SUSTÂNE®

NATURAL FERTILIZERS & SOIL BUILDERS



PRODUCT GUIDE FOR LANDSCAPE &

TURFGRASS

For Professional Groundskeepers, Golf Course Managers & Landscape Architects... Worldwide



SUSTÂNE NATURAL FERTILIZERS & SOIL BUILDERS ORGANIC-BASED FERTILIZERS FOR ALL TURF & LANDSCAPE

WORLD CLASS NATURAL FERTILIZERS

Since 1988

Suståne granulated slow release fertilizers replenish the soil with the essential nutrients and a rich supply of humus as required for long term soil building and plant growth. Groundskeepers, nurserymen, master gardeners and professional growers around the world use Suståne.

HIGH BIOLOGICAL ACTIVITY

Sustane fertilizers are biologically active organic products created from a proprietary controlled aerobic process using composted turkey litter. Through this unique process, the turkey litter is concentrated into a nutrient dense humus containing beneficial microorganisms with very low burn potential.

ALWAYS QUALITY ASSURED

The 6-month aerobic composting process is monitored weekly for moisture, temperature and oxygen assuring a stable, consistent product. Sustane operates its own in-house full time quality assurance laboratory to maintain AAPFCO, USDA-APHIS Export and OMRI standards.

AAPFCO: American Association of Plant Food Control Officers USDA-APHIS: United States Department of Agriculture - Animal & Plant Health Inspection Services OMRI: Organic Material Review Institute

THE SUSTÅNE ADVANTAGE

Consistent, Uniform Granulation, Low Dust, Low Odor

Suståne is an organic based product, which naturally contains all nutrients known to be essential for plant photosynthesis. All Suståne fertilizers have consistent granulation and particle sizing that will not settle out or separate. Suståne fertilizers are slow release nitrogen with long lasting benefits without causing excessive top growth.

THE ORGANIC RESEARCH LEADER

Suståne has been developing products since the early 1980's with the most comprehensive research program of any natural fertilizer company competing in the world market today. Suståne knows how and why the products perform in the field. Today, Suståne fertilizers are the standard to match in university and professional grower trials.

WORLDWIDE DISTRIBUTION

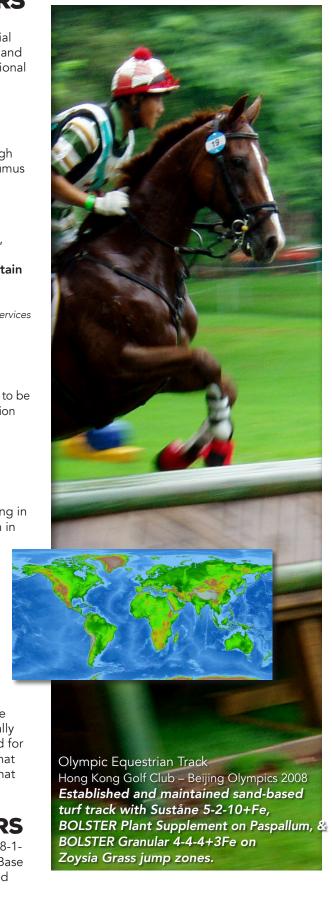
Suståne products are the <u>only</u> organic and natural based fertilizers and soil amendments that are known and distributed throughout Asia, Europe, North and Latin America, Africa, the Middle East, and Indian Ocean.

ALL NATURAL ORGANIC FERTILIZERS

Suståne 3-4-2, 4-6-4, 5-2-4 and 8-2-4 All-Natural products are allowed for use in the production of certified organic food and fiber crops. These are excellent to use on fruit, vegetable and field crops, as well as in professionally landscaped flower and shrub beds, potted plants, new turf construction and for maintenance on trees. Suståne soil builders were created on the premise that healthy soil is key to maintaining quality growing conditions and plant life that the soil system supports.

SUSTÅNE NATURAL BASE FERTILIZERS

Suståne 5-2-4+Fe, 5-2-10+Fe, 7-2-20, 10-1-4, 10-2-10+Fe, 15-3-9, 16-0-6, 18-1-8+Fe and Bolster Granular 4-4-4+3 Fe are Natural Base Fertilizers. Natural Base means products with greater than 50% mass and 50% macronutrients derived from a natural or organic material.



SUSTANE NATURAL FERTILIZERS & SOIL BUILDERS SUSTAINABLE TURF FOR A SUSTAINABLE WORLD

SUSTÂNE: BUILT ON RESEARCH LIKE NO OTHER BRAND

Since 1980 nearly 800 independent studies on Suståne place it at the top of most researched organic fertilizers in the world. Visit www.sustane.com / research.

Turf Establishment. Turf Disease Suppression. Turf Color and Quality trials compared to other fertilizer materials. Impact on Environment. Influence on free living and plant parasitic nematodes. Affect on populations of Black Turfgrass Ataenius beetle. Changes in soil physical and chemical properties. Fertilizer mower pick up. Container Media trials with and without coated controlled release fertilizers. Fruit and Vegetable Yield and Quality trials on organically grown food crops. Soil bioremediation of pesticide residues. Greenhouse Gaseous Nitrogen losses from organic and synthetic fertilizers.

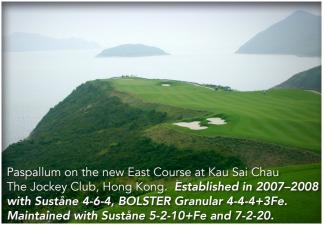
HIGH MICROBIAL DIVERSITY INDEX

Sustane Natural Fertilizers begin with aerobically stabilized compost. Rich in microbial species diversity, yet low in biological oxygen demand (BOD).

Healthy soils produce and maintain healthy turfgrass and other plants. Healthy soils are alive with rich biological diversity. The microbiology is critical to so many soil and plant functions in a balanced and thriving ecosystem. Sustane true aerobic compost based fertilizers enhance the "species richness diversity" (SRD) in all growing systems. SRD is a measurement of microbial diversity that indicates the number and different to the aerobic bacteria during decomposition. Sustane is the types of beneficial soil microorganisms present. Analysis of Suståne compost demonstrates a high diversity index of 4.5.



Sustane fertilizers are biologically stable. Thoroughly, aerobically composted before granulating and shipping. All things organic require oxygen to decompose. Oxygen is vital only organic composted for 26 weeks before application. Note how windrows change in color as humus forms over time.



LOW ENVIRONMENTAL IMPACT

Slow, efficient release of nitrogen to plant life without volatilization, leaching as nitrates or immobilization in the soil environment.

Suståne is serious about keeping our environment green. Aerobic, thermophilic composting is the most environmentally friendly practice for organics conversion and recycling agricultural residue. This process generates less methane and other serious greenhouse gases than other organic stabilization processes do. The basic resource is a renewable recycling of high quality plant nutrients complexed with organic humus. The nitrogen release is most efficient.

Sustane is the only organic fully composted and available worldwide.

LONG LASTING SOIL & PLANT NUTRITION

Rapid establishment & long lasting soil-plant nutrition.

Plant establishment accelerates with TOTAL PLANT NUTRITION from Suståne. A complete package containing both Quick and Slow Release Nitrogen (SRN), all primary, secondary and tertiary plant nutrients are chelated with rich humic and microbial substances.

Food for soil. Food for microbes. Food for plants. Time and again Sustane has demonstrated the efficacy to surpass synthetic and other organic fertilizers, humates or biostimulant combinations. Uniform, predictable release rates available for all grasses, anywhere in the world.

Safe to use. Easy to apply. Predictable. Consistent. Sustane... Naturally.

30 Days after Seeding 5 Bentgrass Varieties USGA 85:15 Sand/Peat Mix 85:12;3 Sand/Peat/ Sustane Starter Fertilizer = 1.8 lb. N/1000ft²Suståne Fertilizer = 1.8 lb. N



Bentgrass Establishment Trials - Maryland

SUSTÂNE NATURAL FERTILIZERS & SOIL BUILDERS ORGANIC-BASED FERTILIZERS FOR ALL TURF & LANDSCAPE

FORMULATIONS FOR EVERY APPLICATION

BIOLOGICALLY DIVERSE:

Only Sustane starts with concentrated aerobic compost. Sustane has the highest known naturally available nutrient concentration available. Sustane is then transformed into fine, homogeneous, granulated particles for uniform, consistent, turfgrass and horticultural applications.

BIOLOGICALLY STABLE:

Because Suståne is completely composted, it does not rob oxygen from the root zone as other "organic" fertilizers do when they decompose <u>after</u> application. Suståne does not attract flies, Black Turfgrass Ataenius beetles, other insects, pests or animals.

NUTRITIONALLY SOUND:

With a base Carbon to Nitrogen ratio of 5:1, Suståne is more soluble than peat products and will not immobilize other soil applied nitrogen. Suståne delivers the broadest spectrum of naturally occurring Macro and Micro-nutrients complexed in a very high Cation Exchange Capacity humic base. Biologically Active – Rich in Humic Substances.

FOR EVERY USE:

All Natural Organic

Natural Slow Release

Hi-N Organic Fertilizer

8 • 2 • 4

All Purpose Fertilizer

From 100% Organic Basic Suståne to Higher Nitrogen Suståne Natural Base formulations and varied release rates, there is a Suståne product for every turf type and agronomic application.





Listed by the Organic Materials Review Institute for use in Organic Production

Fine Grade (100 SGN)

Fine Grade (100 SGN)

Medium Grade (200 SGN)

90% SRN

Medium Grade (200 SGN

OMRI

12.5 lb. /1000 ft²

6.2 kg / 100 m²

OMRI

ALL-NATURAL ORGANIC FERTILIZERS



SRN: Slow Release Nitrogen WSN: Water Soluble Nitrogen SGN Particle Size Guide Number (100 = mm diameter, etc.)

and landscape applications. No burn, slow release nutrition.

Sustane 8-2-4 is certified for organic crop production, greenhouse

plants, vegetative establishment, erosion control, wetlands

reestablishment, and turf. 8-2-4 is the perfect Fertilizer for when

you need primarily Slow Release Nitrogen and low burn potential.

SUSTANE NATURAL FERTILIZERS & SOIL BUILDERS SUSTAINABLE TURF FOR A SUSTAINABLE WORLD

NATURAL BASE FERTILIZERS

GRANULAR 4-4-4+3Fe plus Bolster & Mycorrhizae	A powerful, synergistic blend of four mycorrhizal fungi, Suståne organic base 4-4-4 plus 3% iron, plant biostimulants to promote rapid root development and Arbuscular Mycorrhizae to promote greater access of plant roots to soil nutrients and water. For all turf and landscape plants.	Application Rate 1lb. N / 1000 ft ² 0.5kg. N / 100 m ² 25 lb. / 1000 ft ² 12.5 kg / 100 m ²	80% SRN Fine Grade (100 SGN)
5 • 2 • 4 + Fe Slow Release Nitrogen Natural Base Fertilizer	An all-purpose turf food available in either Medium Grade (lawn and fairway applications) or Fine Grade for putting greens. Suitable for use on all turfgrass types providing quick green up followed by long lasting slow release organic nitrogen.	20 lb. / 1000 ft ² 9.8 kg / 100 m ²	70% SRN Fine Grade (100 SGN) Medium Grade (200 SGN)
5 • 2 • 10 + Fe Slow Release Nitrogen Natural Base Fertilizer	An all-purpose turf food when the 1:2 N to K ratio is desired for building carbohydrate reserves in the root system. Available in either Medium Grade (lawn and fairway) or Fine Grade for putting greens. Suitable for use on all turfgrass types.		70% SRN Fine Grade (100 SGN) Medium Grade (200 SGN)
6 • 2 • 4+Fe NEW SUSTÅNE TURF REVIVAL® W/ ADDED CALCIUM, MAGNESIUM, SULFUR & MYCORRHIZAE	New Suståne Turf Revival is specially engineered for renovation and recovery of fine turf greens, tees, and collars. Turf Revival is granular product with 65% quickly available nitrogen, calcium, magnesium, and sulfur plus biologically-active compost and beneficial mycorrhizal fungi to increase soil health and promote a fast turfgrass plant response and regrowth.	5-8 lb. / 1000 ft ² 2.5-4 kg / 100 m ²	65% WSN Fine Grade (100 SGN)
7 • 2 • 20+ Fe Natural Base Hi-K Fertilizer	High potassium formulation for bolstering plants natural defense against disease and drought. Ideal formula for paspallum turfgrass, greens, tees, fairways, and all fine turfgrasses. Gontains UMAXX™, stabilized nitrogen, and iron chelate.	7.2 lb. / 1000 ft ² 3.5 kg / 100 m ²	50% SRN Fine Grade (100 SGN) Mini Grade (150 SGN)
10 • 1 • 4 Natural Base Spring Turf Fertilizer	Suståne 10-1-4 is the ideal spring formula made with ammonium sulfate for golf course greens, tees, and tight cut fairways. With a quick nitrogen release rate, designed for cool climates and cold soils.	10 lb. / 1000 ft ² 4.9 kg / 100 m ²	75% WSN Fine Grade (100 SGN)
10•2•10 + Fe Greens Grade Natural Base Fertilizer	Suståne's finest 80% Slow Release Nitrogen Greens Grade Fertilizer. Made with methylene urea, ammonium sulfate, and two sources of organic nitrogen. Provides quick green up and long lasting plant nutrition with 8 - 12 week release.	10 lb. / 1000 ft ² 4.9 kg / 100 m ²	80% SRN Fine Grade (100 SGN)
15 • 3 • 9 Natural Base Hi-N Fertilizer	A 65% slow release nitrogen formula for use on low mowed golf course fairways and all sports pitches. Contains 9.75% Slow Release Nitrogen from UMAXX stabilized nitrogen and Suståne Organic Nitrogen. The 150 SGN particle size is ideal for broadcast on tight turf canopies.	6.7 lb. / 1000 ft ² 3.3 kg / 100 m ²	65% SRN Fine Grade (100 SGN) Mini Grade (150 SGN)
16 • 0 • 6 Zero Phosphorus Formula	For all long cut turfgrass, sports field, home lawn and fairway applications. With 60% quick release nitrogen from urea plus iron, sulfur and humic acid. 40% Slow Release Nitrogen from UMAXX, Sustane and methylene urea carry the color without excessive growth for up to 12 weeks.	6.2 lb. / 1000 ft ² 3 kg / 100 m ²	60% WSN Medium Grade (200 SGN)
18 • 1 • 8 + Fe Natural Base Slow Release N Fertilizer	A two-part blend with five-way release of nitrogen for fairways, roughs, lawns, and sports fields. The highest quality coverage of any organic based Fertilizer. 12-16 week release rate.		65% SRN Medium Grade (200 SGN)

UMAXX is a registered trademark of Koch Agronomic SRN: Slow Release Nitrogen WSN: Water Soluble Nitrogen SGN Particle Size Guide Number 100 = 1 mm diameter, etc.

SUSTANE NATURAL FERTILIZERS & SOIL BUILDERS ORGANIC-BASED FERTILIZERS FOR ALL TURF & LANDSCAPE

PLANT STRESS PROTECTION & RECOVERY:

Sustane offers tried and tested plant biostimulants in liquid or dry granular form. Designed to increase root mass, promote rapid plant establishment and protect against environmental stress such as drought, heavy traffic wear, cold hardiness and to delay senescence entering winter while maintaining color without excessive plant growth. See BOLSTER research.

BIOLOGICAL THATCH MANAGEMENT:

Suståne delivers microorganisms and enzymes specific to biological degradation and management of thatch build up in turf. Research¹ conducted to evaluate the efficiency of bioinoculants and organic fertilizers on thatch degradation demonstrated that Suståne Natural Base and Suståne All-Organic fertilizers provided significantly greater thatch reduction when compared against other liquid or granular biologicals, humic acid crystals and conventionally fertilized treatments (SCU) when used in combination with aerification (102% and 80% vs. comparison treatments 30 to 56%) as well in non-aerified plots (59% and

42% respectively vs. comparison treatments 4% to 21%). Bacillus bacteria and lignin attacking enzymes characteristic of and specific to Suståne's 26-week aerobic composting process work together with core aerification and grooming practices to reduce and minimize thatch build up.

MYCORRHIZAE ENHANCES SOIL MICROBIOLOGY:

Sustane supplies a specifically selected suite of endo (within the root) arbuscular fungal mycorrhizae alone or in Suståne blends intended for soil-plant ecosystems that are devoid of naturally occurring symbiotic "root extensions" or hyphae that draw nutrients and water from the micro-pores of depleted soils to nourish the plant. See Mycorrhizal research.

CONTROLLED DOSE ROOT ZONE FEEDER PAKS:

Suståne provides convenient 21-gram compost tea extract and plant fertilizer charges in a biodegradeable, permeable filter pak for controlled dose feeding of individual ornamentals.

SUSTANE SPECIALTY PRODUCTS DELIVER THE DETAIL

Plant Biostimulant Humic Acid • Seaweed Iron Chelate

A concentrated plant growth supplement specifically developed to prepare plants for improved growth in sub-optimum and stress conditions. BOLSTER is a scientifically balanced formulation of cold processed seaweed extracts, humic acid and plant nutrients.

Application Rate 9.55 L / hectare 1 gal / acre

2.0% Solubilized Seaweed Extract 4.0% Humic Extract (Leonardite) 2.0% Sulfur 5.0% Iron



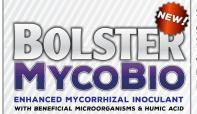
4-4-4 + 3Fe plus Biostimulants

A powerful, synergistic blend of four mycorrhizal fungi, Suståne organic base 4-4-4 plus 3% iron, plant biostimulants to promote rapid root development and Arbuscular Mycorrhizae to promote greater access of plant roots to soil nutrients and water. For all turf and landscape plants.

25 lb. / 1000 ft² $12.5 \text{ kg} / 100 \text{ m}^2$ at 1lb. N / 1000 ft² 0.5kg. N / 100 m²

1.7 propagules Mycorrhizae per cc 1.0% Solubilized Seaweed Extract 3.0% Humic Extract (Leonardite

Fine Grade (100 SGN) Medium Grade (200 SGN)



Suståne MycorMax™ is a biologically super-charged granular soil amendment and microbial inoculant. Specially formulated with a blend of endo-mycorrhizae and beneficial bacteria, it enhances seed germination rates, promotes vigorous plant establishment and improves nutrient use efficiency.

Apply as a fertilizer supplement at rates of 10 to 20 lbs. per

36.7% Compost 3% Humic Acid (derived from leonardite) 0.3% Bacterial Inoculant Bacillus subtilis......

.. 20,000 CFU/q Bacillus pumilus....... Bacillus megaterium... Bacillus licheniformis .. 20,000 CFU/d .. 20,000 CFU/g .. 20,000 CFU/g Bacillus amyloliquefaciens. . 20,000 CFU/q 60% Endo-Mycorrhizae Inoculant Rhizophagus irregularis....... Rhizophagus clarus..... Septoglomus deserticola...... Claroideoglomus etunicatum.... 100% soil amending ingredients . 84 spores/g . 12 spores/g . 12 spores/g ... 12 spores/g



A Granular Mycorrhizal Inoculant used to treat disturbed soils that have diminished soil biology. Mycorrhizal fungi are major facilitators improving soil microbiology by aggregating soil particles, converting organic matter into available plant nutrients; extracting water and soil nutrients; and protecting against plant pathogens.

1.4 lb. / 1000 ft² 685 g / 100 m²

Arbuscular Mycorrhizal Inoculant Endo-Mycorrhizae Inoculant..200 spores/g Rhizophagus irregularis...... 140spores/g 20spores/g Rhizophagus clarus...... Septoglomus deserticola...... 20spores/g Claroideoglomus etunicatum.. 20spores/g

Sustane 4 • 6 • 4

Compost Tea Bags Suståne Permeable Filter Pack

Designed for dual application for the commercial landscaper, Compost Tea Bags/Root Zone Feeder Packs are a easy to use organic fertilizer supplement: no fuss, no mess, no measuring. Beneficial microbes convert nutrients to plant available forms when added to soils and can help protect plants from pests and pathogens. Available in 50-packs that make 1 gallon each or 5 lb. reuseable bags.

► A 50 pack of 21 gram Compost Tea Bags/Root Zone Feeder Packs



Sustane 16 • 4 • 8

8-month Planter Paks Suståne + Controlled Release Single dose applications of Sustane organic plus coated controlled release fertilizers designed to provide long-lasting plant nutrition in a biodegradable paper filter packet. Each Suståne packet will provide a continuous release of nutrients up to 8 months at 70°F (23°C) soil temperature.



◀ A reuseable Suståne 5 lb. 4-6-4 Compost Tea Bag

SRN: Slow Release Nitrogen

WSN: Water Soluble Nitrogen

SGN Particle Size Guide Number (100 = mm diameter, etc.)

¹ Bioinoculant and Natural Organic Fertilizer Effects on Thatch Degradation, Gaussoin, Wit and Witkowski, University of Nebraska, Mead

SUSTANE NATURAL FERTILIZERS & SOIL BUILDERS SUSTAINABLE TURF FOR A SUSTAINABLE WORLD

TURF ESTABLISHMENT & MAINTENANCE-AROUND THE WORLD

From China to Colorado or from Malaysia to Miami, Ireland to Italy, Mauritius to Massachusetts, Denmark to Dubai; South Africa to Scotland; across Mexico, Canada, the U.S., Asia, the Middle East, or the Caribbean Sea – Suståne Natural Fertilizers play an important role in rapid establishment for grow-in's and renovations, turf maintenance and for use in environmentally sensitive areas. Cool season and warm season grasses on all soil types; sand capped fairways, decomposed granite base, heavy clay and native soils -Sustane organic contributes to the success of each project over a wide range of designs in varied climates each with unique agronomic conditions and requirements.

Agronomists, golf course architects, grounds managers and course superintendents specify and rely on Sustane to support each project's special needs. (See Sustane projects at www.sustane.com.)



■ Spring City Golf Courses in Yunnan Province, China offer both the Nicklaus Mountain Course (left) and the Robert Trent Jones Lake Course (see cover photo) and provide some of the finest cool season golf tracks anywhere in the world.







Murphy Creek Golf ▶ Course - City of Aurora, Colorado. Designed by

Kenneth M. Kavanaugh,

2000. Blue grass course

grown-in with Sustane

ASGCA. Opened in

◀ Ted Parslow redesigned & KLGCC re-grassed both 18-hole courses with Seashore Paspallum between 2007-2009. Sime's 20 hectare turf nursery and all 36 holes were established with Suståne 4-6-4.



2008 Beiiina Olympics Equestrian Turf Track established and maintained with Sustane Natural Fertilizers, **BOLSTER** Granular 4-4-4+mycorrhizae and BOLSTER Plant Biostimulant from Suståne.





The wilderness area that crosses the Sky Course at the Lübker Golf Resort is home to some extremely rare wildlife: The spadefoot toad, the sharp-nosed frog, the crested newt and five species of orchid. The year-old resort hopes to set a standard not only for golf but for environmentalism. Designed by Robert Trent Jones Jr. Grow-in by Turfgrass Consultancy of Ireland with Sustane 5-2-10 in 2008 followed by maintenance applications of Sustane 12-4-8. Lübker Golf Resort, Nimtoftie, Denmark

QUALITY GROWTH THROUGH HEALTHY SOIL



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