

Spring Green-Up Warm Season Turf

Spring green-up is an important period in golf turf management. For warm season species in southern climates, the first weeks of active growth can set the stage for the season to come. Warm season species such as bermudagrass and zosia grass emerge from dormancy in a vegetative growth phase, but soon shift to a reproductive phase as day length increases. Once this shift occurs, the plant is geared to produce flowers and seed, even though both will be prevented by close mowing.

The first objective of a spring nutrition program is to optimize color and playing surface consistency while promoting top growth. Thin turf from winter damage must be filled in. The second objective is to prepare turf for the summer stress period ahead. BioPro nutrient products are ideal for spring fertilization. They produce deep consistent color, high-density upright tillering without excessive top growth, and increase the uptake of important nutrients such as calcium, potassium, magnesium, manganese, and iron for maximum summer stress tolerance.

Nutrient Monitoring Program

The following program should be used as a guide. Monitoring nutrient levels in leaf tissue and soils is critical for designing the most efficient nutrient program. TerraBiotics recommends the use of a diagnostic service that provides soil, water, and NIRS (Near Infrared Reflectance Spectroscopy) tissue analysis. With diagnostic results, BioPro nutrient programs may be modified to correct imbalances and prevent future problems.

Application Recommendations

March 15

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|--------------------------|---------|
| 1) Multi-Purpose (6-0-0) | 3 oz. |
| 2) Iron Plus (15-0-0) | 3 oz. |
| 3) Enviro K (0-0-30) | 6 oz. |
| 4) Enviro P (7-21-0) | 15 oz. |
| 5) CytoGro | 0.8 oz. |
| 6) H3O | 6 oz. |

April 1

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|---|----------------|
| 1) Multi-Purpose (6-0-0) or Bio CN (24-0-0) | 3 oz. 3 oz. |
| 2) Magnesium Plus (8-0-0) | 6 oz. |
| 3) Tuff Greens (0-0-13) | 3 oz. |
| 4) Iron Plus (15-0-0) | 3 oz. |
| 5) Calcium Plus (8-0-0) | 6 oz. |

April 15

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|--------------------------|---------|
| 1) Multi-Purpose (6-0-0) | 3 oz. |
| 2) Tuff Greens | 3 oz. |
| 3) Turf Iron (12-0-0) | 6 oz. |
| 4) Greens Plus (14-4-10) | 12 oz. |
| 5) CytoGro | 0.4 oz. |
| 6) H3O | 2 oz. |

May 1

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|--------------------------|--------|
| 1) Multi-Purpose (6-0-0) | 3 oz. |
| 2) Iron Plus (15-0-0) | 3 oz. |
| 3) Enviro K (0-0-30) | 6 oz. |
| 4) Enviro P (7-21-0) | 15 oz. |

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| 3) Tuff Greens (0-0-13) | 3 oz. |
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| 5) Calcium Plus (8-0-0) | 6 oz. |
| 6) CytoGro | 0.4 oz. |
| 7) H3O | 2 oz. |

June 1

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|--------------------------|--------|
| 1) Multi-Purpose (6-0-0) | 3 oz. |
| 2) Tuff Greens | 3 oz. |
| 3) Turf Iron (12-0-0) | 6 oz. |
| 4) Greens Plus (14-4-10) | 12 oz. |

Mixing: Fill spray tank with ¼ the necessary water; add *Multi-Purpose* or *Bio CN* first, then additional products one at a time; if *Calci* mix add it last; add remaining water last.

Recommended BioPro Products

Bio CN (24-0-0) is a higher nitrogen compost-derived soil conditioner containing humic acids and other microbially produced organic compounds. The additional nitrogen in *Bio CN* stimulates faster decomposition of organic material by improving the Carbon to Nitrogen ratio.

Calcium Plus (8-0-0) is a chloride free, readily available calcium source. Calcium is critical for vigorous new growth and for establishing stress tolerance for the next season.

CytoGro (Liquid Root Biostimulant) is an EPA registered hormone biostimulant that improves turf tolerance to stress resulting from disease, insect damage, drought, and soil temperature extremes by augmenting cytokinins and auxins, the turf's natural growth hormones.

Enviro K (0-0-30) provides potassium from potassium carbonate, a high quality, less caustic, chlorine-free source that is retained in the root zone longer for more uniform and consistent uptake by plants. It also contains organic acids from leonardite, which enhances turf performance and improves soil quality. Potassium's role in stress tolerance and recovery is well known.

Greens Plus 14-4-10 & 12-0-12 (Liquid NPK Nutrient Blend) are balanced nutrient blend with nitrogen, phosphorous, and potassium in the same ratio as they are generally found in plant tissue. Nitrogen is supplied as a polymethylene urea blend to provide uniform turf growth and color. This product contains 8.85% controlled release nitrogen, and organic acids from leonardite, which may enhance nutrient uptake.

H3O (Liquid Soil Moisture Management Product) employs a revolutionary new chemistry formulated to manage root zone moisture, making efficient use of water and protecting the turf from the harmful effects of drought stress, thus reducing disease pressure and root shrinkage. It attracts and holds free water molecules from the air within the soil, and efficiently transfers them to the plant root.

Iron Plus (15-0-0) is a particularly effective Fe source. Humic acid is known to be an excellent organic chelator of Fe increasing its availability for plant uptake and mobility within plant tissue.

Magnesium Plus (8-0-0-6) is an excellent source of plant available magnesium with an organic base. Magnesium is involved in increasing stress tolerance in turf plants.

Multi-Purpose 6-0-0 (Liquid Organic Soil Conditioner) is a unique mixture of organic acids and biostimulants derived from a biological composting and extraction process. It is designed to increase nutrient availability to the plant, stimulate soil microbial activity, increase root mass, and improve overall turf quality.

Tuff Greens (0-0-13) is a superior potassium source with calcium, silica, and iron that increases leaf stiffness for increased wear tolerance and greens speed.