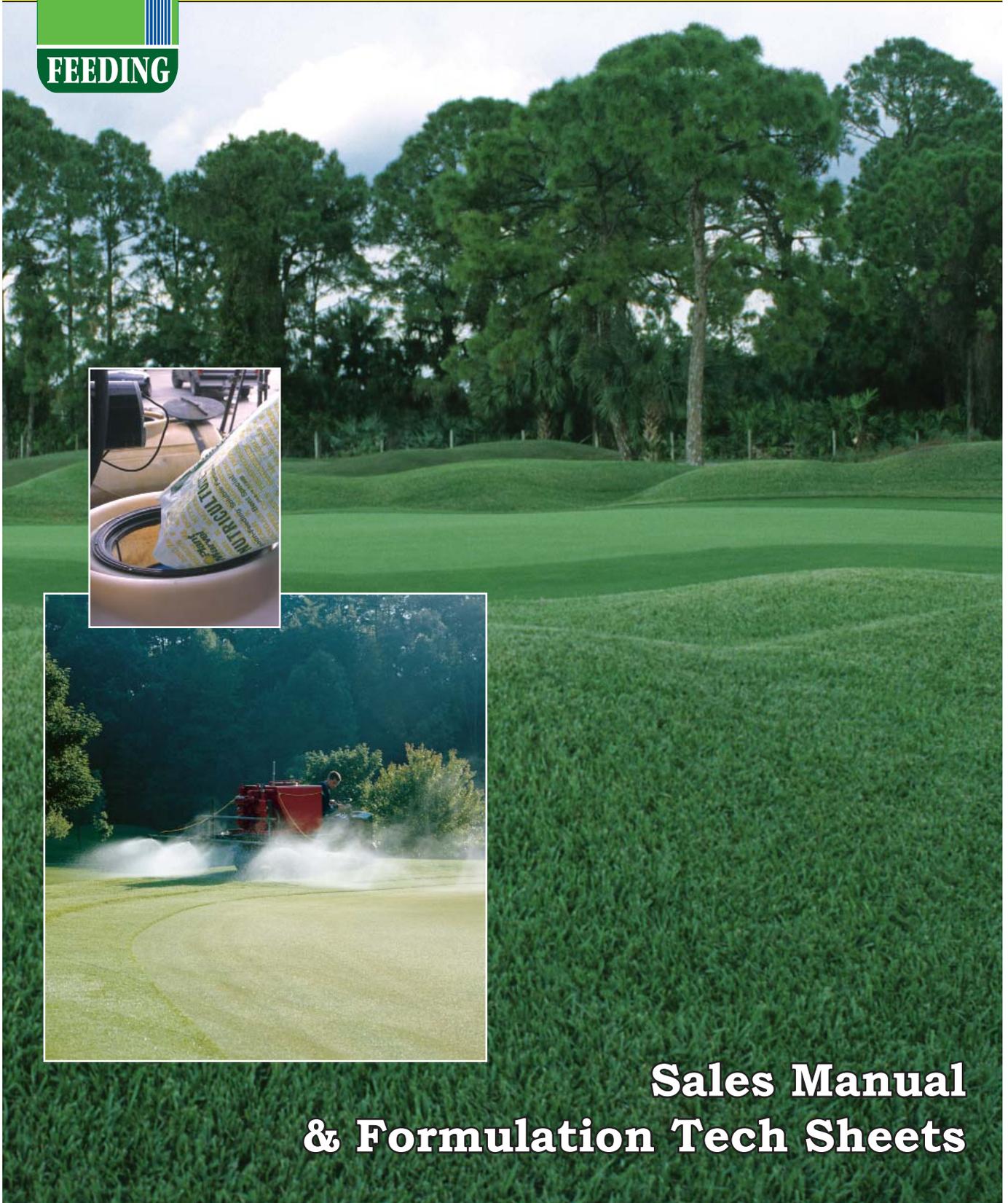


Nutriculture® water-soluble fertilizer



**Sales Manual
& Formulation Tech Sheets**

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371 East 16th Street, Chicago Heights, Illinois 60411

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Selling Nutriculture Spoon-feeding® fertilizers

An easy Sell.

Nutriculture Spoon-feeding fertilizers provide readily available nutrients with immediate and controllable results. They give control of the turf's nutrition to the turf manager. He knows that when an application is made, results will be only a matter of hours. Over 95 percent of the nutrients in Nutriculture are absorbed by the turf and will be utilized over a period of 5 to 10 days. No nutrients are tied up in the soil, and there is no excess to create environmental problems.

both fungus and insect invasion. Turf will stand up better to stress and recover faster from foot or cart traffic.

Get control of the turf's growth

More effective with no waste. Most fertilizers, however are applied in much larger volume and at much higher rates, then must be broken down over time and converted by the soil bacteria and other microorganisms, or may depend on soil moisture and temperature before they become available. Immobili-

Uniquely balanced formula for Bentgrass

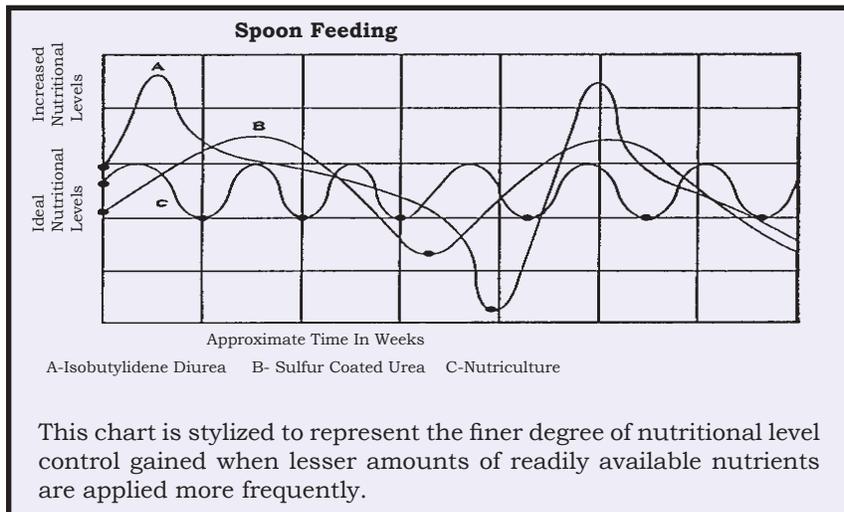
Research has shown that bent grasses remove about 5.5 pounds of nitrogen, 1.5 pounds of phosphorus and 3.5 pounds of potash from each 1,000 square feet of turf on an annual basis. Each feeding of Bent Special, applied at weekly intervals, will replace the N-P-K and minor elements the grass removes, and will promote the highest quality turf all season long.

100% Soluble

Nutriculture Bent Special dissolves completely in water. Once in solution it will require no further agitation. Its nutrients are released and ready to be assimilated by the plant.

A little goes a long way

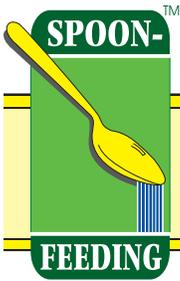
When dissolved, Nutriculture becomes a total nutrient solution and is applied in small amounts, usually 1/8 to 1/4 lb. nitrogen per 1,000 sq. ft. applied every seven to ten days. (See "Spoon-feeding rate" chart). This way, nitrogen is replaced at the rate of removal of clippings. The amount applied per application should be adjusted until the turf responds with the desired results. This will be apparent within a week. Unlike most fertilizers, even the heaviest application will not last more than a few weeks which is why spoon-feeding works best when small amounts are applied more frequently.



Fast green-up without "flushing"

Spoon-feeding will provide a fast green-up without creating excessive top growth or uncontrolled "flushing". There is no disruption of play. No unsightly granules to get picked up by mowers or tracked around on shoes and clothing. It encourages strong, healthy root and blade development which deters

zation, leaching volatilization and denitrification can also cause loss of nutrients. Sudden excessive rainfall can release some of this excess to the environment causing other problems. You use less Nutriculture because it is so much more efficient.



MKP 0-50-30 PLUS

- **Provides phosphate for plant health & root encouragement**
- **Potassium for cell strength and rigidity**
- **Stepped-up trace elements ensure more complete nutrient feed**

A concentrated, highly soluble fairway foliar nutrient spray, MKP Plus provides phosphate for plant health and root encouragement, potassium for cell strength and rigidity and stepped-up amounts of trace elements ensuring a more complete nutrient feed.

Phosphorus and potassium are essential nutrients provided by the soil. Nearly all soils have phosphorous, however much of it is tied-up and not readily available to the plant. Phosphorus and potash play a variety of roles in the life and health of the turf grass plant.

will bolster heat, cold and disease resistance, as well as facilitates turf's rapid regeneration.

Foliar applied MKP Plus, is quickly absorbed by the tissue, adding strength to the plant, facilitating transfer of energy in the plant, increasing root growth and branching, building plant's resistance to disease, cold and heat tolerance and advancing plant maturity.

MKP Plus provides superior spray tank buffering qualities. Solutions of 1% MKP Plus normally have pH levels ranging from 4.5 to 6.0, the ideal pH for many spray applications, improving the efficacy of pesticides and fungicides, when applied together.

Nitrogen-free, making MKP Plus an ideal Spoon-feeding tool for managing nitrogen overuse and reducing nitrate buildup in turf and ground water aquifers.

For continuous liquid feeding

0-50-30 PLUS

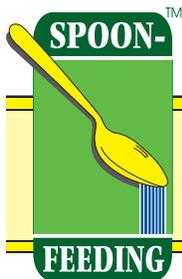
GUARANTEED ANALYSIS

0-50-30+	Percent	Lbs/Ton
Available Phosphate (P ₂ O ₅)	50%	1000
Soluble Potash (K ₂ O)	30%	600
Boron (B)	0.02%	0.4
Copper (Cu)	0.05%	1.0
0.05% Chelated Copper (Cu)		
Iron (Fe)	0.10%	2.0
0.10% Chelated Iron (Fe)		
Manganese (Mn)	0.05%	1.0
0.05% Chelated Manganese (Mn)		
Molybdenum (Mo)	0.0005%	0.01
Zinc (Zn)	0.05%	1.0
0.05% Chelated Zinc (Zn)		

Derived from Potassium Phosphate, Borax, Sodium Molybdate, Copper EDTA, Iron EDTA, Manganese EDTA and Zinc EDTA. Potential acidity equivalent to 0 lbs. Calcium Carbonate per ton.

The response of turf grass plants to applications of MKP Plus to soils deficient in these nutrients is not as dramatic as for nitrogen fertilization. But many weed, disease and stress-related problems may be less critical if deficiencies are avoided. Nutriculture® formula MKP Plus is the new standard in phosphate and potassium nutrition. Spoon-feeding® MKP Plus 0-50-30^{PLUS} as a supplemental fairway foliar application will enhance protein and carbohydrate synthesis and

aid in the turf's tolerance to heat, cold and drought. Can be used to balance out nitrogen applications by providing the other essential plant nutrients, reducing plant stress and enhancing plant's overall health. Fall fairway application will buildup carbohydrate reserves, and promote winter hardiness. Spoon-Feeding MKP Plus increases fibrous quality, density and thickness, and



Potash Special 10-20-30 PLUS

• **High nitrate N**

• **Builds fibrous roots and stems**

An excellent late season fertilizer to hardy-up turf before winter stress sets in. Alleviates brown patch disease, dollar spot and "melting out." Restores balance to potash-deficient turf, for improved disease-resistance and better fibrous strength. Helps turf stand up to heavy traffic,

stress, and hot, dry weather. The relatively low amounts of nitrogen, combined with good phosphorous levels and high potash, give this formula the ability to give fiber and strength quickly without excess amounts of nitrogen creating a flush of top growth.

Phosphorus is necessary for the transfer and storage of energy within the plant. Roots being the primary organ for energy storage means they have an even greater dependency on the presence of phosphorus. Potassium is responsible for starch formation and enzyme activity within the plant. This allows more starch reserves in the stolon and roots through a carbohydrate build-up. The turf grass plant builds an endurance level making it more resilient to stress and disease while aiding it to heal from injuries.

Guaranteed Analysis (For continuous liquid feeding)			
10-20-30+	Percent Lbs/Ton Concentration at		
Total Nitrogen (N)	10%	200	200 PPM as N
2.03% Ammoniacal Nitrogen			
7.97% Nitrate Nitrogen			
Available Phosphate (P ₂ O ₅)	20%	400	400 PPM as P ₂ O ₅
Soluble Potash (K ₂ O)	30%	600	600 PPM as K ₂ O
Sulfur (S)	0.71%	14.2	14.2 PPM as S
Boron (B)	0.02%	0.4	0.4 PPM as B
Copper (Cu)	0.05%	1.0	1.00 PPM as Cu
0.05% Chelated Copper (Cu)			
Iron (Fe)	0.10%	2.0	2.00 PPM as Fe
0.10% Chelated Iron (Fe)			
Manganese (Mn)	0.05%	1.0	1.00 PPM as MN
0.05% Chelated Manganese (Mn)			
Molybdenum (Mo)	0.0009%	0.02	.018 PPM as Mo
Zinc (Zn)	0.05%	1.0	1.00 PPM as Zn
0.05% Chelated Zinc (Zn)			

Derived from Ammonium Sulfate, Ammonium Phosphate, Potassium Phosphate, Potassium Nitrate, Borax, Sodium Molybdate, and the EDTA Form of Copper, Iron, Manganese and Zinc. CAUTION: This fertilizer is to be used on soils which respond to molybdenum. Crops high in molybdenum are toxic to grazing animals. Potential basicity equivalent to 69 lbs. Calcium Carbonate per ton.

MIXING RATE FOR 100 PPM NITROGEN

HOSE END SPRAYER: 1:15 ratio-Premix 2 oz.. per gallon (15 grams per liter).
 TANK: 0.13 oz.. per gallon (1 grams per liter).
 PROPORTIONER: 1:100 ratio use 13.33 oz.. per gal. of concentrate

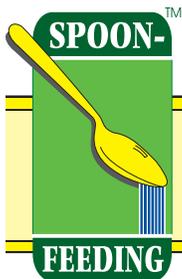
TURF RATES PER SQUARE FOOT					
Desired Pounds of Nitrogen per 1000 square feet	1/10	1/8	1/4	1/2	1
Fertilizer required in ounces	16	20	40	80	160
Pounds required per acre	43.56	54.45	108.9	217.8	435.6
Desired Grams of Nitrogen per square meter	0.49	0.61	1.22	2.44	4.88
Fertilizer required in grams	4.9	6.1	12.2	24.4	48.8
Kilograms required per hectare	49	61	122	244	488
Fertilizer required in kilograms per 500 sq. meter	2.45	3.05	6.10	12.2	24.4

NITROGEN PARTS PER MILLION CHART						
Parts per Million	50	100	150	200	300	400
Injector Ratios	Ounces required per gal of concentrate					
1:15	1	2	3	4	6	8
1:50	3.33	6.66	10	13.33	20	26.66
1:100	6.66	13.33	19.99	26.66	40	53.31
1:200	13.33	26.66	39.98	53.31	*	*
1:300	19.99	39.98	59.98	*	*	*

EC (+ - 10%) mmhos/cm.50 .99 1.50 1.99 2.99 3.98
 *Maximum solubility approx. 60 oz.. per gallon

(100 grams per liter).
 OTHER RATIOS: Multiply ratio times weight divided by 100.
 OTHER PPM: Multiply desired PPM times weight divided by 100. Increase or decrease PPM according to crop response.





Bloom & Flower Plant Food 12-31-14 PLUS

- **Develops larger blooms and more of them**
- **Quickly establishes seeds and cuttings**
- **Stiffens stems and roots**

Nutriculture Bloom and Flowering Plant Food 12-31-14 Plus is used by professionals whose job depends on plants that look good. It will promote the blooming and fruiting qualities of garden plants in beds, borders, pots, and baskets, indoors or out. With regular use it will promote outstanding plants of award winning status. Plants

that are bursting with bloom and overflowing their beds and with no more effort than it takes just to keep them watered! It gets fast results because it is in a special liquid form that is quickly absorbed by the plant through both roots and leaves. And because it is applied already in solution it is safe and will not burn roots or foliage even on hot, dry summer days when used according to directions.

It can also be used as a starter solution on any transplanted stock, and all seedlings and cuttings. It will hasten the establishment of any plant, reducing shock and wilting, advancing the growth several weeks beyond that of untreated plants. Use indoors or out, on ornamentals, flowering and fruiting shrubs and trees. It is probably one of the most versatile fertilizers you can have around and it's compatible with most common water applied pesticides and fungicides.

It may be applied in solution by proportioner, through sprinkler systems, by irrigation or any conventional ground rig and may be applied in combination with most insecticides, herbicides and fungicides. Avoid applications during peak sunlight hours.

MIXING RATE FOR 100 PPM NITROGEN

HOSE END SPRAYER: 1:15 ratio-Premix 1.67 oz.. in 1 gallon (12.5 grams per liter).

TANK: 0.11 oz.. per gallon (0.83 grams per liter).

PROPORTIONER: 1:100 ratio use 11.11 oz.. per gal. of concentrate (167 grams per liter).

OTHER RATIOS: Multiply ratio times weight divided by 100.

OTHER PPM: Multiply desired PPM times weight divided by 100. Increase or decrease PPMN according to response.

Guaranteed Analysis (For continuous liquid feeding)

12-31-14+	Percent	Lbs/Ton	Concentration at
Total Nitrogen (N)	12%	240	200 PPM as N
8.28% Ammoniacal Nitrogen			
3.72% Nitrate Nitrogen			
Available Phosphate (P ₂ O ₅)	31%	620	517 PPM as P ₂ O ₅
Soluble Potash (K ₂ O)	14%	280	233 PPM as K ₂ O
Magnesium (Mg)	0.05%	1.0	0.83 PPM as Mg
Sulfur (S)	3%	6.0	50 PPM as S
3% Combined Sulfur (S)			
Boron (B)	0.02%	0.4	0.33 PPM as B
Copper (Cu)	0.05%	1.0	0.83 PPM as Cu
0.05% Chelated Copper (Cu)			
Iron (Fe)	0.15%	3.0	2.50 PPM as Fe
0.15% Chelated Iron (Fe)			
Manganese (Mn)	0.05%	1.0	0.83 PPM as Mn
0.05% Chelated Manganese (Mn)			
Molybdenum (Mo)	0.0009%	0.018	0.015 PPM as Mo
Zinc (Zn)	0.06%	1.2	1.00 PPM as Zn
0.06% Chelated Zinc (Zn)			

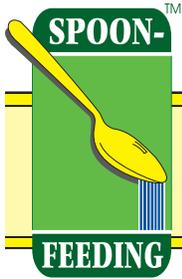
Derived from Ammonium Phosphate, Ammonium Sulfate, Magnesium Sulfate, Borax, Sodium Molybdate and the EDTA form of Copper, Iron, Manganese and Zinc. CAUTION: This fertilizer is to be used on soils which respond to molybdenum. Crops high in molybdenum are toxic to grazing animals. Potential acidity equivalent to 697 lbs. Calcium Carbonate per ton.

NITROGEN PARTS PER MILLION CHART

Parts per Million	50	100	150	200	300	400
Injector Ratios	Ounces required per gal of concentrate					
1:15	.77	1.54	2.31	3.08	4.61	6.15
1:50	2.56	5.13	7.69	10.25	15.40	20.50
1:100	5.13	10.25	15.38	20.50	30.80	41.01
1:200	10.25	20.50	30.76	41.01	61.50	*
1:300	15.38	30.76	46.14	61.51	*	*

EC (+ - 10%) mmhos/cm.42 .84 1.25 1.67 2.51 3.34





Super Start 12-45-10 PLUS

- Establishes seeds and seedlings fast
- Develops strong roots

Super Start 12-45-10^{PLUS} is especially designed as a starter solution which aids plants in rooting faster. It helps overcome transplanting shock. Its nitrogen content is low enough to prevent burning and still promote new top growth. Super Start is widely used in greenhouse

and nursery operations to correct and supplement low phosphorous levels in established plantings. It is also very effective in promoting blossoming. Young vegetable plants being set in the field respond especially well to this starter formula. Use for seedling, transplants and rooted cuttings. Excellent for container azaleas and rhododendrons to promote compact growth and increase bud density.

Guaranteed Analysis (For continuous liquid feeding)			
12-45-10+	Percent	Lbs/Ton	Concentration at
Total Nitrogen (N)	12%	240	200 PPM as N
9.11% Ammoniacal Nitrogen			
2.89% Nitrate Nitrogen			
Available Phosphate (P ₂ O ₅)	45%	900	750 PPM as P ₂ O ₅
Soluble Potash (K ₂ O)	10%	200	167 PPM as K ₂ O
Magnesium	0.05%	1.0	0.83 PPM as Mg
Sulfur (S)	0.31%	6.2	5.2 PPM as S
0.31% Combined Sulfur (S)			
Boron (B)	0.02%	0.4	0.33 PPM as B
Copper (Cu)	0.05%	1.0	0.83 PPM as Cu
0.05% Chelated Copper (Cu)			
Iron (Fe)	0.10%	2.0	1.67 PPM as Fe
0.10% Chelated Iron (Fe)			
Manganese (Mn)	0.05%	1.0	0.83 PPM as Mn
0.05% Chelated Manganese (Mn)			
Molybdenum (Mo)	0.001%	0.02	0.0167 PPM as Mo
Zinc (Zn)	0.05%	1.0	0.83 PPM as Zn
0.05% Chelated Zinc (Zn)			

Derived from Ammonium Sulfate, Ammonium Phosphate, Potassium Nitrate, Magnesium Sulfate, Borax, Sodium Molybdate, and the EDTA forms of Copper, Iron, Manganese and Zinc. CAUTION: This fertilizer is to be used on soils which responds to molybdenum. Crops high in molybdenum are toxic to grazing animals. Potential acidity equivalent to 737 lbs. Calcium Carbonate per ton.

GREENHOUSE MIXING RATE FOR 200 PPM NITROGEN

HOSE END SPRAYER: 1:15 ratio- Premix 3.33 oz. in 1 gallon (25 grams per liter).
 TANK: 0.22 oz. per gallon (1.67 grams per liter).
 PROPORTIONER: 1:100 ratio use 22.21 oz. per gal. of concentrate (167 grams per liter).
 OTHER RATIOS: Multiply ratio times weight divided by 100.
 OTHER PPM: Multiply desired PPM times weight divided by 200. Increase or decrease PPM according to crop response.

NITROGEN PARTS PER MILLION CHART

Parts per Million	50	100	150	200	300	400
Injector Ratios	Ounces required per gal of concentrate					
1:15	.83	1.67	2.50	3.33	5.00	6.66
1:50	2.78	5.55	8.33	11.11	16.66	22.21
1:100	5.55	11.11	16.66	22.21	33.30	44.43
1:200	11.11	22.21	33.32	44.43	*	*
1:300	16.66	33.32	49.98	*	*	*

EC (+ - 10%) mmhos/cm. 36 .71 1.07 1.42 2.13 2.84

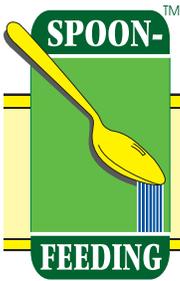
*Maximum solubility approx. 60 oz. per gallon

Available in standard 25 lb bag and 5 lb bags packed 6 per case.

To Order Use Code:

25 lb Bag: 124510+
 Case of 6X5 lb: PM5124510





Hi-K Special 13-0-44 PLUS

- Establishes seeds and seedlings fast
- Develops strong roots

Hi K Special 13-0-44^{PLUS} is all nitrate nitrogen and is an excellent crop toner for any plant variety, especially during periods of low light. Application can be made as early as half way through the total crop time and continued until finished. Being

high in potash, it is an excellent late season fertilizer that will help to toughen up nursery stock, trees, shrubs, turf and greens to make them more resistant to frost, snow and ice. As the growing season comes to an end, more frequent applications of the 13-0-44 should be made.

It is excellent for overcoming severe potash deficiencies, or applications can be altered with other Nutriculture formulas to prevent a marginal low potash condition.

MIXING RATE FOR 200 PPM NITROGEN

HOSE END SPRAYER: 1:15 ratio-Premix

3.08 oz. per gal. (23.08 gms. per liter)

TANK: 0.21 oz. per gal. (1.54 gms. per liter) PROPORTIONER: 1:100 ratio use 20.5 oz. per gal. of concentrate. (154 gms. per liter).

OTHER RATIOS: Multiply ratio times ounces divided by 100.

OTHER PPM: Multiply desired PPM times ounces divided by 200. Increase or decrease PPMN according to crop response.

Guaranteed Analysis (For continuous liquid feeding)

13-0-44+	Percent	Lbs	Ton	Concentration at
Total Nitrogen (N)	13%	272	200	PPM as N
13% Nitrate Nitrogen				
Soluble Potash (K ₂ O)	44%	880	647	as K ₂ O
Boron (B)	0.02%	0.40	0.29	PPM as B
Copper (Cu)	0.05%	1.00	0.74	PPM as Cu
0.05% Chelated Copper (Cu)				
Iron (Fe)	0.10%	2.00	1.47	PPM as Fe
0.10% Chelated Iron (Fe)				
Manganese (Mn)	0.05%	1.00	0.74	PPM as Mn
0.05% Chelated Manganese (Mn)				
Molybdenum (Mo)	0.0009%	0.018	0.01	PPM as Mo
Zinc (Zn)	0.05%	1.00	0.74	PPM as Zn
0.05% Chelated Zinc (Zn)				

Derived from Potassium Nitrate, Borax, Copper EDTA, Iron EDTA, Manganese EDTA and Zinc EDTA. CAUTION: This fertilizer is to be used on soils which respond to molybdenum. Crops high in molybdenum are toxic to grazing animals. Potential basicity equivalent to 450 lbs. Calcium Carbonate per ton.

NITROGEN PARTS PER MILLION CHART

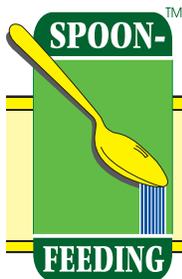
Parts per Million	50	100	150	200	300	400
Injector Ratios	Ounces required per gal of concentrate					
1:15	.77	1.54	2.31	3.08	4.61	6.15
1:50	2.56	5.13	7.69	10.25	15.40	20.50
1:100	5.13	10.25	15.38	20.50	30.80	41.01
1:200	10.25	20.50	30.76	41.01	61.5	*
1:300	15.38	30.76	46.14	61.51	*	*

EC (+ - 10%) mmhos/cm.48 .95 1.41 1.88 2.83 3.77

*Maximum solubility approx. 60 oz. per gallon

To Order Use Code:

25 lb Bag: 130044+



Hi-Cal Special 15-0-15 **PLUS** with 10.5% Calcium

- **Immediately available Calcium and Magnesium**
- **Builds disease resistance**
- **Non-Acidifying**
- **Improves overall quality of turf**

Hi-Cal Special is a Spoon-feeding non acidifying ready source of available calcium and magnesium in a totally soluble form that is immediately available to the plant. It is recommended where maintenance of a good root structure has been a problem, or where excessive susceptibility to fungus disease and tip burn or grass makes greens unsightly.

Intensively cultivated turf has a

special need for Hi-Cal Special's calcium magnesium complex. It improves quality, increases disease resistance, and regulates the intake and utilization of N-P-K. Tests indicate that of the total soil solution salts, 15 percent to 20 percent Ca, with about 10 percent K and 3 to 4 percent Mg, are adequate amounts in satisfactory ratio to one another. Having the proper balance of Ca, Mg, and K permits better utility of N, and aids in higher carbohydrate production for better turf growth. For newly seeded or stolonized areas, Hi-Cal Special 15-0-15 **PLUS** should be used as an alternate feed to 12-31-14 **PLUS** to aid in faster root development. For established greens use Hi-Cal Special where calcium and magnesium levels are low and where additional phosphorus is necessary. Where Poa Anna is a problem use Hi-Cal Special to help control seed head production.

Guaranteed Analysis (For continuous liquid feeding)			
15-0-15+	Percent	Lbs/Ton	Concentration
Total Nitrogen (N)	15%	300	200 PPM as N
13% Nitrate Nitrogen			
2% Urea Nitrogen			
Soluble Potash (K ₂ O)	15%	300	200 PPM as K ₂ O
Calcium (Ca)	10.50%	210	140 PPM as Ca
Magnesium (Mg)	0.3%	0.6	5.07 PPM as Mg
Sulfur (S)	0.12%	2.4	1.6 PPM as S
Boron (B)	0.02%	0.40	0.27 PPM as B
Copper (Cu)	0.05%	1.0	0.67 PPM as Cu
0.05% Chelated Copper (Cu)			
Iron (Fe)	0.10%	2.0	1.33 PPM as Fe
0.10% Chelated Iron (Fe)			
Manganese (Mn)	0.05%	1.0	0.67 PPM as Mn
0.05% Chelated Manganese (Mn)			
Molybdenum (Mo)	0.0009%	0.02	0.01 PPM as Mo
Zinc (Zn)	0.05%	1.0	0.67 PPM as Zn
0.05% Chelated Zinc (Zn)			

Derived from Potassium Nitrate, Calcium Nitrate, Magnesium Sulfate, Urea, Borax, Sodium Molybdate and the EDTA form of Copper, Iron, Manganese and Zinc. CAUTION: This fertilizer is to be used on soils which respond to molybdenum. Crops high in molybdenum are toxic to grazing animals. Potential basicity equivalent to 319 lbs. Calcium Carbonate per ton.

MIXING RATE FOR 100 PPM NITROGEN

HOSE END SPRAYER: 1:15 ratio- Premix 1.33 oz.. in 1 gallon (10 grams per liter).
 TANK: 0.09 oz.. per gallon (0.67 grams per liter).
 PROPORTIONER: 1:100 ratio use 8.89 oz.. per gal. of concentrate (67 grams per liter).
 OTHER RATIOS: Multiply ratio times weight divided by 100.
 OTHER PPM: Multiply desired PPM times weight divided by 100. In-

TURF RATES PER SQUARE FOOT					
Desired Pounds of Nitrogen per 1000 square feet	1/10	1/8	1/4	1/2	1
Fertilizer required in ounces	10.67	13.33	26.67	53.33	106.67
Pounds required per acre	29.05	36.29	72.61	145.19	290.41
Desired Grams of Nitrogen per square meter	0.49	0.61	1.22	2.44	4.88
Fertilizer required in Grams	3.3	4.1	8.1	16.3	32.6
Kilograms required per hectare	33	41	81	163	326

NITROGEN PARTS PER MILLION CHART

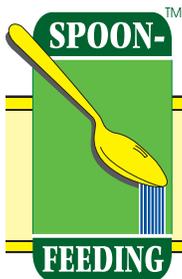
Parts per Million	50	100	150	200	300	400
Injector Ratios	Ounces required per gal of concentrate					
1:15	.67	1.33	2.00	2.67	4.00	5.33
1:50	2.22	4.44	6.66	8.89	13.30	17.77
1:100	4.44	8.89	13.33	17.77	26.7	35.54
1:200	8.89	17.77	26.66	35.54	53.30	*
1:300	13.33	26.66	39.98	53.31	*	*

EC (+ - 10%) mmhos/cm .34 .69 1.03 1.38 2.06 2.75

*Maximum solubility approx. 3 lbs 8 ozs. per gallon

crease or decrease PPMN according to crop response.





K-Mag 15-5-30 PLUS

- Promotes stiff stems and sturdy leaf growth
- High nitrate N
- Provides magnesium
- Helps prevent tip burn

This high potash formula is ideal for overcoming potash deficiency or for building up hardness and fibrous qualities of stems and leaves. May be applied in solution by a proportioner through sprinkler systems, by irrigation or any conventional ground rig and may be applied in combination with most insecticides, herbicides and fungicides. Avoid applications during peak sunlight hours.

TURF: Increase the amount of water used to dilute the fertilizer when soil moisture is low. Increase concentrations when soil moisture is high. Use caution when concentration is 1 lb. or more per 5 gallons of water. Apply every week to ten days at the rate of 1 lb. (1/8 lb. of actual N) per 1000 sq. ft. of area, dissolved in approximately 10 to 20 gallons of water. See the chart below left for turf application rates. For free Spoon-feeding recommendations guide for use on turf call your Plant Marvel distributor.

Guaranteed Analysis (For continuous liquid feeding)

15-5-30+	Percent	Lbs/Ton	Concentration at
Total Nitrogen (N)	15%	300	200 PPM as N
2.82% Ammoniacal Nitrogen			
12.18% Nitrate Nitrogen			
Available Phosphate (P ₂ O ₅)	5%	100	67 PPM as P ₂ O ₅
Soluble Potash (K ₂ O)	30%	600	400 PPM as K ₂ O
Magnesium (Mg)	1.26%	25	16 PPM as Mg
Boron (B)	0.02%	0.4	0.27 PPM as B
Copper (Cu)	0.05%	1.0	0.67 PPM as Cu
0.05% Chelated Copper (Cu)			
Iron (Fe)	0.10%	2.0	1.33 PPM as Fe
0.10% Chelated Iron (Fe)			
Manganese (Mn)	0.05%	1.0	0.67 PPM Mn
0.05% Chelated Manganese (Mn)			
Molybdenum (Mo)	0.0005%	0.01	0.01 PPM as Mo
Zinc (Zn)	0.03%	0.62	0.41 PPM as Zn
0.03% Chelated Zinc (Zn)			

Derived from Ammonium Nitrate, Potassium Nitrate, Potassium Phosphate, Magnesium Nitrate, Sodium Molybdate, and the EDTA form of Copper, Iron, Manganese and Zinc. Potential basicity equivalent to 72 lbs. Calcium Carbonate per ton.

MIXING RATE FOR 100 PPM NITROGEN

HOSE END SPRAYER: 1:15 ratio-Premix 1.33 oz.. in 1 gallon (10 grams per liter).
 TANK: 0.09 oz.. per gallon (0.67 grams per liter).
 PROPORTIONER: 1:100 ratio use 8.89 oz.. per gal. of concentrate (67 grams per liter).
 OTHER RATIOS: Multiply ratio times weight divided by 100.
 OTHER PPM: Multiply desired PPM times weight divided by 100. Increase or decrease PPM according to crop response.

TURF RATES PER SQUARE FOOT

Desired Pounds of Nitrogen per 1000 square feet	1/10	1/8	1/4	1/2	1
Fertilizer required in ounces	10.67	13.33	26.67	53.33	106.67
Pounds required per acre	29.05	36.29	72.61	145.19	290.41
Desired Grams of Nitrogen per square meter	0.49	0.61	1.22	2.44	4.88
Fertilizer required in grams	3.3	4.1	8.1	16.3	32.6
Kilograms required per hectare	33	41	81	163	326
Fertilizer required in kilograms per 500 sq. meter	1.65	2.05	4.05	8.15	16.3

NITROGEN PARTS PER MILLION CHART

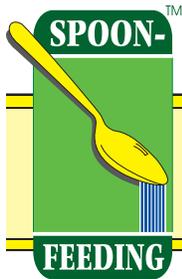
Parts per Million	50	100	150	200	300	400
Injector Ratios	Ounces required per gal of concentrate					
1:15	.67	1.33	2.0	2.67	4.0	5.33
1:50	2.22	4.45	6.67	8.89	13.33	17.77
1:100	4.44	8.89	13.33	17.77	26.66	35.54
1:200	8.88	17.78	26.66	35.54	53.31	*
1:300	13.32	26.67	39.99	53.31	*	*

EC (+ - 10%) mmhos/cm .368 .73 1.11 1.47 2.21 2.95

*Maximum solubility approx. 60 oz. per gallon



Laboratories, Inc.
 371 East 16th Street
 Chicago Heights, IL 60411
 www.plantmarvel.com
 Fax 708-757-5924
 Phone 800-524-7031



Hydro-Seed Starter Special 16-45-7 PLUS

- **Low cost and effective**
- **Non abrasive to equipment**
- **Improves seed germination by as much as 40%**

Seed Starter Special 16-45-7 PLUS is specially designed as a starter solution for use in seed and mulch slurry hydro-seeding applications. It promotes faster seed germination and root development on seeds and transplants, without burning. It will promote faster germination time by as much as 40% depending on

species. It is 100% soluble in water and will not cause abrasive wear and tear on equipment. It is mildly acidic and rinses easily preventing equipment corrosion.

Application Rates: Hydro Seeding Rates of Coverage - Use 75 lbs. to 150 lbs. per acre in enough water to insure even coverage, or if coverage in square feet per tank load is known use the following formula: Square Feet of Coverage per tank load X .0017 to .0035 = lbs. of fertilizer needed per tank load. Mix in hydro seeder with seed and mulch and apply any time conditions are favorable for seed germination. If mixing in combination with insecticides or fungicides, always prepare the solution of chemicals first and then add the fertilizer as the last ingredient.

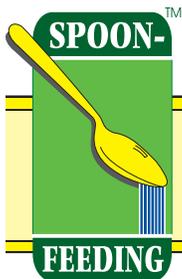
Although designed for mechanical application through Hydro-seed equipment This material can also be used as a watering-in solution on sod and transplants in the nursery. When applying this way use at the rate of 200 PPM Nitrogen by mixing 4.26 ozs per gallon of water applied, For an injector or proportioner use the chart on the lower left.

Guaranteed Analysis (For continuous liquid feeding)			
16-45-7+	Percent	Lbs/Ton	Concentration at
Total Nitrogen (N)	16%	320	200 PPM as N
6.65% Ammoniacal Nitrogen			
9.35% Urea Nitrogen			
Available Phosphate (P ₂ O ₅)	45%	900	562 PPM as P ₂ O ₅
Soluble Potash (K ₂ O)	7%	140	87 PPM as K ₂ O
Boron (B)	0.02%	0.4	0.25 PPM as B
Copper (Cu)	0.05%	1.0	0.63 PPM as Cu
0.05% Chelated Copper (Cu)			
Iron (Fe)	0.10%	2.0	1.25 PPM as Fe
0.10% Chelated Iron (Fe)			
Manganese (Mn)	0.05%	1.0	0.63 PPM as Mn
0.05% Chelated Manganese (Mn)			
Molybdenum (Mo)	0.0009%	0.018	0.011 PPM as Mo
Zinc (Zn)	0.05%	1.0	0.63 PPM as Zn
0.05% Chelated Zinc (Zn)			

Derived from Ammonium Phosphate, Potassium Phosphate, Urea, Borax, Sodium Molybdate, and the EDTA form of Copper, Iron, Manganese, and Zinc. CAUTION: This fertilizer is to be used on soils which respond to molybdenum. Crops high in molybdenum are toxic to grazing animals. Potential acidity equivalent to 949 lbs. Calcium Carbonate per ton.

NITROGEN PARTS PER MILLION CHART

Parts per Million	50	100	150	200	300	400
Injector Ratios	Ounces required per gal of concentrate					
1:15	0.63	1.25	1.87	2.5	3.75	5
1:50	2.09	4.17	6.25	8.33	12.50	16.66
1:100	4.17	8.33	12.50	16.66	24.99	33.32
1:200	8.33	16.66	24.99	33.32	49.98	*
1:300	12.51	24.99	37.5	49.98	*	*



Rose Food 19-26-14 PLUS

- Promotes prolific blooming with deeper color
- Builds sturdy stems

Rose Food 19-26-14^{PLUS} is an exclusive formulation that Plant Marvel Laboratories developed specifically for roses. It has a balance of NPK that should promote vigorous green growth and prolific blooming qualities. Our original formula for roses

was a 20-30-10 developed many years ago. Over time and through experiments it was learned that roses, which are gross feeders, responded better with slightly higher levels of potash in relation to the nitrogen and phosphorous. This new formula will provide lush foliage, sturdy stems, and extensive vigorous root system and larger blooms of deep color and longer keeping qualities.

It may be applied in solution by proportioner, through sprinkler systems, by irrigation or any conventional ground rig and may be applied in combination with most insecticides, herbicides and fungicides. Avoid applications during peak sunlight hours.

MIXING RATE FOR 100 PPM NITROGEN

HOSE END SPRAYER: 1:15 ratio- Premix 1.05 oz.. per gallon (7.89 grams per liter).
 TANK: 0.07 oz.. per gallon (0.53 grams per liter).
 PROPORTIONER: 1:100 ratio use 7.01 oz.. per gal. of concentrate (53 grams per liter).
 OTHER RATIOS: Multiply ratio times weight divided by 100.
 OTHER PPM: Multiply desired PPM times weight divided by 100.
 Increase or decrease PPMN according to crop response.

Guaranteed Analysis (For continuous liquid feeding)			
19-26-14+	Percent	Lbs/Ton	Concentration at
Total Nitrogen (N)	19%	380	200 PPM as N
5.93% Ammoniacal Nitrogen			
4.17% Nitrate Nitrogen			
8.90% Urea Nitrogen			
Available Phosphate (P ₂ O ₅)	26%	520	274 PPM as P ₂ O ₅
Soluble Potash (K ₂ O)	14%	280	147 PPM as K ₂ O
Magnesium (Mg)	0.05%	1.0	0.53 PPM as Mg
Sulfur (S)	1%	20	11 PPM as S
1% Combined Sulfur (S)			
Boron (B)	0.02%	0.40	0.21 PPM as B
Copper (Cu)	0.05%	1.0	0.53 PPM as Cu
0.05% Chelated Copper (Cu)			
Iron (Fe)	0.10%	2.0	1.05 PPM as Fe
0.10% Chelated Iron (Fe)			
Manganese (Mn)	0.05%	1.0	0.53 PPM as Mn
0.05% Chelated Manganese (Mn)			
Molybdenum (Mo)	0.0009%	.018	0.01 PPM as Mo
Zinc (Zn)	0.05%	1.0	0.53 PPM as Zn
0.05% Chelated Zinc (Zn)			

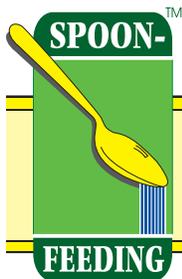
Derived from Ammonium Phosphate, Potassium Nitrate, Ammonium Sulfate, Magnesium Sulfate, Urea, Borax, Sodium Molybdate, and the EDTA form of Copper, Iron, Manganese and Zinc. CAUTION: This fertilizer is to be used on soils which respond to molybdenum. Crops high in molybdenum are toxic to grazing animals. Potential acidity equivalent to 723 lbs. Calcium Carbonate per ton.

NITROGEN PARTS PER MILLION CHART

Parts per Million	50	100	150	200	300	400
Injector Ratios	Ounces required per gal of concentrate					
1:15	0.53	1.05	1.58	2.10	3.16	4.21
1:50	1.75	3.51	5.26	7.01	10.52	14.03
1:100	3.51	7.01	10.52	14.03	21.04	28.06
1:200	7.01	14.03	21.04	28.06	42.09	56.12
1:300	10.52	21.04	31.57	42.09	63.13	*

EC (+ - 10%) mmhos/cm. 21 .42 .63 .84 1.25 1.67

*Maximum solubility approx. 60 oz.. per gallon



Hi-Nitrate Special 20-5-30 PLUS

- **High potash stiffens stems**
- **High nitrate nitrogen for cool weather crops**

Hi-Nitrate Special 20-5-30^{PLUS} is an ideal formula for feeding carnations and chrysanthemums. It is also excellent as an occasional feed for roses, geraniums and other varieties that require a high potash formulation. It allows plants to

establish heavier, thick walled cells. Promotes top growth and extensive root and tuber development. It has a very low potential acidity which makes it especially useful where a change in soil pH is undesirable.

Guaranteed Analysis (For continuous liquid feeding)

20-5-30+	Percentage	Lbs/Ton	Concentration
Total Nitrogen (N)	20%	400	200 PPM as N
0.94% Ammoniacal Nitrogen			
8.75% Nitrate Nitrogen			
10.31% Urea Nitrogen			
Available Phosphate (P ₂ O ₅)	5%	100	50 PPM as P ₂ O ₅
Soluble Potash (K ₂ O)	30%	600	300 PPM as K ₂ O
Magnesium (Mg)	0.05%	1.0	0.50 PPM as Mg
Sulfur (S)	0.07%	1.4	0.70 PPM as S
0.07% Combined Sulfur (S)			
Boron (B)	0.02%	0.40	0.20 PPM as B
Copper (Cu)	0.05%	1.0	0.50 PPM as Cu
0.05% Chelated Copper (Cu)			
Iron (Fe)	0.10%	2.0	1.0 PPM as Fe
0.10% Chelated Iron (Fe)			
Manganese (Mn)	0.05%	1.0	0.50 PPM as Mn
0.05% Chelated Manganese (Mn)			
Molybdenum (Mo)	0.0009%	0.02	0.01 PPM as Mo
Zinc (Zn)	0.05%	1.0	0.50 PPM as Zn
0.05% Chelated Zinc (Zn)			

Derived from Ammonium Phosphate, Potassium Nitrate, Magnesium Sulfate, Urea, Borax, Sodium Molybdate, and the EDTA form of Copper, Iron, Manganese and Zinc. CAUTION: This fertilizer is to be used on soils which respond to molybdenum. Crops high in molybdenum are toxic to grazing animals. Potential acidity equivalent to 153.3 lbs. Calcium Carbonate per ton.

MIXING RATE FOR 100 PPM NITROGEN

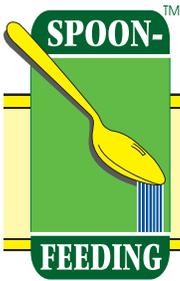
HOSE END SPRAYER: 1:15 ratio-Premix 1 oz. per gallon (7.5 grams per liter).
 TANK: 0.07 oz. per gallon (0.5 gram per liter).
 PROPORTIONER: 1:100 ratio use 6.66 oz. per gal. of concentrate (50 grams per liter).
 OTHER RATIOS: Multiply ratio times weight divided by 100.
 OTHER PPM: Multiply desired PPM times weight divided by 100. Increase or decrease PPM according to crop response.

NITROGEN PARTS PER MILLION CHART

Parts per Million	50	100	150	200	300	400
Injector Ratios	Ounces required per gal of concentrate					
1:15	0.5	1	1.5	2	3	4
1:50	1.67	3.33	5	6.66	10	13.33
1:100	3.33	6.66	10	13.33	19.99	26.66
1:200	6.66	13.33	19.99	26.66	39.98	53.3
1:300	10.0	19.99	29.99	39.98	59.98	*

EC (+-10%) mmhos/cm .23 .47 .70 .93 1.39 1.86

*Maximum solubility approx. 60 ozs. per gallon



General Purpose 20-20-20 PLUS

• **NPK and trace elements all in one mix**

• **Fully chelated minors**

Nutriculture General Purpose 20-20-20 PLUS provides over 60% nutrient value in a 1-1-1 ratio which makes it suitable for general use in a wide variety of growing situations. It is widely used on containerized stock in the nursery industry and for greenhouse crops such as foli-

age plants and bedding plants. For institutional and general landscape maintenance, it is ideal because it works well on trees or shrubs as well as blooming plants and can be used as a single all purpose spray feed.

It may be applied in solution by proportioner, through sprinkler systems, by irrigation or any conventional ground rig and may be applied in combination with most insecticides, herbicides and fungicides. Avoid applications during peak sunlight hours.

MIXING RATE FOR 100 PPM NITROGEN

HOSE END SPRAYER: 1:15 ratio- Premix 1 oz.. per gallon (7.5 grams per liter).

TANK: 0.07 oz.. per gallon (0.5 gram per liter).

PROPORTIONER: 1:100 ratio use 6.66 oz.. per gal. of concentrate (50 grams per liter).

OTHER RATIOS: Multiply ratio times weight divided by 100.

OTHER PPM: Multiply desired PPM times weight divided by 100. Increase or decrease PPM according to crop response.

Guaranteed Analysis (For continuous liquid feeding)

20-20-20+	Percent	Lbs/Ton	Concentration at
Total Nitrogen (N)	20%	400	200 PPM as N
3.98% Ammoniacal Nitrogen			
5.90% Nitrate Nitrogen			
10.12% Urea Nitrogen			
Available Phosphate (P ₂ O ₅)	20%	400	200 PPM as P ₂ O ₅
Soluble Potash (K ₂ O)	20%	400	200 PPM as K ₂ O
Boron (B)	0.02%	0.4	0.2 PPM as B
Copper (Cu)	0.02%	0.4	0.2 PPM as Cu
0.02% Chelated Copper (Cu)			
Iron (Fe)	0.05%	1.04	0.5 PPM as Fe
0.05% Chelated Iron (Fe)			
Manganese (Mn)	0.02%	0.4	0.2 PPM as Mn
0.02% Chelated Manganese (Mn)			
Molybdenum (Mo)	0.0009%	0.018	0.01 PPM as Mo
Zinc (Zn)	0.02%	0.42	0.21 PPM as Zn
0.02% Chelated Zinc (Zn)			

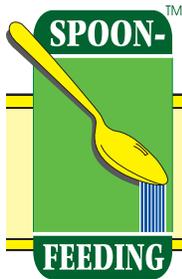
Derived from Ammonium Nitrate, Ammonium Phosphate, Potassium Nitrate, Urea, Boric Acid, Sodium Molybdate, and the EDTA form of Copper, Iron, Manganese and Zinc.

CAUTION: This fertilizer is to be used on soils which respond to molybdenum. Crops high in molybdenum are toxic to grazing animals. Potential acidity equivalent to 515.7 lbs. Calcium Carbonate per ton.

NITROGEN PARTS PER MILLION CHART

Parts per Million	50	100	150	200	300	400
Injector Ratios	Ounces required per gal of concentrate					
1:15	0.5	1	1.5	2	3	4
1:50	1.67	3.34	5	6.67	10	13.33
1:100	3.33	6.67	10	13.33	20	26.6
1:200	6.66	13.34	20	26.66	39.99	53.32
1:300	9.99	20.01	30	39.99	*	*

EC (+ - 10%) mmhos/cm .21 .41 .62 .82 1.23 1.64



Acid Special 21-7-7 PLUS

- **Offsets high water alkalinity**
- **Lowers pH in the root zone**
- **Provides increased iron and sulfur as well as seven minor elements**
- **Helps overcome nutrient tie up in soil**

An effective formula that will help in lowering pH when irrigation water or media are high in alkalinity. Generally used as an occasional feed for correcting these problems in most crops and as a basic feed for acid loving woody ornamentals and foliage plants. Commonly used as a foliar application or root feed on ornamentals, turf and nursery stock. Best results are obtained by monitoring media pH on a regular basis during use of this formula. It will provide immediate but gentle nourishment in a form of application that can overcome and bypass

other nutrient complications due to high soil pH problems, and because amounts applied are tuned to the plants immediate needs there is minimal runoff or other environmental problems.

GENERAL DIRECTIONS

Mix one teaspoon per gallon of water. Apply solution liberally to base of plants, soaking the root area. For potted plants and hanging baskets etc. apply enough to create drainage through the pot. Wet foliage for fast acting leaf feeding. Repeat applications with every watering. Avoid applications during peak sunlight hours.

Guaranteed Analysis (For continuous liquid feeding)			
21-7-7+	Percent	Lbs/Ton	Concentration
Total Nitrogen (N)	21%	420	200 PPM as N
14.00% Ammoniacal Nitrogen			
2.10% Nitrate Nitrogen			
4.90% Urea Nitrogen			
Available Phosphate (P ₂ O ₅)	7%	140	66 PPM as P ₂ O ₅
Soluble Potash (K ₂ O)	7%	140	66 PPM as K ₂ O
Sulfur (S)	10%	200	96 PPM as S
10% Combined Sulfur (S)			
Boron (B)	0.02%	0.4	0.1 PPM as B
Copper (Cu)	0.05%	1.0	0.4 PPM as Cu
0.05% Chelated Copper (Cu)			
Iron (Fe)	0.10%	2.0	0.9 PPM as Fe
0.10% Chelated Iron (Fe)			
Manganese (Mn)	0.05%	1.0	0.4 PPM as Mn
0.05% Chelated Manganese (Mn)			
Molybdenum (Mo)	0.0009%	0.018	0.01 PPM as Mo
Zinc (Zn)	0.05%	1.0	0.4 PPM as Zn
0.05% Chelated Zinc (Zn)			

Derived from Ammonium Sulfate, Ammonium Phosphate, Potassium Nitrate, Urea, Borax, Sodium Molybdate; Copper, Iron, Manganese and Zinc EDTA. CAUTION: This fertilizer is to be used on soils which respond to molybdenum. Crops high in molybdenum are toxic to grazing animals. Potential acidity equivalent to 1556 lbs. Calcium Carbonate per ton.

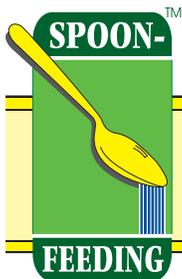
TURF SPOON FEEDING® application rates to achieve desired "N" per given area.

Apply weekly or up to twenty days apart in a convenient amount of water for even coverage. Increase the amount of water used to dilute the fertilizer when soil moisture is low. Increase concentrations when soil moisture is high. Use caution when concentration is 1 lb. or more per 5 gallons of water. Adjust rate to get desired results.

Use the chart below for Spoon Feeding Rates below.

Turf Spoon Feeding Rates

Lbs of N per 1000 sq ft	1/10	1/8	1/4	1/2	1 lb
Fertilizer required (ozs)	7.62	9.52	19	38	76
Lbs required per acre	21	26	52	104	207



HST Greenup 23-0-23 PLUS

Increases Soil Acidity

No Phosphates

Maintains Dark Green Color

Increased Iron with high pH chelation

A phosphate free fertilizer designed for general use where high alkalinity has been a problem and phosphates are undesirable. Perfect for Spoon Feeding problem areas. High Sulfur Turf Greenup 23-0-23 contains over 4% Sulfur and has a complete blend of chelated micronutrients including increased Iron in two forms to cover a broader

range of pH. With a high potential acidity, it will buffer the water solution it is applied in, and have an acidifying effect when applied to alkaline or high pH soils. This can aid the release of soil nutrients which were ordinarily tied up. Iron, Copper, Manganese and Zinc are especially susceptible to tie up with high pH.

Although, the acidifying action in the soil is temporary, these formulas can provide immediate relief to nutrient starved turf both by foliar penetration of leaf surface and by acidifying action in the soil which releases additional nutrients. Results can be seen in a matter of days. This allows time for more permanent corrective action.

100% water soluble:

This material dissolves completely in tap water or well water. It will dissolve almost instantly in hot water.

Packaging:

All formulas are packaged in weather-proof 25-pound bags.

Guaranteed Analysis (For continuous liquid feeding)

23-0-16+	Percent	Lbs/Ton	Concentration at
Total Nitrogen (N)	23%	460	200 PPM as N
3.76% Ammoniacal Nitrogen			
7% Nitrate Nitrogen			
12.24% Urea Nitrogen			
Soluble Potash (K ₂ O)	23%	460	200 PPM as K ₂ O
Magnesium (Mg)	0.02%	0.4	0.17 PPM as Mg
0.02% Water Soluble Magnesium (Mg)			
Sulfur (S)	4.37%	87.4	38 PPM as S
Boron (B)	0.02%	0.4	0.17 PPM as B
Copper (Cu)	0.05%	1.0	0.43 PPM as Cu
0.05% Water Soluble Copper (Cu)			
Iron (Fe)	0.20%	4.1	1.78 PPM as Fe
0.20% Chelated Iron (Fe)			
Manganese (Mn)	0.06%	1.2	0.52 PPM as Mn
0.06% Water Soluble Manganese (Mn)			
Molybdenum (Mo)	0.0009%	0.018	0.01 PPM as Mo
Zinc (Zn)	0.05%	1.0	0.43 PPM as Zn
0.05% Water Soluble Zinc (Zn)			

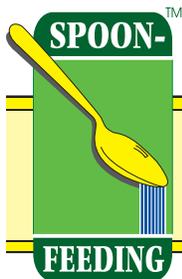
Derived from Ammonium Sulfate, Potassium Nitrate, Urea, Magnesium Sulfate, Boric Acid, Sodium Molybdate, Iron EDTA, Iron DTPA, and the Sulfate form of Copper Manganese and Zinc.

CAUTION: This fertilizer is to be used on soils which respond to molybdenum. Crops high in molybdenum are toxic to grazing animals. Potential acidity equivalent to 900 lbs. Calcium Carbonate per ton.

TURF RATES PER SQUARE FOOT

Desired Pounds of Nitrogen per 1000 square feet	1/10	1/8	1/4	1/2	1
Fertilizer required in ounces	6.96	8.7	17.39	34.78	69.57
Pounds required per acre	18.95	23.69	47.34	94.69	189.4
Desired Grams of Nitrogen per square meter	0.49	0.61	1.22	2.44	4.88
Fertilizer required in grams	2.1	2.7	5.3	10.6	21.2
Kilograms required per hectare	21	27	53	106	212
Fertilizer required in kilograms per 500 sq. meter	1.05	1.35	2.65	5.3	10.6





High Sulfur Turf Special 23-8-16 PLUS

- **Helps control high pH in soils**
- **Increases soil acidity**
- **Promotes increased root development**
- **Maintains dark green color**

This Nutriculture Plus fertilizer was formulated for turf and designed to overcome nutrient starvation caused by high pH. Ideal for Spoon-feeding problem areas High Sulfur Turf 23-8-16 PLUS contains over 4% sulfur and has a complete blend of chelated micro nutrients. With a high potential acidity, it will buffer the water solution it is applied in, and have an acidifying effect when applied to alkaline or high pH soils. This will make the

nutrients in the soil which were ordinarily tied up more readily available. Iron, copper, manganese and zinc are especially susceptible to tie up with high pH.

Although, the acidifying action in the soil is temporary, these formulas can provide immediate relief to nutrient starved turf both by foliar penetration of leaf surface and by acidifying action in the soil which releases additional nutrients. Results can be seen in a matter of days. This allows time for more permanent corrective action.

Guaranteed Analysis (For continuous liquid feeding)

23-8-16+	Percent	Lbs/Ton	Concentration at
Total Nitrogen (N)	23%	460	200 PPM as N
6.25% Ammoniacal Nitrogen			
5.19% Nitrate Nitrogen			
11.56% Urea Nitrogen			
Available Phosphate (P ₂ O ₅)	8%	160	70 PPM as P ₂ O ₅
Soluble Potash (K ₂ O)	16%	320	139 PPM as K ₂ O
Magnesium (Mg)	0.02%	0.4	0.17 PPM as Mg
0.02% Water Soluble Magnesium (Mg)			
Sulfur (S)	5.30%	108	46.9 PPM as S
Boron (B)	0.02%	0.4	0.17 PPM as B
Copper (Cu)	0.05%	1.0	0.43 PPM as Cu
0.05% Chelated Copper (Cu)			
Iron (Fe)	0.10%	2.08	0.9 PPM as Fe
0.10% Chelated Iron (Fe)			
Manganese (Mn)	0.05%	1.0	0.43 PPM as Mn
0.05% Chelated Manganese (Mn)			
Molybdenum (Mo)	0.0009%	0.018	0.01 PPM as Mo
Zinc (Zn)	0.05%	1.0	0.43 PPM as Zn
0.05% Chelated Zinc (Zn)			

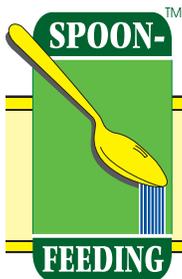
Derived from Ammonium Sulfate, Ammonium Phosphate, Potassium Nitrate, Urea, Magnesium Sulfate, Boric Acid, Sodium Molybdate, and the EDTA form of Copper, Iron, Manganese and Zinc. CAUTION: This fertilizer is to be used on soils which respond to molybdenum. Crops high in molybdenum are toxic to grazing animals. Potential acidity equivalent to 900 lbs. Calcium Carbonate per ton.

Repeat applications as frequently as every 5 to 10 days if required. May be applied in solution by a proportioner through sprinkler systems, by irrigation or any conventional ground rig, and may be applied in combination with most insecticides, herbicides and fungicides. Avoid applications during peak sunlight hours. Increase the amount of water used to dilute the fertilizer when soil moisture is low. Increase concentrations when soil moisture is high. Use caution when concentration is 1 lb. or more per 5 gallons of water.

Using Spoon-feeding application rates to achieve desired "N" per given area, apply weekly or up to twenty days apart in a convenient amount of water for even coverage. Adjust rate to get desired results.

TURF RATES PER SQUARE FOOT

Desired Pounds of Nitrogen per 1000 square feet	1/10	1/8	1/4	1/2	1
Fertilizer required in ounces	6.96	8.7	17.39	34.78	69.57
Pounds required per acre	18.95	23.69	47.34	94.69	189.4
Desired Grams of Nitrogen per square meter	0.49	0.61	1.22	2.44	4.88
Fertilizer required in grams	2.1	2.7	5.3	10.6	21.2
Kilograms required per hectare	21	27	53	106	212
Fertilizer required in kilograms per 500 sq. meter	1.05	1.35	2.65	5.3	10.6



No Phosphate Special 25-0-25 PLUS

- **Balanced to offset excess phosphate tie up of micros**
- **Prevents phosphate flush in bodies of water**

No Phosphate Special 25-0-25^{PLUS} was designed to overcome excess phosphate conditions and to mitigate phosphate contamination of local aquifers. Phosphorous is an element which moves very little in soils or soil mixes and sometimes

through excessive fertilization with high phosphorous materials or with improper maintenance of soil pH, an excess can occur. This in turn can create problems in other areas, such as the availability of other trace elements, particularly zinc. Aluminum can also be tied up by phosphates, which would hamper the production of good quality pink hydrangeas.

25-0-25^{PLUS} has been formulated to provide most of the generally accepted trace and minor elements plus N and K. It is therefore well suited as the primary feed in soil mixes that have proven to contain high levels of phosphorous. As turf deplete the levels of phosphorous in the soil superintendents will usually switch to a NPK formulation that will provide phosphorous at more normal levels.

MIXING RATE FOR 200 PPM NITROGEN

HOSE END SPRAYER: 1:15 ratio-Premix 1.6 oz.. per gallon (12 grams per liter).

TANK: 0.11 oz.. per gallon (0.8 gram per liter).

PROPORTIONER: 1:100 ratio use 10.66 oz.. per gal. of concentrate (80 grams per liter). OTHER RATIOS: Multiply ratio times weight divided by 100.

OTHER PPM: Multiply desired PPM times weight divided by 200. Increase or decrease PPMN according to response.

Guaranteed Analysis (For continuous liquid feeding)

25-0-25+	Percent	Lbs/Ton	Concentration at
Total Nitrogen (N)	25%	500	200 PPM as N
1.01% Ammoniacal Nitrogen			
7.58% Nitrate Nitrogen			
16.32% Urea Nitrogen			
Soluble Potash (K ₂ O)	25%	500	200 PPM as K ₂ O
Magnesium (Mg)	0.05%	1.0	0.4 PPM as Mg
Sulfur (S)	1.40%	28	11.2 PPM as S
1.40% Combined Sulfur (S)			
Boron (B)	0.02%	0.4	0.16 PPM as B
Copper (Cu)	0.05%	1.0	0.4 PPM as Cu
0.05% Water Soluble Copper (Cu)			
Iron (Fe)	0.10%	2.0	0.8 PPM as Fe
0.10% Chelated Iron (Fe)			
Manganese (Mn)	0.05%	1.0	0.4 PPM as Mn
0.05% Water Soluble Manganese (Mn)			
Molybdenum (Mo)	0.0009%	0.018	0.0072 PPM as Mo
Zinc (Zn)	0.05%	1.0	0.4 PPM as Zn
0.05% Water Soluble Zinc (Zn)			

Derived from Ammonium Sulfate, Potassium Nitrate, Magnesium Sulfate, Urea, Borax, Sodium Molybdate, Copper Sulfate, Iron EDTA, Manganese Sulfate and Zinc Sulfate. CAUTION: This fertilizer is to be used on soils which responds to molybdenum. Crops high in molybdenum are toxic to grazing animals. Potential acidity equivalent to 427 lbs. Calcium Carbonate per ton.

TURF RATES PER SQUARE FOOT

Desired Pounds of Nitrogen per 1000 square feet	1/10	1/8	1/4	1/2	1
Fertilizer required in ounces	6.4	8	16	32	64
Pounds required per acre	17.42	21.78	43.56	87.12	174.24
Desired Grams of Nitrogen per square meter	0.49	0.61	1.22	2.44	4.88
Fertilizer required in grams	2	2.4	4.9	9.8	19.5
Kilograms required per hectare	20	25	49	98	195
Fertilizer required in kilograms per 500 sq. meter	1	1.2	2.45	4.9	9.75

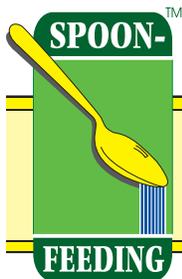
NITROGEN PARTS PER MILLION CHART

Parts per Million	50	100	150	200	300	400
Injector Ratios	Ounces required per gal of concentrate					
1:15	0.42	0.83	1.25	1.67	2.4	3.2
1:50	1.33	2.67	4.00	5.33	8.00	10.66
1:100	2.67	5.33	8.00	10.66	15.99	21.32
1:200	5.33	10.66	15.99	21.32	31.99	42.65
1:300	8.00	15.99	23.99	31.99	47.98	63.97

EC (+ - 10%) mmhos/cm. 15 .30 .45 .61 .92 1.22

*Maximum solubility approx. 60 oz.. per gallon





Bermuda Special 25-5-20 PLUS

- **Balanced to offset excess phosphate tie up of micros**
- **Prevents phosphate flush in bodies of water**

Bermuda Special's 5-1-4 ratio was specially formulated to replace the nutritive elements removed from the soil by bermuda grasses. Research shows that bermuda grasses remove about 5.5 pounds of nitrogen, 1.5 pounds of phosphorus and 3.5 pounds of potash from each 1,000 square feet of turf on an

annual basis. Spoon-feeding Bermuda Special, at weekly intervals, will replace the N-P-K the grass removes and will promote highest quality turf all season long.

Bermuda Special is recommended for use on tees, approaches and fairways, but its special balance of nutrients works especially well on greens. Formulated to promote the maximum amount of top growth of good fibrous quality, Bermuda Special permits considerable traffic, close mowing, rapid decomposition of thatch and promotes deep-penetrating root development - for greener turf even under the most severe stress.

Bermuda Special is compatible with most water based fungicide and insecticide sprays and adapts to your regular spray program.

MIXING RATE FOR 200 PPM NITROGEN

HOSE END SPRAYER: 1:15 ratio- Premix 1.6 oz.. per gallon (12 grams per liter).
 TANK: 0.11 oz.. per gallon (0.8 gram per liter).
 PROPORTIONER: 1:100 ratio use 10.66 oz.. per gal. of concentrate (80 grams per liter).
 OTHER RATIOS: Multiply ratio times weight divided by 100.
 OTHER PPM: Multiply desired PPM times weight divided by 200. Increase or decrease PPM according to response.

Guaranteed Analysis (For continuous liquid feeding)			
25-5-20+	Percent	Lbs/Ton	Concentration at
Total Nitrogen (N)	25%	500	200 PPM as N
2.81% Ammoniacal Nitrogen			
6.04% Nitrate Nitrogen			
16.15% Urea Nitrogen			
Available Phosphate (P ₂ O ₅)	5%	100	40 PPM as P ₂ O ₅
Soluble Potash (K ₂ O)	20%	400	160 PPM as K ₂ O
Magnesium (Mg)	0.05%	1.0	0.4 PPM as Mg
Sulfur (S)	2.00%	41	16.5 PPM as S
2.00% Combined Sulfur (S)			
Boron (B)	0.02%	0.4	0.16 PPM as B
Copper (Cu)	0.05%	1.0	0.4 PPM as Cu
0.05% Water Soluble Copper (Cu)			
Iron (Fe)	0.10%	2.0	0.8 PPM as Fe
0.10% Chelated Iron (Fe)			
Manganese (Mn)	0.05%	1.0	0.4 PPM as Mn
0.05% Water Soluble Manganese (Mn)			
Molybdenum (Mo)	0.0009%	0.018	0.0072 PPM as Mo
Zinc (Zn)	0.05%	1.0	0.4 PPM as Zn
0.05% Water Soluble Zinc (Zn)			

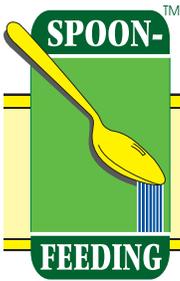
Derived from Ammonium Phosphate, Ammonium Sulfate, Potassium Nitrate, Urea, Magnesium Sulfate, Urea, Borax, Sodium Molybdate, Copper Sulfate, Iron EDTA, Manganese Sulfate and Zinc Sulfate. CAUTION: This fertilizer is to be used on soils which respond to molybdenum. Crops high in molybdenum are toxic to grazing animals. Potential acidity equivalent to 637 lbs. Calcium Carbonate per ton.

TURF RATES PER SQUARE FOOT					
Desired Pounds of Nitrogen per 1000 square feet	1/10	1/8	1/4	1/2	1
Fertilizer required in ounces	6.4	8	16	32	64
Pounds required per acre	17.42	21.78	43.56	87.12	174.24
Desired Grams of Nitrogen per square meter	0.49	0.61	1.22	2.44	4.88
Fertilizer required in grams	2	2.4	4.9	9.8	19.5
Kilograms required per hectare	20	25	49	98	195
Fertilizer required in kilograms per 500 sq. meter	1	1.2	2.45	4.9	9.75

NITROGEN PARTS PER MILLION CHART						
Parts per Million	50	100	150	200	300	400
Injector Ratios	Ounces required per gal of concentrate					
1:15	0.42	0.83	1.25	1.67	2.4	3.2
1:50	1.33	2.67	4.00	5.33	8.00	10.66
1:100	2.67	5.33	8.00	10.66	15.99	21.32
1:200	5.33	10.66	15.99	21.32	31.99	42.65
1:300	8.00	15.99	23.99	31.99	47.98	63.97

EC (+ - 10%) mmhos/cm .
 *Maximum solubility approx. 60 oz.. per gallon





Tree & Shrub Special 25-15-10 PLUS

- **Ideal feed for woody plants and container stock**
- **Helps lower pH**

Tree & Shrub Special 25-15-10^{PLUS} was developed primarily as an all purpose feed for container grown stock in nurseries and as a general spray feed for institutional and park grounds maintenance. It produces excellent color, vigorous roots and

promotes rapid development of all evergreen stock. It is also excellent on small trees and shrubs. It has a relatively high potential acidity which helps to lower the pH of the applied solution as well as the soil mix.

Guaranteed Analysis (For continuous liquid feeding)

25-15-10+	Percent	Lbs/Ton	Concentration at
Total Nitrogen (N)	25%	500	200 PPM as N
6.60% Ammoniacal Nitrogen			
2.95% Nitrate Nitrogen			
15.45% Urea Nitrogen			
Available Phosphate (P ₂ O ₅)	15%	300	120 PPM as P ₂ O ₅
Soluble Potash (K ₂ O)	10%	200	80 PPM as K ₂ O
Magnesium (Mg)	0.02%	0.40	0.16 PPM as Mg
Sulfur (S) (Combined)	4.17%	83.4	33 PPM as S
Boron (B)	0.02%	0.40	0.16 PPM as B
Copper (Cu)	0.05%	1.00	0.40 PPM as Cu
0.05% Chelated Copper (Cu)			
Iron (Fe)	0.10%	2.00	0.80 PPM as Fe
0.10% Chelated Iron (Fe)			
Manganese (Mn)	0.05%	1.00	0.40 PPM as Mn
0.05% Water Soluble Manganese (Mn)			
Molybdenum (Mo)	0.0009%	0.018	0.0072 PPM as Mo
Zinc (Zn)	0.05%	1.00	0.40 PPM as Zn
0.05% Water Soluble Zinc (Zn)			

Derived from Ammonium Phosphate, Ammonium Sulfate, Potassium Nitrate, Magnesium Sulfate, Urea, Borax, Sodium Molybdate, Copper EDTA, Iron EDTA, Manganese Sulfate and Zinc Sulfate. CAUTION: This fertilizer is to be used on soils which respond to molybdenum. Crops high in molybdenum are toxic to grazing animals. Potential acidity equivalent to 1090 lbs. Calcium Carbonate per ton.

MIXING RATE FOR 200 PPM NITROGEN

HOSE END SPRAYER: 1:15 ratio- Premix 1.6 oz.. per gallon (12 grams per liter).

TANK: 0.11 oz.. per gallon (0.8 gram per liter).

PROPORTIONER: 1:100 ratio use 10.66 oz.. per gal. of concentrate (80 grams per liter).

OTHER RATIOS: Multiply ratio times weight divided by 100.

OTHER PPM: Multiply desired PPM times weight divided by 200. Increase or decrease PPM according to response.

TURF RATES PER SQUARE FOOT

Desired Pounds of Nitrogen per 1000 square feet	1/10	1/8	1/4	1/2	1
Fertilizer required in ounces	6.4	8	16	32	64
Pounds required per acre	17.42	21.78	43.56	87.12	174.24
Desired Grams of Nitrogen per square meter	0.49	0.61	1.22	2.44	4.88
Fertilizer required in grams	2	2.4	4.9	9.8	19.5
Kilograms required per hectare	20	25	49	98	195
Fertilizer required in kilograms per 500 sq. meter	1	1.2	2.45	4.9	9.75

NITROGEN PARTS PER MILLION CHART

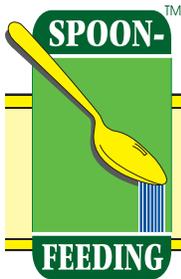
Parts per Million	50	100	150	200	300	400
Injector Ratios	Ounces required per gal of concentrate					
1:15	0.42	0.83	1.25	1.67	2.4	3.2
1:50	1.33	2.67	4.00	5.33	8.00	10.66
1:100	2.67	5.33	8.00	10.66	15.99	21.32
1:200	5.33	10.66	15.99	21.32	31.99	42.65
1:300	8.00	15.99	23.99	31.99	47.98	63.97

EC (+ - 10%) mmhos/cm. 15 .31 .46 .62 .92 1.23

*Maximum solubility approx. 60 oz.. per gallon



Laboratories, Inc.
 371 East 16th Street
 Chicago Heights, IL 60411
 www.plantmarvel.com
 Fax 708-757-5924
 Phone 800-524-7031



Bent Special 28-8-18 PLUS

- Gives you control of your turf's growth
- 100% soluble
- Compatible with herbicides, fungicides etc.
- Non streaking
- Enviromentally safe
- Fast greenup without "flushing"

Ever wish you could get a fast green-up in certain areas without creating excessive top growth or uncontrolled flushing? Spoon-feeding Nutriculture water soluble Bent Special provides readily available nutrients with immediate and consistent, controlled results. And it won't upset your regular fertilizer program. 100% solubility and complete compatibility make Nutriculture highly cost effective when tied into your regular preventive maintenance spray program.

Bent Special's 3-1-2 ratio was specially formulated to replace the nutritive elements removed from the soil by bent grasses. Research has shown that bent grasses remove about 5.5 pounds of nitrogen, 1.5 pounds of phosphorus and 3.5 pounds of potash from each 1,000 square feet of turf on an annual basis. Each feeding of Bent Special, applied at weekly intervals, will replace the N-P-K the grass removes, and will promote the highest quality turf all season long.

Experiments show that bent grasses absorb 95 percent or more of the nutrients applied in solution. Each feeding of Bent Special replaces these nutrients with no over-stimulation from excess N, because Bent Special's careful balance of N-P-K with secondary and minor trace elements are perfectly attuned to bent grasses needs.

Bent Special can be used on tees, approaches and fairways, but it works especially well on greens, even on all sand based greens. Spoon feeding Nutriculture in small amounts, applied frequently, not only provides the turf with its needs but eliminates any possibility of run-off or other enviromental concerns.

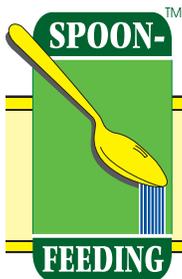
Formulated to promote top growth of good fibrous quality, Bent Special permits considerable traffic, close-mowing, rapid decomposition of thatch, and a deep-penetrating root system that will sustain turf under the most severe stress.

Bent Special			
GUARANTEED ANALYSIS (For Continous liquid Feeding)			
28-8-18+	Percent	Lbs/Ton	Concentration
Total Nitrogen (N)	28%	560	200 PPM as N
0.81% Ammoniacal Nitrogen			
4.56% Nitrate Nitrogen			
22.63% Urea Nitrogen			
Available Phosphorus (P ₂ O ₅)	8%	160	57 PPM as P ₂ O ₅
Soluble Potash (K ₂ O)	18%	360	128 PPM as K ₂ O
Magnesium (Mg)	0.05%	1.0	0.36 PPM as Mg
Sulfur (S)	0.07%	1.4	0.5 PPM as S
0.07% Combined Sulfur (S)			
Boron (B)	0.02%	0.4	0.14 PPM as B
Copper (Cu)	0.05%	1.0	0.36 PPM as Cu
0.05% Chelated Copper (Cu)			
Iron (Fe)	0.10%	2.0	0.74 PPM as Fe
0.10% Chelated Iron (Fe)			
Manganese (Mn)	0.05%	1.0	0.36 PPM as Mn
0.05% Chelated Manganese (Mn)			
Molybdenum (Mo)	0.0009%	0.018	0.01 PPM as Mo
Zinc (Zn)	0.05%	1.0	0.36 PPM as Zn
0.05% Chelated Zinc (Zn)			

Derived from Ammonium Phosphate, Potassium Phosphate, Potassium Nitrate, Magnesium Sulfate, Urea, Borax, Sodium Molybdate and the EDTA form of Copper, Iron, Manganese, and Zinc. CAUTION: This fertilizer is to be used on soils which respond to molybdenum. Crops high in molybdenum are toxic to grazing animals. Potential acidity equivalent to 704 lbs. Calcium Carbonate per ton

TURF RATES PER SQUARE FOOT					
Desired Pounds of Nitrogen per 1000 square feet	1/10	1/8	1/4	1/2	1
Fertilizer required in ounces	5.71	7.14	14.29	28.57	67.14
Pounds required per acre	15.55	19.44	38.9	77.78	155.56
Desired Grams of Nitrogen per square meter	0.49	0.61	1.22	2.44	4.88
Fertilizer required in grams	1.7	2.2	4.4	8.7	19.5
Kilograms required per hectare	17	22	44	87	174
Fertilizer required in kilograms per 500 sq. meter	.85	1.1	2.2	4.35	8.7





Hi-Acid 28-18-8 PLUS

- **Helps reduce pH**
- **Ideal Spoon-feeding® fertilizer for container and field grown stock**

Hi-Acid 28-18-8^{PLUS} is specially formulated to provide the acid rich diet so many crops need. It is recommended as a regular feed for azaleas and hydrangeas and as a supplementary feed for mums and green plants. It can also be used on specialty field grown crops such as strawberries, asparagus, beans and

spinach. Also for all broad leaf and needle type evergreens or any acid loving plants. 28-18-8 is one of our most popular formulas because of the great variety of plants it can benefit.

The fairly high quantity of phosphorous assures a higher bud count; deeper color blooms and lush dark green foliage will result from the highly available nitrogen. Because of its high potential acidity, it is possible to incorporate ground dolomitic limestone into the soil mix to supply adequate amounts of calcium to the crop and still maintain a low pH.

Guaranteed Analysis (For continuous liquid feeding)

28-18-8+	Percent	Lbs/Ton	Concentration at
Total Nitrogen (N)	28%	560	200 PPM as N
4.33% Ammoniacal Nitrogen			
2.41% Nitrate Nitrogen			
21.26% Urea Nitrogen			
Available Phosphate (P ₂ O ₅)	18%	360	129 PPM as P ₂ O ₅
Soluble Potash (K ₂ O)	8%	160	57 PPM as K ₂ O
Magnesium (Mg)	0.05%	1.0	0.36 PPM as Mg
Sulfur (S)	1%	20	7.14 PPM as S
1% Combined Sulfur (S)			
Boron (B)	0.02%	0.40	0.143 PPM as B
Copper (Cu)	0.05%	1.0	0.357 PPM as Cu
0.05% Chelated Copper (Cu)			
Iron (Fe)	0.10%	2.0	0.714 PPM as Fe
0.10% Chelated Iron (Fe)			
Manganese (Mn)	0.05%	1.0	0.357 PPM as Mn
0.05% Chelated Manganese (Mn)			
Molybdenum (Mo)	0.0009%	0.02	0.0071 PPM as Mo
Zinc (Zn)	0.05%	1.0	0.357 PPM as
0.05% Chelated Zinc (Zn)			

MIXING RATE FOR 200 PPM NITROGEN

HOSE END SPRAYER: 1:15 ratio-Premix 1.43 oz.. per gallon (10.71 grams per liter).
 TANK: 0.1 oz.. per gallon (0.71 gram per liter).
 PROPORTIONER: 1:100 ratio use 9.52 oz.. per gal. of concentrate (71 grams per liter).
 OTHER RATIOS: Multiply ratio times weight divided by 100.
 OTHER PPM: Multiply desired PPM times weight divided by 200. Increase or decrease PPMN according to crop response.

Derived from Ammonium Phosphate, Ammonium Sulfate, Potassium Nitrate, Magnesium Sulfate, Urea, Borax, Sodium Molybdate, and the EDTA form of Copper, Iron, Manganese and Zinc. CAUTION: This fertilizer is to be used on soils which respond to molybdenum. Crops high in molybdenum are toxic to grazing animals Potential acidity equivalent to 1062 lbs. Calcium Carbonate per ton.

TURF RATES PER SQUARE FOOT

Desired Pounds of Nitrogen per 1000 square feet	1/10	1/8	1/4	1/2	1
Fertilizer required in ounces	5.71	7.14	14.29	28.57	67.14
Pounds required per acre	15.55	19.44	38.9	77.78	155.56
Desired Grams of Nitrogen per square meter	0.49	0.61	1.22	2.44	4.88
Fertilizer required in grams	1.7	2.2	4.4	8.7	19.5
Kilograms required per hectare	17	22	44	87	174
Fertilizer required in kilograms per 500 sq. meter	.85	1.1	2.2	4.35	8.7

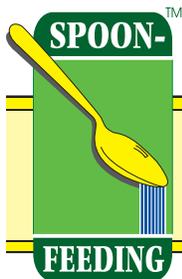
NITROGEN PARTS PER MILLION CHART

Parts per Million	50	100	150	200	300	400
Injector Ratios	Ounces required per gal of concentrate					
1:15	0.36	0.41	1.07	1.43	2.14	2.86
1:50	1.19	2.38	3.57	4.76	7.14	9.52
1:100	2.38	4.76	7.14	9.52	14.28	19.04
1:200	4.76	9.52	14.28	19.04	28.56	38.08
1:300	7.14	14.28	21.42	28.56	42.84	57.12

EC (+ - 10%) mmhos/cm. 11 .22 .33 .43 .66 .85

*Maximum solubility approx. 60 oz.. per gallon





Ornamental Special 30-10-10 PLUS

- **Helps reduce pH**
- **Ideal Spoon-feeding® fertilizer for container and field grown stock**

Ornamental Special 30-10-10^{PLUS} is a 3-1-1 ratio that produces excellent color, vigorous roots and rapid development of all nursery stock in containers or rows. It also promotes good color and lush foliage development in the greenhouse on ornamentals and is widely used on

foliage plants and orchids. Its high potential acidity promotes the maintenance of pH on the acid side. It's high ammoniacal nitrogen content, makes it an ideal feed for outdoor application in the warmer, sunnier months.

This formula is very low in biuret content, and it's high nitrogen meets the requirements for use with many forms of fir bark. Use on orchids, tropical foliage plants, container azaleas and nursery stock.

It may be applied in solution by proportioner, through sprinkler systems, by irrigation or any conventional ground rig and may be applied in combination with most insecticides, herbicides and fungicides. Avoid applications during peak sunlight hours.

MIXING RATE FOR 100 PPM NITROGEN

HOSE END SPRAYER: 1:15 ratio-Premix 0.67 oz.. per gallon (5 grams per liter).

TANK: 0.04 oz.. per gallon (0.33 grams per liter). PROPORTIONER: 1:100 ratio use 4.44 oz.. per gal. of concentrate (33 grams per liter).

OTHER RATIOS: Multiply ratio times weight divided by 100.

Guaranteed Analysis (For continuous liquid feeding)			
30-10-10+	Percent	Lbs/Ton	Concentration at
Total Nitrogen (N)	30%	600	200 PPM as N
3.10% Ammoniacal Nitrogen			
1.90% Nitrate Nitrogen			
25.00% Urea Nitrogen			
Available Phosphate (P ₂ O ₅)	10%	200	67 PPM as P ₂ O ₅
Soluble Potash (K ₂ O)	10%	200	67 PPM as K ₂ O
Magnesium (Mg)	0.05%	1.0	0.33 PPM as Mg
0.05% Water Soluble Magnesium (Mg)			
Sulfur (S) (Combined)	2.45%	49	16.33 PPM as S
Boron (B)	0.02%	0.4	0.13 PPM as B
Copper (Cu)	0.05%	1.0	0.33 PPM as Cu
0.05% Chelated Copper (Cu)			
Iron (Fe)	0.10%	2.0	0.67 PPM as Fe
0.10% Chelated Iron (Fe)			
Manganese (Mn)	0.05%	1.0	0.33 PPM as Mn
0.05% Chelated Manganese (Mn)			
Molybdenum (Mo)	0.0009%	.018	.006 PPM as Mo
Zinc (Zn)	0.05%	1	0.33 PPM as Zn
0.05% Chelated Zinc (Zn)			

Derived from Ammonium Phosphate, Ammonium Sulfate, Potassium Nitrate, Urea, Borax, Sodium Molybdate, Magnesium Sulfate and the EDTA form of Copper, Iron, Manganese and Zinc. CAUTION: This fertilizer is to be used on soils which respond to molybdenum. Crops high in molybdenum are toxic to grazing animals Potential acidity equivalent to 1117 lbs. Calcium Carbonate per ton.

TURF RATES PER SQUARE FOOT					
Desired Pounds of Nitrogen per 1000 square feet	1/10	1/8	1/4	1/2	1
Fertilizer required in ounces	5.33	6.67	13.33	26.67	53.33
Pounds required per acre	14.51	18.16	36.29	72.61	145.19
Desired Grams of Nitrogen per square meter	0.49	0.61	1.22	2.44	4.88
Fertilizer required in Grams	1.5	2	4.1	8.1	16.3
Kilograms required per hectare	16	20	41	81	163
Fertilizer required in Kilograms per 500 sq. meter	0.8	1	2.05	4.05	8.15

NITROGEN PARTS PER MILLION CHART						
Parts per Million	50	100	150	200	300	400
Injector Ratios	Ounces required per gal of concentrate					
1:15	0.33	0.67	1.00	1.33	2.00	2.67
1:50	1.11	2.22	3.33	4.44	6.66	8.89
1:100	2.22	4.44	6.66	8.89	13.33	17.77
1:200	4.44	8.89	13.33	17.77	26.66	35.54
1:300	6.66	13.33	19.99	26.66	39.98	53.31

EC (+ - 10%) mmhos/cm, 11 .22 .33 .43 .66 .85

*Maximum solubility approx. 60 oz. per gallon

OTHER PPM: Multiply desired PPM times weight divided by 100. Increase or decrease PPMN according to crop response.



Minor Element Supplements

Chemec® B

Chelated Minor Element Complex

Chemec is a completely soluble, high quality, concentrated micronutrient compound in chelated form. The Iron has two forms of chelation to make it effective over a broad range of pH. It has the ability to correct a minor element deficiency through soil application even when test indicate an imbalance in the soil, because the chelate will protect its elements until the plant can assimilate them. It has the double benefit of being assimilated through the leaves when applied as a foliar feed. Designed as a supplemental feed when soil and/or tissue tests indicate a need. It can also be used to supplement a regular fertilizer application of just NPK. Chemec B is compatible with a broad range of fertilizer elements including those that contain calcium.

Guaranteed Analysis**Chemec B**

Magnesium (Mg)	1.58%
Boron (B)	1.3%
Copper (Cu)	0.10%
0.10% Chelated Copper (Cu)	
Iron (Fe)	7.0%
7.0% Chelated Iron (Fe)	
Manganese (Mn)	2.0%
2.0% Chelated Manganese (Mn)	
Molybdenum (Mo)	0.06%
Zinc (Zn)	0.40%
0.40% Chelated Zinc (Zn)	

Derived from Magnesium Sulphate, Boric Acid, Sodium Molybdate, Iron EDTA, Iron EDDHA, Copper EDTA, Manganese EDTA, and Zinc EDTA.

CAUTION:

This fertilizer contains copper, iron, manganese, molybdenum and zinc and should be used only as recommended. It may prove harmful if misused.

CAUTION:

Molybdenum content is greater than 0.001% and application to forage crops must be avoided.

NOTE:

Rates given are to provide an adequate level of secondary nutrients guaranteed on this label. If additional secondary nutrients are being supplied from other sources, rates should be reduced accordingly. Consult your Crop

advisor for interpretation of soil and foliar nutrient analysis. This product is not recommended for use in correcting single micronutrient deficiencies.

DIRECTIONS FOR USE

CHEMEC is a chelated water soluble nutrient mix which can be used as a supplement for crops grown in soil or in a regular feeding program for crops grown in artificial and soilless media where N-P-K fertilizers are used that don't contain micros.

TO CORRECT DEFICIENCIES:

Soil Applications: Always apply secondary nutrients to moist soil. For heavy feeders use 12 oz. on 1000 square feet in 120 gallons of water. For sensitive crops use 4 oz. on 10,000 square feet in 120 gallons of water.

General Applications:

Use 1/2 to 1 oz. per 100 gallons of water in a regular constant feed program.

For Use on Agriculture and Soil-Grown Greenhouse Crops as a Supplement:

Apply through the irrigation system when soil test indicates a low level of secondary plant nutrients.

For Use on Greenhouse Crops Grown in Artificial or Soilless Media:

Use in the nutrient solution in conjunction with sources of nitrogen, phosphorous and potassium. NOTICE- Sellers guarantee shall be limited to the terms of the label, and subject thereto the buyer assumes

Sol-Trace®
Soluble Trace Element Mix

A non-chelated minor element mix that is highly soluble and designed for prevention or correction of micronutrient deficiencies through foliar application or as a supplement along with NPK fertilizers. Stops yellow leafing, stunting and die back caused by micronutrient deficiency. It will help develop better root structure and stimulate lush green foliage. It will provide automatic buffering of water with its high sulphur content and in addition will provide a balance of 6 more micronutrients. Applied as a foliar spray, Sol-Trace will show results in a matter of days by by-passing soil related tie-ups.

Guaranteed Analysis

Sol-Trace	Percent
Sulphur (S)	14.00%
Boron (B)	1.45%
Copper (Cu).....	3.20%
Iron (Fe).....	7.50%
Manganese (Mn).....	8.15%
Molybdenum (Mo)	0.046%
Zinc (Zn)	4.50%

Derived from Boric acid, Sodium Molybdate and the sulphate form of Copper, Iron, Manganese, and Zinc.

Directions

Nursery & Greenhouse

This material is immediately available when applied and should show results within days. Do not over apply. Use soil and tissue test as a guide.

When on a constant feeding schedule, using basic N-P-K fertilizers, the normal rate of application is 2 ozs. of Sol-Trace for every 25 lbs. of fertilizer material being applied.

As an occasional or supplemental application to bench crops, use 2 ozs. per 100 sq. ft. Do not repeat unless deficiency has definitely been established. For potted crops, use 2 ozs. in 25 gals. or 1/4 teaspoon in 1 gal. Apply as a normal saturation of root area. No repeat should be necessary.

Turf

Use soil and leaf tests as a guide. Do not apply in conjunction with fertilizers that have added micronutrients (such as Nutriculture Plus formulas) unless test results indicate the need. In general, apply at the rate of 1 oz. per 1000 sq. ft. dissolved in 5 gals. of water or more. Apply in

early morning while dew is still on the ground or in late afternoon. Three to four applications per season at four to six week intervals should be adequate. Do not apply during periods of moisture stress or disease.

Mor-Green®
7% Iron Chelate

For use on iron-deficient soils, Mor-Green is a preventive and cure of iron chlorosis in lawns, trees and flowering shrubs. Unlike many irons, Plant Marvel's Mor-Green is 100 percent water-soluble, allowing extremely rapid green-up when applied as a soil treatment or foliar spray. Mor-Green improves disease resistance. Compatible with most fungicide and herbicide sprays and other chemicals, Mor-Green is an EDTA iron chelate (technical sodium ferric ethylenediamine triacetate) and is formulated in a highly concentrated form for maximum economy.

Guaranteed Analysis

Mor-Green	Percent
Iron (Fe)	7.00%
10.00% as Fe ₂ O ₅)	
Technical (Fe) Ethylenediamine Triacetate	

Directions

Mor-Green dissolves completely in tap or well water. It will dissolve almost instantly in hot water. It's ability to stay in solution without precipitation makes it ideal for applying through all injector systems and even the finest misting nozzles. Foliar: Because of its complete and high solubility, this formula is ideal as a foliar feed.

Soil Treatment:

Mor-Green should be distributed uniformly over the surface of the treated area and thoroughly watered in to a depth of six inches into the soil. To obtain even distribution, dissolve in water and spray or sprinkle on soil, or, apply dry after mixing with a suitable quantity of sand, soil or other material to cover area. Standard dilution rate is one pound to 100 gals. of water.

Golf Greens and Lawn

Grasses: 1 lb. of Mor-Green in 100 gals. of water treats 4,000 sq. ft. Repeat monthly throughout the season, using eight ounces per 50 gals. of water alone, or, in combination with fungicide or fertilizer, per 4,000 sq. ft. Dry form application should be at the rate of 20 lbs. per acre.

Nursery and Green-

house: Dissolve 1/4 pound in 100 gals. of water for each 400 sq. ft. of bench area or bed. For dry application, mix 1 lb. with enough sand or soil to cover 1,600 sq. ft. of area and water in thoroughly.

Foliar Spray: Dissolve one pound in 100 gals. of water. Thoroughly wet the foliage of the plants treated.

Aqua-Sol® Fe

Three Chelated Irons

Three Irons with the most advanced chelation available to cover the complete pH spectrum. Completely soluble and compatible with most water based application materials.

Aqua-Sol Fe 13%

Derived from Sodium Ferric Ethelenediaminetetraacetic Acid. For correction of Iron chlorosis in acid soils.

Aqua-Sol Fe 11%

Derived from Diethelenediaminepentaacetic Acid. For correction of Iron deficiencies in slightly alkaline and calcareous conditions.

Aqua-Sol Fe 6%

Derived from Sodium Ferric Ethelenediamine di-(hydroxyphenylacetate) For correction of Iron deficiency in alkaline and calcareous conditions.

For correction of iron chlorosis in turf, ornamental plants and trees including azaleas, roses, rhododendrons, pin oaks and sweet gums, and other plants growing in acid soils. Unlike many irons, Plant Marvel's Aqua-Sol Irons Chelates are completely water-soluble, thus making them extremely rapid in greening properties when applied as a soil treatment or foliage spray. They are non-caking and free-flowing which allow them to be used with most commonly used insecticides, fungicides and fertilizers. Application may be made alone or in combination with our Nutriculture family of plant foods.

Directions

These three Aqua-Sol Fe products cover a broad spectrum of growing conditions. Proper selection and use depends on knowledge of the pH of the media being treated and should include tissue analysis with recommendations by a qualified plant nutritionist.

Greenhouse: Apply as a soil drench using 2 to 3 oz. per 100 gals. of water (approx. 30 PPM Fe) Repeat applications may be made, if needed, in 1 to 2 weeks.

Lawns and Turf: Apply 1/2 lb. per 1,000 sq. ft. Mix thoroughly with fertilizer or water apply evenly. Water in thoroughly. Use 1/2 the above rate on greens. 13% IRON dissolves completely in tap water or well water. It will dissolve almost instantly in hot water. Its ability to stay in solution without precipitation makes it ideal for applying through all injector systems and even the finest misting nozzles. Foliar: Because of its complete and high solubility, this formula is ideal as a foliar feed.

Ornamental shrubs and bushes, small trees, etc.:

Soil application - For each foot of height, use 1-1/2 ounces well distributed under branches. May be applied as liquid by dissolving the required amount in a convenient amount of water.

Garden Flowers: Soil application - Use 1-1/2 ounces per 100 feet or row. For individual plants in garden use 1/3

ounce. May be applied as liquid by dissolving the required amount in a convenient amount of water. For potted plants, water normally, no more than once per month, with a solution containing 1/3 ounce per gallon of water.

Trees, citrus, other fruit and ornamentals.

(Trunk diameter over 6 inches.): Soil application - Apply 1 to 3 pounds per tree depending on age, size of tree and extent of chlorosis. May be applied as required in a convenient amount of water.

Mag Iron®

6% Iron, 4.5% Magnesium

MAG-IRON is a highly effective source of Magnesium and Iron which is essential for the growth and development of all plants. MAG-IRON releases to the soil Magnesium and Iron in a form that can be easily assimilated by the plant. Because it is chelated with EDTA, it does not block the assimilation of other plant food elements. MAG-IRON aids in absorption and translocation of phosphorus, increasing the yield and quality of the crop. 100% water-soluble, it may be applied as a foliar spray or as a soil drench.

MAG-IRON contains penetrating and wetting agents to enhance its effectiveness, and a blue tracer dye that tells at a glance when feeding is through or a problem develops at application. MAG-IRON is compatible with other water based agricultural sprays and fertilizers and may be combined for treatment.

Guaranteed Analysis

Mag-Iron	Percent
Magnesium (Mg)	4.5%
Iron (Fe)	6.0%

Derived from Iron EDTA and Magnesium Sulphate.

Directions

Soil Treatment: Mag-Iron should be distributed uniformly over the surface of the treated area and thoroughly watered in to depth of six inches into the soil. To obtain even distribution, dissolve in water and spray or sprinkle on soil, or apply dry after mixing, with a suitable quantity of sand, soil or other material to cover area. Standard dilution rate for Mag-Iron is 1 pound to 100 gallons of water.

Field Crops

Foliage - 1 lb. per acre in convenient amount of water to cover an acre, after plants are established.
Soil - Band or side dress up to 10 lbs. per acre.

Vegetable Crops

Foliage - 1 lb. per acre in convenient amount of water to cover an acre, after plants are established.
Soil - Band or side dress up to 10 lbs. per acre.

Nursery

Foliage - 1 lb. in 100 gals. of water.
Soil - For bed or row application apply 2 to 5 oz. per 100 sq. ft.

Fruit & Nut Crops

Foliage - 1/2 lb. per 100 gals. of water and apply as a thorough cover spray prior to bloom or after harvest.

Soil - 1 to 2 lbs. per tree based on size. For berry crops, band or side dress 1 lb. per 100 ft. of row.

Greenhouse Ornaments

Soil Drench - Use 1/4 lb. in 100 gals. of water (approx. 19 PPM Fe) to cover 400 sq. ft. of bench or bed.
Soil Mix - 1 lb. in enough soil to cover 1600 sq. ft. of area or 200 cu. ft. of soil.

Foliage Spray: Dissolve 1 pound of Mag-Iron in 100 gallons of water; thoroughly wet the foliage of plants treated.

Use on evergreens, oaks, citrus, apple, pear, magnolia as well as other fruit and ornamental trees. Also, spray shrubs and ornamentals such

as roses, rhododendrons, azaleas, camellias, hibiscus, ixora, holly, etc.

Golf Greens and Lawn

Grasses: 1 pound of Mag-Iron in 100 gallons of water treats 4,000 sq. ft. Repeat monthly throughout season, using 8 ounces per 50 gallons of water alone, or in combination with fungicide or fertilizer, per 4,000 sq. ft. This is done to maintain soil's iron content, due to removal of grass clippings. Dry form applications should be at the rate of 20 pounds per acre.



Many of the key points that have helped make Nutriculture Spoon Feeding fertilizers the top soluble fertilizer in the turf market are:

Control
Convenience
Consistency
Flexibility
Safety