE
Minimum 5°C	Optimum 18°C	Maximum -°C	

NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
5 lt/ha			10 lt/ha		
N 0.0	P_2O_5 0.0	K_2O 0.3	N 0.0	P_2O_5 0.0	K_2O 0.6

CHARACTERISTIC	VALUE
Approx. Longevity:	2 - 3 weeks
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	-
Guaranteed Analysis:	0-0-6
Additional Elements:	6.4% Fe
Organic Matter:	-
Pack Size:	5 lt
Pack Coverage:	5,000 - 10,000 m²
Application Rate:	5 - 10 lt/ha
Water Rate:	300 - 600 lt/ha
Application Method:	Sprayer
Product Code:	**IG040219**

SolarMax Si

SolarMax Si is a silicate product which utilises nano technology. Silicon is used in plants to help strengthen cell wall tissues, which aids in the prevention of leaf spot. An application of SolarMax Si lifts seed heads allowing for better collection with regular mowing, particularly with uneven spring growth, in turn leading to a more consistent and reliable playing surface. SolarMax Si also assists in the removal of annual meadow-grass.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Improves uniform cutting and appearance of managed amenity turf
- Reduces water loss in dry weather
- Increases ball roll and green speed
- Offers increased cell wall strength which in turn ensures seed heads are easier to cut

SUGGESTED SOIL TEMPERATURES FOR APPLICATION			DISCOVER MORE
Minimum 5°C	Optimum 18°C	Maximum -°C	

NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
2.5 lt/ha			5 lt/ha		
N 0.0	P_2O_5 0.0	K_2O 0.0	N 0.0	P_2O_5 0.0	K_2O 0.0

CHARACTERISTIC	VALUE
Approx. Longevity:	2 - 3 weeks
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	-
Guaranteed Analysis:	-
Additional Elements:	36.0% SiO_2
Organic Matter:	-
Pack Size:	5 lt
Pack Coverage:	10,000 - 20,000 m²
Application Rate:	2.5 - 5 lt/ha
Water Rate:	300 - 600 lt/ha
Application Method:	Sprayer
Product Code:	**IG040222**

Solar Pro-Active OneShot

Solar Pro-Active OneShot is a concentrated foliar bio-stimulant, high in phosphite, designed to help dramatically reduce plant stress during the summer months. It is rapidly absorbed by the leaf and translocated to all parts of the plant, stimulating natural plant auxin production. It is fully systemic, and is available in our fast acting, stable, tank mixable formulation.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Significantly aids early root growth and establishment
- Promotes the plants natural resistance to disease and boost overall plant health
- Increases plants natural defence mechanism towards some pathogens
- Applications boost plant growth, particularly in low temperatures

SUGGESTED SOIL TEMPERATURES FOR APPLICATION			DISCOVER MORE
Minimum 5°C	Optimum 18°C	Maximum -°C	

NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					

CHARACTERISTIC	VALUE
Approx. Longevity:	2 - 3 weeks
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	5.5% ammonium
Guaranteed Analysis:	5-34-22
Additional Elements:	-
Organic Matter:	-
Pack Size:	20 sachets
Pack Coverage:	5 - 10 ha
Application Rate:	2 - 4 sachets/ha
Water Rate:	300 - 600 lt/ha
Application Method:	Sprayer
Product Code:	**IG040121**

> Soluble fertilisers provide an economical method of supplying nutrients to turf.

Liquid and Soluble Fertilisers

- **Eight NPK liquid feeds with added seaweed and trace elements**
- **A liquid chelated iron**
- **A trace element package in easy-to-use sachets**
- **Four fully soluble powders**

Indigrow's Fusion liquid fertilisers contain 100% soluble and plant available nutrients. They have all been developed to be 'spoon-fed' throughout the year to complement a granular fertiliser programme, but equally, can be used regularly as a stand-alone product.

PRODUCT ANALYSIS

PRODUCT	ANALYSIS	APPROXIMATE RATE	LONGEVITY	PACK COVERAGE	PACK SIZE
Fusion BioGreen High N	28-0-0 + seaweed	40-80 lt/ha	2-3 weeks	2,500-5,000 m² 2.5-5 ha 12.5-25 ha	20 lts 200 lts 1,000 lts
Fusion BioGreen NPK	18-9-9 + seaweed	40-80 lt/ha	2-3 weeks	2,500-5,000 m² 2.5-5 ha 12.5-25 ha	20 lts 200 lts 1,000 lts
Fusion BioGreen NK	12-0-12 + seaweed	40-80 lt/ha	2-3 weeks	2,500-5,000 m² 2.5-5 ha 12.5-25 ha	20 lts 200 lts 1,000 lts
Fusion BioGreen Sport	14-5-12 + seaweed	40-80 lt/ha	2-3 weeks	2,500-5,000 m² 2.5-5 ha 12.5-25 ha	20 lts 200 lts 1,000 lts
Fusion BioGreen High K	5-3-18 + seaweed	40-80 lt/ha	2-3 weeks	2,500-5,000 m² 2.5-5 ha 12.5-25 ha	20 lts 200 lts 1,000 lts
Fusion BioGreen NPK	2-7-14 + seaweed	40-80 lt/ha	2-3 weeks	2,500-5,000 m² 2.5-5 ha 12.5-25 ha	20 lts 200 lts 1,000 lts
Fusion BioGreen K	0-0-10 + seaweed	40-80 lt/ha	2-3 weeks	2,500-5,000 m² 2.5-5 ha 12.5-25 ha	20 lts 200 lts 1,000 lts
Fusion BioGreen NK	20-0-10 + seaweed	40-80 lt/ha	2-3 weeks	2,500-5,000 m² 2.5-5 ha 12.5-25 ha	20 lts 200 lts 1,000 lts
Fusion Tracer OneShot	1.8% MgO, 4.2% SO_3, 0.15% Cu, 2.2% Fe, 1.13% Mn, 0.03% Mo, 0.42% Zn	2-4 sachets/ha	2-4 weeks	5-10 ha	20 sachets
Fusion Liquid Fe	7.0% Fe	10-20 lt/ha	4-6 weeks	5,000-10,000 m² 6-12 ha 50-100 ha	10 lts 120 lts 1,000 lts
Fusion Soluble Fe	20.0% Fe	20 kg/ha	2-4 weeks	5,000 m²	10 kg
Fusion Soluble N	46-0-0	20 kg/ha	2-4 weeks	5,000 m²	10 kg
Fusion Soluble NPK	32-5-10	20 kg/ha	2-4 weeks	5,000 m²	10 kg
Fusion Soluble High K	13-0-46	20 kg/ha	2-4 weeks	5,000 m²	10 kg

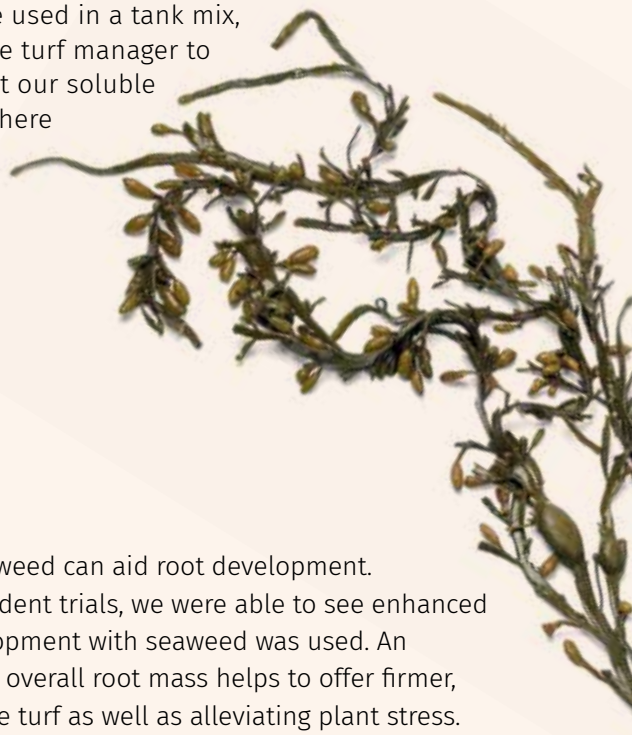
All of the products in our range of conventional liquid fertilisers can be tank mixed with one another, providing the turf manager with the ultimate flexibility of their NPK inputs. Our conventional liquids can also be mixed with the majority of our foliar fertilisers to allow the addition of further trace elements.

The Fusion BioGreen liquids contain added seaweed as well as a useful complete amino acid and trace element package. Seaweed is added to our Fusion BioGreen liquid fertilisers to help stimulate root growth and help protect the plant at times of stress, including protection from disease, insects, cold weather and drought.

Soluble fertilisers can provide an economical method of supplying nutrients to turf. These economical fertilisers are frequently used on large areas of turf including golf fairways and sports pitches.

Indigrow's soluble fertilisers are fully soluble and are easily absorbed by the plant. Our products will dissolve rapidly, even in cold water. This range of soluble fertilisers are suitable for year-round use in all climates.

These soluble fertilisers also include chelated micronutrients. These stable nutrients not only provide essential micronutrients to the plant, but can also be used in a tank mix, allowing the turf manager to supplement our soluble products where necessary.

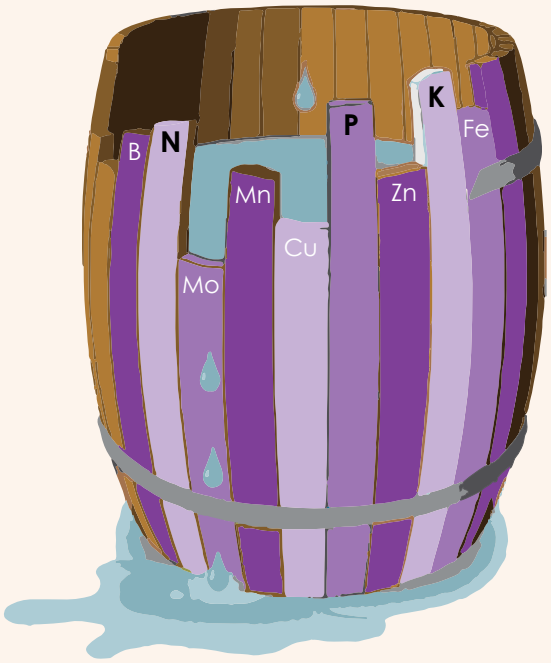


NPK Liquids with Added Seaweed

Seaweed (from the same source as Compass Bio-Active) is added to help enhance root structure, along with an amino acid package from plant available L-amino acids, and a trace element inclusion to maintain levels throughout the season.

Added seaweed can aid root development. In independent trials, we were able to see enhanced root development with seaweed was used. An increase in overall root mass helps to offer firmer, more stable turf as well as alleviating plant stress.

Leibig's Law of the Minimum



Fusion BioGreen liquids all have added trace element packages. These additions give real added value to the range as they help turf managers meet the conditions of Leibig's Law of the Minimum. Leibig found that it was important to increase the most limited required nutrient to allow for plant growth to be improved.

Our trace element packaging includes boron, copper, iron, manganese, molybdenum and zinc to help turf managers maintain trace elements levels with every application of macro nutrients.

If additional trace elements are required, it's possible to further top up applications with the easy-to-use, no mess, OneShot sachets through using regular applications of Fusion Tracer OneShot, which is fully tank mixable with the Fusion BioGreen liquids.

Water Soluble Fertilisers

Water Soluble Fertilisers (WSF) can provide an economical method of supplying nutrients to managed turf. Often this is a favoured approach to nutrient maintenance on large areas of sports and amenity turf such as golf fairways and sports pitches, with the benefit of even application and efficient uptake when applied via suitable spray equipment.

The most efficient method of application is little and often as with many fertilisers as this allows the optimum uptake and reduces potential nitrogen losses via volatilisation and leaching.

As well as the economic benefits of the high nutrient concentrations, WSFs suit situations where there is reduced storage which is often an issue. Reduced transport costs are also a key factor due to the lack of water content being transported.

In order to maximise the efficacy of any WSF the raw materials in the formulation must be of the highest purity. Confirmation by analysis guarantee of impurity content is fundamental to quality products with traceable provenance.

To ensure that there is no limiting factor in terms of nutrition in our three soluble NPK fertilisers, a comprehensive package of chelated micronutrients containing Boron, Copper, Iron, Manganese, Molybdenum and Zinc is added during manufacture.

Solubility

Solubility is a property referring to the ability for a given substance, the solute, to dissolve in a solvent. It is measured in terms of the maximum amount of solute dissolved in a solvent at equilibrium. The resulting solution is called a saturated solution.

Solubility is obviously key to the concept of WSFs. Minimal insoluble content is required for the highest quality products, with <0.05% being the bench-mark for our products.

Particle size is also vital for maximum solubility, with our products aiming for up to 99% of particles <1.0 mm this is to ensure no blockages to sprayer equipment and maximum surface area to increase solubility.

All products in the range are also formulated with anti-caking agents to maintain condition and flowability.

These WSFs are suitable for year round use in all climates they can all be used in tank mixes allowing for managers to supplement where necessary.

Fusion BioGreen High N 28-0-0

Fusion BioGreen High N contains three nitrogen sources to provide immediate and long-term nutrient availability. The combination of nitrogen sources offers optimal plant nutrient uptake, and should be used when a boost of nitrogen level is required. With the added seaweed and trace element package, it is designed to alleviate plant stress, as well as provide nutrition to the plant.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Provides immediate, mid-term and long-term nitrogen availability
- A balanced source of nitrate, ammonium and urea nitrogen
- Contains seaweed, added amino acids and trace elements for improved turf health and stress recovery
- Ideal as a tank mix partner where nitrogen is required

SUGGESTED SOIL TEMPERATURES FOR APPLICATION					
Minimum 5°C		Optimum 15°C		Maximum -°C	
NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
40 lt/ha			80 lt/ha		
N 11.2	P_2O_5 0.0	K_2O 0.0	N 22.4	P_2O_5 0.0	K_2O 0.0

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	2 - 3 weeks
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	7.0% nitrate, 7.0% ammonium, 14.0% urea
Guaranteed Analysis:	28-0-0
Additional Elements:	-
Organic Matter:	-
Pack Size:	20 lts
Pack Coverage:	2,500 - 5,000 m²
Application Rate:	40 - 80 lt/ha
Water Rate:	300 - 600 lt/ha
Application Method:	Sprayer
Product Code:	**IG050110**

Fusion BioGreen NPK 18-9-9

Fusion BioGreen NPK is a balanced liquid feed containing seaweed, trace elements and amino acids and is ideal for the primary growing season. It contains ammoniacal and urea nitrogen sources which provide a two-stage nitrogen source, offering both quick and long-term response. This ensures there is always nitrogen available to the plant during the main season, without promoting excessive growth.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Balanced NPK feed for the primary growing season for enhanced turf colour and health
- Offers efficient nutrient uptake and highly tank mix compatible
- Contains immediately available phosphate and potash
- Added seaweed, amino acids and trace elements for improved turf health and stress relief

SUGGESTED SOIL TEMPERATURES FOR APPLICATION					
Minimum 5°C		Optimum 15°C		Maximum -°C	
NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
40 lt/ha			80 lt/ha		
N 7.2	P_2O_5 3.6	K_2O 3.6	N 14.4	P_2O_5 7.2	K_2O 7.2

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	2 - 3 weeks
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	2.6% ammonium, 15.4% urea
Guaranteed Analysis:	18-9-9
Additional Elements:	-
Organic Matter:	-
Pack Size:	20 lt
Pack Coverage:	2,500 - 5,000 m²
Application Rate:	40 - 80 lt/ha
Water Rate:	300 - 600 lt/ha
Application Method:	Sprayer
Product Code:	**IG050120**

Fusion BioGreen NK 12-0-12

Fusion BioGreen NK contains perfectly balanced levels of N and K both of which are used in large quantities throughout the growing season. The balance of nitrogen and potassium helps to strengthen the sward, without promoting excessive growth. Fusion BioGreen NK also as added seaweed, amino acids and trace elements for improved turf health and stress relief.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Ideal mid to late season fertiliser to maintain growth and harden the turf
- Zero phosphate formulation for use on high phosphate soils
- A balanced NK ratio to balance growth and toughen the sward
- Fully tank mixable and ideally suited for regular application in small quantities

SUGGESTED SOIL TEMPERATURES FOR APPLICATION					
Minimum 5°C		Optimum 15°C		Maximum -°C	
NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
40 lt/ha			80 lt/ha		
N 4.8	P_2O_5 0.0	K_2O 4.8	N 9.6	P_2O_5 0.0	K_2O 9.6

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	2 - 3 weeks
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	12.0% urea
Guaranteed Analysis:	12-0-12
Additional Elements:	B, Cu, Fe, Mn, Mo, Zn
Organic Matter:	-
Pack Size:	20 lt
Pack Coverage:	2,500 - 5,000 m²
Application Rate:	40 - 80 lt/ha
Water Rate:	300 - 600 lt/ha
Application Method:	Sprayer
Product Code:	**IG050130**

Fusion BioGreen Sport 14-5-12

Fusion BioGreen Sport is a balanced liquid feed for use on high wear sports pitches. Its 14-5-12 formulation contains nitrate, ammoniacal and urea nitrogen sources offering both quick and long-term response, to help maximise grass cover in heavy wear conditions. The high potassium levels improve disease resistance, vital on stadium pitches where prolonged periods of shade are common.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Balanced NPK feed for the primary sports pitch growing season for enhanced turf colour and health
- Added seaweed, amino acids and trace elements to maximise turf health and performance
- High potassium content for improved disease resistance in cooler conditions
- Offers efficient nutrient uptake and highly tank mix compatible

SUGGESTED SOIL TEMPERATURES FOR APPLICATION		
Minimum 5ºC	Optimum 15ºC	Maximum -ºC

NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
40 lt/ha			80 lt/ha		
N 5.6	P_2O_5 2.0	K_2O 4.8	N 11.2	P_2O_5 4.0	K_2O 9.6

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	2 - 3 weeks
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	1.6% nitrate, 1.4% ammonium, 11.5% urea
Guaranteed Analysis:	14-5-12
Additional Elements:	B, Cu, Fe, Mn, Mo, Zn
Organic Matter:	-
Pack Size:	20 lt
Pack Coverage:	2,500 - 5,000 m²
Application Rate:	40 - 80 lt/ha
Water Rate:	300 - 600 lt/ha
Application Method:	Sprayer
Product Code:	**IG050150**

Fusion BioGreen High K 5-3-18

Fusion BioGreen High K is a liquid low nitrogen input fertiliser with high levels of potassium, which help to increase root strength and improve root mass. The 5-3-18 analysis offers minimal nitrogen, ideal for warm season grasses such as Paspalum, and high levels of potassium help improve disease resistance. The added seaweed, amino acids and a full trace element package boost overall plant health and offer improved turf performance, particularly in warmer climates.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Formulation to specifically suit warm season grasses such as Paspalum
- Added seaweed for plant stress relief, growth stimulation and hormonal balance
- Additional amino acids aid nitrogen metabolism and help to prevent plant stress
- Fully tank mixable with other products ensuring ease of adding further trace elements

SUGGESTED SOIL TEMPERATURES FOR APPLICATION		
Minimum 5ºC	Optimum 15ºC	Maximum -ºC

NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
40 lt/ha			80 lt/ha		
N 2.0	P_2O_5 1.2	K_2O 7.2	N 4.0	P_2O_5 2.4	K_2O 14.4

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	2 - 3 weeks
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	5.0% urea
Guaranteed Analysis:	5-3-18
Additional Elements:	B, Cu, Fe, Mn, Mo, Zn
Organic Matter:	-
Pack Size:	20 lt
Pack Coverage:	2,500 - 5,000 m²
Application Rate:	40 - 80 lt/ha
Water Rate:	300 - 600 lt/ha
Application Method:	Sprayer
Product Code:	**IG050140**

Fusion BioGreen NPK 2-7-14

Fusion BioGreen NPK 2-7-14 is ideally suited to low Nitrogen input species. Manufactured to include a comprehensive additive package, the foliar uptake of nutrients by the plant minimises the environmental impact of nutrients leaching into the soil. Fusion BioGreen NPk 2-7-14 can also be used as a turf hardener in cool climates.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Ideal for species with low nitrogen requirements, including paspalum
- Can be used in cool climates to increase turf hardness
- Fully tank-mixable containing added seaweed and trace elements
- Sulphur free and has a low salt index

SUGGESTED SOIL TEMPERATURES FOR APPLICATION		
Minimum 5ºC	Optimum 15ºC	Maximum -ºC

NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
40 lt/ha			80 lt/ha		
N 0.8	P_2O_5 2.8	K_2O 5.6	N 1.6	P_2O_5 5.6	K_2O 11.2

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	2 - 3 weeks
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	2.0% ammonium
Guaranteed Analysis:	2-7-14
Additional Elements:	-
Organic Matter:	-
Pack Size:	20 lt
Pack Coverage:	2,500 - 5,000 m²
Application Rate:	40 - 80 lt/ha
Water Rate:	300 - 600 lt/ha
Application Method:	Sprayer
Product Code:	**IG050160**

Fusion BioGreen K 0-0-10

Fusion BioGreen K 0-0-10 is an ideal cool season turf hardener. It can be mixed with all other Indigrow liquid fertilisers to help develop a bespoke, ideal and balanced nutritional program for all turf scenarios. The Fusion BioGreen K 0-0-10 liquid also contains a comprehensive additive package, helping to provide a wide range of benefits to the turf, particularly in harsher, cooler temperatures.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- A potassium only feed based on potassium chloride
- Minimises soil nutrient loss through leaching
- Added seaweed to help alleviate stress symptoms
- Contains added seaweed and trace elements

SUGGESTED SOIL TEMPERATURES FOR APPLICATION					
Minimum 5°C		Optimum 15°C		Maximum -°C	
NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
40 lt/ha			80 lt/ha		
N 0.0	P_2O_5 0.0	K_2O 4.0	N 0.0	P_2O_5 0.0	K_2O 8.0

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	2 - 3 weeks
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	10.0% potassium chloride
Guaranteed Analysis:	0-0-10
Additional Elements:	B, Cu, Fe, Mn, Mo, Zn
Organic Matter:	-
Pack Size:	20 lt
Pack Coverage:	2,500 - 5,000 m²
Application Rate:	40 - 80 lt/ha
Water Rate:	300 - 600 lt/ha
Application Method:	Sprayer
Product Code:	**IG050170**

Fusion BioGreen NK 20-0-10

A zero phosphate product, Fusion BioGreen NK 20-0-10 contains are 2:1 ratio of nitrogen to potassium, both of which are critical in turf growth. The 20% nitrogen content is derived from urea to provide a longer and more consistent nutrient release. The added seaweed and trace element package helps to improve overall turf health and stress relief.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- A zero phosphate nitrogen and potassium analysis
- Helps to maintain turf growth and promote turf hardness
- Fully tank-mixable containing added seaweed and trace elements
- Mixes with all Fusion BioGreen liquids to enable balanced nutritional program

SUGGESTED SOIL TEMPERATURES FOR APPLICATION					
Minimum 5°C		Optimum 15°C		Maximum -°C	
NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
40 lt/ha			80 lt/ha		
N 8.0	P_2O_5 0.0	K_2O 4.0	N 16.0	P_2O_5 0.0	K_2O 8.0

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	2 - 3 weeks
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	0.9% nitrate, 19.1% urea
Guaranteed Analysis:	20-0-10
Additional Elements:	B, Cu, Fe, Mn, Mo, Zn
Organic Matter:	-
Pack Size:	20 lt
Pack Coverage:	2,500 - 5,000 m²
Application Rate:	40 - 80 lt/ha
Water Rate:	300 - 600 lt/ha
Application Method:	Sprayer
Product Code:	**IG050180**

Fusion Tracer OneShot

Fusion Tracer OneShot is a liquid secondary and trace element package and has been developed to include a wide range of micronutrients. The balanced nutrient ratio ensures Fusion Tracer OneShot is perfectly suited to all turf types, particularly in circumstances where the availability of trace elements is minimal. The highly efficient foliar formulation allows for swift and efficient uptake by the plant leaf. It can be used in a tank mix with a wide range of Indigrow products, including the rest of the OneShot range.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Particularly effective when used on sand-based greens where nutrient leaching is common
- Designed to work on soils with high pH levels
- Compatible with most approved pesticides
- Additives improve leaf penetration, uptake and nutrient absorption

SUGGESTED SOIL TEMPERATURES FOR APPLICATION					
Minimum 8°C		Optimum 15°C		Maximum -°C	
NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
2 sachets/ha			4 sachets/ha		
N 0.0	P_2O_5 0.0	K_2O 0.0	N 0.0	P_2O_5 0.0	K_2O 0.0

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	2 - 4 weeks
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	-
Guaranteed Analysis:	-
Additional Elements:	1.8% MgO, 4.2% SO_3, 0.15% Cu, 2.2% Fe, 1.13% Mn, 0.03% Mo, 0.42% Zn
Organic Matter:	-
Pack Size:	20 sachets
Pack Coverage:	5 - 10 ha
Application Rate:	2 - 4 sachets/ha
Water Rate:	300 - 600 lt/ha
Application Method:	Sprayer
Product Code:	**IG050215**

Fusion Liquid Fe

Fusion Liquid Fe is a concentrated liquid iron formulation containing 7.0% Fe for application throughout the year. Regular applications of Fusion Liquid Fe will stimulate chlorophyll production giving excellent turf green-up without promoting excessive top growth. The iron content will also help harden turf grass against disease. Fusion Liquid Fe is fully compatible in a tank mix with other Indigrow products.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Provides up to 6 weeks of turf green-up without blackening
- Iron only formulation ensure that there is no unwanted growth
- Helps improve the plants ability to utilise nitrogen applications
- Toughens sward providing disease and stress resistance

SUGGESTED SOIL TEMPERATURES FOR APPLICATION			DISCOVER MORE
Minimum 10°C	Optimum 15°C	Maximum -°C	

NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
10 lt/ha			20 lt/ha		
N 0.0	P_2O_5 0.0	K_2O 0.0	N 0.0	P_2O_5 0.0	K_2O 0.0

CHARACTERISTIC	VALUE
Approx. Longevity:	4 - 6 weeks
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	-
Guaranteed Analysis:	7.0% Fe
Additional Elements:	-
Organic Matter:	-
Pack Size:	10 lt
Pack Coverage:	5,000 - 10,000 m²
Application Rate:	10 - 20 lt/ha
Water Rate:	300 - 600 lt/ha
Application Method:	Sprayer
Product Code:	**IG050102**

Fusion Soluble Fe

Fusion Soluble Fe is a highly soluble ferrous sulphate powder. It contains 20% iron for the economic treatment of large areas of turf. Fusion Soluble Fe has been designed to dissolve quickly in water, and once applied to the turf the sulphur in Fusion Soluble Fe helps to temporarily reduce the pH levels in the soil.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Produces dark green turf in all conditions
- Toughens sward for improved disease resistance
- Economic alternative to conventional liquid fertiliser
- Tank mix compatible with Fusion Soluble N and High K

SUGGESTED SOIL TEMPERATURES FOR APPLICATION			DISCOVER MORE
Minimum 6°C	Optimum 14°C	Maximum -°C	

NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
10 kg/ha			20 kg/ha		
N 0.0	P_2O_5 0.0	K_2O 0.0	N 0.0	P_2O_5 0.0	K_2O 0.0

CHARACTERISTIC	VALUE
Approx. Longevity:	2 - 4 weeks
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	-
Guaranteed Analysis:	20.0% Fe
Additional Elements:	-
Organic Matter:	-
Pack Size:	10 kg
Pack Coverage:	5,000 m²
Application Rate:	20 kg/ha
Water Rate:	300 - 600 lt/ha
Application Method:	Sprayer
Product Code:	**IG050203**

Fusion Soluble N 46-0-0

Fusion Soluble N is a highly soluble source of nitrogen. It has been designed to work as a standalone product, or in conjunction with other fertilisers to boost nitrogen content in the soil. Fusion Soluble N is a cost-effective solution for managers with large areas of turf to feed and should be used as part of a planned nutrient programme.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- High nitrogen formulation, to provide quick green up and steady, continual growth
- Cost effective alternative to conventional liquid fertiliser
- Fully dissolves in the spray tank, even in cold water
- Ideal for use in a tank mix where additional nitrogen content is required

SUGGESTED SOIL TEMPERATURES FOR APPLICATION					
Minimum 5°C		Optimum 15°C		Maximum -°C	
NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
10 kg/ha			20 kg/ha		
N 4.6	P_2O_5 0.0	K_2O 0.0	N 9.2	P_2O_5 0.0	K_2O 0.0

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	2 - 4 weeks
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	46.0% urea
Guaranteed Analysis:	46-0-0
Additional Elements:	B, Cu, Fe, Mn, Mo, Zn
Organic Matter:	-
Pack Size:	10 kg
Pack Coverage:	5,000 m²
Application Rate:	20 kg/ha
Water Rate:	300 - 600 lt/ha
Application Method:	Sprayer
Product Code:	**IG050202**

Fusion Soluble NPK 32-5-10

Fusion Soluble NPK contains 100% soluble, readily available, plant food. It has been designed to provide a constant source of plant available nutrients for all turf areas. The high nitrogen content provides excellent growth and the potassium content gives added cell wall strength and disease resistance. Fusion Soluble NPK should be used as part of a planned nutrient programme and can be spoon fed throughout the year.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- High nitrogen content from three nitrogen sources for great initial and prolonged growth
- Fully balanced nutrient formulation
- Economic alternative to conventional liquid fertiliser
- Contains a comprehensive list of trace elements

SUGGESTED SOIL TEMPERATURES FOR APPLICATION					
Minimum 12°C		Optimum 15°C		Maximum -°C	
NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
10 kg/ha			20 kg/ha		
N 3.2	P_2O_5 0.5	K_2O 1.0	N 6.4	P_2O_5 1.0	K_2O 2.0

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	2 - 4 weeks
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	2.8% nitrate, 3.8% ammonium, 25.4% urea
Guaranteed Analysis:	32-5-10
Additional Elements:	B, Cu, Fe, Mn, Mo, Zn
Organic Matter:	-
Pack Size:	10 kg
Pack Coverage:	5,000 m²
Application Rate:	20 kg/ha
Water Rate:	300 - 600 lt/ha
Application Method:	Sprayer
Product Code:	**IG050201**

Fusion Soluble High K 13-0-46

Fusion Soluble High K contains a high concentration of potassium. The potassium provides additional cell wall strength and drought control for the plant. It provides an excellent green up and growth for up to four weeks, and can be used throughout the growing season, but is particularly effective when applied before periods of expected stress, such as drought. Fusion Soluble High K should be used as part of a planned nutrient programme.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- High potassium formulation for improved cell wall strength and drought control
- Includes nitrate nitrogen for excellent immediate turf response
- Provides excellent cool temperature response
- Fully dissolves in the spray tank, even in cold water

SUGGESTED SOIL TEMPERATURES FOR APPLICATION					
Minimum 8°C		Optimum 15°C		Maximum -°C	
NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
10 kg/ha			20 kg/ha		
N 1.3	P_2O_5 0.0	K_2O 4.6	N 2.6	P_2O_5 0.0	K_2O 9.2

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	2 - 4 weeks
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	13.0% nitrate
Potassium Source:	46.0% potassium nitrate
Guaranteed Analysis:	13-0-46
Additional Elements:	B, Cu, Fe, Mn, Mo, Zn
Organic Matter:	-
Pack Size:	10 kg
Pack Coverage:	5,000 m²
Application Rate:	20 kg/ha
Water Rate:	300 - 600 lt/ha
Application Method:	Sprayer
Product Code:	**IG050204**

Seaweed Extracts

- **Manufactured from Ascophyllum Nodosum**
- **Sourced from tidal areas in unpolluted seas**
- **Produced using latest cold cell burst technology**
- **Provide plant stress relief**
- **Contain naturally occurring alginic acid and mannitol**

Seaweed is a bio-stimulant. Indigrow's Compass seaweed products comprise a unique range of molecular seaweed and carbohydrate extract products. These seaweed products are produced using Ascophyllum nodosum, grown at a renewable, sustainable and environmentally friendly source.

Compass products are seaweed based, utilising its ability to stimulate root growth. The seaweed helps the plant to produce thicker and longer roots with more root hairs leading to an increase in water and nutrient scavenging and the plant's ability to thrive in stress situations. We have extensively trialled our seaweed products, please contact us if you would like to see our independent university research data.

The seaweed used in the Compass products is extracted from the plant using the latest cold cell burst technology. This technology is designed to keep all of the marine molecules intact, allowing them to maintain their bioactive properties. Compass molecular seaweed extract is rich in alginic acid, mannitol, amino acids, minerals and other plant hormone-like molecules. The end product is concentrated and finely filtered to ensure maximum solubility and guarantee ease of application.

PRODUCT ANALYSIS

PRODUCT	ANALYSIS	APPROXIMATE RATE	LONGEVITY	PACK COVERAGE	PACK SIZE
Compass Bio-Active Liquid	liquid seaweed	10-20 lt/ha	4-6 weeks	5,000-10,000 m² 6-12 ha	10 lts 120 lts
Compass Bio-Active OneShot	concentrated liquid seaweed	2-4 sachets/ha	4-6 weeks	5-10 ha	20 sachets
Compass Bio-Complete	liquid seaweed + 3.3% Fe + wetting agent	10-20 lt/ha	4-6 weeks	5,000-10,000 m² 6-12 ha	10 lts 120 lts
Compass Start	4-4-4 + molasses	10-20 lt/ha	4-6 weeks	5,000-10,000 m² 6-12 ha	10 lts 120 lts
Compass Composted Seaweed	3-1-0	35-75 g/m²	4-6 weeks	250-575 m²	20 kg
Compass Lite	zeolite with seaweed	65-130 g/m²	4-6 weeks	150-300 m²	20 kg

The Importance of Seaweed Source

Choosing the correct source of seaweed is vital to producing a high quality product. Our seaweed is carefully selected from unpolluted, tidal seas. The tidal seas offer a source which results in a finished product which is higher in beneficial compounds. Tidal flow submerges and exposes the seaweed plants twice every day, causing them high levels of stress. Naturally, the plants build up internal reserves of stress relieving compounds, which after processing remain in the product and can be applied to turf. Tidal seaweed also has increased nutrient content compared to other seaweeds grown in still/calm waters.

SEAWEED SOURCE BREAKDOWN	Compass Bio-Active	Compass Bio-Active OneShot	Compass Bio-Complete	Compass Start
Dry Matter	24.1%	48.2%	9.4%	33.0%
Organic Matter	18.25%	36.5%	7.75%	21.8%
Specific Gravity	1.1	1.24	1.1	1.25
pH	6.8	6.6	3.0	5.5
Carbohydrates				
Mannitol	3.27%	6.65%	0.52%	1.66%
Alginic Acid	4.52%	9.04%	1.65%	2.26%
Amino Acids				
Alanine	0.10%	0.003%	4.8 ppm	0.0068%
Arginine	0.35%	0.003%	6.0 ppm	0.0226%
Aspartic Acid	0.24%	0.004%	9.3 ppm	0.0157%
Cystine	0.16%	0.001%	1.5 ppm	0.0101%
Glutamic Acid	0.63%	0.006%	140 ppm	0.0409%
Glycine	0.16%	0.005%	45 ppm	0.0101%
Trimethylglycine	2.00%	-	-	-
Isoluecine	0.12%	0.002%	9.0 ppm	0.0077%
Histidine	0.04%	0.001%	12 ppm	0.0028%
Leucine	0.16%	0.004%	24 ppm	0.0101%
Lysine	0.14%	0.001%	6.2 ppm	0.0094%
Methionine	0.02%	0.0003%	1.6 ppm	0.0010%
Phenylalanine	0.11%	0.003%	3.8 ppm	0.0070%
Proline	0.23%	0.006%	42 ppm	0.0150%
Serine	0.30%	0.007%	1.2 ppm	0.0149%
Threonine	0.30%	0.003%	6.0 ppm	0.0196%
Tyrosine	0.05%	0.001%	2.6 ppm	0.0034%
Valine	0.17%	0.003%	0.42 ppm	0.0110%
Total Amino Acids	**5.21%**	**0.053%**	**315.42 ppm**	**0.2088%**

Mannitol and Alginic Acid

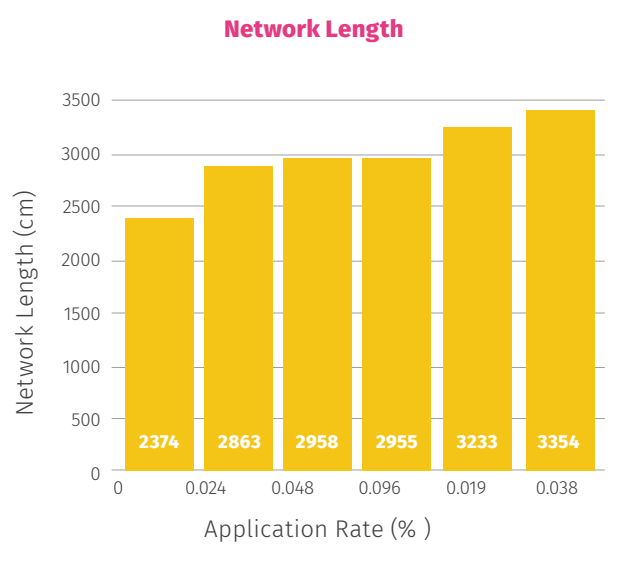
Alginic acid is an integral bioactive component of seaweed extract and this polysaccharide can enhance soil structures. Alginates are able to bond with ions in the soil similar to the way natural mucigels from soil organisms impact on aggregation of soil particles. This aggregation effect creates structures which allow aeration and water movement. This allows for root growth and increased uptake of nutrients and alginates are also proficient at retaining water and thus provides a conducive environment for increased root development and maximising healthy growth.

Foliar applications of seaweed extract is able to encourage increased root mass and development of increased surface area due to fibrous morphology promoted by the available auxins and cytokinins.

Mannitol is a polyol with excellent antioxidant properties that protect cell functions particularly under conditions of abiotic stress. They achieve this by quenching free radicals or reactive oxygen species such as singlet oxygen, hydroxyl and hydrogen peroxide molecules. Mannitol also protect the important cell structures responsible for metabolic processes to maintain normal functionality.

Compass Bio-Active OneShot Trials

Compass Bio-Active has been independently tested to evaluate the bio-stimulant and stress tolerance effects.



Indigrow have worked with an independent laboratory to evaluate the performance of Compass Bio-Active OneShot.

Compass Bio-Active OneShot was applied to turf grass (Lolium), at a range of application rates above and below the recommended rate of 4 sachets per hectare (0.8kg/Ha w/v in 300L water). The major focus of this work was on the early growth and morphology of roots in bioassay tests.

Compass Bio-Active OneShot was shown to significantly increase root length, total network length and perimeter within the first two weeks of growth. It also significantly increases the growth of tillers at the recommended application rate. The conclusions drawn by an independent laboratory indicated that, when applied at the recommended application rate, Compass Bio-Active OneShot will increase the ability of turf grass roots to scavenge deeper soil for water and nutrients from an early stage in their development.

Control

0.2 L/ha

0.4 L/ha

Compass Bio-Active Liquid

Compass Bio-Active Liquid is a highly concentrated, pure seaweed, liquid plant stimulant and soil conditioner. It is produced using the Indigrow cold water extraction process which prevents the loss of many beneficial nutrients during the manufacturing process. Compass Bio-Active will assist in revitalising tired looking turf as the high seaweed content promotes excellent wear and recovery characteristics.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Ideal all-year round product for improving plant stress relief
- Increases root length and encourages root growth in new and established turf
- Longer roots help to scavenge deeper soil for water and nutrients
- Can be used as part of an organic fertiliser programme

SUGGESTED SOIL TEMPERATURES FOR APPLICATION					
Minimum 4°C		Optimum 10°C		Maximum -°C	
NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
10 lt/ha			20 lt/ha		
N 0.0	P_2O_5 0.0	K_2O 0.0	N 0.0	P_2O_5 0.0	K_2O 0.0

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	4 - 6 weeks
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	-
Guaranteed Analysis:	-
Additional Elements:	-
Organic Matter:	18.25%
Pack Size:	10 lt
Pack Coverage:	5,000 - 10,000 m²
Application Rate:	10 - 20 lt/ha
Water Rate:	300 - 600 lt/ha
Application Method:	Sprayer
Product Code:	**IG090101**

Compass Bio-Active OneShot

Compass Bio-Active OneShot is a plant stimulant and soil conditioner in the form of a pure seaweed liquid. It is manufactured from Ascophyllum nodosum seaweed using gentle evaporation technology to avoid excessive thermal degradation. The concentrated formulation is contained in sachets for large scale economic use, whilst also reducing transport costs and emissions.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Proven to significantly increase root length in the first two weeks of turf growth
- Applications will aid plant stress relief
- Can be used as part of an organic fertiliser programme
- Highly economical, super-concentrated sachets

SUGGESTED SOIL TEMPERATURES FOR APPLICATION					
Minimum 4°C		Optimum 10°C		Maximum -°C	
NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
2 sachets/ha			4 sachets/ha		
N 0.0	P_2O_5 0.0	K_2O 0.0	N 0.0	P_2O_5 0.0	K_2O 0.0

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	4 - 6 weeks
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	-
Guaranteed Analysis:	-
Additional Elements:	-
Organic Matter:	36.5%
Pack Size:	20 sachets
Pack Coverage:	5 - 10 ha
Application Rate:	2 - 4 sachets/ha
Water Rate:	300 - 600 lt/ha
Application Method:	Sprayer
Product Code:	**IG090110**

Compass Bio-Complete

Compass Bio-Complete contains 16.5% readily plant available seaweed to help promote root growth. The seaweed content promotes excellent wear and recovery characteristics. With 3.3% iron, Compass Bio-Complete helps to harden turf and improve colour without encouraging new growth. The 1.6% wetting agent, based on the penetrant technology in Magnum Forty-Four, reduces surface moisture which is important in cooler, wetter conditions.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Formulated for cooler climates, hardens turf and reduces surface moisture
- A mix of seaweed, iron and wetting agent
- Improves colour without encouraging new growth
- Helps to minimise disease risk

SUGGESTED SOIL TEMPERATURES FOR APPLICATION					
Minimum 4°C		Optimum 10°C		Maximum -°C	
NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
10 lt/ha			20 lt/ha		
N 0.0	P_2O_5 0.0	K_2O 0.0	N 0.0	P_2O_5 0.0	K_2O 0.0

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	4 - 6 weeks
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	-
Guaranteed Analysis:	16.5% seaweed, 3.3% Fe, 1.6% wetting agent
Additional Elements:	-
Organic Matter:	7.8%
Pack Size:	10 lt
Pack Coverage:	5,000 - 10,000 m²
Application Rate:	10 - 20 lt/ha
Water Rate:	300 - 600 lt/ha
Application Method:	Sprayer
Product Code:	**IG090103**

Compass Start

Compass Start is a blend of seaweed and molasses, ideal for use as an early season feed. It helps to boost microbial activity in the soil and encourage root development. The molasses provides an excellent food source of carbon, sugars and carbohydrates for soil microbes. Compass Start will also help increase resistance to stress and disease as well as strengthening roots to resist nematode damage.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Contains seaweed, molasses and wetting agent for an improved playing surface
- Greatly increases root mass and beneficial soil bacteria
- Unlocks locked-up nutrients in the soil into readily available forms
- Increases resistance to stress and disease

SUGGESTED SOIL TEMPERATURES FOR APPLICATION		
Minimum 4°C	Optimum 15°C	Maximum 30°C

NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
10 lt/ha			20 lt/ha		
N 0.4	P_2O_5 0.4	K_2O 0.4	N 0.8	P_2O_5 0.8	K_2O 0.8

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	4 - 6 weeks
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	1.1% ammonium, 2.9% urea
Guaranteed Analysis:	4-4-4 + molasses
Additional Elements:	Fe, Cu, Zn, Mn
Organic Matter:	21.8%
Pack Size:	10 lt
Pack Coverage:	5,000 - 10,000 m²
Application Rate:	10 - 20 lt/ha
Water Rate:	300 - 600 lt/ha
Application Method:	Sprayer
Product Code:	**IG090106**

Compass Composted Seaweed

Compass Composted Seaweed is a seaweed-based soil improver, comprising of homogenous 2-4mm prills, leading to long lasting micronutrient and biostimulant activity. It helps to build up the humus structure of the soil, stimulates microbial activity and provides a range of polysaccharides, vitamins and alginates. A single application provides a slow-acting, long lasting plant food which is broken down over a period of months by the soil bacteria providing a health benefit to all sports turf.

Designed for use on:

- Tees
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- A composted seaweed containing a wide range of micronutrients
- Regular applications will help to rectify calcium imbalance
- Improves the humus structure of the soil, helping moisture and nutrient retention
- Aids plant recovery after periods of high stress

SUGGESTED SOIL TEMPERATURES FOR APPLICATION		
Minimum 8°C	Optimum 12°C	Maximum -°C

NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
35 g/m²			75 g/m²		
N 9.8	P_2O_5 2.1	K_2O 1.4	N 21.0	P_2O_5 4.5	K_2O 3.0

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	4 - 6 weeks
SGN/Particle size:	200 - 400
Cutting Height:	> 10mm
Nitrogen Source:	1.3% organic, 1.5% ammonium
Guaranteed Analysis:	3-1-0
Additional Elements:	3.0% CaO
Organic Matter:	21.3%
Pack Size:	20 kg
Pack Coverage:	250 - 575 m²
Application Rate:	35 - 75 g/m²
Water Rate:	-
Application Method:	Spreader
Product Code:	**IG090109**

Compass Lite

Compass Lite is a combination of zeolite and seaweed to create a soil improver designed for new constructions and for use during turf renovation. The water holding properties of zeolite assist in providing an environment where new roots can thrive with the seaweed content providing and increase in the humus structure of the soil, stimulating microbial activity and providing a range of polysaccharides, vitamins and alginates.

Designed for use on:

- Greens
- Tees
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Improves the humus structure of the soil, helping nutrient retention
- Retains water in the rootzone to ensure consistent delivery of moisture to the plant
- Increases C.E.C. of the soil for improved water and nutrient management
- An ideal product for use when hollow tine aeration or coring

SUGGESTED SOIL TEMPERATURES FOR APPLICATION		
Minimum 5°C	Optimum 12°C	Maximum -°C

NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
35 g/m²			75 g/m²		
N 0.0	P_2O_5 0.0	K_2O 0.0	N 0.0	P_2O_5 0.0	K_2O 0.0

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	4 - 6 weeks
SGN/Particle size:	70 - 400
Cutting Height:	> 6mm
Nitrogen Source:	-
Guaranteed Analysis:	-
Additional Elements:	-
Organic Matter:	5.5%
Pack Size:	20 kg
Pack Coverage:	150 - 300 m²
Application Rate:	65 - 130 g/m²
Water Rate:	Water in after application
Application Method:	Spreader
Product Code:	**IG090108**

> Plant health is an overarching term for emerging risks including pests, diseases and weeds, integrated pest management and innovation in plant protection.

Bio-stimulant Plant Health Enhancers

- **Natural plant stress relief**
- **Greater nutrient uptake**
- **Improved turf vigour and quality**
- **Improved disease resistance**
- **Stimulated root growth**

The pressure to reduce chemical inputs for plant protection due to environmental concerns has gathered substantial momentum over the last two decades. Alternative natural sustainable solutions have been promoted at a rapid pace to counter the reduction in new approvals and reduced listings of the approved chemical products. Many of the alternatives are bio-stimulant based with several having a long history of applications within agricultural, horticultural and amenity situations.

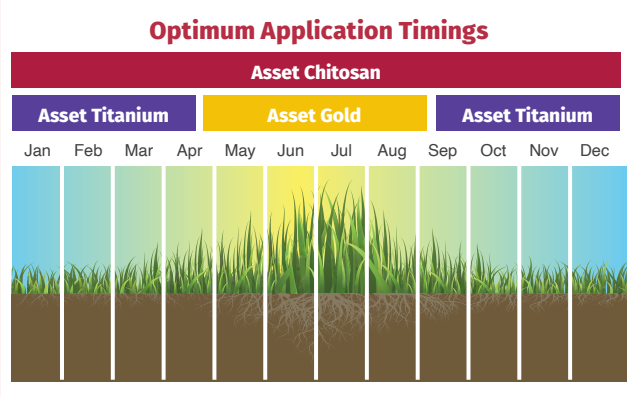
Indigrow has spent several years researching many solutions as alternatives to assist amenity turf managers in regards to some perennial wide spread difficulties such as turf stress due to the extremes of weather we experience, the requirement to use significant amounts of Iron to create the required aesthetic experience for players and the requirements for complementary products to reduce the reliance on chemical pesticides. To that end Indigrow arrived at three new product solutions to reinforce the turf manager's armoury to maintain the quality playing surfaces in light of the changing challenging economic and environmental conditions and constraints we are all working within today.

PRODUCT ANALYSIS

PRODUCT	ANALYSIS	APPROXIMATE RATE	LONGEVITY	PACK COVERAGE	PACK SIZE
Asset Gold	bio-stimulant complex	1-3 lt/ha	4-6 weeks	1 - 3 ha	6 x 500 ml
Asset Chitosan	10.0% Chitosan	1-3 lt/ha	4-6 weeks	1 - 3 ha	6 x 500 ml
Asset Titanium	0.6% Ti + trace elements	1-3 lt/ha	4-6 weeks	1 - 3 ha	6 x 500 ml

Asset - The range

The Asset range of products are designed to work effectively in conjunction with one another to provide the maximum benefit to the plant. The unique bio-stimulant properties of Asset Gold, in conjunction with the natural chitin content of Asset Chitosan and the innovative foliar nutrition properties of Asset Titanium ensure excellent all-round plant health and colour, with or without the use of plant protection products.



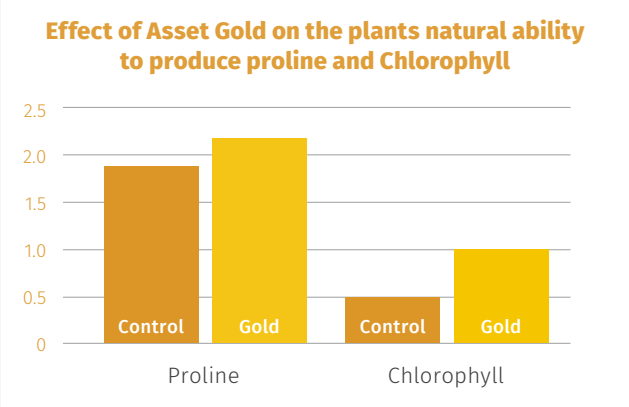
Asset Gold - A natural plant bio-stimulant

Turf grass experiences 'stress' from a wide range of factors including drought, water logging, salinity, compaction and mowing height. These symptoms of stress can cause a reduction in Chlorophyll production.

Asset Gold has been developed as targeted stress relief of abiotic stress in a concentrated formulation for increased rapid impact. The formulation is based on sustainable naturally produced plant osmolytes specifically aimed at countering many stressful situations including anaerobic, drought and saline conditions.

The raw materials are derived from plants which have evolved in harsh environments and produce significant amounts of these amino acids in order to survive. These osmolytes keep the osmotic balance of the plant cells to enhance functionality of the organelles, maintain turgidity and reduce the impact and subsequent damage of reactive oxygen species.

One of the plants natural defence mechanisms to the many turf grass stresses is to increase the production of the amino acid Proline, which reduces the damaging 'Free Radicals' which attack plant cells. Our latest trial work highlights the impact Asset Gold has on the plants natural ability to produce a range of amino acids, including Proline, as well as increasing chlorophyll levels.



Due to the targeted osmolytes plant health was maintained by balanced osmotic regulation, cell membrane protection, reduction in free radicals and therefore protection of photosynthetic and biological pathways.

Asset Chitosan - Sustainable, natural, bio-polymer

Chitin is the second most abundant polymer after cellulose and is found in the exoskeletons of arthropods and fungi.

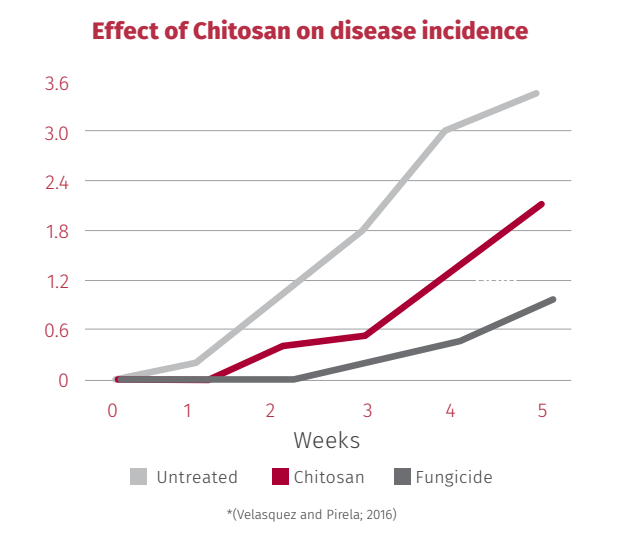
Chitin is the raw material, in our case, extracted from crustacea shells. The processing involves the chemical processes acetylation and deacetylation in order to convert the chitin into chitosan, to give us a usable product. The chitin is processed into an oligosaccharide which is more soluble and more biologically active.

Chitosan is non-toxic, biodegradable and has very little negative environmental impact making it a very attractive product for use on turf grass. Asset Chitosan is our liquid formulation to enhance

turf health and help develop resilience to perturbation throughout the growing season. A scheduled and planned approach will offer maximum benefits to turf health by pre-empting periods of increased biotic and abiotic stress pressure.

Chitosan has been shown through peer reviewed research over many decades to trigger defensive responses to biotic and abiotic stress when applied to turf grass it also has priming effects to enhance microbial activity. One of the main theories is that the chitosan causes a vaccine like effect on the turf which builds the cell wall protection and lignification.

Chitinous materials indirectly control fungal diseases in plants by the indirect inhibition of the pathogens via their decomposition by-products, by also having a fertiliser effect, stimulating/ supporting the growth of beneficial micro-organisms, and by the elicitor activity of chitin.



Asset Titanium - A beneficial turf nutrient

With many foliar applied nutrients it is vital that they are in a plant available form and soluble as application and uptake is crucial to the efficacy. Titanium is an abundant element although often unavailable. It is both synergistic with iron at low levels and antagonistic at high levels.

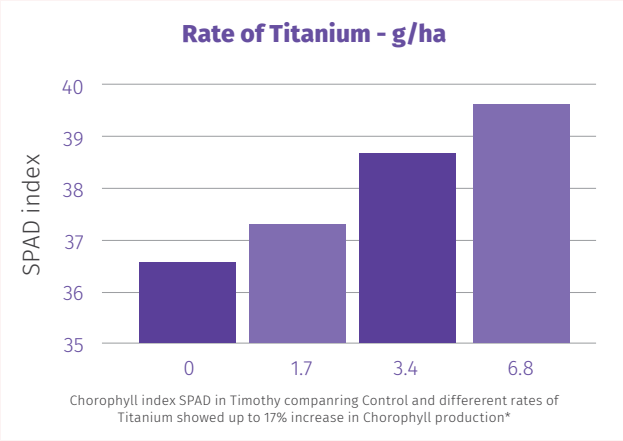
Asset Titanium is based on high quality raw materials to provide a highly soluble form of Titanium. It is manufactured processing specific ferrotitanium raw materials, uniquely for purpose of turf grass nutrition.

Historically Titanium has been used to enhance nutrient use efficiency. The benefits of the nutrient have been researched and publicised in peer reviewed academic papers, which has categorised titanium as having bio-stimulant qualities in the way it triggers biochemical processes when applied to turf grass.

One of the main effects cited by the research is the increase in Chlorophyll production. This is just one of many actions that occur when Ti in the plant available form are applied. The mode of action of titanium is that initially it is taken up by ligands that would ordinarily be occupied by iron and magnesium as it is synergistic at low levels of iron.

The first reaction of the plant is to build biomass and as a result, increased nitrate reductase production creates a cyclical process to build and uptake. The second major process is the increased uptake of iron and magnesium from the rhizosphere, where the roots are primed to increase more active foraging for these nutrients.

The overall result is increased biomass and chlorophyll production which has been the initial findings of our independent field trial. The formulation has not only titanium, but also a balanced micronutrient package and a unique biopolymer to increase the efficacy of the product.



Asset Gold

Asset Gold is a plant bio-stimulant specifically used when plants are under stress from extreme climatic conditions, poor soil environment including salinity, water logging and drought as well as pest and disease attack. It contains an amino acid derivative which is extracted exclusively from plant species that naturally exhibit resistance to abiotic stress. Asset Gold is an osmolyte and plays a role in maintaining cell water balance. It also stimulates the plants natural production of essential amino acids, such as proline.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Naturally derived plant stress relief agent containing amino acids
- Helps maintain ideal water balance within the plant cells
- Stimulates the plants natural production of amino acids, including proline
- Highly concentrated to offer a very low application rate

SUGGESTED SOIL TEMPERATURES FOR APPLICATION					
Minimum 10°C		Optimum 20°C		Maximum 30°C	
NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
1 lt/ha			3 lt/ha		
N 0.0	P_2O_5 0.0	K_2O 0.0	N 0.0	P_2O_5 0.0	K_2O 0.0

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	4 - 6 weeks
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	-
Guaranteed Analysis:	-
Additional Elements:	-
Organic Matter:	-
Pack Size:	6 x 500 ml
Pack Coverage:	1 - 3 ha
Application Rate:	1 - 3 lt/ha
Water Rate:	300 - 600 lt/ha
Application Method:	Sprayer
Product Code:	**IG020151**

Asset Chitosan

Asset Chitosan is a foliar plant heath product based on chitin, found in shells of shrimp and other crustaceans. Chitosan is derived from natural sustainable organic bio-polymers (complex carbohydrate compounds). This unique formulation increases plant health by supplying plant available carbohydrates to the turf supporting and retaining much needed energy within the plant to maintain root mass and turf coverage.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Chitosan strengthens plants to resist disease, pest damage and drought
- Derived from natural ingredients
- Highly concentrated to offer a very low application rate
- An ideal tank mix partner with Asset Gold and Asset Titanium

SUGGESTED SOIL TEMPERATURES FOR APPLICATION					
Minimum 10°C		Optimum 20°C		Maximum 30°C	
NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
1 lt/ha			3 lt/ha		
N 0.0	P_2O_5 0.0	K_2O 0.0	N 0.0	P_2O_5 0.0	K_2O 0.0

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	4 - 6 weeks
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	-
Guaranteed Analysis:	10.0% Chitosan
Additional Elements:	-
Organic Matter:	-
Pack Size:	6 x 500 ml
Pack Coverage:	1 - 3 ha
Application Rate:	1 - 3 lt/ha
Water Rate:	300 - 600 lt/ha
Application Method:	Sprayer
Product Code:	**IG020153**

Asset Titanium

Asset Titanium is an innovative foliar nutrition product to enhance the dark green colour of quality sports turf and improve overall plant health. High iron inputs to increase chlorophyll production on stadium pitches causes the gradual acidification of the sand-based rootzones. The Titanium (Ti) content is able to replace iron in the production of chlorophyll and can be used at far lower application rates, to alleviate chlorosis. The unique combination of Titanium and a sustainable bio-polymer, enhances turf colour without high iron input.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Offers television friendly, deep green sports surfaces in shaded areas of stadia
- Particularly effective where growing lights are used
- Maintains optimum aesthetics for all sports and amenity turf without excess growth
- Ideal for use on any shaded area of turf

SUGGESTED SOIL TEMPERATURES FOR APPLICATION					
Minimum 10°C		Optimum 20°C		Maximum 30°C	
NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
1 lt/ha			3 lt/ha		
N 0.0	P_2O_5 0.0	K_2O 0.0	N 0.0	P_2O_5 0.0	K_2O 0.0

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	4 - 6 weeks
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	-
Guaranteed Analysis:	0.6% Ti
Additional Elements:	0.3% B, 0.5% Fe, 3.0% Mn, 6.3% Zn
Organic Matter:	-
Pack Size:	6 x 500 ml
Pack Coverage:	1 - 3 ha
Application Rate:	1 - 3 lt/ha
Water Rate:	300 - 600 lt/ha
Application Method:	Sprayer
Product Code:	**IG020155**

Amino, Humic and Fulvic Acids

- **Relieve plant stress symptoms**
- **Promote microbial growth**
- **Reduce the uptake of toxins**
- **Provide a food source for soil microbes**

Amino acids are organic compounds that contain amine ($-NH_2$) and carboxyl (-COOH) functional groups. The key elements of an amino acid are carbon (C), hydrogen (H), oxygen (O), and nitrogen (N), although other elements are found in the side chains of certain amino acids.

It is believed that there are about 500 naturally occurring amino acids, only some of which are beneficial to turf grass. There is a wide range of 20 amino acids in the pool within plants. This varies throughout the plants lifecycle and changes depending on its development and physiological conditions.

The biologically active amino acids are the L (Levorotatory) α amino acids as opposed to the D Dextrorotatory amino acids which are not biologically active. Not all amino acids are readily plant available. It is the L- α amino acids that are plant available, and which are the focus of our products.

Amino acids are the building blocks of peptides, proteins and DNA. They have a variety of functions and are crucial to the overall health of any plant. Getting the correct balance is vital in preventing stress which can have a significant impact of turf quality and aesthetics.

PRODUCT ANALYSIS

PRODUCT	ANALYSIS	APPROXIMATE RATE	LONGEVITY	PACK COVERAGE	PACK SIZE
Turbine Amino OneShot	5-0-0 + 30.1% L-amino acids	2-4 sachets/ha	2-3 weeks	5-10 ha	20 sachets
Turbine Humate OneShot	0-0-5 + 29.4% humic substances	2-4 sachets/ha	2-4 weeks	5-10 ha	20 sachets
Turbine Fulvic OneShot	2-0-6 + 33.8% fulvic acid	2-4 sachets/ha	2–3 weeks	5–10 ha	20 sachets

Amino Acids

Indigrow Turbine products have a highly concentrated L- α amino acid package derived from sustainable plant based raw materials. The wide variety of amino acids cover very many biologically activities in plants as well as biosynthesis of proteins and are crucial in the resistance to biotic and abiotic stresses.

Throughout the plant life cycle the pool of amino acids varies in composition in a dynamic flux depending on the internal demands of the plant metabolism. By identifying the key amino acids such as proline which is particularly beneficial in drought conditions and applying this in order to reduce the requirement of the plant to utilise its own energy to fulfil the stress relief requirements.

The use of Turbine Amino OneShot reduces the impact of stress on the plants own resources. Applications are particularly important during periods of stress, which can include drought, cold or frost and other physiological stresses.

Tubine Amino OneShot Aminogram

TYPICAL SPECIFICATION

Characteristic	% w/v
Total Amino Acids	30.07
Free L-Amino Acids	30.07
Organic Nitrogen	4.80
Organic Matter	36.90
Organic Carbon	20.66

AMINO ACIDS ANALYSIS

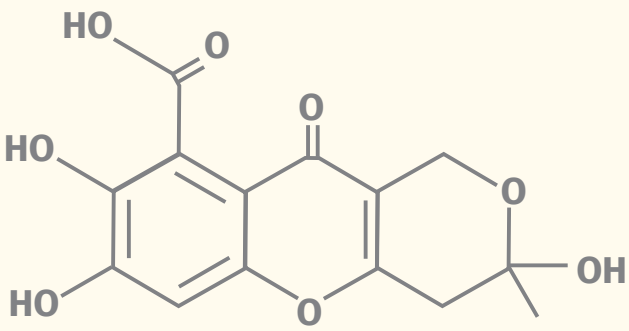
Amino Acid	% w/v
Alanine	0.14
Arginine	0.15
Asparagine	0.16
Cystine	0.18
Glutamic Acid	18.31
Glytamine	0.05
Glycine	0.63
Isoluecine	0.12
Histidine	0.25
Leucine	0.21
Lysine	9.05
Methionine	0.06
Phenylalanine	0.14
Proline	0.20
Serine	0.14
Threonine	0.00
Trytophene	0.05
Tyrosine	0.00
Valine	0.25
Total Amino Acids	**30.07%**

Fulvic Acids

Fulvic acids are the smallest molecular form of humic acid molecules, and are vital to turf grass. They help to mobilise the minerals applied as fertiliser into a form which can be readily absorbed by the turf grass plant. Fulvic acids help the plant metabolise nutrients, vitamins, enzymes and auxins, all of which contribute significantly to overall plant health.

Fulvic acids also help turf grass plants to deal with stresses, including drought. They achieve this by helping to increase the amount of soluble sugars in the cell.

As fulvic acid is a form of humic substance, it with works perfectly with the humic acid package in Turbine Humate OneShot.



Turbine Amino OneShot

Turbine Amino OneShot is a plant bio-stimulant and stress relieving agent containing 35% of plant available free L-amino acids. L-amino acids are the building blocks of peptides, proteins and DNA. They are crucial to the health of any plant. When these are applied to plants suffering from environmental stress, they help improve turf health and quality. Turbine Amino OneShot also offers the plant relief from physiological, cold and frost, transplanting and water stress.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- A food source for soil microbes, which product organic acids required by turf
- Helps turf recover from drought, frost, fungal diseases and pest attack
- Rapidly metabolised
- Relieves plant stress symptoms

SUGGESTED SOIL TEMPERATURES FOR APPLICATION		
Minimum 8°C	Optimum 15°C	Maximum -°C

NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
2 sachets/ha			4 sachets/ha		
N 0.01	P_2O_5 0.0	K_2O 0.0	N 0.02	P_2O_5 0.0	K_2O 0.0

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	2 - 3 weeks
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	4.8% organic, 0.5% ammonium
Guaranteed Analysis:	5-0-0 + 30.1% L-amino acids
Additional Elements:	-
Organic Matter:	31.1%
Pack Size:	20 sachets
Pack Coverage:	5 - 10 ha
Application Rate:	2 - 4 sachets/ha
Water Rate:	300 - 600 lt/ha
Application Method:	Sprayer
Product Code:	**IG080312**

Turbine Humate OneShot

Turbine Humate OneShot contains both humic and fulvic acids. Humic acid chemically aids in the breakdown of, and directly reduces the plants uptake of toxins. Turbine Humate OneShot also increases the plants ability to cope with high levels of stress from drought, frost and excess moisture and heat. It also directly encourages microbial growth, both flora and fauna, which add to general soil fertility and health.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Contains humic and fulvic acids to help promote microbial growth
- Increases the availability of phosphorous and potassium to the turf
- Improves chlorophyll content by improving the plants metabolism
- Assists in increasing surface water penetration and improves soil water holding capacity

SUGGESTED SOIL TEMPERATURES FOR APPLICATION		
Minimum 8°C	Optimum 15°C	Maximum -°C

NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
2 sachets/ha			4 sachets/ha		
N 0.0	P_2O_5 0.0	K_2O 0.02	N 0.0	P_2O_5 0.0	K_2O 0.02

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	3 - 4 weeks
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	-
Guaranteed Analysis:	0-0-5 + 29.4% humic substances
Additional Elements:	-
Organic Matter:	19.7%
Pack Size:	20 sachets
Pack Coverage:	5 - 10 ha
Application Rate:	2 - 4 sachets/ha
Water Rate:	300 - 600 lt/ha
Application Method:	Sprayer
Product Code:	**IG080311**

Turbine Fulvic OneShot

Turbine Fulvic OneShot is packed with fulvic acids and contains naturally occurring organic nitrogen. The high levels of fulvic acids contains within Turbine Fulvic OneShot will help to encourage microbial growth and support all round soil fertility and health. It will also assist in the greater development of roots and root hairs to assist in the uptake of other applied nutrients. The vegetal origin of the raw materials ensures fast absorption and high efficacy after application.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Helps the plant metabolise nutrients, vitamins, enzymes and auxins
- Fulvic acid provides a natural chelating, improving uptake of nutrients
- Increases nutrient use efficiency of other applied products
- Highly economical, super-concentrated sachets with low application rates

SUGGESTED SOIL TEMPERATURES FOR APPLICATION		
Minimum 8°C	Optimum 15°C	Maximum -°C

NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
2 sachets/ha			4 sachets/ha		
N 0.004	P_2O_5 0.0	K_2O 0.01	N 0.008	P_2O_5 0.0	K_2O 0.02

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	2 - 3 weeks
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	2.1% organic
Guaranteed Analysis:	2-0-6 + 33.8% fulvic acid
Additional Elements:	-
Organic Matter:	35.0%
Pack Size:	20 sachets
Pack Coverage:	5 - 10 ha
Application Rate:	2 - 4 sachets/ha
Water Rate:	300 - 600 lt/ha
Application Method:	Sprayer
Product Code:	**IG080313**

> Integrated Pest Management refers to the careful consideration of all available pest control techniques and subsequent integration of appropriate measures to discourage development pest populations.

Problem Solving Products

- **Diamond Green - induce natural plant resistance to disease**
- **Sapphire Green – a worm suppressant**
- **Opal Green – a hard surface biocide**

Our range of Specialist Products has been developed to help turf managers with a wide range of issues, including improved aesthetic aspirations.

The range currently includes a disease suppression agent, a worm suppressant and an algae control product. This range of products can be used in conjunction with the rest of our product range to assist turf managers to provide the best playing surface for their customers.

We constantly strive for innovation and our research and development team are constantly trying new ideas to bring the latest innovations to turf managers.

The latest innovations and changes can always be found on our website: www.indigrow.com

PRODUCT ANALYSIS

PRODUCT	ANALYSIS	APPROXIMATE RATE	LONGEVITY	PACK COVERAGE	PACK SIZE
Diamond Green	1-0-6 + 2% CaO + 1% MgO	10-20 lt/ha	2–3 weeks	5,000-10,000 m² 6-12 ha	10 lts 120 lts
Sapphire Green	15-0-0 + 82.5% SO_3	20–40 lt/ha	2–3 weeks	2,500–5,000 m² 3–6 ha	10 lts 120 lts
Opal Green	-	50 lt/ha	4 weeks	1,000 m²	5 lts

Diamond Green

Indigrow developed Diamond Green as a liquid fertiliser based on potassium, calcium and magnesium. It contains essential plant oils to enhance plant health and induce naturally acquired resistance in turf grass. The combination of nutrients in Diamond Green improves the plants natural resistance to many known pathogens.

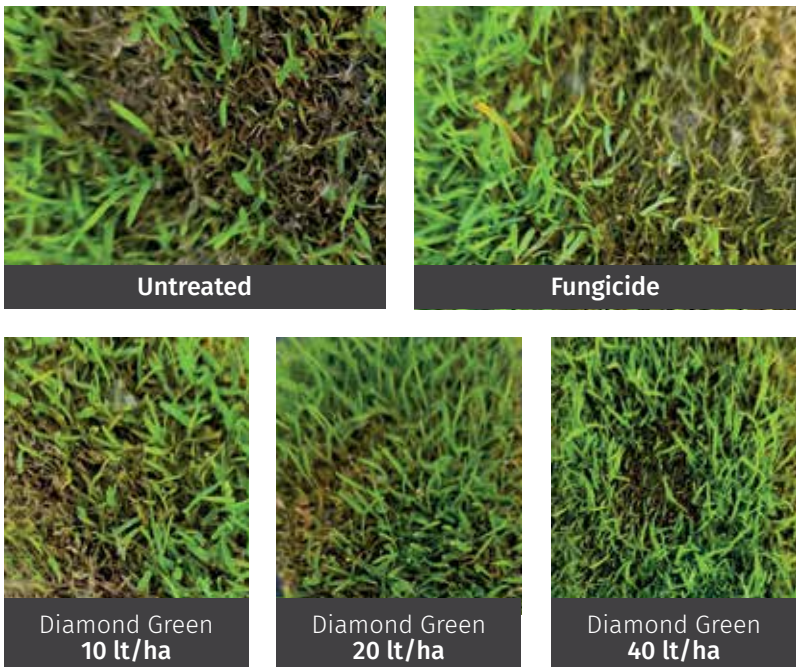
The known benefits of the nutritional package, along with the essential plant oil additives in Diamond Green will prevent the spread of turf disease, without killing the fungus. To assess the effectiveness of Diamond Green, it was trialled on diseased turf cores harvested from a parkland golf course in the UK.

Treatments

The following treatments were tested for their potential to reduce disease spread in already infected turf stands:

TREATMENT	APPLICATOR RATE	ESTIMATED DISEASE SPREAD (%)
Water (control)	Untreated	47%
Fungicide (Tebuconazole 200 g/lt + Trifloxystrobin 100 g/lt)	1 lt/ha	14%
Diamond Green	10 lt/ha	19%
Diamond Green	20 lt/ha	8%
Diamond Green	40 lt/ha	3%

OBSERVATIONS: 4 DAYS AFTER TREATMENT – FUSARIUM



Over a period of 4 days, the active Fusarium had spread freely on the untreated turf core and white, active mycelium was observed. The fungicide treatment has suppressed the spread of Fusarium, but there is still a small amount of active mycelium present.

At 10 lt/ha, Diamond Green has supressed the spread of Fusarium, but like the fungicide there is still a small amount of active mycelium present. At both 20 and 40 lt/ha, Diamond Green has not only supressed the spread of Fusarium but the foliar fertiliser components included within the formulation have allowed the turf to start to fill in disease scarred areas of turf.

Other Diseases

As Diamond Green acts as a trigger to the plants natural defences, rather than having a direct effect on the fungus itself, it is safe to assume that the activity shown here on Fusarium would be similar on other turf grass diseases including: Anthracnose, Dollar Spot, Red Thread and Leaf Spot.

Effect on Disease

Diamond Green is not a fungicide, it is a fertiliser with additives. We trialled both the fertiliser formulation without additives alongside the full Diamond Green formulation with additives. We found that when treated in isolation, the fungal growth is the same for just the fertiliser component as it is for the finished formulation containing the additives. This confirms that it is the systemic acquired resistance within the plant that stops the spread of the disease.

OBSERVATIONS:
FUNGAL GROWTH

Fertiliser component only

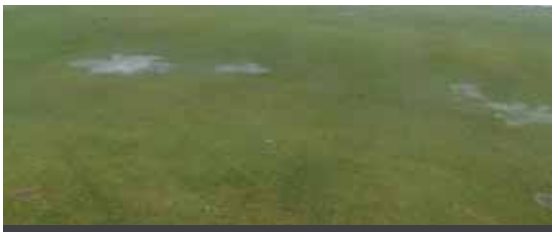
Formulation Fertiliser component + additives

Trials on Snow Mould

The trial work on Diamond Green was continued in Scandinavia during the winter months as Snow Mould is a significant issue for turf managers in the region. Diamond Green was applied to one half of a golf green at 20 lt/ha, with the other half remaining untreated. The application was made just before the onset of the winter snow cover which remained in place for an eight week period. Once the snow had melted, there was a clear difference between the treated and untreated areas of the green.

OBSERVATIONS:
SCANDINAVIA 8-WEEK TRIAL PERIOD

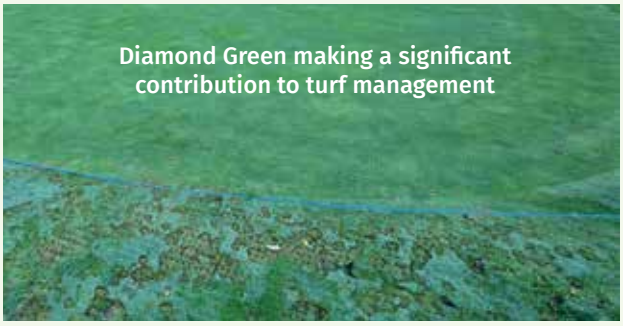
Control



Diamond Green at 20 lt/ha

Real World Applications

After the initial trial work was completed and Diamond Green was made commercially available, the feedback from our customer base has been overwhelming with Diamond Green making a significant contribution to turf managers desire to reduce their fungicide use. The below image highlights the benefit of using Diamond Green on a UK golf course where disease pressure was high.



Diamond Green making a significant contribution to turf management

Conclusions

The applications of Diamond Green have been successful in reducing the spread of Fusarium and the higher the application rate of Diamond Green, the stronger the effect is on disease.

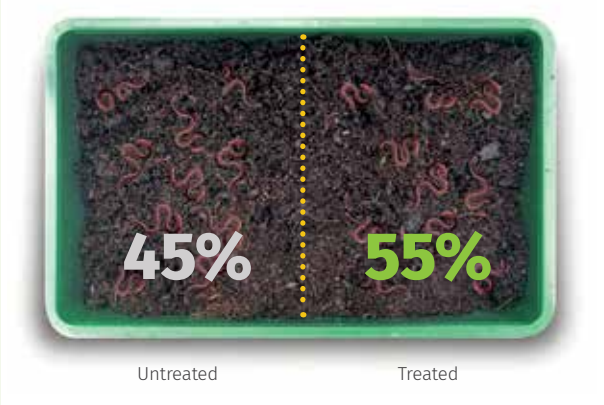
At higher application rates of Diamond Green, the treatment also produces a strong growth response, with turf able to quickly 'fill in' previously diseased/scarred areas. Although this trial was only observational, Diamond Green has proven it can play a vital role as part of an integrated disease management strategy. With the benefits to turf health (shown by increased growth response and improved colour), turf treated with Diamond Green will also show an improved resistance to future disease attack.

Sapphire Green

Sapphire Green is a worm suppressant product, which is classified as a fertiliser. It contains nitrogen and sulphur and helps to encourage worms to migrate away from the treated area. The affect in the soil can last for up to three weeks.

Earthworm Repellency of Sapphire Green

DAY 1



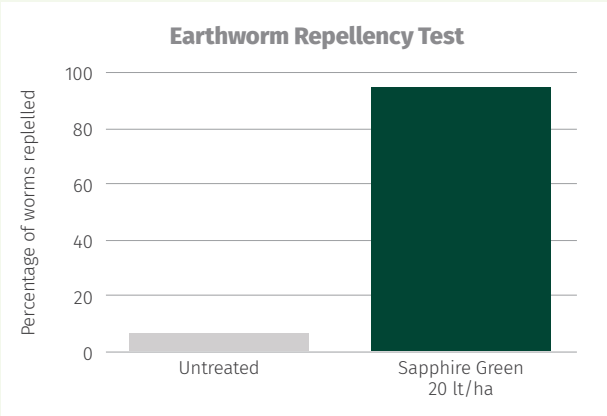
DAY 3

A fully replicated experiment was set up to evaluate the effect of Sapphire Green on Earthworm activity.

In the untreated area, there was a good even spread of worms through the soil with 45% being found in one half and the remaining 55% in the other.

Sapphire Green was applied at rate of 20 lt/ha the soil surface. After several days, only 17.5% of earthworms were found in the treated area.

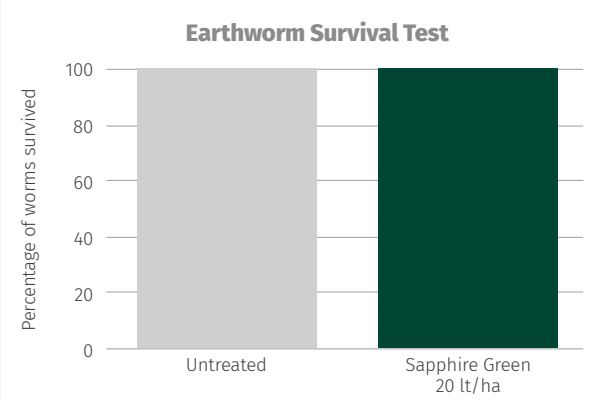
This indicates that at our lowest recommended application rate of 20 lt/ha, Sapphire Green was effective in moving 82.5% of the worms away from the treated area.



Earthworm Survival

Earthworms provide many benefits to the soil, so their survival is important.

Seven days after treatment, there was no evidence of any earthworm mortality from the Sapphire Green treatments area; and they were observed to be as healthy as the worms in the untreated area.



Diamond Green

Diamond Green is a liquid fertiliser based on potassium, calcium and magnesium which contains essential plant oils to enhance plant health and increase disease resistance. This increased resistance to disease in achieved through increased cell wall strength and increased root mass. The combination of nutrients in Diamond Green improves the plants natural resistance to many known pathogens. Diamond Green should be applied before anticipated disease pressure to achieve optimum results.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Contains essential plant oils which further enhance plant health and resistance to disease
- Offers increased disease resistance when applied ahead of expected disease pressure
- Potassium content helps increase cell wall strength within the plant and enhance root mass
- Increases resistance to many known pathogens and helps increase sugar synthesis and starch translocation

SUGGESTED SOIL TEMPERATURES FOR APPLICATION		
Minimum 5°C	Optimum 15°C	Maximum -°C

NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
10 lt/ha			20 lt/ha		
N 0.1	P_2O_5 0.0	K_2O 0.6	N 0.2	P_2O_5 0.0	K_2O 1.2

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	2 - 3 weeks
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	-
Guaranteed Analysis:	1-0-6
Additional Elements:	2.0% CaO, 1.0% MgO
Organic Matter:	-
Pack Size:	10 lt
Pack Coverage:	5,000 - 10,000 m²
Application Rate:	10 - 20 lt/ha
Water Rate:	300 - 600 lt/ha
Application Method:	Sprayer
Product Code:	**IG070111**

Sapphire Green

Sapphire Green is a combination of harmless fertiliser ingredients which helps to suppress worm casts with no detrimental impact to the worm. Sapphire Green contains no active chemicals, but still dramatically reduces worm casts. Laboratory trials have shown that earthworms will move away from treated areas, either deeper into the soil or away from the treated area entirely. Sapphire Green can be used all year round, but will have greatest effect in the early and late season whilst worms are closest to the surface of the soil.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Minimises earthworm activity on the soil surface
- No detrimental impact on worms
- Contains no active chemicals, only deterrents
- Highly effective in early and late season
- Spray when worms are near the surface during Spring and Autumn months.
- Avoid spraying in drought or frozen ground conditions. DO NOT mix with products which acidify water.

SUGGESTED SOIL TEMPERATURES FOR APPLICATION		
Minimum 5°C	Optimum 10°C	Maximum -°C

NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
20 lt/ha			40 lt/ha		
N 3.0	P_2O_5 0.0	K_2O 0.0	N 6.0	P_2O_5 0.0	K_2O 0.0

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	2 - 3 weeks
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	-
Guaranteed Analysis:	15-0-0
Additional Elements:	82.5% SO_3
Organic Matter:	-
Pack Size:	10 lt
Pack Coverage:	2,500 - 5,000 m²
Application Rate:	20 - 40 lt/ha
Water Rate:	400 - 800 lt/ha
Application Method:	Sprayer
Product Code:	**IG070104**

Opal Green

Opal Green is hard surface cleaner based around a blend of organic acids, biocides and surfactants. When applied to the surface, the surfactants allow the acid and biocide to spread and penetrate to help eradicate aglae, moulds and fungi. On more permeable surfaces such as artificial turf a higher water rate of 1,000 lt/ha should be used.

Designed for use on:

- Hard Surfaces
- Artificial Surfaces

KEY FEATURES

- Effective for use on algae, moulds and fungi
- A blend of organic acids, biocides and surfactants
- Developed for use on hard surfaces
- For use on concrete, asphalt, tarmac, paving and artificial surfaces

SUGGESTED SOIL TEMPERATURES FOR APPLICATION		
Minimum 8°C	Optimum 15°C	Maximum -°C

Please use plant protection products safely.
Always read the label and product information before use.
Product availability varies by location - please enquire for more details.

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	4 weeks
SGN/Particle size:	-
Cutting Height:	-
Nitrogen Source:	-
Guaranteed Analysis:	-
Additional Elements:	-
Organic Matter:	-
Pack Size:	5 lt
Pack Coverage:	1,000 m²
Application Rate:	50 lt/ha
Water Rate:	500 lt/ha
Application Method:	Sprayer
Registration Number:	HSE 9114
Product Code:	**IG070101**

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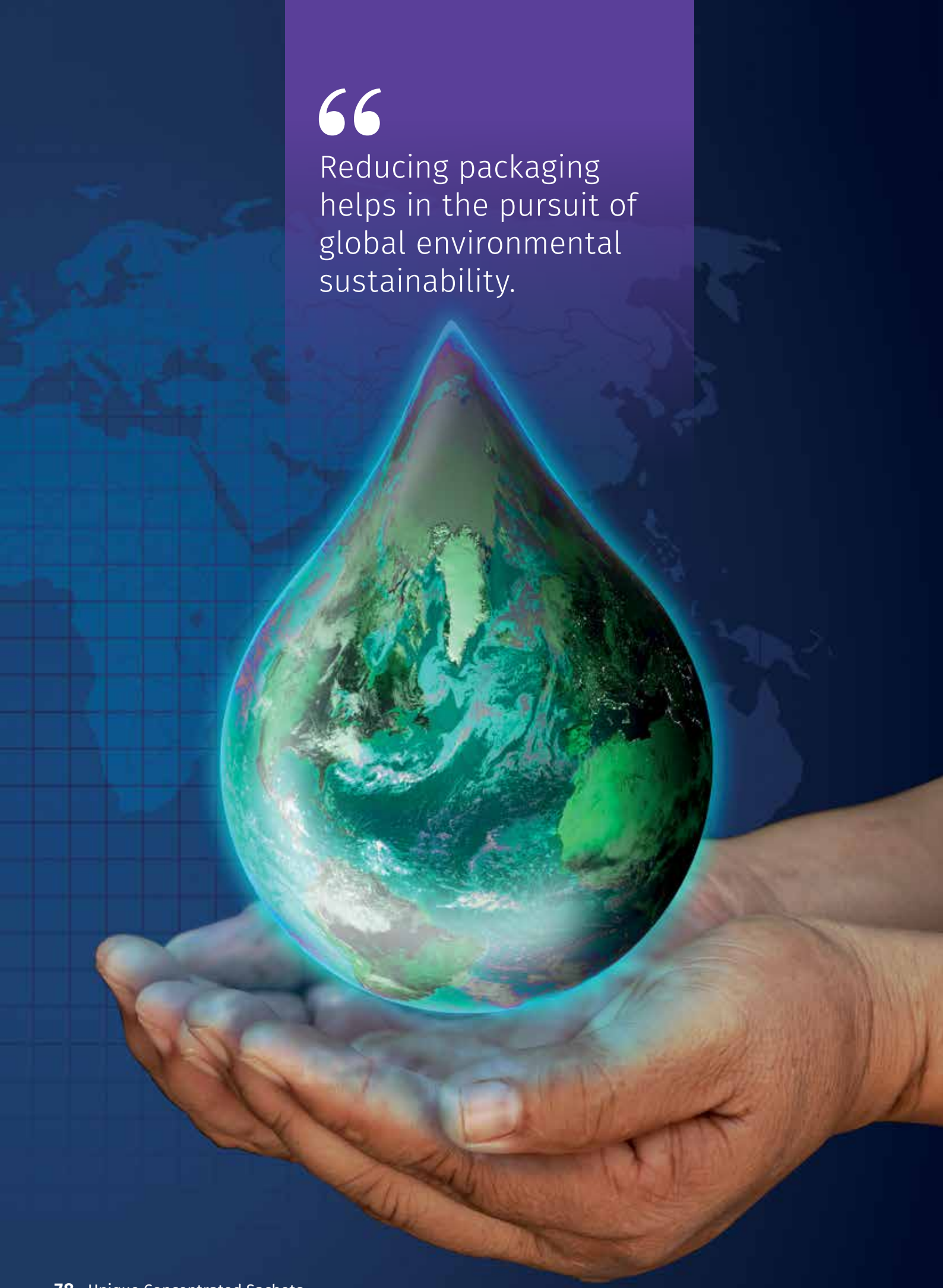
Reducing packaging helps in the pursuit of global environmental sustainability.



Unique Concentrated Sachets

- **Highly cost-effective concentrated formulations**
- **A wide range of different formulations**
- **Reduced packaging waste and lower haulage emissions**
- **Fully tank mix compatible**
- **Easy-to-use, pre-measured sachets**

The OneShot range is a unique collection of concentrated products packaged in easy-to-use, no-mess sachets. All of the OneShot products are now supplied in a liquid form with the same application rate for added simplicity.

Our OneShot products are packed in convenient, pre-measured sachets for direct addition to the spray tank, preventing the need to measure out liquids from larger containers. The simple tear-top sachets ensure these products are simple to open and use.

All of the OneShot products are fully tank mixable with each other, and can be used in any combination. They can be used to enhance virtually any tank mix, with a full range of options available.

PRODUCT ANALYSIS

PRODUCT	ANALYSIS	APPROXIMATE RATE	LONGEVITY	PACK COVERAGE	PACK SIZE
Compass Bio-Active OneShot	concentrated liquid seaweed	2-4 sachets/ha	4–6 weeks	5–10 ha	20 sachets
Turbine Humate OneShot	0-0-5 + 29.4% humic substances	2-4 sachets/ha	2-4 weeks	5-10 ha	20 sachets
Turbine Amino OneShot	5-0-0 + 30.1% L-amino acids	2-4 sachets/ha	2-3 weeks	5-10 ha	20 sachets
Turbine Fulvic OneShot	2-0-6 + 33.8% fulvic acid	2-4 sachets/ha	2–3 weeks	5–10 ha	20 sachets
Solar Pro-Active OneShot	5-34-22	2-4 sachets/ha	2–3 weeks	5–10 ha	20 sachets
Fusion Tracer OneShot	1.8% MgO, 4.2% SO_3, 0.15% Cu, 2.2% Fe, 1.13% Mn, 0.03% Mo, 0.42% Zn	2-4 sachets/ha	2–4 weeks	5–10 ha	20 sachets
Magnum Forty-Four OneShot	penetrant wetting agent	2-4 sachets/ha	2–4 weeks	5–10 ha	20 sachets

The Range

Our OneShot products are packed in convenient, pre-measured sachets for direct addition to the spray tank, preventing the need to measure out liquids from larger containers. The simple tear-top sachets ensure these products are simple to open and use.

COMPASS BIO-ACTIVE ONESHOT

Concentrated seaweed extract

TURBINE HUMATE ONESHOT

Humic and fulvic acids

TURBINE AMINO ONESHOT

Amino acid package

TURBINE FULVIC ONESHOT

Fulvic acid package

SOLAR PRO-ACTIVE ONESHOT

Phosphite foliar feed

FUSION TRACER ONESHOT

Trace element package

MAGNUM FORTY-FOUR ONESHOT

Penetrant wetting agent

Environmentally Friendly

These exceptionally environmentally-friendly products offer a significant reduction in packaging waste and transport costs. In turn they offer the turf manager a very low cost and effective method of adding penetrant wetting agent, bio-stimulants, macro or micro nutrients and other additives to any spray tank mix.

Due to the concentrated nature of the OneShot products, they are supplied in small sachets. The concentrated products offer significant weight savings over their traditional liquid equivalents. These smaller sachets offer a huge environmental benefits in haulage, reducing haulage weight and therefore emissions and cost savings.

The OneShot products also offer cost savings after they have been used. The sachets are much easier to dispose of than conventional drums and barrels, offering the turf manager additional savings on disposal costs.

The environmentally friendly nature of these products does not end there. As they are highly tank mixable, they can be applied at the same time as other products, offering a reduction in emissions from sprayers, as well as a considerable saving on water use.

OneShot Tank Mixes

Tank mix compatibility is another major benefit of the OneShot range. All seven of the products are fully compatible in a spray tank mix. We have used this tank mix compatibility to offer a range of application programmes to help turf managers with a range of turf management issues.

Root Development

Root development is an important part of turf management. Whilst the aesthetic appearance is often considered most important by players and spectators, it is root growth which provides the stability to the playing surface. Expanding and enhancing root growth allows the plant to absorb more water and nutrients, essential to top growth and the required aesthetic appearance.

COMPASS BIO-ACTIVE ONESHOT + SOLAR PRO-ACTIVE ONESHOT + TURBINE HUMATE ONESHOT =

ROOT DEVELOPMENT

Use 2 – 4 sachets of each product in a tank mix, regularly throughout the growing season.

This mix can be added to applications of NPK fertilisers or foliar feeds for added effect and efficiency.

Anti-Stress

Our efficient anti-stress tank mix, includes seaweed, amino acids, humic acids and fulvic acids. This combination offers the turf grass plant all of the requirements to provide efficient recovery after periods of abiotic stress. This package helps to strengthen the plant and offer recovery from adverse climactic conditions, whilst also providing an invigorating and stimulating effect.

Nutrient Use Efficiency

Our programme to deliver increased nutrient use efficiency is based around boosting the availability of nutrients in the soil through the use of humic acids, effective water management and adding additional macro and micronutrients to boost the natural supply. The humic and fulvic acids in Turbine Humate OneShot enhance nutrient availability for exchange in the rhizosphere they provide additional support in the soil for cation exchange capacity. The Addition of Fusion Tracer OneShot ensures that all of the micronutrients required by the turf are available to be used. As a lack of excess water also has an impact on nutrient availability, the addition of Magnum Forty-Four OneShot assists in helping remove excess water from the rootzone, through increased water penetration.

FUSION TRACER ONESHOT + TURBINE FULVIC ONESHOT + MAGNUM FORTY-FOUR ONESHOT =

NUTRIENT USE EFFICIENCY

Use 2 – 4 sachets of each product in a tank mix, regularly throughout the growing season.

This mix can be added to applications of NPK fertilisers or foliar feeds for added effect and efficiency.

COMPASS BIO-ACTIVE ONESHOT + TURBINE AMINO ONESHOT + TURBINE HUMATE ONESHOT =

ANTI-STRESS

Use 2 – 4 sachets of each product in a tank mix, regularly throughout the growing season.

This mix can be added to applications of NPK fertilisers or foliar feeds for added effect and efficiency.

> OneShot are highly tank mixable, they can be applied at the same time as other products, offering a reduction in emissions from sprayers, as well as a considerable saving on water use.

Compass Bio-Active OneShot

Compass Bio-Active OneShot is a plant stimulant and soil conditioner in the form of a pure seaweed liquid. It is manufactured from Ascophyllum nodosum seaweed using gentle evaporation technology to avoid excessive thermal degradation. The concentrated formulation is contained in sachets for large scale economic use, whilst also reducing transport costs and emissions.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Proven to significantly increase root length in the first two weeks of turf growth
- Applications will aid plant stress relief
- Can be used as part of an organic fertiliser programme
- Highly economical, super-concentrated sachets

SUGGESTED SOIL TEMPERATURES FOR APPLICATION					
Minimum 4°C		Optimum 10°C		Maximum -°C	
NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
2 sachets/ha			4 sachets/ha		
N 0.0	P_2O_5 0.0	K_2O 0.0	N 0.0	P_2O_5 0.0	K_2O 0.0

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	4 - 6 weeks
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	-
Guaranteed Analysis:	-
Additional Elements:	-
Organic Matter:	36.5%
Pack Size:	20 sachets
Pack Coverage:	5 - 10 ha
Application Rate:	2 - 4 sachets/ha
Water Rate:	300 - 600 lt/ha
Application Method:	Sprayer
Product Code:	**IG090110**

Turbine Humate OneShot

Turbine Humate OneShot contains both humic and fulvic acids. Humic acid chemically aids in the breakdown of, and directly reduces the plants uptake of toxins. Turbine Humate OneShot also increases the plants ability to cope with high levels of stress from drought, frost and excess moisture and heat. It also directly encourages microbial growth, both flora and fauna, which add to general soil fertility and health.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Contains humic and fulvic acids to help promote microbial growth
- Increases the availability of phosphorous and potassium to the turf
- Improves chlorophyll content by improving the plants metabolism
- Assists in increasing surface water penetration and improves soil water holding capacity

SUGGESTED SOIL TEMPERATURES FOR APPLICATION					
Minimum 8°C		Optimum 15°C		Maximum -°C	
NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
2 sachets/ha			4 sachets/ha		
N 0.0	P_2O_5 0.0	K_2O 0.02	N 0.0	P_2O_5 0.0	K_2O 0.02

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	3 - 4 weeks
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	-
Guaranteed Analysis:	0-0-5 + 29.4% humic substances
Additional Elements:	-
Organic Matter:	19.7%
Pack Size:	20 sachets
Pack Coverage:	5 - 10 ha
Application Rate:	2 - 4 sachets/ha
Water Rate:	300 - 600 lt/ha
Application Method:	Sprayer
Product Code:	**IG080311**

Turbine Amino OneShot

Turbine Amino OneShot is a plant bio-stimulant and stress relieving agent containing 35% of plant available free L-amino acids. L-amino acids are the building blocks of peptides, proteins and DNA. They are crucial to the health of any plant. When these are applied to plants suffering from environmental stress, they help improve turf health and quality. Turbine Amino OneShot also offers the plant relief from physiological, cold and frost, transplanting and water stress.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- A food source for soil microbes, which product organic acids required by turf
- Helps turf recover from drought, frost, fungal diseases and pest attack
- Rapidly metabolised
- Relieves plant stress symptoms

SUGGESTED SOIL TEMPERATURES FOR APPLICATION					
Minimum 8°C		Optimum 15°C		Maximum -°C	
NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
2 sachets/ha			4 sachets/ha		
N 0.01	P_2O_5 0.0	K_2O 0.0	N 0.02	P_2O_5 0.0	K_2O 0.0

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	2 - 3 weeks
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	4.8% organic, 0.5% ammonium
Guaranteed Analysis:	5-0-0 + 30.1% L-amino acids
Additional Elements:	-
Organic Matter:	31.1%
Pack Size:	20 sachets
Pack Coverage:	5 - 10 ha
Application Rate:	2 - 4 sachets/ha
Water Rate:	300 - 600 lt/ha
Application Method:	Sprayer
Product Code:	**IG080312**

Turbine Fulvic OneShot

Turbine Fulvic OneShot is packed with fulvic acids and contains naturally occurring organic nitrogen. The high levels of fulvic acids contains within Turbine Fulvic OneShot will help to encourage microbial growth and support all round soil fertility and health. It will also assist in the greater development of roots and root hairs to assist in the uptake of other applied nutrients. The vegetal origin of the raw materials ensures fast absorption and high efficacy after application.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Helps the plant metabolise nutrients, vitamins, enzymes and auxins
- Fulvic acid provides a natural chelating, improving uptake of nutrients
- Increases nutrient use efficiency of other applied products
- Highly economical, super-concentrated sachets with low application rates

SUGGESTED SOIL TEMPERATURES FOR APPLICATION		
Minimum 8°C	Optimum 15°C	Maximum -°C

NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
2 sachets/ha			4 sachets/ha		
N 0.004	P_2O_5 0.0	K_2O 0.01	N 0.008	P_2O_5 0.0	K_2O 0.02

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	2 - 3 weeks
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	2.1% organic
Guaranteed Analysis:	2-0-6 + 33.8% fulvic acid
Additional Elements:	-
Organic Matter:	35.0%
Pack Size:	20 sachets
Pack Coverage:	5 - 10 ha
Application Rate:	2 - 4 sachets/ha
Water Rate:	300 - 600 lt/ha
Application Method:	Sprayer
Product Code:	**IG080313**

Solar Pro-Active OneShot

Solar Pro-Active OneShot is a concentrated foliar bio-stimulant, high in phosphite, designed to help dramatically reduce plant stress during the summer months. It is rapidly absorbed by the leaf and translocated to all parts of the plant, stimulating natural plant auxin production. It is fully systemic, and is available in our fast acting, stable, tank mixable formulation.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

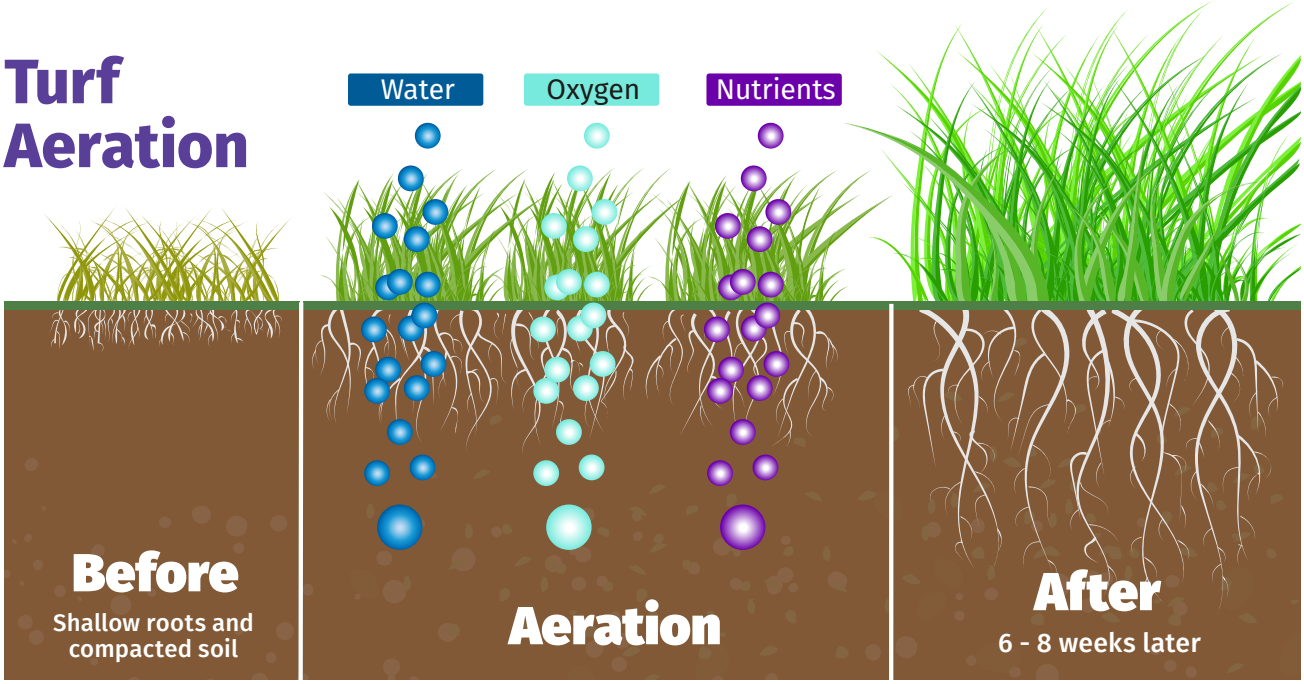
- Significantly aids early root growth and establishment
- Promotes the plants natural resistance to disease and boost overall plant health
- Increases plants natural defence mechanism towards some pathogens
- Applications boost plant growth, particularly in low temperatures

SUGGESTED SOIL TEMPERATURES FOR APPLICATION		
Minimum 5°C	Optimum 18°C	Maximum -°C

NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	2 - 3 weeks
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	5.5% ammonium
Guaranteed Analysis:	5-34-22
Additional Elements:	-
Organic Matter:	-
Pack Size:	20 sachets
Pack Coverage:	5 - 10 ha
Application Rate:	2 - 4 sachets/ha
Water Rate:	300 - 600 lt/ha
Application Method:	Sprayer
Product Code:	**IG040121**



Fusion Tracer OneShot

Fusion Tracer OneShot is a liquid secondary and trace element package and has been developed to include a wide range of micronutrients. The balanced nutrient ratio ensures Fusion Tracer OneShot is perfectly suited to all turf types, particularly in circumstances where the availability of trace elements is minimal. The highly efficient foliar formulation allows for swift and efficient uptake by the plant leaf. It can be used in a tank mix with a wide range of Indigrow products, including the rest of the OneShot range.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Particularly effective when used on sand-based greens where nutrient leaching is common
- Designed to work on soils with high pH levels
- Compatible with most approved pesticides
- Additives improve leaf penetration, uptake and nutrient absorption

SUGGESTED SOIL TEMPERATURES FOR APPLICATION		
Minimum 8°C	Optimum 15°C	Maximum -°C

NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
2 sachets/ha			4 sachets/ha		
N 0.0	P_2O_5 0.0	K_2O 0.0	N 0.0	P_2O_5 0.0	K_2O 0.0

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	2 - 4 weeks
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	-
Guaranteed Analysis:	-
Additional Elements:	1.8% MgO, 4.2% SO_3, 0.15% Cu, 2.2% Fe, 1.13% Mn, 0.03% Mo, 0.42% Zn
Organic Matter:	-
Pack Size:	20 sachets
Pack Coverage:	5 - 10 ha
Application Rate:	2 - 4 sachets/ha
Water Rate:	300 - 600 lt/ha
Application Method:	Sprayer
Product Code:	**IG050215**

Magnum Forty-Four OneShot

Magnum Forty-Four OneShot is a highly concentrated penetrant wetting agent designed to give economical yet superior turf wetting and water penetration on hydrophobic soils. The highly concentrated formula ensures significantly lower application rates than a conventional liquid. It can be used to aid the spread and penetration of foliar fertilisers. Magnum Forty-Four OneShot is contained in a sachet for large scale economic use and tank mixing.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

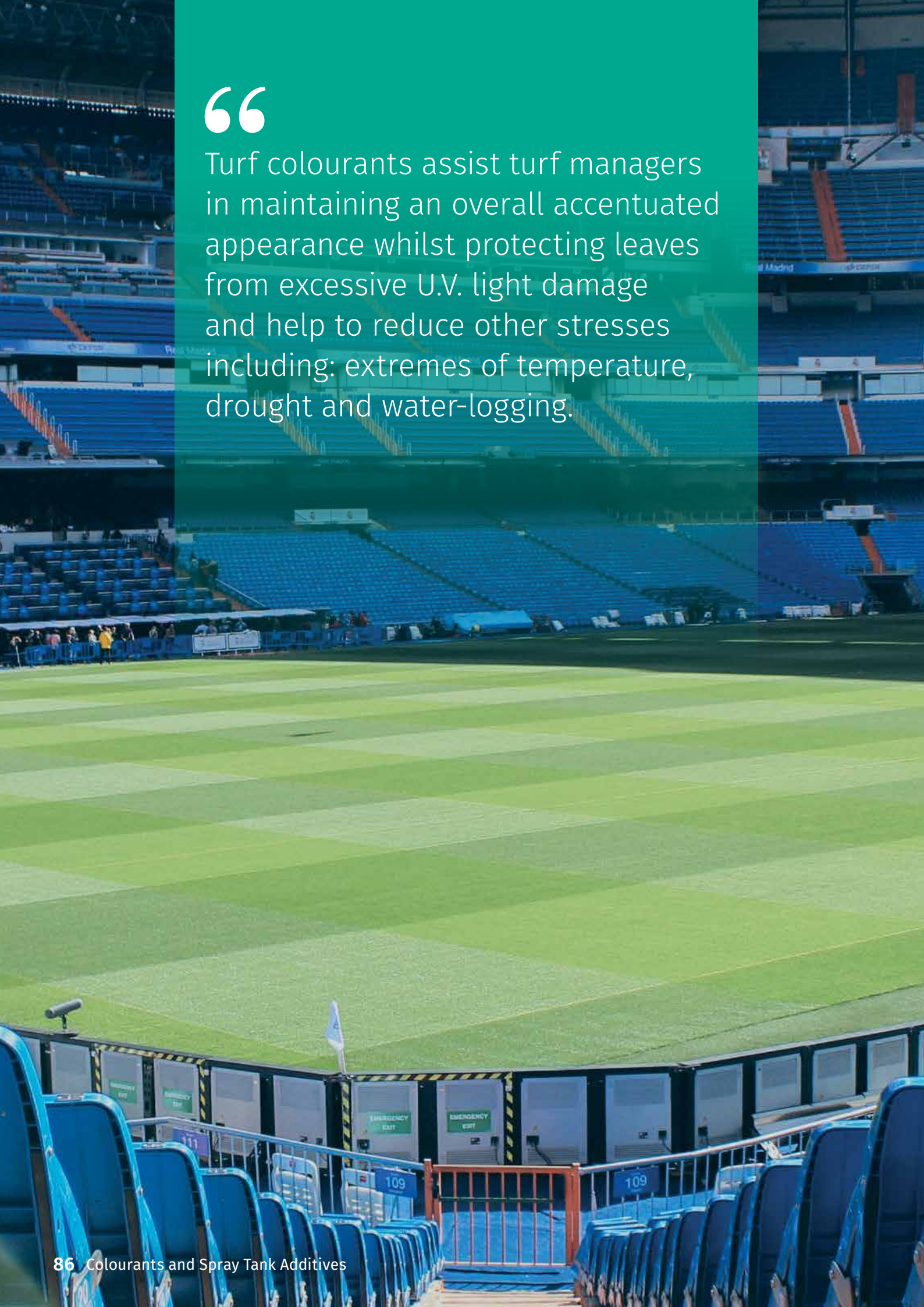
- Reduces excessive surface water, to create playing surfaces which can be used all year round
- Use prior to rainfall to aid irrigation and water movement
- Sachet provides an environmentally friendly and biodegradable, no mess solution
- Can be used in spray solutions to improve tank mix penetration

SUGGESTED SOIL TEMPERATURES FOR APPLICATION		
Minimum 8°C	Optimum 15°C	Maximum -°C

NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					
2 sachets/ha			4 sachets/ha		
N 0.0	P_2O_5 0.0	K_2O 0.0	N 0.0	P_2O_5 0.0	K_2O 0.0

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	2 - 4 weeks
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	-
Guaranteed Analysis:	-
Additional Elements:	-
Organic Matter:	-
Pack Size:	20 sachets
Pack Coverage:	5 - 10 ha
Application Rate:	2 - 4 sachets/ha
Water Rate:	300 - 600 lt/ha
Application Method:	Sprayer
Product Code:	**IF020108**



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Turf colourants assist turf managers in maintaining an overall accentuated appearance whilst protecting leaves from excessive U.V. light damage and help to reduce other stresses including: extremes of temperature, drought and water-logging.

Optik

Colourants and Spray Tank Additives

- **The latest pigment technologies**
- **Help prevent overlapping sprays or missed areas**
- **Improve nutrient and chemical penetration**
- **Environmentally friendly and will not damage turf**

The range of colourants and spray tank additives offer the turf manager a complete range of products, designed to help optimising spraying efficiency and ensure ease of use of common difficult to spray chemicals.

Optik spray pattern indicators help highlight overlapping sprays, missed areas, spray drift and blocked nozzles. These spray pattern indicators can be essential in ensuring the correct quantity of fertiliser or pesticide is applied.

The spray tank additives in the Optik range have been developed to improve chemical penetration, provide a foaming and anti-foam option, as well as providing an environmentally friendly chemical tank cleaner.

The most recent addition to our Optik range is our turf colourant, Optik Bronco. The colourants in our range will not damage turf, and are environmentally friendly. They have been developed to provide an aesthetically pleasing colour to turf when it is most needed.

PRODUCT ANALYSIS

PRODUCT	APPROXIMATE RATE	LONGEVITY	PACK COVERAGE	PACK SIZE
Optik Bronco	1 lt/ha	2-6 weeks	10,000 m²	1 lt
Optik Blue Spray Dye Indicator	125-250 ml/100 lt spray solution	24-48 hours	-	10 lts
Optik Blue WSP Spray Dye Indicator	1 sachet/100 lt water	24-48 hours	-	20 water soluble sachets
Optik Anti-Foam	15-75 ml in 200 lt spray solution	-	-	1 lt
Optik Foam Bout Marker	1% of total spray solution	-	-	2.5 lts
Optik Tank Cleaner	1 lt in 200 lt water	-	-	5 lts

Innovative Turf Colourant Technology – Optik Bronco

The primary objective of turf colourants is to assist turf managers in maintaining a superior appearance. There are also a wide range of additional benefits which can come from using turf colourants:

- Protect leaves from excessive U.V. light which can lead to damage to chlorophyll, a reduction in photosynthesis and damage to cell DNA
- Classified as organic
- Free up bound nutrients in alkaline soils
- Remove unwanted salts
- Natural wetting agent

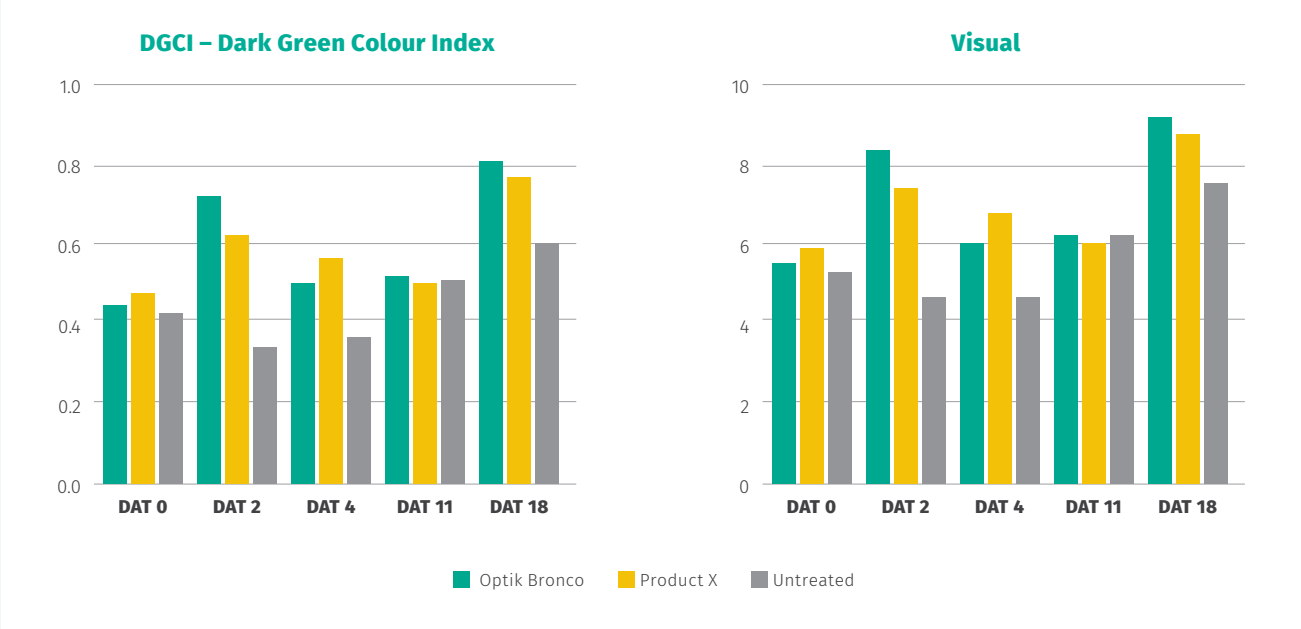
Development Programme of Optik Bronco

The development of Optik Bronco included a series of field trials against a competitor product. Both products were applied at a rate equivalent to 1.5 lt/ha in 250 lt/ha water, using a battery powered hand held sprayer. Both products were assessed at regular intervals, with measurements taken using the Field Scout Green Index calibration chart and app.

Measurements were recorded using a DGCI (dark green colour index) score, with a computation of the DGCI score providing the visual score.

The trial was repeated on multiple occasions to ensure accuracy of results. An average of the results is shown in the graphs below.

Optik Bronco Trial Results



Conclusions

Optik Bronco outperformed the competitor product during the trial, particularly over the longer time frame. The additional dark green colour offered by Optik Bronco offers primarily a greater aesthetic appearance to the turf, but also an increase in uptake of beneficial light energy and greater chlorophyll production leading to improved overall plant health. Early season applications of Optik Bronco, where lower air and soil temperatures are prevalent and daylight hours are reduced can assist turf managers in encouraging growth earlier.

The Effect of Spray Water pH

The performance of some agrochemicals and foliar applied fertilisers is impeded when mixed in water which is alkaline, hard, brackish, or contaminated with insoluble deposits.

Many Greenkeepers are forced to use sources of water which are either of high pH (over 7.0) or are 'hard', containing significant levels of Calcium, Magnesium or bicarbonate ions. Often where water is collected from chalk or limestone rocks the water has both these characteristics but their influence is distinct and they should be considered separately.

In such conditions, some expensive agrochemicals and fertilisers are prone to rapid hydrolysis and precipitation resulting in poor performance due to loss of active ingredients particularly when multi-product tank mixing is required.

Pesticides can quickly degrade and this is measured by the time taken for 50% of the active to be broken down. It is called the 'half-life'.

Not only can pH have an effect on the stability of products but it can also influence their uptake by the plant through the leaf. Most foliar nutrients are taken into the plant more rapidly using a spray water of lower pH.

Optik Blue Spray Dye Indicator

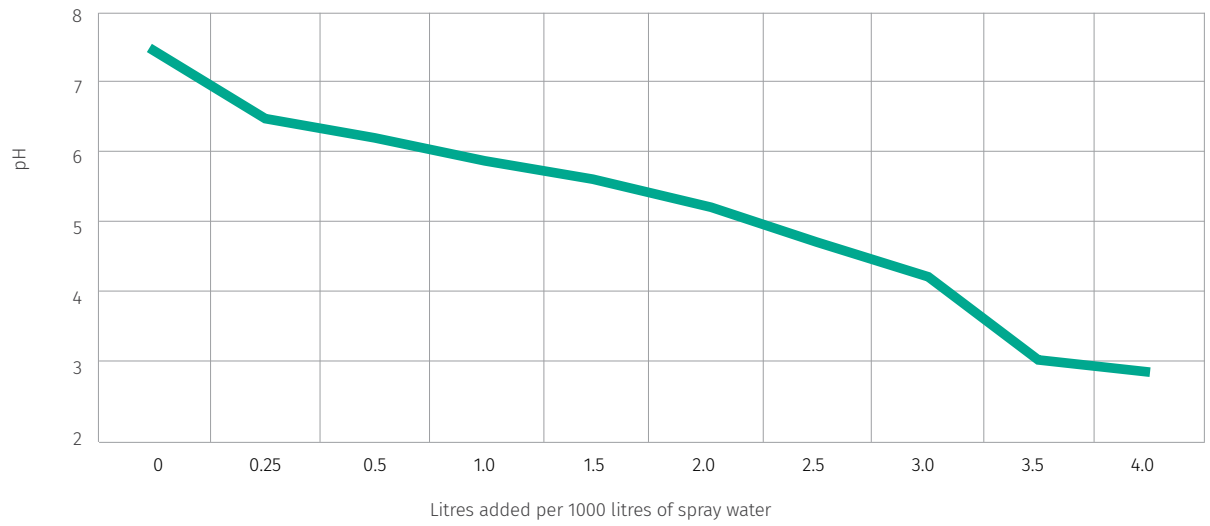
Unlike adjuvants, Optik Blue Spray Dye Indicator does not increase the activity of the various agrochemicals with which it is mixed.

By treating the water, it ensures that any antagonistic constituents that may be present are removed or neutralised before the agrochemical is added to the spray tank. In this way it enables the agrochemical to reach it full potential activity.

As reducing the pH of the spray water can have an important impact on the effectiveness of fertilisers and pesticides, we add a buffering agent to our formulation to help reduce spray water pH.

The amount of Optik Blue Spray Dye Indicator required will depend on a number of factors including the starting pH, the hardness of the water and the desired finishing pH. It is not always possible for a greenkeeper to access such complete data so Optik Blue Spray Dye Indicator has been formulated for a general application rate of 125-250 ml per 100 liters of spray water which will ensure adequate buffering of the majority of alkaline water sources.

How pH of spray water is affected by adding Optik Blue Spray Dye Indicator



Optik Bronco

Optik Bronco is a new turf colourant, based on the latest technologies to help protect turf from harmful or excessive UV radiation. Our long-lasting formulation offers turf managers a simple method of maintaining turf appearance helping to increase colour during periods of stress. Applications of Optik Bronco should be made every three weeks during the growing season, but can be applied less frequently out of the main growing season. The intensity of colour is directly related to water volume. Using lower water rates will offer a stronger colour.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Offers dark green colour and maintains natural appearance
- Provides enhanced protection from UV radiation
- Compatible for use in a tank mix with a wide range of products
- Hazard-free formulation

SUGGESTED SOIL TEMPERATURES FOR APPLICATION		
Minimum 5ºC	Optimum 15ºC	Maximum -ºC

NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	2 - 6 weeks
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	-
Guaranteed Analysis:	-
Additional Elements:	-
Organic Matter:	-
Pack Size:	1 lt
Pack Coverage:	10,000 m²
Application Rate:	1 lt/ha
Water Rate:	200 - 400 lt/ha
Application Method:	Sprayer
Product Code:	**IG060301**

Optik Blue Spray Dye Indicator

Optik Blue Spray Dye Indicator is an enhanced spray pattern dye designed to highlight and help eliminate overlapping sprays, missed areas, spray drift or blocked nozzles. It can also be used for marking out temporary greens. Optik Blue Spray Dye Indicator will remain visible for 24 – 48 hours, after which it will gradually fade depending on light intensity and/or rainfall.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Reduces the pH of spraying water, protecting pesticides from losing activity
- Surfactants help spread the droplets on the leaf surface
- Contains added complexing agent to reduce the staining effect of the dye
- Added anti-drift component reduces chemical trespass

ADDITIONAL FEATURES

Adding 250ml of Optik Blue Spray Dye Indicator to 100 litres of spraying water with a starting pH of 7.6 will reduce it to approx. pH 4.5

SUGGESTED SOIL TEMPERATURES FOR APPLICATION		
Minimum 5ºC	Optimum 15ºC	Maximum -ºC

NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	24 - 48 hours
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	-
Guaranteed Analysis:	-
Additional Elements:	-
Organic Matter:	-
Pack Size:	10 lt
Pack Coverage:	-
Application Rate:	250 ml
Water Rate:	100 lt
Application Method:	Sprayer
Product Code:	**IG060101**

Optik Blue WSP Spray Dye Indicator

Optik Blue WSP are a blue spray pattern indicator packaged in fully water soluble packets (WSP). They are designed for easy, pre-measured, no mess applications. Visible for 24-48 hours, they help eliminate overlapping sprays, missed areas, spray drift or blocked nozzles and can also be used to mark out temporary greens.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Water soluble blue dye sachets, easily added to spray tanks with absolutely no mess
- Dissolve completely, even in cold water
- Highly concentrated formulation for low application rates
- Under normal conditions, remains visible for 24-48 hours

SUGGESTED SOIL TEMPERATURES FOR APPLICATION		
Minimum 5ºC	Optimum 15ºC	Maximum -ºC

NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	24 - 48 hours
SGN/Particle size:	-
Cutting Height:	> 2mm
Nitrogen Source:	-
Guaranteed Analysis:	-
Additional Elements:	-
Organic Matter:	-
Pack Size:	20 water soluble sachets
Pack Coverage:	-
Application Rate:	1 sachet
Water Rate:	100 lt
Application Method:	Sprayer
Product Code:	**IG060150**

Optik Anti-Foam

Optik Anti-Foam is a silicone based anti-foam and de-foaming agent. Optik Anti-Foam should ideally be added to the spray tank before a pesticide or product which is known to foam. Alternatively, if foaming is already present in the tank, Optik Anti-Foam can be added with agitation for the foam to be quickly quelled.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Improves tank mixability of difficult to spray fertilisers and chemicals
- Helps to prevent the initial build-up of foam
- Also acts as a de-foamer when applied to the tank mix
- Contains 16% dimethylpolysiloxane

SUGGESTED SOIL TEMPERATURES FOR APPLICATION		

NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	-
SGN/Particle size:	-
Cutting Height:	-
Nitrogen Source:	-
Guaranteed Analysis:	-
Additional Elements:	-
Organic Matter:	-
Pack Size:	1 lt
Pack Coverage:	-
Application Rate:	15 - 75 ml
Water Rate:	200 lt
Application Method:	Sprayer
Product Code:	**IG060171**

Optik Foam Bout Marker

Optik Foam Bout Marker produces a high quality, thick-bodied foam to help identify previously sprayed areas. The foam produced is deposited on the ground in large blobs rather than in narrow streaks. The size of foam blobs is dependent on the pressure and diameter of the boom and end drop hoses.

Designed for use on:

- Greens & Tees
- Fine Turf
- Fairways
- Outfields
- Sports Pitches

KEY FEATURES

- Creates a think-bodied foam which disappears from the turf faster than a spray dye
- Helps identify where applications have been made without using a spray dye indicator
- Can be used with all water types
- Safe for use on all turf types

SUGGESTED SOIL TEMPERATURES FOR APPLICATION		

NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	-
SGN/Particle size:	-
Cutting Height:	-
Nitrogen Source:	-
Guaranteed Analysis:	-
Additional Elements:	-
Organic Matter:	-
Pack Size:	2.5 lt
Pack Coverage:	
Application Rate:	1% of spray solution
Water Rate:	-
Application Method:	Sprayer
Product Code:	**IG060175**

Optik Tank Cleaner

Optik Tank Cleaner is specially formulated to remove pesticide deposits and other debris, including oily substances, from tanks, hoses, booms, filters, screens and nozzles. Tank Cleaner was developed to handle difficult to clean agricultural chemicals, including sulfonylurea herbicides and sticky formulations.

KEY FEATURES

- Improves spray efficiency of the following application using the sprayer
- Removes deposits and other debris from tanks, hoses, filters, screens and nozzles
- Non-hazardous - will not corrode equipment
- Harmless to turf grass and the environment

SUGGESTED SOIL TEMPERATURES FOR APPLICATION		

NUTRIENT LEVELS APPLIED (KG/HA) FROM ONE APPLICATION					

DISCOVER MORE

CHARACTERISTIC	VALUE
Approx. Longevity:	-
SGN/Particle size:	-
Cutting Height:	-
Nitrogen Source:	-
Guaranteed Analysis:	-
Additional Elements:	-
Organic Matter:	-
Pack Size:	5 lt
Pack Coverage:	-
Application Rate:	1 lt
Water Rate:	200 lt
Application Method:	directly into spray tank
Product Code:	**IG060177**

Impact P45 & S45 Fertiliser Spreader

Settings for our Indigrow products shown below

PRODUCT NAME	ANALYSIS	GRANULE SIZE (mm)	EFFECTIVE WIDTH (m)	SLIDER POSITION	SPREADER SETTING FOR APPLICATION RATE OF:		
					20 g/m²	30 g/m²	40 g/m²
IMPACTPLUS							
ImpactPlus Accelerate	14-0-12	1-1.25	3.4	-	9.5	11.0	12.5
ImpactPlus Vitalize	16-5-16	1-1.25	3.4	-	9.5	11.0	12.5
ImpactPlus Summer Perk	14-0-4 + 6% Fe	1-1.25	3.4	-	9.5	11.0	12.5
ImpactPlus All Round	5-5-15	1-1.25	3.4	-	9.5	11.0	12.5
ImpactPlus Perk	4-0-14 + 10% Fe	1-1.25	3.4	-	9.5	11.0	12.5
ImpactPlus Emerge	10-20-10	1-1.25	3.4	-	9.5	11.0	12.5
ImpactPlus SRF 19-0-19	19-0-19 + 2% Fe	1-1.25	3.4	-	9.5	11.0	12.5
ImpactPlus SRF 12-0-24	12-0-24	1-1.25	3.4	-	9.5	11.0	12.5
IMPACT							
Impact CGF 15-5-15	15-5-15	1.2-1.6	3.8	-	9.5	11.0	13.0
Impact CGF 25-5-10	25-5-10	1.2-1.6	3.8	-	9.5	11.0	13.0
Impact CGF 26-5-8	26-5-8	1.2-1.6	3.8	-	9.5	11.0	13.0
Impact CGF 28-8-8	28-8-8	1.2-1.6	3.8	-	9.5	11.0	13.0
Impact Enhance	27% CaO	1-1.25	3.4	-	9.5	11.0	12.5
IMPACT ORGANIC							
Impact Organic Fine	14-2-8	0.8-2.0	3.8	-	9.5	11.0	13.0
Impact Organic Medium	14-2-8	2.0-4.0	4.5	3 clicks LHS*	14.5	17.0	20.0
HUMIK							
Humik Boost	30-6-6	2.0-4.0	4.5	3 clicks LHS*	14.5	17.0	20.0
Humik Triple Ten	10-10-10	2.0-4.0	4.5	3 clicks LHS*	14.5	17.0	20.0
Humik Sport	14-5-18	2.0-4.0	4.5	3 clicks LHS*	14.5	17.0	20.0
Humik N25	25-0-0	2.0-4.0	4.5	3 clicks LHS*	14.5	17.0	20.0
Humik NPK 5-2-1	5-2-1	1-1.25	3.4	-	9.5	11.0	12.5
Humik NPK 12-0-12	12-0-12	1-1.25	3.4	-	9.5	11.0	12.5
Humik NPK 14-5-14	14-5-14	1-1.25	3.4	-	9.5	11.0	12.5
Humik NPK 5-3-18	5-3-18	1-1.25	3.4	-	9.5	11.0	12.5
COMPASS							
Compass Composted Seaweed	2-2-1	1.5-2.5	3.8	-	9.5	11	13

Spreader settings based on a walking speed of 3mph, 4.8 kph and 1.34 meters per second
This chart should be used as a guide only. Full calibration should be carried out before use.
*3 clicks LHS: left hand side slider plate needs to be pulled out three clicks.

Reference

Soil Testing and Product Guidance

- Soil Testing
- QMP – Quality Master Plan
- Fertiliser Specifications
- Tank Mix Compatibility Chart

When choosing fertilisers and other products to provide the healthiest and most aesthetically pleasing turf, it can be challenging to choose the correct products from the vast quantity available. We have put together guidance on our products, as comparative tools, which will help the turf manager make an informed decision on the products they're purchasing. These reference charts and tables can be used to identify products to help with any deficiencies highlighted by soil testing results.

Soil Testing

To fully understand the nutritional status of the soil, it is important that regular soil samples are taken and analysed. This will highlight the inherent fertility and also see if the current fertiliser practice is, over time, altering the base level of nutrients. The other factor to take into account is soil pH – not only do different species tolerate different pH levels but nutrient availability is also linked to pH.

It is important to take soil samples at the beginning of the growing season, before any nutrients are applied to the turf. This will allow for an accurate representation of the nutrient levels to be determined, allowing for an accurate nutrition plan to be developed for the forthcoming season.

All Indigrow sales representatives are able to interpret soil analysis results and offer advice and suggestions in developing a nutrition plan for the upcoming season.

Indigrow have furthered their work on soil analysis with the development of QMP – the Quality Master Plan.

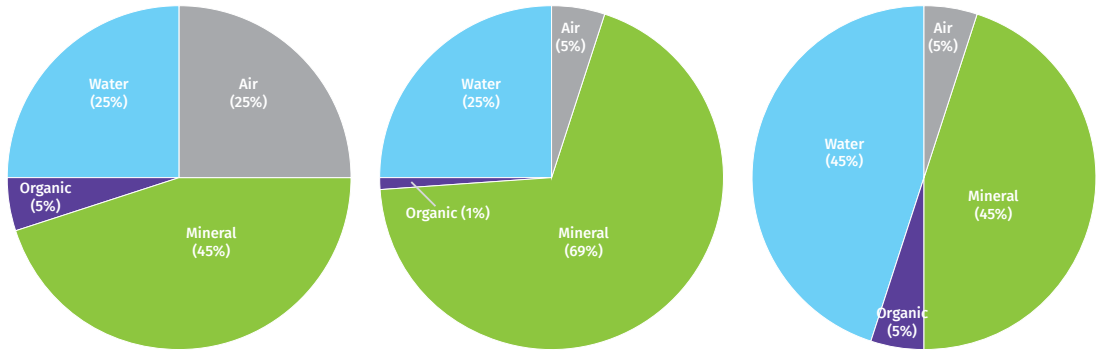
QMP - Quality Master Plan

Indigrow have developed QMP, our Quality Master Plan for greenkeepers and groundspersons. QMP is a tool for the greenkeeper to monitor and quantify green quality and performance in an objective, measurable manner.

It is important to consider where in the world your course or club is located, as climate has a huge effect on soil profiles and nutrition levels and requirements.

The most important environmental demands for turf grass plants are: temperature, moisture, available oxygen, soil pH and available nutrients. QMP provides physical analysis allowing us to understand what is going on under the surface, taking into consideration all of these environmental demands. Only after physical analysis is nutrient analysis relevant. Turf can only fully utilise nutrients with a properly functioning rootzone.

Air, Water Mineral and Organic Balance in Rootzones



Ideal Rootzone | Compact Rootzone | Poorly Drained Rootzone

QMP will measure:

- Organic matter percentage at four depths (0-25mm, 25-50mm, 50-75mm, 75-100mm)
- Textural Analysis (particle size distribution)
- Surface infiltration rate
- Saturated hydraulic conductivity
- Pore volume (total pore volume, water filled pores at sampling, moisture holding capacity, air filled pore space)

Applying QMP for three years, validates your actions to be optimal for the ability of reaching high quality on your greens and other playing surfaces.

With QMP you can design a maintenance programme to ensure you concentrate your efforts accurately and measurably:

- Evaluate the sucess of cultural practises such as airation and topdressing
- Evaluate the effects of inputs such as like wetting agents, soil conditioners, pH buffers and nutritional products
- Results are presented in easy to read formats, perfect for presenting to committees and boards of managment
- Manage your turf to its full potential
- Analysis of plant tissue

Testing

One of the most important elements of QMP is the thorough testing process. Indigrow only work with laboratories with accreditations so that we can ensure the accuracy and reliability of results for our customers.

For more information on our Quality Master Plan, please contact your local representative or send us an email to **growth@indigrow.com.**

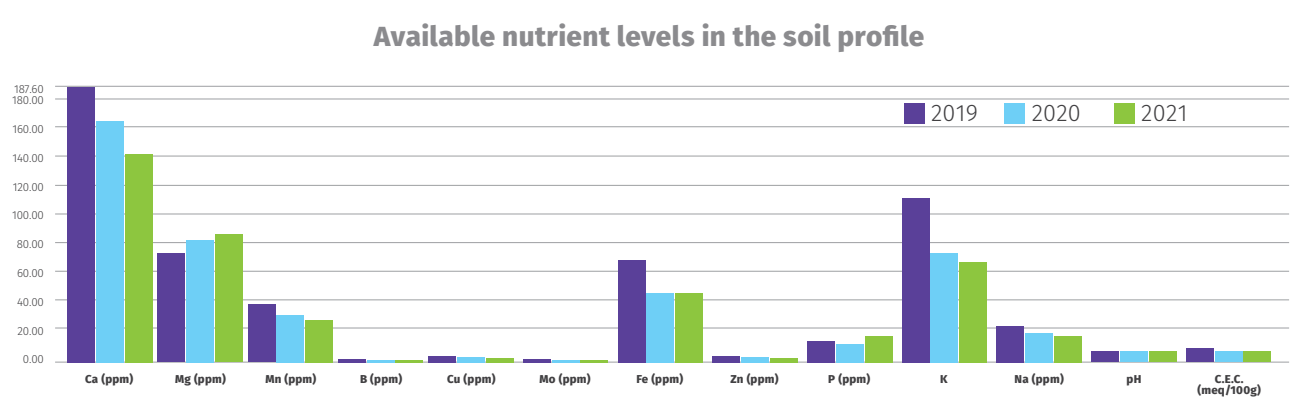
QMP
Quality Master Plan

Results

The results gathered from soil sampling begin to build up a picture of the playing surfaces being tested. As more samples are taken over time, we are able to build up a visual representation of the progress being made through the QMP analysis and the effective application of nutritional products.

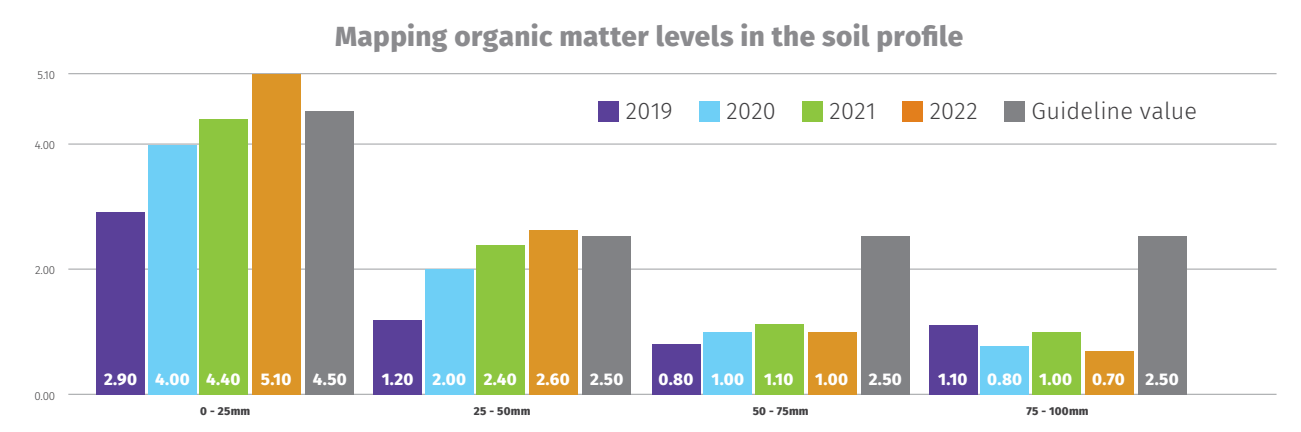
Nutrition

Through using QMP and testing nutrient levels, Indigrow were able to determine that this customer had problem with black layer, as a result of using too many products when high levels of undeclared iron. After receiving their first set of QMP results, they started to aerate more intensively and changed their outlook to products with magnesium and vastly reduced their iron inputs. Their most recent QMP results show a reduction in iron within the soil profile and they have all but eliminated their black layer issues.



Organic Matter

QMP analysis was able to show this customer that their organic matter content levels were low. Through a change to their nutritional program and the use of different fertilisation products, we have been able to increase their organic matter levels. We can also add guideline information to show how our effective nutritional programs are helping to create the ideal conditions for turf grass to thrive.



Fertiliser Specifications

Declared Nutrients (%)

Product	Total N	Organic N	Nitrate N	Ammonia N	Ureic N	Methylene Urea N	N from Urea Formaldehyde	Total P_2O_5	Total P	Total K_2O	Total K	CaO	Ca	MgO	Mg
ImpactPlus															
ImpactPlus Accelerate 14-0-12	14.0	1.2		10.2	2.6					12.0	10.0				
ImpactPlus Summer Perk 14-0-4	14.0	3.0		9.3	1.7					4.0	3.4				
ImpactPlus Vitalize 16-5-16	16.0	1.3		3.7	11.0			5.0	2.2	16.0	13.3			2.0	1.2
ImpactPlus All Round 5-5-15	5.0	1.3		2.3	1.5			5.0	2.2	15.0	12.5	10.0	7.2	3.0	1.8
ImpactPlus Perk 4-0-14 +10% Fe	4.0	0.5			3.5					14.0	11.6				
ImpactPlus Emerge 10-20-10	10.0	1.3		8.7				20.0	8.6	10.0	8.3				
ImpactPlus SRF 19-0-19	19.0	0.5		2.0	6.5	10.0				19.0	15.8				
ImpactPlus SRF 12-0-24	12.0	1.3		1.3	1.4	8.0				24.0	19.9				
Humik															
Humik NPK 5-2-1	5.0	1.5		3.0	0.5			2.0	0.9	1.0	0.8	12.1	8.7	2.0	1.2
Humik NPK 12-0-12	12.0	0.8		8.2	3.0					12.0	10.0	5.0	3.6		
Humik NPK 14-5-14	14.0	1.2		9.3	3.5			5.0	2.2	14.0	11.6	2.0	1.4		
Humik NPK 5-3-18	5.0	1.4		3.6				3.0	1.3	18.0	14.9	4.0	2.9		
Humik N25 25-0-0	25.0	1.0		11.5	12.5										
Humik Boost 30-6-6	30.0	0.5		3.5	26.0			6.0	2.6	6.0	5.0				
Humik Triple Ten 10-10-10	10.0	0.5		9.5				10.0	4.3	10.0	8.3	3.0	2.1		
Humik Sport 14-5-18	14.0	0.5		9.4	4.1			5.0	2.2	18.0	14.9				
Impact CGF															
Impact CGF 15-5-15	15.0			3.3	11.4		0.3	5.0	2.2	15.0	12.5	15.0	12.5		
Impact CGF 25-5-10	25.0			1.3	23.3		0.4	5.0	2.2	10.0	8.3	7.0	5.0	2.0	1.2
Impact CGF 26-5-8	26.0			1.2	24.4		0.4	5.0	2.2	8.0	6.6	6.0	4.3	2.0	1.2
Impact CGF 28-8-8	28.0			1.9	25.5		0.6	8.0	3.5	8.0	6.6				
Impact															
Impact Enhance 27% CaO												27.0	19.3		
RePhlex															
RePhlex LS												1.74	1.24		
SolarMax															
SolarMax NPK	17.0			1.5	15.5			17.0	7.3	17.0	14.1				
SolarMax N	33.0		6.5	6.5	20.0			5.0	2.2	5.0	4.2				
SolarMax PK								16.0	6.9	28.0	23.2				
SolarMax K										33.0	27.5				
SolarMax Ca+Mg												12.8	9.2	6.4	3.8
SolarMax Mg	10.1				10.1									13.1	7.9
SolarMax Fe										6.4	5.3				
SolarMax Si															
Solar ProActive OneShot	5.5			5.5				34.2	14.7	21.9	18.2				
Fusion															
Fusion BioGreen High N 28-0-0	28.0		7.0	7.0	14.0										
Fusion BioGreen NPK 18-9-9	18.0			2.6	15.4			9.0	3.9	9.0	7.5				
Fusion BioGreen NK 12-0-12	12.0				12.0					12.0	10.0				
Fusion BioGreen Sport 14-5-12	14.0		1.6	1.4	11.0			5.0	2.2	12.0	10.0				
Fusion BioGreen High K 5-3-18	5.0				5.0			3.0	1.3	18.0	14.9				
Fusion BioGreen NPK 2-7-14	2.0			2.0				7.0	3.0	14.0	11.6				
Fusion BioGreen K 0-0-10										10.0	8.3				
Fusion BioGreen NK 20-0-10	20.0		0.9		19.1					10.3	8.3				
Fusion Tracer OneShot														1.8	1.1
Fusion Liquid Fe															
Fusion Soluble Fe															
Fusion Soluble N	46.0				46.0										
Fusion Soluble NPK	32.0		2.8	3.8	25.4			5.0	2.2	10.0	8.3				
Fusion Soluble High K	13.0		13.0							46.0	38.2				
Asset															
Asset Titanium															
Compass															
Compass Bio-Active															
Compass Bio-Active OneShot															
Compass Bio-Complete															
Compass Start	4.0			1.1	2.9			3.8	1.7	3.8	3.1				
Compass Composted Seaweed	2.0	2.0						2.0	1.3	1.0	0.8				
Turbine															
Turbine Amino OneShot	5.3	4.8		0.5											
Turbine Fulvic OneShot	2.1	2.1								6.3	5.3				
Turbine Humate OneShot										4.8	4.0				
Specialist															
Diamond Green	0.7		0.7							6.6	5.5	2.0	1.5	1.0	0.6
Sapphire Green	15.0			15.0											

	Declared Nutrients (%)										Undeclared Nutrients (ppm)							
Product	SO_3	S	B	Cu	Fe	Mn	Mo	SiO_2	Ti	Zn	CaO	Ca	B	Cu	Fe	Mn	Mo	Zn
ImpactPlus																		
ImpactPlus Accelerate 14-0-12	39.5	15.8			2.0													
ImpactPlus Summer Perk 14-0-4	11.5	4.5			6.0													
ImpactPlus Vitalize 16-5-16	16.5	6.6																
ImpactPlus All Round 5-5-15	10.0	4.0			4.0													
ImpactPlus Perk 4-0-14 +10% Fe	11.3	4.5			10.0	1.0												
ImpactPlus Emerge 10-20-10	18.0	7.2																
ImpactPlus SRF 19-0-19	13.0	5.2			2.0													
ImpactPlus SRF 12-0-24	16.0	6.4																
Humik																		
Humik NPK 5-2-1	17.8	7.1																
Humik NPK 12-0-12	25.0	10.0																
Humik NPK 14-5-14	16.0	6.4																
Humik NPK 5-3-18	16.0	6.4																
Humik N25 25-0-0	30.0	12.0																
Humik Boost 30-6-6	4.0	1.6																
Humik Triple Ten 10-10-10	20.0	8.0																
Humik Sport 14-5-18	18.0	7.2																
Impact CGF																		
Impact CGF 15-5-15	9.0	3.6																
Impact CGF 25-5-10	10.0	4.0																
Impact CGF 26-5-8	15.0	6.0																
Impact CGF 28-8-8	24.0	9.6																
Impact																		
Impact Enhance 27% CaO	36.0	14.4																
RePhlex																		
RePhlex LS	4.65	1.86																
SolarMax																		
SolarMax NPK					0.1	0.1				0.1								
SolarMax N					0.1	0.1				0.1								
SolarMax PK					0.1	0.1				0.1								
SolarMax K					0.1	0.1				0.1								
SolarMax Ca+Mg																		
SolarMax Mg																		
SolarMax Fe					6.4													
SolarMax Si								36.0										
Solar ProActive OneShot																		
Fusion																		
Fusion BioGreen High N 28-0-0													45	85	165	45	1.5	30
Fusion BioGreen NPK 18-9-9													45	85	165	45	1.5	30
Fusion BioGreen NK 12-0-12													45	85	165	45	1.5	30
Fusion BioGreen Sport 14-5-12													45	85	165	45	1.5	30
Fusion BioGreen High K 5-3-18													45	85	165	45	1.5	30
Fusion BioGreen NPK 2-7-14													45	85	165	45	1.5	30
Fusion BioGreen K 0-0-10													45	85	165	45	1.5	30
Fusion BioGreen NK 20-0-10													45	85	165	45	1.5	30
Fusion Tracer OneShot	4.2	1.7		0.15	2.2	1.13	0.03			0.42								
Fusion Liquid Fe	9.3	3.9			7.0													
Fusion Soluble Fe	28.0	11.2			20.0													
Fusion Soluble N													45	85	165	45	1.5	30
Fusion Soluble NPK													45	85	165	45	1.5	30
Fusion Soluble High K													45	85	165	45	1.5	30
Asset																		
Asset Titanium			0.3		0.5	3.0			0.6	6.3								
Compass																		
Compass Bio-Active																		
Compass Bio-Active OneShot																		
Compass Bio-Complete	4.3	1.7			3.3													
Compass Start																		
Compass Composted Seaweed																		
Turbine																		
Turbine Amino OneShot																		
Turbine Fulvic OneShot																		
Turbine Humate OneShot																		
Specialist																		
Diamond Green																		
Sapphire Green	82.5	33.0																

Declared Nutrients' are those written on the bag/label - the 'Undeclared' are present in the product but not specified. All liquids are expressed as w/v % analysis. Tolerance Limits as per Regulation (EU) No. 2019/1009 of the European Parliament and of the Council of June 2019.

Compatibility chart

Compatible

Non Compatible

	Asset Chitosan	Asset Gold	Asset Titanium	Compass Bio-Active	Compass Bio-Active OneShot	Compass Bio-Complete	Compass Start	Diamond Green	Fusion BioGreen High K 5-3-18	Fusion BioGreen High N 28-0-0	Fusion BioGreen K 0-0-10	Fusion BioGreen NK 12-0-12	Fusion BioGreen NK 20-0-10	Fusion BioGreen NPK 2-7-14	Fusion BioGreen NPK 18-9-9	Fusion BioGreen Sport 14-5-12	Fusion Liquid Fe	Fusion Soluble Fe	Fusion Soluble High K	Fusion Soluble N	Fusion Soluble NPK	Fusion Tracer OneShot	Magnum 357 Calibre	Magnum CO
Asset Chitosan																								
Asset Gold																								
Asset Titanium																								
Compass Bio-Active																								
Compass Bio-Active OneShot																								
Compass Bio-Complete																								
Compass Start																								
Diamond Green																								
Fusion BioGreen High K 5-3-18																								
Fusion BioGreen High N 28-0-0																								
Fusion BioGreen K 0-0-10																								
Fusion BioGreen NK 12-0-12																								
Fusion BioGreen NK 20-0-10																								
Fusion BioGreen NPK 2-7-14																								
Fusion BioGreen NPK 18-9-9																								
Fusion BioGreen Sport 14-5-12																								
Fusion Liquid Fe																								
Fusion Soluble Fe																								
Fusion Soluble Higk K																								
Fusion Soluble N																								
Fusion Soluble NPK																								
Fusion Tracer OneShot																								
Magnum 357 Calibre																								
Magnum CO																								
Magnum Forty Four																								
Magnum Forty Four OneShot																								
Magnum Recoil																								
Opal Green																								
Optik Anti-Foam																								
Optik Blue Spray Dye																								
Optik Blue WSP Spray Dye																								
Optik Bronco																								
RePhlex LS																								
Sapphire Green																								
SolarMax Ca+Mg																								
SolarMax Fe																								
SolarMax K																								
SolarMax Mg																								
SolarMax N																								
SolarMax NPK																								
SolarMax PK																								
SolarMax Si																								
Solar Pro-Active OneShot																								
Turbine Amino OneShot																								
Turbine Fulvic OneShot																								
Turbine Humate OneShot																								

The compatibilies of our products have been tested in laboratory conditions. We recommend that a jar test or similar is undertaken before mixing any products. When mixing with other products or chemicals the end user is responsible for compatibility and safety.

	Magnum Forty Four	Magnum Forty Four OneShot	Magnum Recoil	Opal Green	Optik Anti-Foam	Optik Blue Spray Dye	Optik Blue WSP Spray Dye	Optik Bronco	RePhlex LS	Sapphire Green	SolarMax Ca+Mg	SolarMax Fe	SolarMax K	SolarMax Mg	SolarMax N	SolarMax NPK	SolarMax PK	SolarMax Si	Solar Pro-Active OneShot	Turbine Amino OneShot	Turbine Fulvic OneShot	Turbine Humate OneShot
Asset Chitosan																						
Asset Gold																						
Asset Titanium																						
Compass Bio-Active																						
Compass Bio-Active OneShot																						
Compass Bio-Complete																						
Compass Start																						
Diamond Green																						
Fusion BioGreen High K 5-3-18																						
Fusion BioGreen High N 28-0-0																						
Fusion BioGreen K 0-0-10																						
Fusion BioGreen NK 12-0-12																						
Fusion BioGreen NK 20-0-10																						
Fusion BioGreen NPK 2-7-14																						
Fusion BioGreen NPK 18-9-9																						
Fusion BioGreen Sport 14-5-12																						
Fusion Liquid Fe																						
Fusion Soluble Fe																						
Fusion Soluble Higk K																						
Fusion Soluble N																						
Fusion Soluble NPK																						
Fusion Tracer OneShot																						
Magnum 357 Calibre																						
Magnum CO																						
Magnum Forty Four																						
Magnum Forty Four OneShot																						
Magnum Recoil																						
Opal Green																						
Optik Anti-Foam																						
Optik Blue Spray Dye																						
Optik Blue WSP Spray Dye																						
Optik Bronco																						
RePhlex LS																						
Sapphire Green																						
SolarMax Ca+Mg																						
SolarMax Fe																						
SolarMax K																						
SolarMax Mg																						
SolarMax N																						
SolarMax NPK																						
SolarMax PK																						
SolarMax Si																						
Solar Pro-Active OneShot																						
Turbine Amino OneShot																						
Turbine Fulvic OneShot																						
Turbine Humate OneShot																						

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