Brix Bounty Farm

Building Agricultural Skills for the Southcoast

Helfand Farm Community Gardens – April 16, 2016

Accelerating Spring Growth in Your Garden

Our cool coastal climate may make it difficult to enjoy rapid growth in the vegetable garden during the spring. With a few simple tips we can enhance the capacity of our gardens to maximize their potential in the springtime, by warming the soils and improving early season root growth…

Building Complete Proteins

Basic N-P-K fertility creates in-balance in our plant systems. Through a more rigorous consideration of the Full Spectrum Fertility, we are able to grow plants which produce complete proteins and avoid a build-up of "free" Amino Acids, which promote insect feeding on plants. If we want to avoid a need for toxic, rescue chemistry in the garden, we need to ensure complete nutrition throughout the growing season…

Judging our Production – Full Benefit & Cost Accounting

Inputs: Amendments & Fertilizer Labor Seeds Soil Supplies Water Etc.

Yield – Quality & Quantity

Additional Benefits & Costs: Intangibles and Externalities Impact(s) on Future Resource Base

Full Spectrum Fertility: Maximizing Return and Receiving Nature's Bounty

Carbon (C), Hydrogen (H), & Oxygen (O)

Calcium (Ca)	Boron (B)	Chromium (Cr)
Magnesium (Mg)	Chlorine (Cl)	Cobalt (Co)
Nitrogen (N)	Copper (Cu)	Iodine (I)
Potassium (K)	Iron (Fe)	**Molybdenum (Mo)**
Phosphorus (P)	Manganese (Mn)	Nickel (Ni)
Silica (Si)	Sodium (Na)	Selenium (Se)
Sulfur (S)	Zinc (Zn)	

Brix Bounty Farm - *Growing a Foundation for Health… Starts in the Soil*
Farm Location: 449 Bakerville Road, Dartmouth, MA 02748
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Accelerating Spring Growth Tips

- Modify your microclimate with floating row cover (aka Agribon)
- Provide a fertility boost with a light application of soluble organic fertilizers
    - (see suggestions below)
- Pre-Warm your garden beds using row cover, clear plastic, and/or tarps
- DIY Nitrate Boost – Grass Clippings Soak (a 3-day Soak: a 5 gallon bucket 2/3 full w/ grass clippings, anchor down with rock, add water & let "magic" happen. Dilute 1:1 or 1:5 when applying http://farmwhisperer.com/article/liquid-grass-clipping-fertilizer
- Use Transplants instead of Direct Seeding Early Crops
- And … _____

Building Complete Protein Tips

- Expand fertility beyond N-P-K, include Sulfur, Molybdenum, and trace minerals!
- Nitrogen is a part of all Amino Acids which form proteins
- Sulfur is a constituent of 2 key Amino Acids: Cysteine, Methionine
    - These 2 Amino Acids are critical for protein synthesis
- Sulfur is also part of the Nitrate Reductase Enzyme (see also Molybdenum)
- Soil Sulfur levels in the Northeast have generally decreased since the passing of the Clean Air Act… and therefore our soils may have a recently increased need for Sulfur applications.

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Accelerating Spring Growth in The Garden (April 2016)

N - Nitrogen – Nitrogen is essential to absolutely all plant growth!

Nitrogen is the key to all crop growth and required by all plant cells. Its capacity to promote growth may be over utilized by conventional agriculture. Organic producers may benefit from small applications of Nitrogen to help "jump start" the system in the spring time, especially in cool coastal climates, like the Southcoast.

Signs of Nitrogen Deficiency – slow or stunted growth, yellow leaves

Suggested Nitrogen Application: To Boost Early Spring Growth

Two options for early season available Nitrogen in organic gardens are Blood Meal (13-0-0) or Chilean Nitrate (16-0-0). Neither choice is perfect from an environmental or sustainable view. Spread 4-8 ounces of either amendment per 100 square feet and work gently into the soil – the top 2 inches is sufficient.

Good Nitrogen Sources

- Alfalfa Meal
- DIY Grass Clippings (see basic recipe above)
- Seed Meal (Peanut Meal, Soybean Meal, etc.)
- Organic Fish Fertilizer (i.e. Organic Gem)
- Increase N fixing soil microbes – Rhizobia bacteria for legumes, Azotobacter for all soil types, etc…

P - Phosphorous – essential element for plant energy and photosynthesis. Phosphorous may be difficult for plants to access in cool, spring soils.

Phosphorous is a triple bonded, negatively charged mineral – it bonds readily in the soil and is not very mobile or available in the soil. Strong and vigorous root growth {need calcium for this}, leading roots to explore new soil zones, is essential to providing plants with adequate P during the springtime. Mycorhizzal Fungi assist most garden crops (except the brassicas and chenopods – beet/chard/spinach) to access soil P through the season. Phosphorous plays a major role in photosynthesis and the capacity for plants to build sugars.

Signs of Phosphorous Deficiency – a classic sign of spring P deficiency is purple colored leaves…

Suggested Phosphorous Application: To Boost Early Spring Growth

We like to boost early season P availability in 2 steps. (1) Apply a dry application of bone meal or bone char (at 8 ounces to 1 pound per 100 square feet) – this can be banded a few inches beside the seed or root (if transplanting) or broadcast. Banding with compost may assist availability. (2) Apply a nutrient drench at seeding or transplanting – Organic Gem Fish Fertilizer is stabilized with phosphoric acid (2-4 ounces Organic

Gem per gallon of water). 1 gallon of water will cover 100 square feet, ideally timed to coincide with a gentle rainfall, or water in to bring the fertilizer to the root zone if necessary.

Good Sources of Phosphorous:

- Bone Meal or Bone Char – 8 ounces – 1 pound per 100 sq. ft.
- Rock Phosphate (Soft Rock Phosphate or Colloidal Phosphate – preferred) – 1-4 pounds per 100 sq. ft.
- Organic Fertilizers (i.e. composted chicken manure) – 1-4 pounds per 100 sq. ft.

S - Sulfur– a sometimes neglected element, which plays a major role in "flavor" development

Plants need quite a bit of sulfur throughout the growing season (as much as Phosphorous). Sulfur readily leaches from our soils, and is mostly held by soil organic matter. The mineralization of this organic matter makes this Sulfur available to our plants, unfortunately this mineralization rate is often limited in cool spring conditions. Therefore, to maximize spring growth and ensure complete protein development Sulfur amendments are recommended for northeast farmers and gardeners…

Signs of Sulfur Deficiency – Signs of sulfur deficiency mirror nitrogen deficiency – small and stunted growth. However, chlorosis (yellowing of leaves) will occur in new growth, b/c of the limited mobility of S in plants

Suggested Sulfur Application: To Boost Early Spring Growth

Our favorite early season sulfur fertilizer is Sul-Po-Mag (also known as K-Mag or Langbeinite) which provides readily available Sulfur in the sulfate form plus potassium and magnesium.

Sul-Po-Mag Dry Application Rate - 8 ounces - 1 pound per 100 square feet.

Good Sources of Sulfur:

- Calcium Sulfate (Gypsum) at 1 pound per 100 square feet or Solu-Cal S at 8 ounces per 100 square feet
- Potassium Sulfate or Sul-Po-Mag – 4 ounces to 1 pound per 100 square feet
- Elemental Sulfur (Tiger 90 Organic) – 2 oz. per 100 sq. ft.

*Note: Elemental Sulfur * requires thermophilic bacteria to make S available, not a good option for springtime.*

Mo – Molybdenum – key to the nitrate reductase enzyme and required by rhizobia bacteria

Molybdenum is critically required for the Nitrate Reductase Enzyme in plants. It is an anion and will readily leach from most soils. Application encouraged for legumes and crop fertilized with high amounts of Nitrogen.

Application Rate - .5 gram (that's ½ gram) Sodium Molybdate (39% Mo) per 100 sq. ft.
[2 oz. bag from Hydro Gardens = $5.95 + shipping, $.20 per gram]