Track 2 Advanced Soils and Nutrition

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Mid West Winter Growers 2020









Soil Management Physical Chemical Biological









Winter High Tunnel Research at CCE

N fertilization does not increase spinach yield



0 (Early) 0 (Late) 65 (Early) 65 (Late) 130 (Early) 130 (Early) 200 (Early) 200 (Late)

Spinach Yield



Aug. 27 Sept. 10

- Higher yields from <u>earlier planting</u>
- No significant yield differences across N fertility treatments: 0, 65, 130, and 200 lbs N/ac

















Element	Ibs/acre*	Very Low	Low	Optimum	High	Very High
Phosphorus (P)	836			1		
Potassium (K)	3,351			1	· ·	
Calcium (Ca)	8,994					
Magnesium (Mg)	1,509					

Element	Value	Element	Value	Element	Value
Soil pH	7.9	Zinc (Zn), Ibs/acre	5	% OM	12.8
Iron (Fe), Ibs/acre	3	Aluminum (Al), lbs/acre	12		
Manganese (Mn), lbs/acre	64	Soluble Salts, mmhos/cm	0.4		

Soil Calcium Level vs Foliar Potassium Level





Soil pH vs Foliar Manganese Level



LIQUID MICRONUTRIENT

Home / PRODUCTS / LIQUID & SOLUBLE FERTILIZER / LIQUID MICRONUTRIENT



Available in 3 sizes: 1 quart, 1 gallon, 2.5 gallon

DESCRIPTION GUARANTEED ANALYSIS

TOTAL NITROGEN (N) 2.0%

2.0% Nitrate Nitrogen

SOLUBLE POTASH (K₂O) 1.0%

BORON (B) 0.1% 0.1% Water Soluble Boron (B)

COPPER (Cu) 0.1% 0.1% Water Soluble Copper (Cu)

IRON (Fe) 2.0%

2.0% Water Soluble Iron (Fe)

MANGANESE (Mn) 2.0% 2.0% Water Soluble Manganese (Mn)

ZINC (Zn) 2.0%

2.0% Water Soluble Zinc (Zn)

APPLICATION RATES DOWNLOADS

Derived from:

Sodium Nitrate, Potassium Sulfate, Sodium Borate, Copper Sulfate, Ferrous Sulfate, Manganese Sulfate and Zinc Sulfate.

Listed by the Organic Materials Review Institute for use in organic production.

Soluble OMRI Micros

- "Micronutrient deficiency must be documented by soil or tissue testing or other documented and verifiable method as approved by a certifying agent"
- Fish and seaweed products (micro quantities unknown)
 - Caution-the oils in these products can burn foliage
- Other micros available, often as derivatives of sulfates
- Before moving into this approach remember that your micro-nutrient deficiency is most likely caused by compaction, pH or nutrient imbalance and <u>not</u> a soil deficiency.





