SA - INTERACTIVE

TURF DISEASE

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Professional ***Turf Care and Amenity Solutions***

TURF DISEASE

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GOLF GREENS

BOWLS GREEN

CRICKET SQUARE

SHERRIFF AMENITY

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Use plant protection products safely. Always read the label and product information before use.


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MICRODOCHIUM PACK 6

MEADALLION TL

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FEBRUARY

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MICRODOCHIUM PACK 6

MEADALLION TL

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MICRODOCHIUM PACK 10

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ANTRACNOSE PACK 3

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MICRODOCHIUM PACK 4

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MICRODOCHIUM PACK 11

MICRODOCHIUM PACK 4

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Professional Turf Care and Amenity Solutions

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MICRODOCHIUM PACK 6

INSTRATA

SHERRIFF AMENITY

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MICRODOCHIUM PACK 10

MICRODOCHIUM PACK 6

CHIPCO GREEN

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NOVEMBER - MARCH

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RATES

CHIPCO GREEN

INSTRATA

MEDALLION

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APRIL - OCTOBER

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CHIPCO GREEN

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DEDICATE

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TANK MIXES

CHIPCO GREEN / SCORPIO

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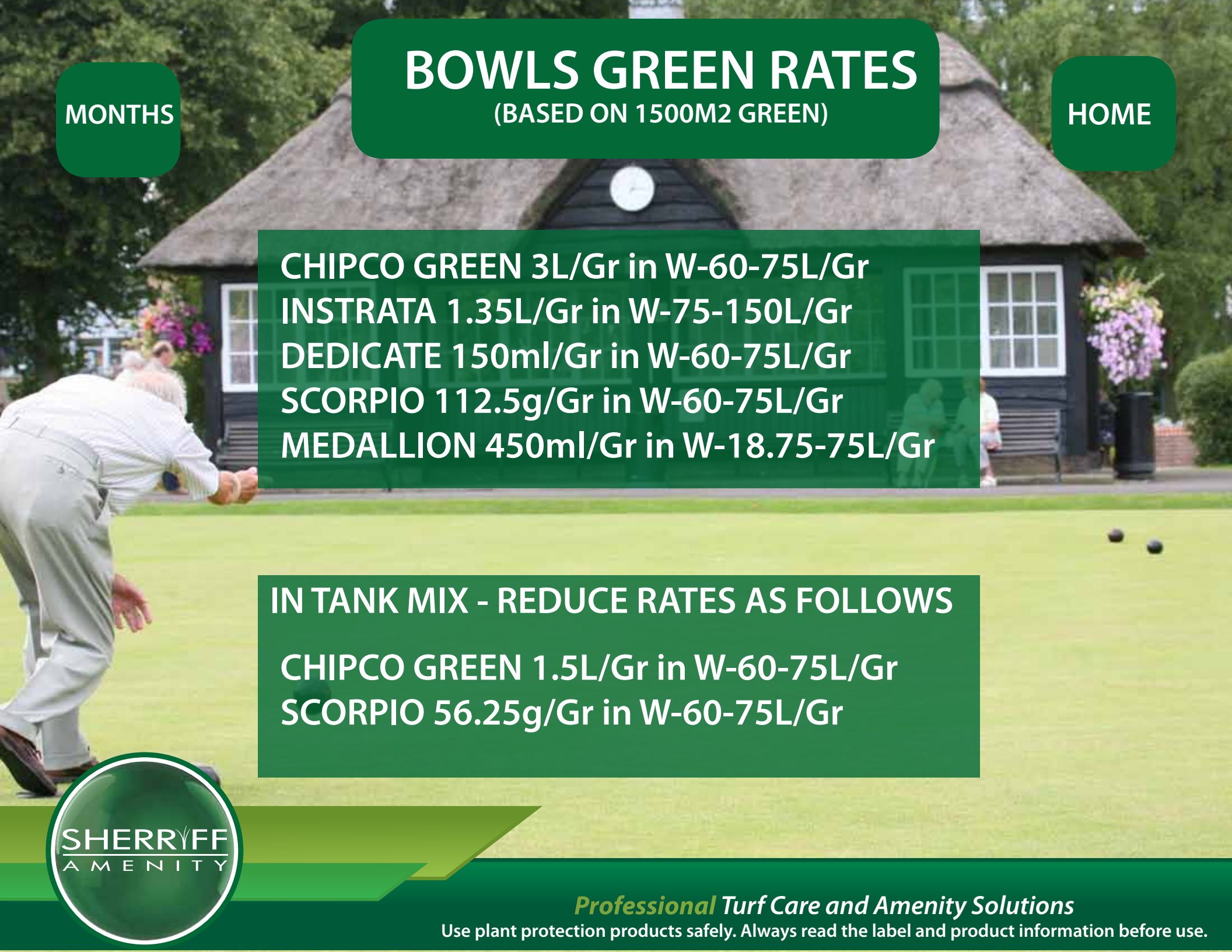

MONTHS

BOWLS GREEN RATES
(BASED ON 1500M2 GREEN)

HOME

CHIPCO GREEN 3L/Gr in W-60-75L/Gr
INSTRATA 1.35L/Gr in W-75-150L/Gr
DEDICATE 150ml/Gr in W-60-75L/Gr
SCORPIO 112.5g/Gr in W-60-75L/Gr
MEDALLION 450ml/Gr in W-18.75-75L/Gr

IN TANK MIX - REDUCE RATES AS FOLLOWS

CHIPCO GREEN 1.5L/Gr in W-60-75L/Gr
SCORPIO 56.25g/Gr in W-60-75L/Gr

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NOVEMBER - MARCH

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TANK MIXES

CHIPCO GREEN / SCORPIO

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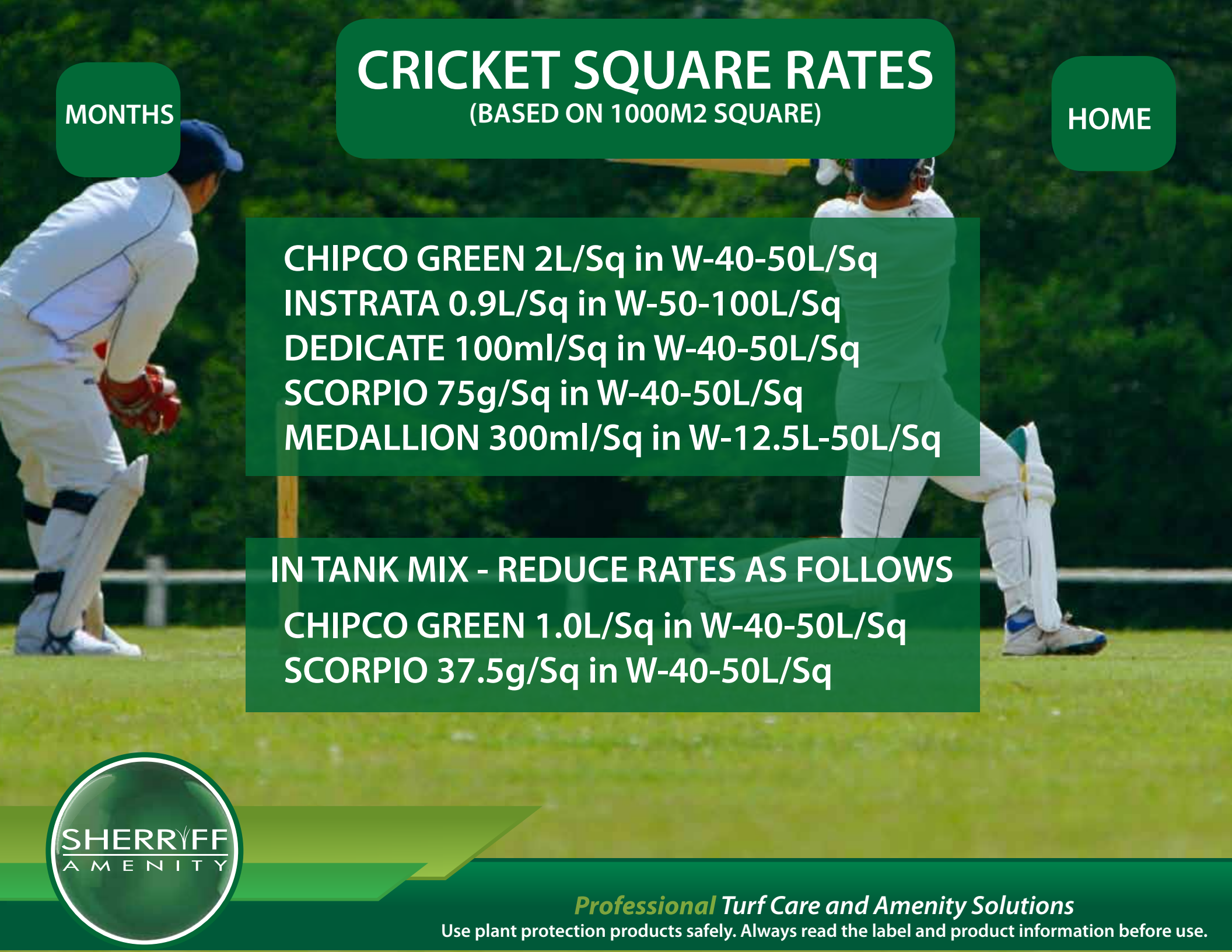

MONTHS

CRICKET SQUARE RATES

(BASED ON 1000M2 SQUARE)

HOME

CHIPCO GREEN 2L/Sq in W-40-50L/Sq
INSTRATA 0.9L/Sq in W-50-100L/Sq
DEDICATE 100ml/Sq in W-40-50L/Sq
SCORPIO 75g/Sq in W-40-50L/Sq
MEDALLION 300ml/Sq in W-12.5L-50L/Sq

IN TANK MIX - REDUCE RATES AS FOLLOWS

CHIPCO GREEN 1.0L/Sq in W-40-50L/Sq
SCORPIO 37.5g/Sq in W-40-50L/Sq

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BACK

HOME

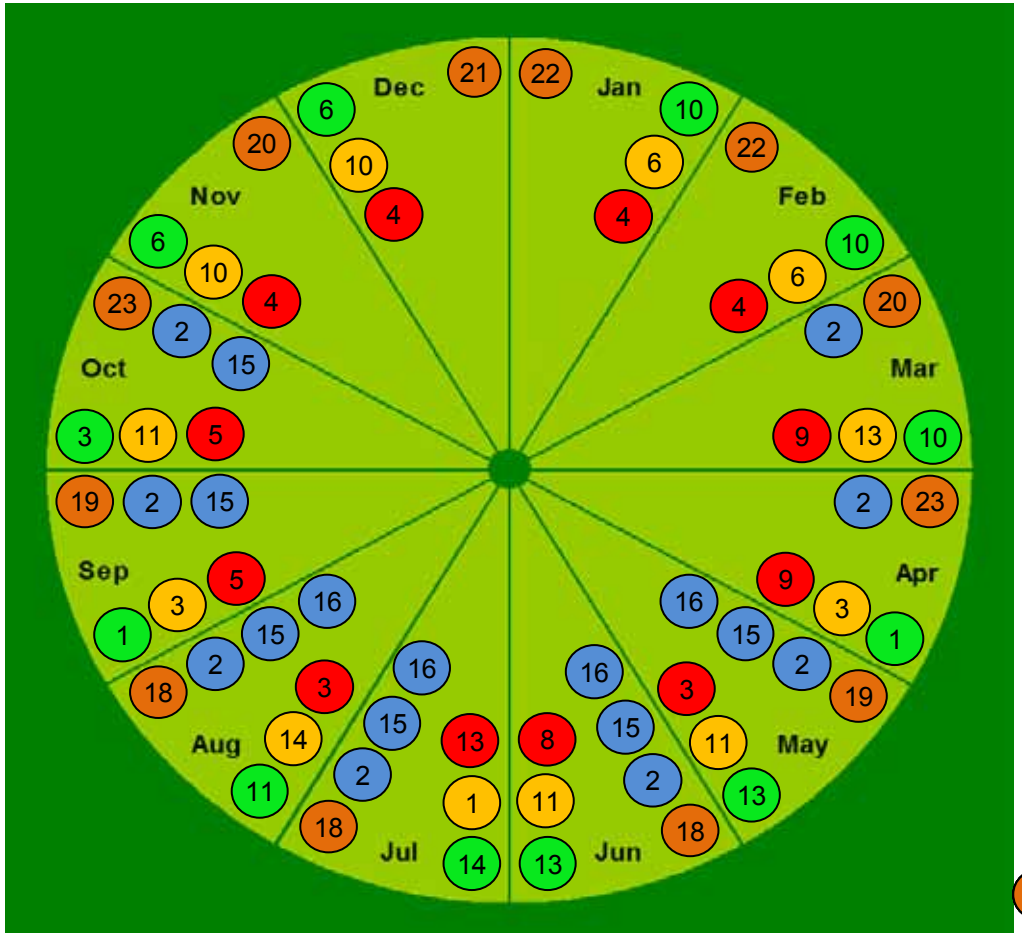
Planner - Fungicide

Microdochium nivale

Package Options

First- Second- Third-

Key: Indicates Product Options / Month Not Total Applications / Year



Key: Indicates Product Options / Month Not Total Applications / Year

Proprietary

Other Turf Diseases

1. MP1 FUNGICIDE PACKAGE EACH
2. ANTHRACNOSE PACKAGE 3 EACH
3. MP3 FUNGICIDE PACKAGE EACH
4. MP4 FUNGICIDE PACKAGE EACH
5. MP5 FUNGICIDE PACKAGE EACH
6. MP6 FUNGICIDE PACKAGE EACH
7. NEW PACKAGE TBC EACH
8. MP8 FUNGICIDE PACKAGE EACH
9. MP9 FUNGICIDE PACKAGE EACH
10. MP10 FUNGICIDE PACKAGE EACH
11. MP11 FUNGICIDE PACKAGE EACH
12. NEW PACKAGE TBC EACH
13. MP13 FUNGICIDE PACKAGE EACH
14. MP14 FUNGICIDE PACKAGE EACH
15. TAKE-ALL & FAIRY RING PACK 1 EACH
16. DOLLAR SPOT PACKAGE 1 EACH
17. LS1 FUNGICIDE PACKAGE EACH
18. HEADWAY 3L
19. SCORPIO
20. INSTRATA 9L
21. CHIPCO GREEN 20 L
22. MEDALLION 3 L
23. INTERFACE 10 L

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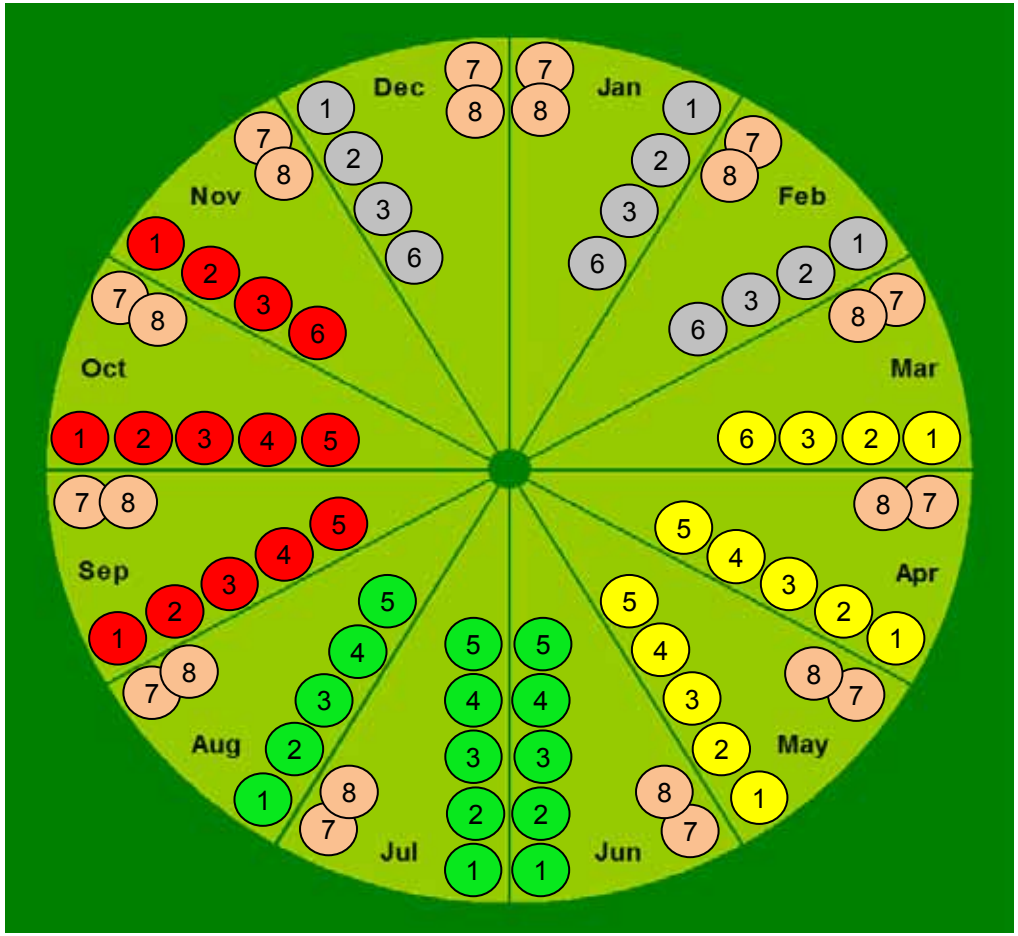
Microdochium nivale

Key: Spring Summer Autumn Winter

A Guide To Monthly Fungicide

Key: Indicates Product Options / Month Not Total Applications / Year



Key: Indicates Product Options / Month Not Total Applications / Year

Planner - Fungicide

Bowling Green - Based on 1500m²

Application Rate of Products /Green(Gr) in Water Volume /Green(W)

Overlapping balls indicates tankmix, eg 7 8

1. CHIPCO GREEN 3L/Gr in W-60-75L/Gr 5 LITRE
2. INTERFACE 1.5 L/GR in W-60-75L/Gr 5 LITRE
3. INSTRATA 1.35L/Gr in W-75-150L/Gr 3 LITRE
4. DEDICATE 150ml/Gr in W-60-75L/Gr 0.25 LITRE
5. SCORPIO 112.5g/Gr in W-60-75L/Gr 0.25 KG
6. MEDALLION 450ml/Gr in W-18.75-75L/Gr 3 LITRE
7. CHIPCO GREEN 1.5L/Gr in W-60-75L/Gr 5 LITRE
8. SCORPIO 56.25g/Gr in W-60-75L/Gr 0.25 KG

Key: Maximum Applications Per Year

Please note: Tank mixing counts towards annual total

1. Chipco Green 4
2. Interface 4
3. Instrata 1
4. Dedicate 2
5. Scorpio 2
6. Medallion 4

Green Size Application Calculation Example:1500m²

Fungicide - 1500m²=0.15Ha² x Product L/Ha=L/Gr

Water Volume - 0.15Ha² x Water Volume L/Ha=L/Gr

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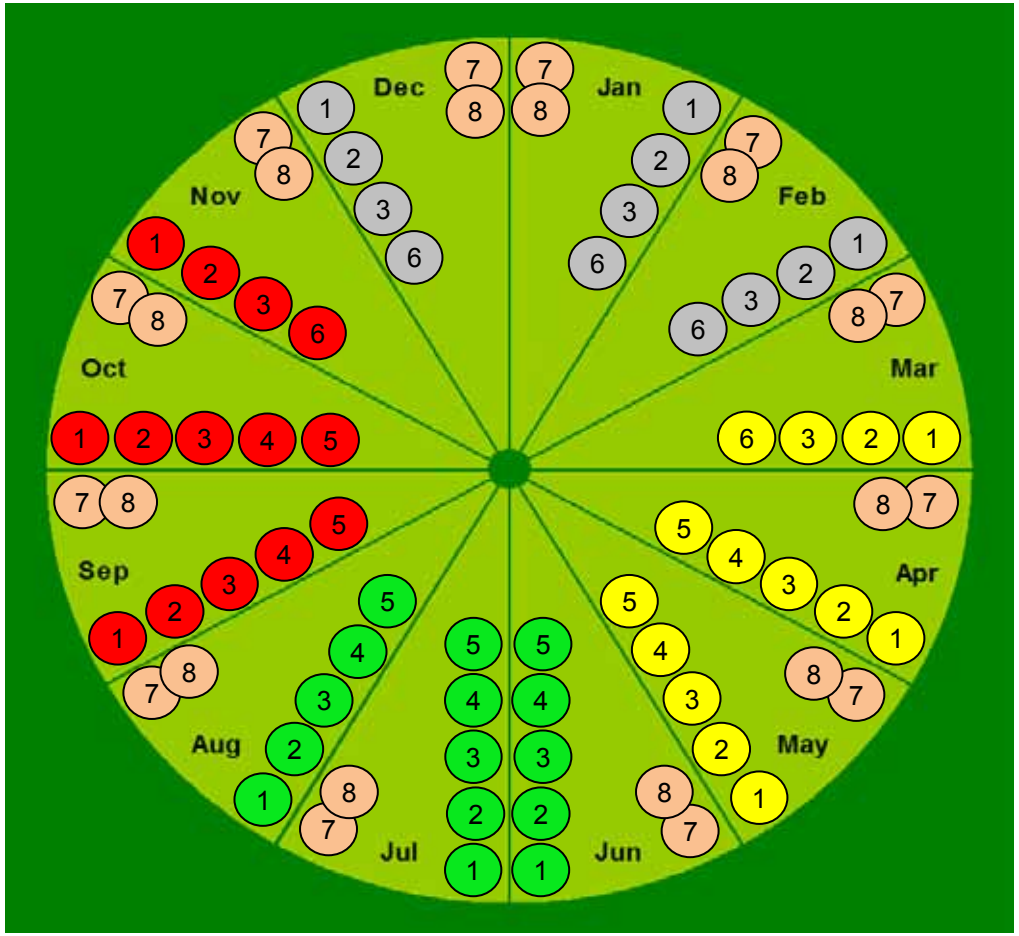
Planner - Fungicide

Microdochium nivale

Key: Spring Summer Autumn Winter

A Guide To Monthly Fungicide

Key: Indicates Product Options / Month Not Total Applications / Year



Key: Indicates Product Options / Month Not Total Applications / Year

Cricket Square - Based on 1000m²

Application Rate of Products /Square(Sq) in Water Volume /Green(W)

Overlapping balls indicates tankmix, eg 7 8

1. CHIPCO GREEN 2L/Sq in W-40-50L/Sq 5 LITRE
2. INTERFACE 1.0L/Sq in W-40-50L/Sq 5 LITRE
3. INSTRATA 0.9L/Sq in W-50-100L/Sq 3 LITRE
4. DEDICATE 100ml/Sq in W-40-50L/Sq 0.25 LITRE
5. SCORPIO 75g/Sq in W-40-50L/Sq 0.25 KG
6. MEDALLION 300ml/Sq in W-12.5-50L/Sq 3 LITRE
7. CHIPCO GREEN 1.0L/Sq in W-40-55L/Sq 5 LITRE
8. SCORPIO 37.5g/Sq in W-40-50L/Sq 0.25 KG

Key: Maximum Applications Per Year

Please note: Tank mixing counts towards annual total

1. Chipco Green 4
2. Interface 4
3. Instrata 1
4. Dedicate 2
5. Scorpio 2
6. Medallion 4

Square Size Application Calculation Example:1000m²

Fungicide - 1000m²=0.1Ha² x Product L/Ha=L/Sq

Water Volume - 0.1Ha² x Water Volume L/Ha=L/Sq

Spreader Settings

HOME






Product	Application Rate	Scotts Accupro 2000				Trojan 15			Trojan 30			Trojan 30+			Trojan HVO			Duo		
		Cone Setting	Single Pass	Double Pass	Spread Width	Single Pass	Double Pass	Spread Width	Single Pass	Double Pass	Spread Width	Single Pass	Double Pass	Spread Width	Single Pass	Double Pass	Spread Width	Single Pass	Double Pass	Spread Width
Marathon Sport	25 g/m²	3	O	M	4	11	8	2.5	11	8	3.5	N	K	4	N	L	4	3.5	2.5	4
	30 g/m²	3	P	N	4	12	9	2.5	12	9	3.5	O	L	4	O	M	4	4	2.75	4
	35 g/m²	3	Q	N 1/2	4	13	10	2.5	13	10	3.5	P	M	4	P	N	4	4.5	3	4
Marathon Allround	25 g/m²	3	O	M	4	11	8	2	11	8	3	N	K	4	N	K	4	-	-	-
	35 g/m²	3	Q	N	4	14	10	2	14	10	3	P	M	4	P	M	4	-	-	-
Evolution Organic	35 g/m²	3	Q	N 1/2	4	17	12	2	17	12	3	P	M	4	R	O	3	-	-	-
	50 g/m²	3	T	O	4	18	14	2	18	14	3	Q	O	4	V	P	3	-	-	-
	70 g/m²	3	V	Q	4	n/a	17	2		18	3	T	P	4		R	3	-	-	-
Absolute NPK	20 g/m²	4	L	J	4							J	H	4				-	-	-
	25 g/m²					8	5	2.5	8	5	3.5				G	E	4	-	-	-
	30 g/m²	4	M	K	4							K	I	4				-	-	-
	40 g/m²	4	N	L	4	10	7	2.5	10	7	3.5	L	J	4	H	G	4	-	-	-
Evolution² Mini	35 g/m²	4	L	J	4	7	5	2.5	11.5	6.5	3.5	J	H	4	I	F	4	2.5	2	4
	50 g/m²	4	O	K	4	10	6	2.5	13.5	10	3.5	K	I	4	K	H	4	3	2.25	4
Marathon Golf	25 g/m²	5	K	H	4	6	4	2	7	5	3	J	H	4	J	H	4	2.5	1	3
	30 g/m²	5	L	I	4	8	4.5	2	8	5.5	3	K	I	4	K	I	4	3	1.5	3
	35 g/m²	5	M	J	4	8.5	5	2	9	6	3	L	I 1/2	4	L	J 1/2	4	3.5	2	3
GoGreen Granules	40 g/m²	5	N	J 1/2	4	8.5	6	2.5	9	6	3.5	N	G	4	I	G	4	2.5	2	3
Aqua-Zorb Granular	30 g/m²	5	L	I	4	9	6	2	9	6	3	K	I	4	K	I	4	2.25	1.5	3
Evolution² Micro	30 g/m²	6	J	H	4	6.5	4.5	2.5	11.5	5.5	3.5	H	F	4	H	E	4	2	1.5	4
	35 g/m²	6	K	I	4	7	5.5	2.5	13.5	6.5	3.5	I	G	4	I	F	4	2.5	1.75	4
SeaVolution Granules	25 g/m²	9	J	H	2	11	8	2.5	11	8	3.5	H	F	2	O	L	4	3	2	3
	50 g/m²	9	M	J	2	13	11	2.5	13	11	3.5	J	H	2	I	O	4	4	3	3
Evolution⁵	25 g/m²	4	J	H	4	7	4	2.5	7	5	3.5	J	H	4	J	F	4	1.5	N/A	4
	35 g/m²	4	K	I	4	8	5	2.5	8	6	3.5	K	I	4	K	I	4	2	N/A	4
	40 g/m²	4	L	I 1/2	4	9	7	2.5	9	7	3.5	L	I 1/2	4	L	J	4	2.5	N/A	4

FEED PROGRAMMES

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AMATEUR FOOTBALL

CRICKET

LAWN

GOLF

GOLF GRANULAR

GOLF LIQUID

BOWLS

BOWLS GRANULAR

BOWLS LIQUID

SHERRIFF AMENITY

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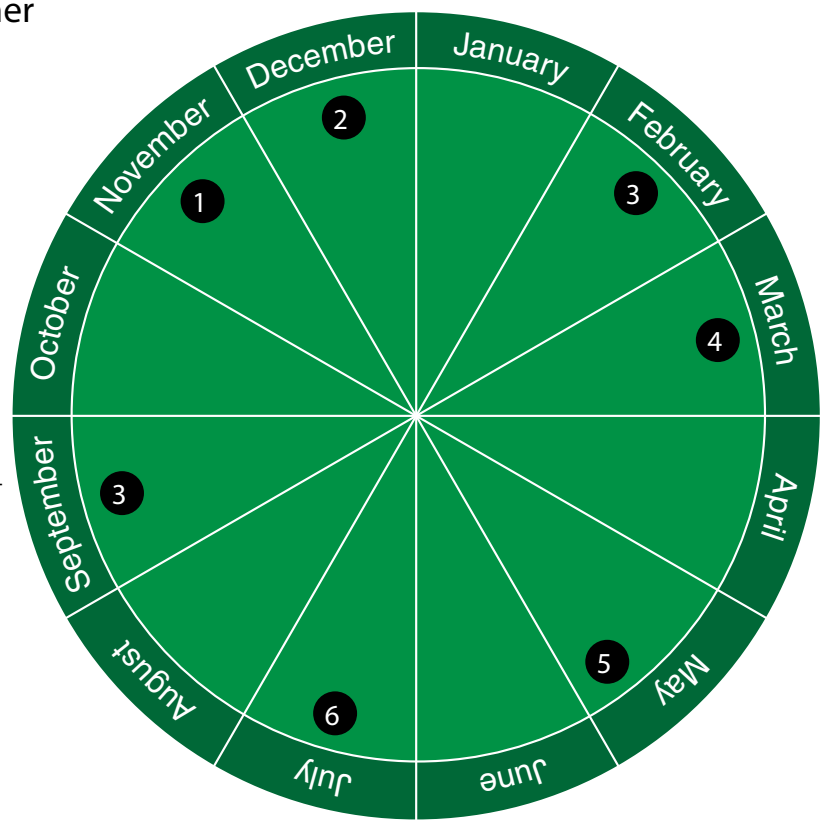
BACK

Amateur Football

HOME

Recommended Programme Year Planner

1. **Evolution² 9.7.7**
   A balanced NPK fertiliser, the granules breakdown quickly to give rapid uptake of the nutrients, ensuring a fast response.
2. **Evolution² 4.12.12**
   A high phosphate and potash fertiliser that stimulates deep root growth, helping grass cope with the extra wear for winter games.
3. **Absolute NPK**
   High potash for use on turf enduring heavy wear. Rapid granule breakdown for a fast response. Additional magnesium ensures a good colour response.
4. **Marathon Sport Spring 16.4.8**
   An extended release NPK for steady growth with additional sulphur, iron and trace elements.
5. **Evolution² 6.9.6**
   A pre-seed fertiliser with an ideal balance of NPK. Use in the top 5cm of soil prior to seeding or re-turfing.
6. **Marathon Allround 12.4.6**
   A versatile long release fertiliser for a steady growth response, good colour and minimal leaching.



Recommended Programme Table

		Analysis							Nutrient input per application kg/ha		
Product	Pack	N	P	K	Application Rate	No of Applications	Area (ha)	Packs required	N	P	K
Evolution² 9.7.7	20 kg	9	7	7	25 g/m²	1	1	13	22.5	17.5	17.5
Evolution² 4.12.12	20 kg	4	12	12	25 g/m²	1	1	13	10	30	30
Absolute NPK	20 kg	15	5	20	25 g/m²	2	1	25	37.5	12.5	50
Marathon Sport Spring	25 kg	16	4	8	35 g/m²	1	1	14	56	14	28
Evolution² 6.9.6	20 kg	6	9	6	35 g/m²	1	1	18	21	31.5	21
Marathon Allround	25 kg	12	4	6	35 g/m²	1	1	18	42	14	21
						Total annual input kg/ha					

To calculate a liquid fertiliser application rate per pitch multiply the application rate of the product by the area e.g SA 6% liquid iron 0.88 ha x 20 L/ha = 16 litres

BIO-STIMULANT TANK MIXES

Cricket

Recommended Programme Year Planner

1 **Evolution5 25.5.8+2MgO**
A controlled release fertiliser with fast start NPK for an early season response, blended with a dual coated polymer sulphur core granule that provides smooth and steady growth into the playing season. Added magnesium content will support chlorophyll synthesis and turf colour.

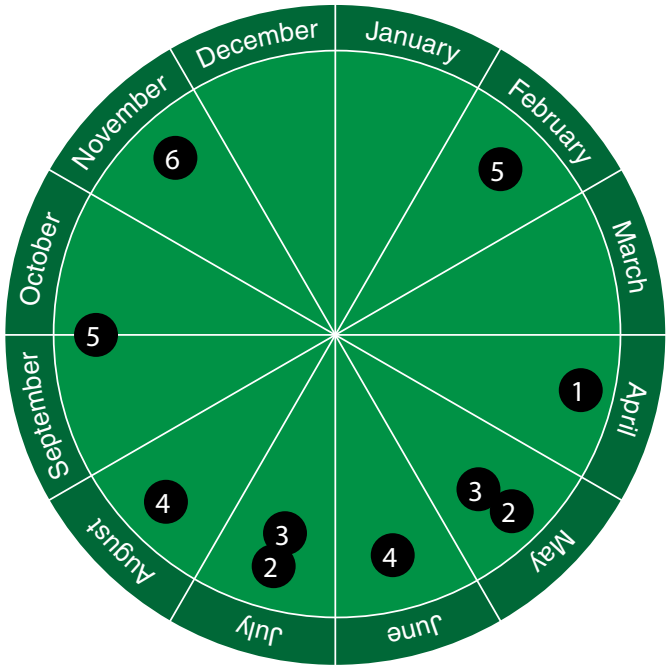
2 **GoGreen Plus**
A sulphur free complex iron that gives extended green-up with 6% potassium for turf hardening. Also contains a trace element package, supplemented with magnesium with a small amount of nitrogen to improve the health and appearance of the turf. At 20 L /ha Go Green Plus will add <1.5kg/ha of iron to your square.

3 **Intrench 15.0.0 +7Ca**
This is a premium liquid fertiliser that can be used at a reduced rate when compared to standard slow release (polymethylene-urea) nitrogen. This is achieved by slowing the degradation of urea to nitrate.

4 **Evolution^2 8.0.0**
Provides essential nitrogen utilised in the structure of amino acid and proteins, chlorophyll and nucleic acids. As a result of these functions its application can result in strong healthy growth. Effective in low temperatures, assists with sward development and wear tolerance.

5 **Greenmaster 6.5.11 NoFe**
Low iron NPK analysis formulated with magnesium to enhance turf health and colour. The micro-granule particles disperse evenly and quickly to provide an immediate and consistent turf response.

6 **Eco 4.0.4 + 4Fe**
A general turf conditioner and hardening product. The low iron content makes it especially suitable as an autumn/winter fertiliser for a cricket square.



Recommended Programme Table

		Analysis							Nutrient input per application kg/ha		
Product	Pack	N	P	K	Application Rate	No of Applications	Area (ha)	Packs required	N	P	K
Evolution^5 25.5.8	20 kg	25	5	8	35 g/m^2	1	0.1	2	87.5	17.5	28
GoGreen Plus	5 ltr	-	-	6	20 l/ha	2	0.1	1	-	-	1.146
Intrench 15.0.0 +7Ca	10 ltr	20	-	-	60 l/ha	2	0.1	2	12	-	-
Evolution^2 8.0.0 +3Fe +3Mg	20 kg	8	-	-	35 g/m^2	2	0.1	4	28	-	-
Greenmaster 6.5.11 NoFe	25 kg	6	5	11	35 g/m^2	2	0.1	3	21	17.5	38.5
Eco 4.0.4 +4Fe	20 kg	4	-	4	35 g/m^2	1	0.1	2	14	-	14
						Total annual input kg/ha			223.5	52.5	121.8

BACK

Lawn

HOME

Fertiliser Choices

1. Ferromel20
A formulation of iron sulphate used for hardening and greening turf. Ferremel20 will help to discourage moss whilst encouraging the finer leaved grasses in the sward. Do not apply to hard surfaces as it may cause staining.

2. Krista Urea 46%N
The high nitrogen content of Krista Urea makes this a cost effective liquid or granular (10-15g/m2) fertiliser application for lawns. Urea is non corrosive and when dissolved in water it also makes a useful de-icing agent.

3. Evolution^{5} Fine Grade 25:5:8
Contains a quick start granule for a rapid response blended with polymer coated sulphur urea for a smooth and steady growth pattern for up to 5 months. Keeps the grass growing and looking healthy without the need for too much mowing.

4. Evolution^{2} 12:6:6
A standard fertiliser granule, that breaks down quickly to support healthy summer growth and the presentation of the lawn. Ideal to help the grass, recover after the extra wear from summer use.

5. Evolution^{5} Fine Grade 12:5:21
A coated autumn and winter fertiliser containing a rapid action NPK granule to give a quick response immediately after application, followed by a steady growth pattern for up to 5 months.

6. Evolution^{2} 5:5:10
An ideal fertiliser product for late season growth whilst, maintaining strength against disease. The ammonium nitrogen is an excellent choice for cool season application.

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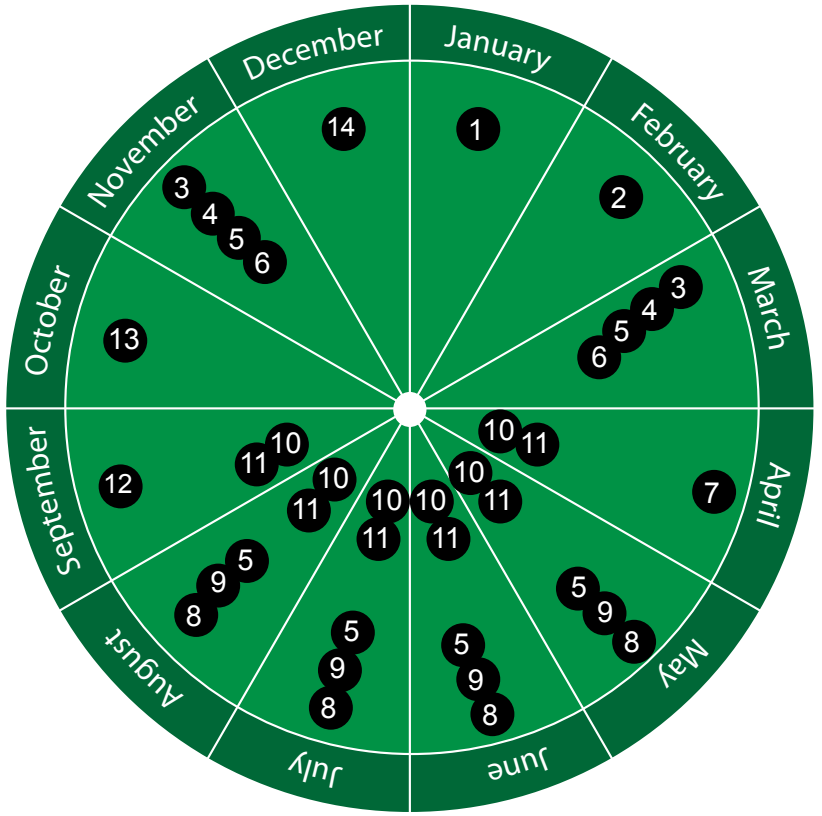
Golf

HOME

Recommended Programme Year Planner



1. **Greenlawnger TR**
   A pigment based turf colourant that is used to improve turf quality in winter and early spring. Increased solar absorption can help to prevent frost and accelerate thawing.

2. **Evolution² 5-5-10+5Fe**
   Ideal product for early season growth, whilst maintaining strength against disease. The ammonium nitrogen is an excellent choice for cool season application.

3. **Rootmass Plus**
   The product contains high quality, plant available humic and fulvic acids, and highly soluble chelated iron, together with seavolution. Designed to be effective for improving both mass and root structure whilst also encouraging the enhancement of soil microbial activity.

4. **Greenmaster Step Liquid**
   A premium liquid chelated fertiliser with Tmax technology for enhanced foliar and nutrient uptake. Contains chelated trace elements to maximise nutrient delivery and to prevent nutrient lock-up.

5. **P-Kursor**
   A high potassium winter hardening product with added calcium for cell formation and iron for chlorophyll synthesis. Support for the presentation of the greens under difficult growing conditions.

6. **Greenlawnger Pro HC**
   A revolutionary visual spraying aid and turf colourant, contains natural pigments. Increases solar radiation into the leaf, raises temperatures and provides a more desirable micro climate for growth.

7. **Evolution² 8-0-0 +3Fe +3Mg**
   Provides essential nitrogen for healthy growth. Effective in low temperatures, assisting early season sward development and wear resistance.

8. **Go Green Plus**
   A sulphur free complex iron that gives extended green-up with potassium for turf hardening. A trace element package supplemented magnesium with a small amount of nitrogen to improve the health and appearance of the turf..

9. **Intrench 18-0-9**
   This is a premium liquid fertiliser that can be used at a reduced rate when compared to standard slow release (polymethylene-urea) nitrogen. This is achieved by slowing the degradation of urea to nitrate.

10. **Aquazorb 45 wetting agent**
    Designed for use in a monthly maintenance programme for the control of localised dry patch, improve the quality of the sward and for the maintenance of perfect playing conditions.

11. **Seavoltuion**
    A unique cold pressed seaweed extract, high in micronutrients, plant hormones and alginates. An ideal turf tonic for grass under stress also helps to alleviate the symptoms of nematode damage.

12. **Marathon Golf Autumn 5-0-27**
    Low nitrogen and high potassium content, with extended release organic fraction to prevent excessive top growth. Ideal for the early autumn period.

13. **Go Green Granules**
    Will provide a steady greening and hardening effect for up to 4 months. Contains a very pure form of iron pyrites that controls the release of iron. Potassium helps to harden the turf by strengthening the cell walls.

14. **Evolution² 4-0-7 +4Fe+2Mg**
    A general turf conditioner and hardener product that can be used throughout the year. The low nitrogen content makes it especially suitable as an autumn/winter fertiliser.

INPUTS TABLE

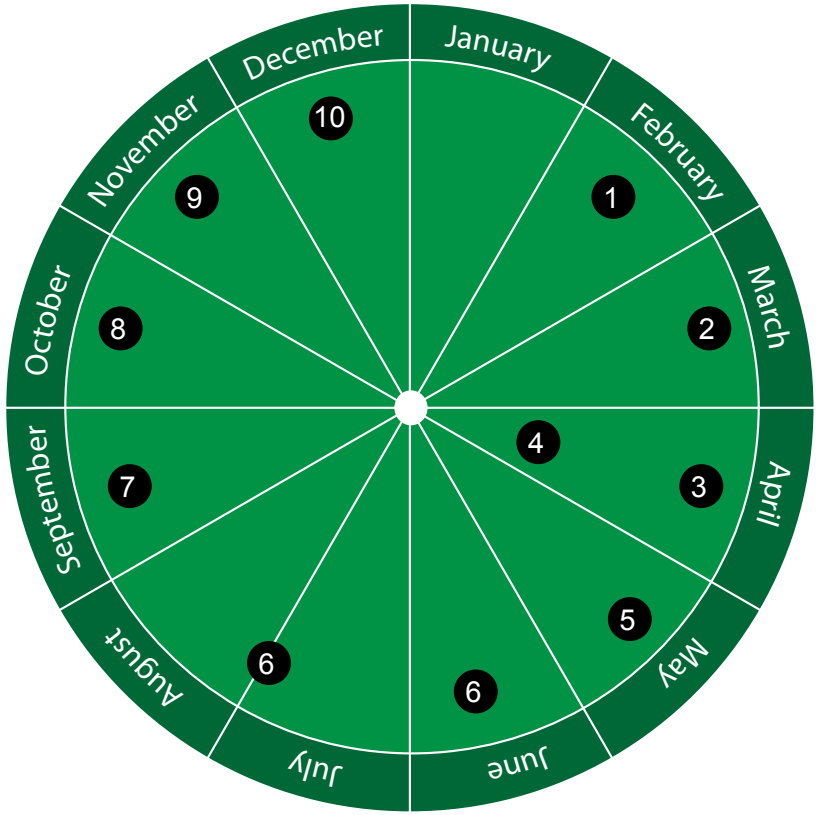
BACK

Golf Granular

HOME

Recommended Programme Year Planner

1. Evolution² 5-5-10+5Fe
   Ideal product for early season growth, whilst maintaining strength against disease. The ammonium nitrogen is an excellent choice for cool season application.
2. Seavolution Granular
   An organic mini granular blend of seaweed meal and composted seaweed, containing calcium magnesium and micronutrients in a unique formulation.
3. Marathon Golf Summer 10-0-15
   Contains additional magnesium for enhanced summer colour. An organic based product that achieves a steady release of nutrients for 8-12 weeks.
4. Aquazorb Granular
   A bio-degradable granule containing a non-ionic surfactant for the treatment of hydrophobic soil. One application can last up to 5 months.
5. C-Complex 4-3-4
   Contains ammonium nitrogen to encourage rapid spring recovery, stimulate the microbial population of the soil, reduce stress and enhance root development.
6. Evolution² 8-0-0 +3Fe +3Mg
   Provides essential nitrogen for healthy growth. Effective in low temperatures, assisting early season sward development and wear resistance.
7. Marathon Golf Autumn 5-0-27
   Low nitrogen and high potassium content, with extended release organic fraction to prevent excessive top growth. Ideal for the early autumn period.
8. Go Green Granules
   Will provide a steady greening and hardening effect for up to 4 months. Contains a very pure form of iron pyrites that controls the release of iron. Potassium helps to harden the turf by strengthening the cell walls.
9. Evolution² 4-0-7 +4Fe+2Mg
   A general turf conditioner and hardener product that can be used throughout the year. The low nitrogen content makes it especially suitable as an autumn/winter fertiliser.
10. Evolution 3-0-22 +Ca+Fe
    A high potassium winter hardening product with added calcium for cell formation and iron for chlorophyll synthesis. Support for the presentation of the greens under difficult growing conditions.



INPUTS TABLE

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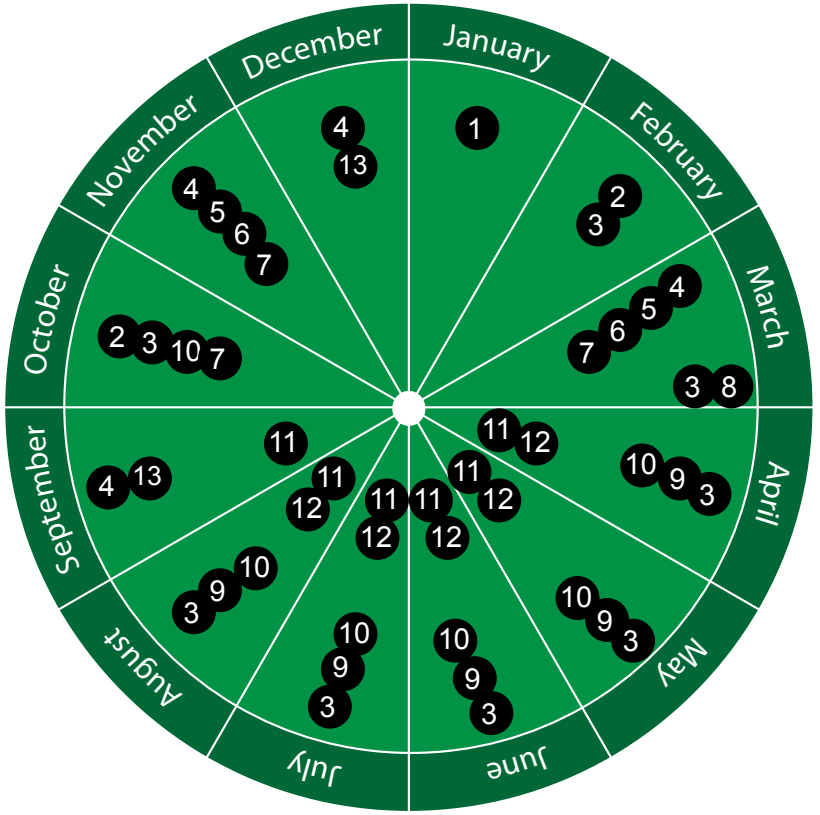
Golf Liquid

Recommended Programme Year Planner



1 Greenlawnger TR
A pigment based turf colourant that is used to improve turf quality in winter and early spring. Increased solar absorption can help to prevent frost and accelerate thawing.

2 Omex K-Max
A high potassium fertiliser with readily available nitrate nitrogen designed to provide a response and harden the grass under cool conditions whilst avoiding soft lush growth.

3 Go Green Plus
A sulphur free complex iron that gives extended green-up with potassium for turf hardening. A trace element package supplemented magnesium with a small amount of nitrogen to improve the health and appearance of the turf..

4 Rootmass Plus
The product contains high quality, plant available humic and fulvic acids, and highly soluble chelated iron, together with seavolution. Designed to be effective for improving both mass and root structure whilst also encouraging the enhancement of soil microbial activity.

5 Greenmaster Step Liquid
A premium liquid chelated fertiliser with Tmax technology for enhanced foliar and nutrient uptake. Contains chelated trace elements to maximise nutrient delivery and to prevent nutrient lock-up.

6 Magflo300
Formulated in a magnesium hydroxide suspension, this nutrient is utilised for phosphate metabolism and is essential for chlorophyll production, having a positive influence on the presentation of the sward.

7 Greenlawnger Pro HC
A revolutionary visual spraying aid and turf colourant, contains natural pigments. Increases solar radiation into the leaf, raises temperatures and provides a more desirable micro climate for growth.

8 Calsal
A liquid calcium nitrate fertiliser that is ideal for stimulating a growth response, under cool conditions and at low rates of application.

9 Intrench 18-0-9
This is a premium liquid fertiliser that can be used at a reduced rate when compared to standard slow release (polymethylene-urea) nitrogen. This is achieved by slowing the degradation of urea to nitrate.

10 P-Kursor
A high potassium winter hardening product with added calcium for cell formation and iron for chlorophyll synthesis. Support for the presentation of the greens under difficult growing conditions.

11 Aquazorb 45 wetting agent
Designed for use in a monthly maintenance programme for the control of localised dry patch, improve the quality of the sward and for the maintenance of perfect playing conditions.

12 Seavoltuion
A unique cold pressed seaweed extract, high in micronutrients, plant hormones and alginates. An ideal turf tonic for grass under stress also helps to alleviate the symptoms of nematode damage.

13 Evolution^2 Pro AW Plus 3-3-12
A high level of potassium helps support level in the soil over the cooler growing season. Just enough nitrogen, combined with phosphate encourages root development without stimulating heavy top growth.

14 Evolution^2 Pro Hi-K 0-0-32
High potassium is essential for strengthening cell walls, making grass more resilient to stress and disease. Zero nitrogen content makes this ideal for use during the autumn and winter months.

INPUTS TABLE

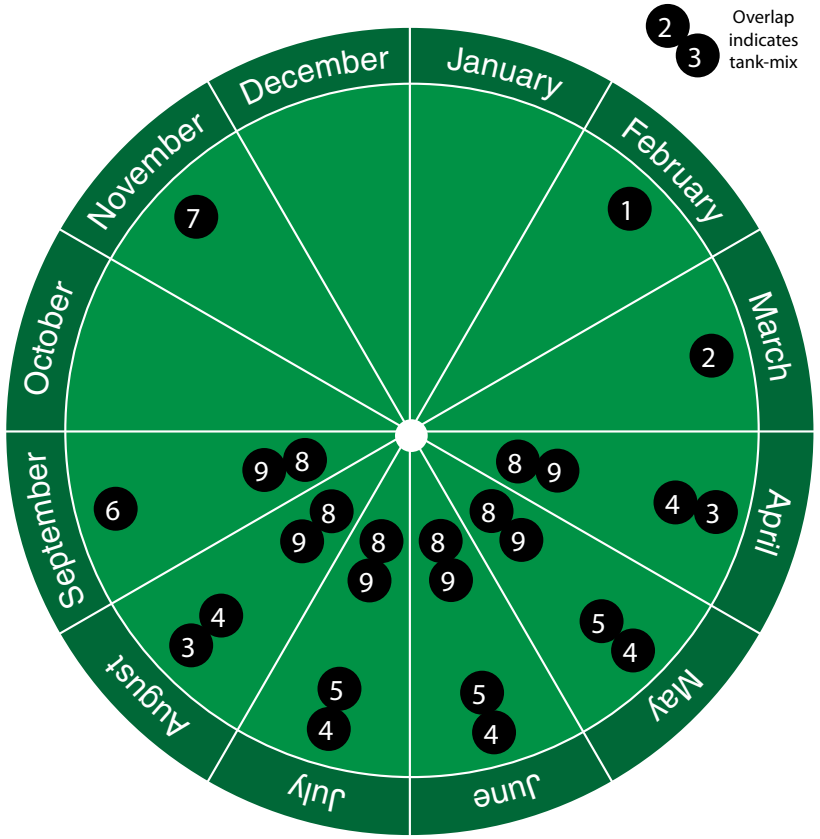
BACK

HOME

Bowls Traditional

Recommended Programme Year Planner

1. **SHL Lawn Sand**
   To stimulate early season growth and to control the build up of moss.
2. **Evolution² 5-5-10 + 5Fe**
   Helps to condition the turf following spring renovation and maintains the sward strength.
3. **K-Max 11-0-39**
   A liquid potassium nitrate that generates strong consistent growth.
4. **GoGreen Plus**
   Complexed liquid iron for added strength and excellent presentation.
5. **Intrench 18.0.9**
   Liquid fertiliser to give consistent healthy growth without excessive flush.
6. **Marathon Golf 7-0-21**
   Apply in conjunction with renovation work to stimulate recovery & to harden the turf in autumn.
7. **GoGreen Granules**
   Slow release iron based product to help strengthen the plant & prevent disease attack.
8. **Aqua-Zorb 45**
   Wetting agent. Apply monthly to prevent Dry Patch disorder.
9. **SeaVolution**
   Liquid alginate/seaweed for increasing root development & the overall health of the plant.



Recommended Programme Table

To calculate liquid application rate per green multiply application rate by 0.15
e.g. GoGreen Plus 0.15 x 20 L/ha = 3 litres per green

		Analysis							Nutrient input per application kg/ha		
Product	Pack	N	P	K	Application Rate	No of Applications	Area (ha)	Packs required	N	P	K
SHL Lawn Sand	25kg	5	0	0	75 g/m²	1	0.15	5	37.5	0	0
Evolution² 5-5-10	20kg	5	5	10	25 g/m²	1	0.15	2	12.5	12.5	25
K-Max	10 litre	11	0	39	30 L/ha	2	0.15	1	5.148	0	18.25
GoGreen Plus	5 litre	-	-	-	20 L/ha	5	0.15	3	-	-	-
Intrench 18.0.9	10 litre	18	0	9	60 L/ha	3	0.15	3	14.4	0	7.2
Marathon Golf 7-0-21	25kg	7	0	21	30 g/m²	1	0.15	2	21	0	63
GoGreen Granules	20kg	2	0	10	40 g/m²	1	0.15	3	8	0	40
Aqua-Zorb 45	10 litre	-	-	-	20 L/ha	6	0.15	2	-	-	-
SeaVolution	10 litre	-	-	-	10 L/ha	6	0.15	1	-	-	-
						Total annual input kg/ha			132.5	12.5	186.1

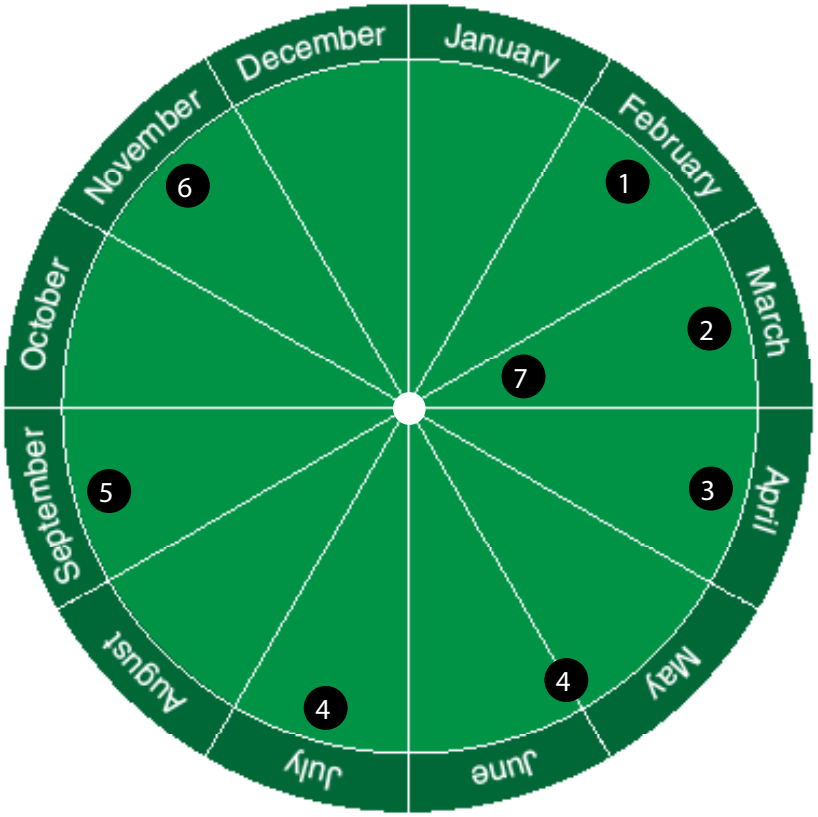
BACK

Bowls Granular

HOME

Recommended Programme Year Planner

1. Lawn Sand
   To stimulate early season growth and to control the build up of moss.
2. Evolution² 4-0-7 + 4Fe + 2Mg
   Helps to condition the turf following spring renovation and maintains the sward strength
3. Evolution² 14-4-8 + 2Fe + 4Mg
   Continues the swards spring recovery, growth & development, lasts into the playing season.
4. Evolution² 8-0-0 + 3Mg
   To maintain the general health of the sward and to give improved presentation.
5. Marathon Golf 7-0-21
   Apply in conjunction with renovation work to stimulate recovery & help prevent disease attack.
6. GoGreen Granules
   Slow release iron based product to help strengthen the plant & prevent disease attack.
7. Aqua-Zorb Granular
   Apply during spring renovation for long term eradiction of Dry Patch.



		Analysis							Nutrient input per application kg/ha		
Product	Pack	N	P	K	Application Rate	No of Applications	Area (ha)	Packs required	N	P	K
Lawn Sand	25kg	5	0	0	75 g/m²	1	0.15	5	37.5	0	0
Evolution² 4-0-7	5 litre	4	0	7	25 g/m²	1	0.15	2	10	0	17.5
Evolution² 14-4-8	20kg	14	4	8	25 g/m²	1	0.15	2	35	10	20
Evolution² 8-0-0	20kg	8	0	0	25 g/m²	2	0.15	4	20	0	0
Marathon Golf 7-0-21	25kg	7	0	21	30 g/m²	1	0.15	2	21	0	63
GoGreen Granules	20kg	2	0	10	40 g/m²	1	0.15	3	8	0	40
Aqua-Zorb Granular	15kg	-	-	-	30 g/m²	1	0.15	3	-	-	-
						Total annual input kg/ha			151.5	10	140.5

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Bowls Liquid

HOME

Recommended Programme Year Planner

1. **Ferromex**
   A powerful and convenient to use liquid mosskiller.

2. **K Max 11-0-39**
   Liquid Potassium Nitrate to generate strong consistent early season growth.

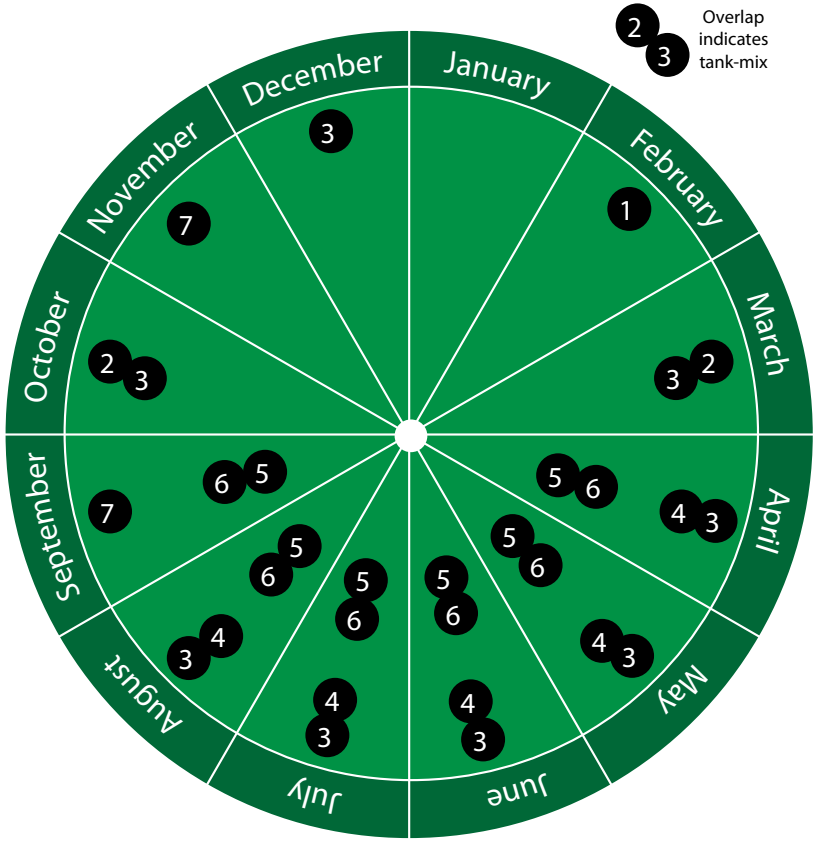
3. **Go Green Plus**
   Complexed liquid Iron for added strength and excellent presentation.

4. **iNTrench 18-0-9**
   Balanced liquid fertiliser to give consistent healthy growth without excessive flushes.

5. **Aqua-Zorb 45**
   Wetting agent. Applied monthly to prevent Dry Patch disorder.

6. **Seavolution**
   Liquid alginate/seaweed for increasing root development & the overall health of the plant.

7. **Evolution² Pro AW Plus 3-3-12**
   Autumn/winter liquid feed to boost Potash levels and gently feed the sward.



Recommended Programme Table

To calculate liquid application rate per 1500m² green multiply application rate by 0.15
e.g. GoGreen Plus 0.15 x 20 L/ha = 3 litres per green

		Analysis								Nutrient input per application kg/ha		
Product	Pack	N	P	K	Specific Gravity	Application Rate	No of Apps	Area (ha)	Packs req	N	P	K
Ferromex	20 litre	4.6	0	39	-	130 litres/ha	1	0.15	1	5.98	-	-
K-Max	10 litre	11	0	39	1.56	30 litres/ha	2	0.15	2	5.148	-	18.25
Go Green Plus	5 litre	0	0	6	1.18	20 litres/ha	2	0.15	2	-	-	1.416
iNTrench 18-0-9	10 litre	-	-	-	1.2	60 litres/ha	5	0.15	6	14.4	-	7.2
Aqua-zorb 45	10 litre	-	-	-	-	20 litres/ha	6	0.15	2	-	-	-
SeaVolution	10 litre	-	-	-	-	10 litres/ha	6	0.15	1	-	-	-
Evolution² Pro AW Plus	10 litre	3	3	12	1.18	60 litres/ha	2	0.15	2	2.124	2.124	8.496
							Total annual input kg/ha			92.52	4.248	100.8

HOME

AMATEUR FOOTBALL

BOWLS

CRICKET

LAWN

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Use plant protection products safely. Always read the label and product information before use.

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Amateur Football Four Seasons Maintenance Guide

HOME

Spring

Mowing frequency can be expected to increase in response to improvement in growing conditions. Continue to aerate to maintain soil porosity. Treat for heightened levels of worm casting activity. Lightly brush and or verti-cut the sward to further encourage and maintain an upright growth habit. Over seed any weak or bare areas.

Summer

Renovate thoroughly at the end of the playing season, paying particular attention to the goal mouth areas. Verti drain or undertake similar deep aeration work, apply a suitable sand top dressing material and over seed. Carryout necessary improvements to the drainage system by adding additional sand slits, gravel bands, French drains and sumps. The sward should be allowed to recover before topping and reducing the height of cut to the desired playing height. Irrigate as necessary during drought conditions.

Autumn

Maintain a suitable cutting frequency. Continue to irrigate when conditions dictate and apply additional grass seed to weak and or bare areas during the early optimum growing period. For pre match use an approved line marking material such as Bowcom Regular, Super or Supreme Plus and do not use hydrated lime. Finale is a herbicide that can be used to provide a more permanent line. As a guide use 40-60ml per football pitch. A 5 litre unit of Finale will treat 100,000 linear metres of 4" (100mm) lines.

Winter

Post match renovation is vital if the integrity of the playing surface is to be maintained. Divot repair is intregal to this task but as germination is possible throughout the year additional over seeding should not be neglected. Aerate on a monthly basis, verti draining if resources permit and allow the holes to close up naturally. Monitor for pests such as worms, chaffer grubs and leather jackets and apply approved methods as required.

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Bowls
Four Seasons Maintenance Guide

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Spring

Lightly scarify to fine down the sward and remove moss. Aerate the soil with solid tines regularly. Top dress and over-seed any weak areas. Lower the height of cut gradually to playing height. Remove any build up of dew. Apply fungicide to combat disease if necessary.

Summer

Regularly cut green at playing height. Irrigate as necessary to maintain moisture levels. Scarify and aerate regularly when moisture levels allow. Spot treat any areas of Localised Dry Patch. Continue to inspect for disease and treat if required.

Autumn

Continue to maintain as summer until the end of the playing season. Undertake renovation work involving scarification, aeration, topdressing and overseeding. Check green levels and adjust if necessary. Raise height of cut. Apply preventative fungicide.

Winter

Keep green free from dew. Check regularly for pests, such as; Leatherjackets, Chafer Grubs and Worms and apply approved control methods as required. Treat disease with approved fungicide as a preventative or at first visible sign. Aerate on a monthly basis if conditions allow.

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Cricket
Four Seasons Maintenance Guide

HOME

Spring
As growing conditions improve aim to gradually lower the height of cut. Lightly scarify the square to fine down and remove coarse and irregular growth. Continue to attend to any remaining weak and bare areas by further over seeding. Grow covers can be used to good effect to force germination and early season growth. Monitor for disease outbreaks and treat with an approved fungicide. Worm casts can still be an issue in a moist turf surface and a heightened level of activity may be addressed with an approved lumbricide. Hand-pull scattered weeds or for greater levels of ingress treat with a broad spectrum herbicide, as they start to grow and develop in the mid to late spring period. Start to lightly roll the square to re-establish levels in anticipation of strip preparation.

Summer
Increase cutting frequency and mow in the direction of play. If available use groomers on the mower to help lift the sward and maintain an upright growth habit. Plan your season on the cricket table, cutting out individual strips to fit the level of use and importance of games. Strips should be prepared well in advance of play. Cut up and down on the same lines and gradually lower the height to produce a 'white finish'. A hand scarification unit, allowing variable pressure or a reciprocating brush attachment, will help to raise the grass and address any low spots after each cut. Irrigate the square when under drought stress and as part of wicket preparation. Flood the strip and allow to dry gradually, commencing rolling, when the weight of the machine can be applied without smearing the surface. Continue to roll and cut up to the day of play. Use covers to protect the playing surface if rain is anticipated. Over seed any bare areas as part of post match renovation and aerate strips that are no longer required for play.

Autumn
As the end of the season approaches, begin your preparations for autumn renovation work. Maintain a suitable cutting frequency to keep growth under control. Scarify the surface vigorously in several directions at slight angles to each other. This will help to remove surface fibre but will also fine down coarse growth and remove a percentage of shallow rooting weed annual meadow grass from the square. The choice of aeration will depend on objectives, such as the need for compaction relief, thatch removal and replacing root zone material. Verti draining, solid and hollow cores should all be considered. The latter is particularly effective at lowering 'saddles' that may be developing at either end of the square. Apply an approved cricket loam top dressing material and work into the tine holes, paying particular attention to uneven areas. Over seed the square with a cricket mixture of dwarf perennial ryegrass and depending on the level of wear at a rate of 25-75g/m2.

Winter
Perform regular checks of the playing surface for pests and diseases. Apply approved methods of control. Brushing or switching the square to remove dew will help to reduce turf disease. Dew dispersant, is also effective if resources permit and can keep the sward dry for several weeks. Continue to relieve soil compaction by periodic aeration and allow the holes to close naturally. As growth occurs even at low temperatures, continue to attend to any remaining weak or bare areas by further over seeding.

BACK

Lawn
Four Seasons Maintenance Guide

HOME

Spring

Lightly scarify to fine down the sward and remove moss. A springbok rake or similar could be used instead of a mechanical operation. Aerate the soil with solid tines or a garden fork. Lower the height of cut gradually. Hand-pull weeds, apply an approved selective herbicide for wider infestation. Over seed with good quality, proprietary lawn seed cultivars.

Summer

Regularly cut the lawn at an appropriate height. Irrigate as necessary to maintain moisture levels and prevent dieback of the sward. Further scarification and aeration work will benefit the lawn when ground conditions allow. Attend to any localised areas of weakness. Continue to inspect for weeds and treat if required.

Autumn

Undertake renovation work involving scarification, aeration and over seeding. Raise the height of cut. Also take the opportunity to adjust levels over the lawn by top dressing with an approved loam based soil. Remove leaves that may have fallen onto the grass from nearby trees.

Winter

Check regularly for pests, such as Leatherjackets and Chafer Grubs. Apply approved control methods as required. Brushing or switching to remove dew formation will help to reduce turf disease. Aeration work will improve soil structure and drainage over the lawn. As growth occurs even at low temperatures, continue to attend to weak and bare areas by further over seeding. Grow sheets can also be used to good effect.

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NUTRIENT

HOME

NITROGEN
N

PHOSPHORUS
P

POTASSIUM
K

IRON
Fe

CALCIUM
Ca

MAGNESIUM
Mg

SULPHUR
S

BORON
B

COPPER
Cu

MANGANESE
Mn

ZINC
Zn

SILICON
Si

PHOSPHITE
H_2PO_3-

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BACK

NITROGEN (N)

HOME

Overview

Nitrogen is one of the most important nutrients that grasses need to sustain healthy growth. It is an essential component of many of the building blocks of living organisms such as amino acids, proteins, nucleic acids (DNA and RNA) and chlorophyll. Turf grown on soils deficient in nitrogen will lack vigour, colour, wear tolerance and a natural resistance to disease. It is not possible to obtain sufficient quantities of nitrogen from mining activities to provide the raw materials for fertiliser manufacture, so any additional resources of this vital nutrient must be taken from the atmosphere, where it accounts for about 80% of the air we breathe - in the form of dinitrogen (N_2). Chemically, dinitrogen is represented as N = N.
The triple bond between the two nitrogen atoms is very strong, which makes this molecule highly stable and practically inert. To be useful in plant nutrition, nitrogen must be 'fixed' in the form of ammonium (NH_4^+) or nitrate (NO_3^-) ions.
Prior to the introduction of man-made nitrogenous fertilisers, the major sources of nitrogen for plants were from recycled plant and animal wastes, broken down by microorganisms, and also from nitrogen fixing bacteria living free in the soil or in the root nodules of certain leguminous plants. A small amount of nitrogen is fixed by lightning strikes where the high energy from the discharge heats the air locally to about 30,000°C, splitting molecules of N_2 and O_2 and forming nitrogen oxides (NO and NO_2) These oxides dissolve in rain water and fall as weak nitrous and nitric acids. Lightning discharges account for about 5% of the total nitrogen fixed from the air. Nitrogen can be artificially fixed in a process that involves the reaction of nitrogen and hydrogen to produce ammonia. Today this accounts for more than a hundred million tons of artificial fertiliser manufactured each year.

NITROGEN FORMS

FUNCTIONS IN THE PLANT

FACTORS AFFECTING PLANT AVAILABILITY

BACK

NITROGEN FORMS

HOME

Urea

-Formed by reacting ammonia with carbon dioxide CO_2 at high pressure. Urea contains 46% nitrogen and is soluble in water, so it can be applied as either a granule or liquid.

Ammonium nitrate

– Also known as 'Nitram' is produced from ammonia by reaction with nitric acid. Ammonium nitrate contains 34% nitrogen and is also soluble in water.

Calcium ammonium nitrate

– A mixture of ammonium nitrate and calcium or magnesium carbonate. Calcium ammonium nitrate contains 25-28% nitrogen.

Sulphate of ammonia

– Is useful where deficiencies of sulphur occur. It contains 21% nitrogen and 24% sulphur.

Potassium nitrate

– Manufactured by reacting sodium nitrate with potassium chloride. Potassium nitrate can be used in colder temperatures as it is available to the plant without the need for nitrification by soil bacteria. It contains 13.5 percent nitrogen and 45 percent water-soluble potassium as K_2O, making it ideal for use to correct potassium deficiency in early spring.

Calcium nitrate

– Is used to remedy deficiencies in calcium and reduce soil acidity. It contains 15.5% nitrogen and 19% water soluble calcium.

Methylene Urea

– Provides a chemical slow release nitrogen source containing 37-40% total nitrogen; of which about a quarter is available in the short term with most of the remainder being released slowly over 2 to 3 months – depending on the ambient temperature.

BACK

NITROGEN - FUNCTIONS IN THE PLANT

HOME

Key functions in the plant

- A fundamental component for plant growth, being important for amino acid synthesis and subsequent protein formation
- Formation of nucleic acids
- Synthesis of chlorophyll and ATP (adenosine triphosphate)
- Core role in photosynthesis and energy production

BACK

NITROGEN - FACTORS AFFECTING PLANT AVAILABILITY

HOME

Factors affecting availability to plant

- Deficiency most common on soils prone to leaching and drought (sandy or light soils with low organic matter)
- Availability is reduced below pH 5.5 and on very alkaline soils
- High rainfall areas or heavily irrigated areas
- Drought affects nutrient uptake
- Transient deficiencies can occur during periods of rapid growth where demand exceeds the rate of nitrogen uptake
- Compacted soils and areas of poor drainage affect root development and subsequent nitrogen uptake

BACK

PHOSPHOROUS (P)

HOME

Overview

Phosphorus is an important requirement of many plant compounds that are essential for growth.

Key functions in the plant

- Key component of ATP (adenosine tri-phosphate) which is used in the energy transfer process within the plant
- Involved in nucleic acid formation, protein synthesis and carbohydrate metabolism
- Formation of cell membranes, phospholipids
- Important role in stimulating early growth and development

Most soils in the UK have adequate phosphate, although soil indices have declined in recent years. However, not all is in 'pools' that are available to the plant. Potentially up to 90% of phosphate applied is not utilised. Movement of phosphate is very slow (0.02 mm/day). Plants roots take up phosphorus from soil solution mainly as the $H_2PO_4^-$ and HPO_4^{2-} ions. Phosphate (-ve charge) can be 'locked up' in soils with high levels of cations (+ve charge, eg. calcium, magnesium or iron). So availability is reduced in heavy clays or other soils with high fixing capacity and in very acidic soils (eg. peats or heathland) or very alkaline soils, (eg. calcareous soils) where calcium phosphate precipitation occurs. Sources of phosphate for use in inorganic fertiliser will become limiting in the next 30 years, and more will need to be utilised from organic manures and by improving the availability from soil reserves by increasing soil plant growth promoting rhizobacteria (PGPRb) levels (eg. Bacillus and Rhizobacter).

Factors affecting availability to plant

- Deficiencies can occur during periods of rapid growth or during cold/wet conditions.
- Deficiency can also occur in low organic matter soils
- Compacted or waterlogged soils limit root growth and the ability of the plant to absorb phosphate

BACK

POTASSIUM (K)

HOME

Overview

Potassium is an essential component of plant nutrition. Potassium deficient plants are known to be less resistant to plant diseases.

Key functions in the plant

- Maintenance of water balance in the plant, and helps regulate cell water content and plant turgor, maintaining stem strength.
- Important role in transpiration by controlling stomatal pore opening and closing
- Involved in transport of sugars from 'sources' to 'sinks'
- Good mobility in the plant

There are 4 pools of potassium in the soil, most is in soil minerals, these weather to release slowly available potassium embedded in clays (slowly exchangeable K), readily available potassium held on the surface of clays or organic matter (exchangeable K) and potassium in soil solution.

Factors affecting availability to plant

- Low pH soils
- Deficiency can be common at the end of the growing season, especially on light, sandy soils.
- Soils with low clay reserves where little K is released, and on sandy or light soils where K can be leached
- Drought and high levels of magnesium reduce uptake

BACK

IRON (Fe)

HOME

Overview

Iron typically constitutes 3% of the content of soils and deficiencies are associated with reduced availability. Iron is present in soils as oxides that give soil red / brown colour. Iron is transported to root surface as organo-mineral complex, but is taken up as Fe2+.

Key functions in the plant

- Required for the synthesis of chlorophyll, 80% of iron content is in chloroplasts
- Involved in respiration (redox reaction)
- Constituent of cytochromes, and involved in utilisation of nitrate and sulphate.
- Involved in lignin synthesis

BACK

CALCIUM (Ca)

HOME

Key functions in the plant

- Calcium pectate is a constituent of the cell walls. Maintains strength and permeability of the cell membrane
- Involved in cell division and elongation, essential for healthy growth
- Disease / pest mitigation by strengthening cell walls
- Involved in nutrient uptake
- Activates a number of plant enzymes
- Involved in heat stress response by the formation of heat shock proteins and stomatal pore function

BACK

MAGNESIUM (Mg)

HOME

Key functions in the plant

- Central atom of chlorophyll molecule and is therefore essential for photosynthesis. However, typically this is only 15-20% of a plants requirement for magnesium. Deficiency of magnesium will reduce the plants photosynthetic rate
- Key activator of many enzyme reactions and protein synthesis
- Transport of carbohydrates and amino acids from the leaf to the roots and shoots via the phloem.
- Important in nitrogen and phosphate metabolism
- Regulates uptake and cell turgor together with K+

BACK

SULPHUR (S)

HOME

Key functions in the plant

- Sulphur is an essential component of proteins in plants and animals since it is required for the formation of two amino acids (cysteine and methionine), that are the building blocks of proteins
- Sulphur is also a component of enzymes (forming bonds within the enzyme structure) and vitamins
- Sulphur is also involved in the reduction of nitrate to amino acids

BACK

BORON (B)

HOME

Key functions in the plant

- Maintenance of cell membranes
- Structural component of cell walls
- Transport of nutrients and sugars through cell membranes
- Production of nucleic acids and cell division

BACK

COPPER (Cu)

HOME

Overview

Copper concentrations in the soil are typically 20ppm (ranging from <10 to 100ppm). Copper is held in a number of different forms in soil, the bulk as organically bound copper. Copper is also found in soil solution and exchangeable fraction, weakly bound to inorganic compounds, bound to organic compounds or in the clay lattice. 98% of the copper in the soil is unavailable to the plant. However, this reduces the risk of leaching, so copper tends to be relatively uniformly distributed in free draining soils (except Breckland and Icknield soils). Copper is taken up into the plant as the Cu2+ ion.

Key functions in the plant

- Important component of several plant enzyme systems, including nitrate reductase, protein synthesis and hormone regulation
- Acts as a catalyst in photosynthesis and respiration
- Required for the manufacture of lignin in cell walls
- Copper, manganese and zinc, are all constituents of superoxide-dismutase (SOD enzyme) important in the detoxification of damaging free oxygen radicals that are formed under stress conditions

BACK

MANGANESE (Mn)

HOME

Overview

Manganese deficiency is the most widespread micronutrient problem in the UK. Although most soils contain sufficient Mn, soil pH influences availability to the plant. Manganese is taken up into the plant as the cation Mn^{2+}.

Key functions in the plant

- Component of enzymes involved in photosynthesis, nitrate reduction, protein synthesis and other plant processes
- Required for chlorophyll synthesis
- Involved in production of vitamin C and carotene
- Manganese, zinc and copper are all constituents of superoxide-dismutase (SOD enzyme) important in the detoxification of damaging free oxygen radicals that are formed under stress conditions

BACK

ZINC (Zn)

HOME

Overview

Soils originating from igneous rocks tend to have a high zinc concentration, whilst those from silica are low. The availability is reduced in high pH soils (>7.0) especially in the presence of free calcium carbonate. Zinc deficiency affects fertility and seed production, growth regulation and defence against disease. High soil phosphate concentrations (eg. where fertiliser is placed) can reduce availability of zinc by the formation of zinc phosphate. Zinc is taken up by the plant as the cation Zn2+.

Key functions in the plant

- Important in synthesis of nucleic acid
- Required for many enzyme systems in the plant including photosynthesis (CO_2 assimilation), development of chloroplasts, sugar formation and protein synthesis
- Use in metabolism of the hormone auxin
- Zinc, manganese and copper are all constituents of superoxide-dismutase (SOD enzyme) important in the detoxification of damaging free oxygen radicals that are formed under stress conditions
- Low levels of zinc reduce disease resistance to Rhizoctonia spp

BACK

SILICON (Si)

HOME

Overview

Silicon is an abundant element in soil, but deficiency can occur, particularly in highly weathered, low base saturation and low pH soils.

Plant-available silicon is also deficient in soils with a high organic fraction. Silicon deficiencies may be prevalent on USGA sand greens and tees.

Grass is able to uptake silicon freely. It is transported and deposited in tissue, such as the cuticle and cell wall. Indeed most silicon is found in the outer cells or epidermis of the plant and in effect forms a mechanical barrier against pathogens.

Silicon is also considered to have a catalytic role in the expression of physiological resistance through the production of, among other chemicals, tannic and phenolic compounds that act to neutralise pathogenic fungi and bacteria.

The beneficial effects of silicon are reported in turfgrass. Leaves grown in the presence of silicon show an erect growth and improved wear tolerance.

Silicon can positively affect the activity of some enzymes involved in photosynthesis and improve productivity. Plants absorb silicon from the soil solution this is then carried by the transportation stream and deposited in plant tissue as amorphous silica gel. Turf contains about 1% of Si in its biomass. Although silicon has not been considered an essential element due to a lack of supportive data, it is thought to have a large number of functions in plants.

Key functions in the plant

- Better pest and disease resistance
- Improved rate of photosynthesis
- Increased root growth
- Water regulation
- Regulates the uptake of nutrients and helps to prevent toxicity
- Strengthening of cells in leaves and stems

BACK

PHOSPHITE

HOME

Overview

Phosphite is a nutrient that is known to stimulate healthy growth with enhanced rooting, this helps support the grass plant's natural defence leading to the grass being better able to withstand stress conditions. Phosphonates are any compound containing a carbon to phosphorus bond including those products made up of the salts and esters (compounds produced by reaction with acid and alcohols) of phosphorus acid. This should not be confused with phosphoric acid, the basic ingredient of phosphorus fertilisers.

Phosphorus acid is a solid substance when mixed with water it forms a strong acid called a phosphonic acid. This acid is too strong to be used on turf and must be combined with an alkaline compound to raise the pH and decrease the potential for burning. Potassium hydroxide (K0H) is used in some formulations to neutralise the acidity of phosphoric acid. The resulting solution contains mono and dipotassium salts of phosphorus acid and is often referred to as potassium phosphite.

Phosphonate fertilisers should not be confused with phosphate fertilisers. Even though phosphonate and phosphate compounds have similar chemical structures they differ significantly in how they act in plants and fungi. Studies have shown that phosphonites are not effective substitutes for phosphate fertiliser. Indeed research has revealed phosphite can be converted to phosphate primarily by soil borne bacteria but the bacteria would not use phosphite until most phosphate was depleted.

Results have shown turf grasses growing in sand culture and treated with equal amounts of potassium phosphite and potassium phosphate support claims that potassium phosphite does not supply usable phosphorus to turf grass. Turf quality along with enhanced rooting is considered to relate specifically to product formulation (e.g. P-Kursor 4:30:15) or from the suppression of minor root pathogens leading to healthier turf and more extensive roots.

Phosphonate fertilisers are absorbed by plants and incorporated in to cells as phosphite ($H_2PO_3^-$). The fact that this ion has one less oxygen atom than phosphate means that it does not act in the same manner as phosphate in plants. When absorbed into cells phosphonate fertilisers do not appear to be involved in typical phosphorus metabolism and cannot be directly linked to plant growth, photosynthesis and respiration.

Phosphonate fertiliser is a true systemic (symplastic ambimobility) having significant mobility in both xylem and phloem. Potassium phosphite may also stimulate the plants own natural defences (chemical and physical).

SPRAYING

HOME

KNAPSACK RATES

KNAPSACK CALIBRATION

CODES OF PRACTICE

PESTICIDE DATABASE

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Use plant protection products safely. Always read the label and product information before use.

BACK

KNAPSACK RATES

HOME

Product	Knapsack Approval	15 Litre Knapsack			20 Litre Knapsack			App Rate/ ha	Water Rate L/ha	Pack Size	Max App/ Year	LERAP	Product Rate/ Ltr Water
		Product Rate	Coverage m^2	Water Rate if differ-ent	Product Rate	Coverage m^2	Water Rate if different						
Blaster Pro	✓	90ml	750		120ml	1000		1.6L	200	1L	1	B	6ml
Cabadex	✓	150ml	750		200ml	1000		2L	200	5L	1	B	10ml
Crossbar	✓	14.25-30ml	150		19-40ml	200		0.95-2L	200-1000	2L	2		0.95-2ml
Depitox	✓	105-123.5ml	375		140-165ml	500		2.8-33L	400	5L	9.9L/ha	U	7-8.25ml
Dicophar	✓	150ml	150		200ml	200		10L	1000	1L	1		10ml
Duplosan KV	✓	90ml	375		120ml	500		2.4L	170-400	10L	2	U	6ml
Esteem	✓												
Greenor	✓	60ml	750		80ml	1000		4L	200-1000	5L			4ml
Holster XL	✓												
Icade	✓	225-300ml	375m^2		300-400ml	500m^2		4L Max	300-600	1L	4L/Yr	U	15-20ml
Jewel	✓	45g	300		60g	400		1.5kg	500	1.5kg		U	3-4gms
Junction	✓												
Longbow	✓	112.5ml	150		150ml	200		7.5L	400-800	5L	1		
Praxys	✓	93.75-375ml	333		125-500ml	444		2.8-11.2L	450	2L		U	6.25-25ml
Quickfire	✓												
Redeem	✓	45ml	150		60ml	200		3L		3L	1		3ml
T2 Green Pro	✗									10L	5L/ha		
Rescue	✓	37-49ml	375		50-67	500		1-1.33L	250-500	1L	2	U	
Trafalgar	✓	75ml	375		100ml	500		2L	200	1L		U	5ml
Hammer	✓	318-656ml	750					4.25-8.75L	200-500	1L			21.2-43.73ml
Rosate Green	✓									5L & 20L			
Roundup Pro 360	✓	300-600ml	600		400-800ml	800		5-10L	250	5L		U	20-40ml
Roundup Pro 480	✓	90-300ml	750		120-400ml	1000		1.2-4L		5L			6-20ml
Pistol	✓	135ml	300	6 ltrs	180ml	400		4.5L	200-500	1L & 5L	1	B	22.5ml
Finale 150	✓	375-600ml	750		500-800ml	1000		5-8L	200-500	5L		U	25-40ml
New Way Weed Spray	✓									5L	6		333ml
Katana	✓	4.5g	300		6g	400		150g	200-600	50g	1	B	0.3g
Chikara	✓	4.5g	300		6g	400		150g	200-600	50g	1	B	0.3g
Rezist	✓	1ltr	400	8 ltrs	1ltr	400	8ltr			5L			
Proshield	✓	135ml	300	6ltrs	180ml	400		4.5L	200-400	5L	1		22.5ml
Esteron T	✓	60ml	500m^2	5-20L	60ml	500m^2	5-20L	1.2L	100-400	5L			3-12ml
Speedster	✓							2L	200-1000	1L	2		
Enforcer	✓	112.5ml	150m^2		150ml	200m^2		7.5L	1000	5L	1		7.5ml

To Be used as a guide only, calibrate spraying equipment before use.

Use plant protection products safely. Always read the label and product information before use.

Pesticides approved for professional use must only be used by users holding the relevant specified certificates(s).

(Section8(1), The Plant Protection Products (Sustainable Use) Regulations 2012)

(Part III of the Food and Environment Protection Act 1985, and related Codes of Practice)

BACK

KNAPSACK CALIBRATION

HOME

KNAPSACK SPRAYER CALIBRATION – 20L

The easiest way to do a quick calibration is as follows: -

- Prime the sprayer by adding a small quantity of clean water and then pump out through the lance until air can be heard 'spitting' from the nozzle.
- Now add exactly 1L of clean water to the tank and spray it out in a straight line on a path or drive, walking at a natural speed.
- Measure the spray width and the length of path sprayed and then calculate the area covered by the 1L of water (spray width x length = area for 1L)
- Multiply the area for 1L by the capacity of the sprayer to work out how far a full tank will go [A] (e.g. if you fill to 20L then; 20 x area for 1L will give you the number of m^2 per tank.

To work out the amount (g) of product to add per tank fill, do the following simple calculation: -

- Take the dose from the product label and divide it by 10 – this figure is the number of grammes (g) of the product for each square metre [B]. e.g. 'Ferromel 20' should be applied at (a maximum of) 25kg per hectare so this would be 2.5g per square metre.
- Now multiply the area covered by each tank [A] by the amount of product needed for each square metre [B] to find the amount of product required for each tank full. [AxB grammes]
- Mix the 'Ferromel 20' in a bucket using warm water if available
- When fully dissolved add the solution to the sprayer tank then top up with the remainder of the water.
- Mix thoroughly before spraying.

It is a good idea to keep records of any calibrations you do for your sprayer as they can save time when using the equipment in the future.

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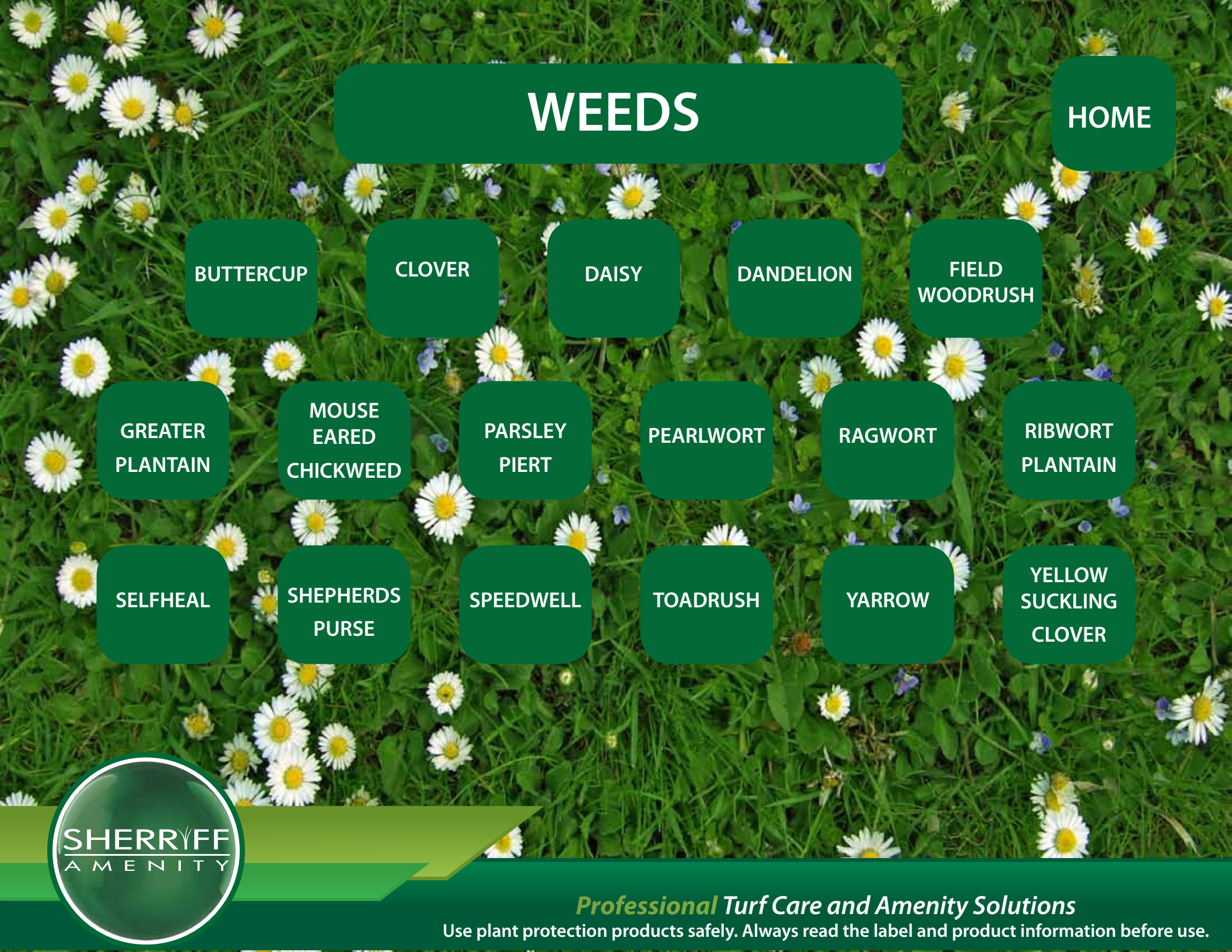

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BACK

BUTTERCUP

HOME

Common name: Buttercup
Botanical name: Ranunculus repens
Timing: Treat in spring/summer
Cultural Control: Dense Sward
Chemical control – mecoprop-p,
fluroxypyr,
mcpa

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BACK

CLOVER

HOME

Common name: Clover, trefoil, medick

Botanical name: Trifolium spp.
Medicago spp.
Lotus corniculatus

Timing: Seen year round, treat in summer

Chemical control: mecoprop-p
fluroxypyr
MCPA

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BACK

DAISY

HOME

Common name: Lawn Daisy

Botanical name: Bellis perennis

Timing: Blooms from early/midsummer

Chemical control: 2,4-d,
fluroxypyr

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BACK

DANDELION

HOME

Common name:	Dandelion
Botanical name:	Taraxacum
Timing:	Flowering spring onwards, Seeding summer
Cultural Control:	Dense Sward
Chemical control:	MCPA (most selectives)

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BACK

FIELD WOODRUSH

HOME

Common name: Field Woodrush

Botanical name Luzula campestris

Main causes Is associated with acidic soils

Timing: Brown flower heads seen in spring; treat in summer

Cultural Control: Increase soil ph

Chemical control: Difficult to control mecoprop-p

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BACK

GREATER PLANTAIN

HOME

Common name: Greater plantain

Botanical name: Plantago major

Main causes: Associated with compacted soil

Cultural Control: Look to address compaction

Chemical control – mcpa

2,4-d

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BACK

MOUSE EARED CHICKWEED

HOME

Common name: Mouse Eared Chickweed
Botanical name: Cerastium
Chemical control: mecoprop-p
floasulam
florxypyr

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BACK

PARSLEY PIERT

HOME

Common name: Parsley Piert

Botanical name: Aphanes arvensis

Main causes prefers dry, nutrient deficient sandy soils that are mown very short

Timing : Germinates in the autumn

Cultural Control: Increase moisture and fertility of soil, raise height of cut.

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BACK

PEARLWORT

HOME

Common name: Pearlwort
Botanical name: Sagina procumbens

Main causes can be found in all types of conditions especially moist, wet lawns and turf where frequent close, mowing is the norm.

Timing flowering : April to September
Cultural Control: Raise height of cut.

Chemical control: floasulam
florxypyr

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BACK

RAGWORT

HOME

Common name Common Ragwort
Botanical name Senecio jacobaea

Precautions: weed is poisonous to cattle and horses
Timing: Seen from spring to autumn; Treat in late spring or autumn
Cultural Control: see defra - code of practice on how to prevent the spread of ragwort.

Chemical control: 2,4-d pre flowering (see defra code of practice)

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BACK

RIBWORT PLANTAIN

HOME

Common name: Ribwort Plantain

Botanical name: Plantago lanceolata

Main causes compacted soil

Cultural Control: look to address soil compaction

Chemical control: MCPA
2,4-d

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Use plant protection products safely. Always read the label and product information before use.

BACK

SELFHEAL

HOME

Common name: Selfheal

Botanical name: Prunella vulgaris

Main causes can be found in all types of turf and will tolerate both dry and moist soils

Timing flowers from June to October

Chemical control: mecoprop-p

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BACK

SHEPHERDS PURSE

HOME

Common name: Shepherds Purse

Botanical name: Capsella bursa-pastoris

Chemical control: 2,4-d

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BACK

SPEEDWELL

HOME

Common name Speedwell
Botanical name Veronica spp.
Main causes
Timing Flowers: from early spring onwards;
treat spring-autumn,

Chemical control: florxypyr

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BACK

TOADRUSH

HOME

Common name: Toadrush
Botanical name: Juncus bufonius
Main causes: poor drainage
Cultural Control: look to improve drainage

Chemical control: 2,4-d

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BACK

YARROW

HOME

Common name Yarrow
Botanical name Achillea millefolium
Main causes: Dry or poor soil conditions and lack of plant nutrients

Timing: Spring to autumn

Cultural Control : Yarrow is a difficult weed to control once it is established in lawn grasses or turf so good lawn care is an effective preventative measure

Chemical control – MCPA
mecoprop-p
(NOT 2,4-d)

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BACK

YELLOW SUCKLING CLOVER

HOME

Common name: Yellow Suckling Clover
Lesser trefoil

Botanical name: Trifolium dubium

Main causes nutrient deficient soils and ones which are non-acidic.

Timing: flowers from May to October

Chemical control: mecoprop-p
floasulam
florxypyr

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BACK

Golf

HOME

Recommended Programme Table

		Analysis								Nutrient input per application kg/ha		
Product	Pack	N	P	K	Specific Gravity	Application Rate	No of Apps	Area (ha)	Packs req	N	P	K
Greenlawnger TR	2.5 litre	-	-	-	-	2.5 litres/ha	1	1	1	-	-	-
Evolution^2 5+5+10+5Fe	20 kg	5	5	10	-	25g/m^2	1	1	13	12.5	12.5	25
Rootmass Plus	10 litre	-	-	-	-	20 litres/ha	2	1	4	-	-	-
Greenmaster Step Liquid	10 litre	-	-	-	-	10 litres/ha	2	1	2	-	-	-
P-Kursor	10 litre	4	-	15	1.35	5 litres/ha	6	1	3	0.268	-	1.005
Greenlawnger pro HC	2.5 litre	-	-	-	-	1.25 litres/ha	2	1	1	-	-	-
Evolution^2 8+0+0+3Fe+3Mg	20 kg	8	-	-	-	35 g/m^2	1	1	18	28	-	-
Go Green Plus	5 litre	-	-	6	1.18	20 litres/ha	4	1	16	-	-	1.416
Intrench 18+0+9	10 litre	18	-	9		60 litres/ha	4	1	24	10.8	-	5.4
Aquazorb 45 Wetting Agent	10 litre	-	-	-	-	20 litres/ha	6	1	12	-	-	-
Seavolution	10 litre	-	-	-		10 litre/ha	6	1	6	-	-	-
Marathon Golf Autumn 5+0+27	25 kg	5	0	27	-	25 g/m^2	1	1	13	12.5	-	67.5
Go Green Granules	20 kg	2	-	10	-	40 g/m^2	1	1	20	8	-	40
Evolution^2 4+0+7	20 kg	4	-	7	-	25 g/m^2	1	1	13	10	-	17.5
							Total annual input kg/ha			115.8	12.5	183.3

BACK

Golf Granular

HOME

Recommended Programme Table

		Analysis							Nutrient input per application kg/ha		
Product	Pack	N	P	K	Application Rate	No of Apps	Area (ha)	Packs req	N	P	K
Evolution² 5-5-10+5Fe	20kg	5	5	10	25 g/m²	1	1	13	12.5	12.5	25
Seavolution Granular	25kg	-	-	-	40 g/m²	1	1	16	-	-	-
Marathon Golf Summer 10-0-15	20kg	10	-	15	25 g/m²	1	1	13	25	-	37.5
Aquazorb Granular	15kg	-	-	-	30 g/m²	1	1	20	-	-	-
C-Complex 4-3-4	25kg	4	3	4	25 g/m²	1	1	10	10	7.5	10
Evolution² 8-0-0+3Fe+3Mg	20kg	8	-	-	25 g/m²	2	1	25	20	-	-
Marathon Golf Autumn 5-0-27	20kg	5	-	27	25 g/m²	1	1	13	12.5	-	67.5
Go Green Granules	20kg	2	-	10	40 g/m²	1	1	20	8	-	40
Evolution² 4-0-7 +4Fe+2Mg	20kg	4	-	7	25 g/m²	1	1	13	10	-	17.5
Evolution 3-0-22+Ca+Fe	20kg	3	-	22	20 g/m²	1	1	10	6	-	44
						Total annual input kg/ha			124	20	241.5

BACK

Golf Liquid

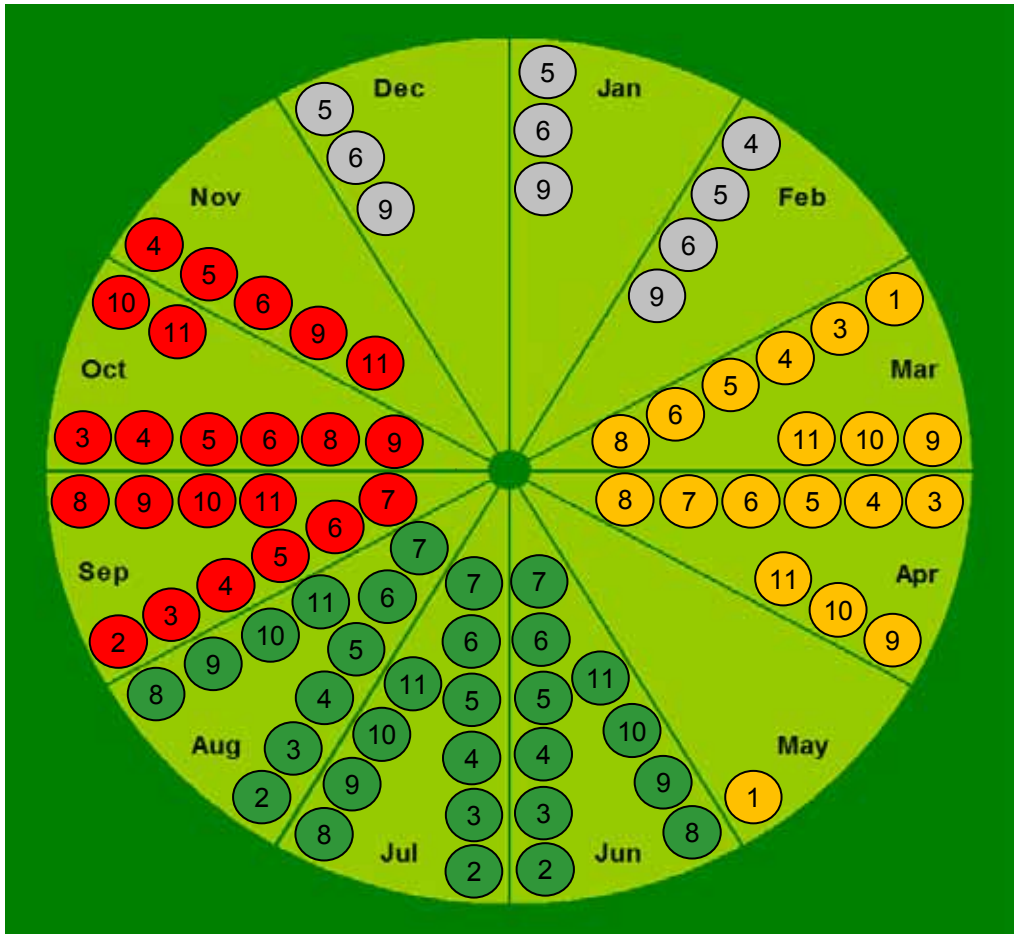
HOME

Recommended Programme Table

		Analysis								Nutrient input per application kg/ha		
Product	Pack	N	P	K	Specific Gravity	Application Rate	No of Apps	Area (ha)	Packs req	N	P	K
Greenlawnger TR	2.5ltr	-	-	-	-	2.5 litres/ha	1	1	1	-	-	-
K-Max	10 litre	11	0	39	1.56	30 litres/ha	2	1	6	5.148	-	18.25
Go Green Plus	5 litre	0	0	6	1.18	20 litres/ha	9	1	36	-	-	1.416
Rootmass Plus	10 litre	-	-	-	-	20 litres/ha	3	1	6	-	-	-
Greenmaster Step Liquid	10 litre	-	-	-	1.15	10 litres/ha	2	1	2	-	-	-
Magflo 300	10 litre	-	-	-	1.511	4 litres/ha	2	1	1	-	-	-
Greenlawnger Pro HC	2.5 litre	-	-	-	-	1.25 litres/ha	2	1	1	-	-	-
Calsal 8.7N+ 17.5CaO	20 litre	8.7	-	-	1.5	40 litres/ha	1	1	2	5.22	-	-
Intrench 18+0+9	10 litre	18	-	9		80 litres/ha	5	1	40	14.4	-	7.2
P-Kursor	10 litre	4	-	15	1.34	5 litres/ha	6	1	3	0.268	-	1.005
Aquazorb 45 Wetting Agent	10 litre	-	-	-		20 litre/ha	6	1	12	-	-	-
Seavolution	10 litre	-	-	-	-	10 litres/ha	6	1	6	-	-	-
Evolution^2 Pro AW Plus 3+3+12	10 litre	3	3	12	1.18	100 litres/ha	1	1	10	3.54	3.54	14.16
Evolution^2 Pro Hi K 0+0+32	10 litre	-	-	32	1.47	80 litres/ha	1	1	8	-	-	37.63
							Total annual input kg/ha			92.66	3.54	143.1

FOOTBALL BIO-STIMULANT TANK MIXES

Key: Spring Summer Autumn Winter



Key: Indicates Product Options / Month Not Total Applications / Year

AMINO TURF 20L + GO GREEN 20L + INTRENCH K 60L + P-KURSOR 10L

AMINO TURF 20L + ROOTMASS PLUS 20L + MAGFLO 4L

Planner:FOOTBALL

BIO-STIMULANT PRODUCTS AND TANK MIXES

1. HUMIC PRO 0+6+16+28% Ha+6%Fa 25 KG
2. AQUASORB 45 WETTING AGENT 10 LITRE
3. RAPID ROOT 3+16+18+29% Ha+Ta 15 KG
4. ROOTMASS PLUS 10 LITRE
5. MAGFLO 300 10 LITRE
6. P-KURSOR 10 LITRE
7. SEAVOLUTION 10 LITRE
8. AMINO TURF 9+0+0+24% AMINO ACID 5 LITRE
9. GO GREEN PLUS 5 LITRE
10. INTRENCH 15+0+7 10 Litre
11. FOSSIL 1 LITRE

TANK MIXING OPTIONS

AQUASORB 45 20L + RAPID ROOT 15KG/HA

AQUASORB 45 20L + SEAVOLUTION 10L + AMINO TURF 20L

AQUASORB 45 20L + ROOTMASS PLUS 20L

AQUASORB 45 20L + FOSSIL 1L

ROOTMASS 20L + MAGFLO 4L + P-KURSOR 10L

ROOTMASS 20L + GO GREEN PLUS 20L + MAGFLO 4L + P-KURSOR 10L

ROOTMASS 20L + GO GREEN PLUS 20L + INTRENCH K 60L + P-KURSOR 10L

SEAVOLUTION 10L + MAGFLO 4L + P-KURSOR 10L

SEAVOLUTION 10L + GO GREEN 20L + P-KURSOR 10L