



## The Finances of Vegetable Fertility

*WHERE TO FOCUS YOUR FERTILIZER DOLLARS ON NEWLAND*

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**2017 SEMAPAG & FOOD CONFERENCE**  
 SUNDAY FEBRUARY 26, 2017 - DIGHTON, MASS

### Brix Bounty Farm – Dartmouth, MA

~7 acres veg  
 Started in 2008

Direct marketed  
 Farmstand  
 CSA  
 Market

Farming since 2002



### Fertility – One Part of Whole System

**Profit = Income – Expenses (Wiswall, Richard)**

- Crop Planning
- Bed Preparation
- Planting & Transplanting
- Weed Management – aka Cultivation
- Water Management
- Harvest, Post Harvest, and Marketing

**Fertility – Impacts Yields... a worthwhile Expense?**

### Finances of Vegetable Fertility - Overview

- Prior Land Use and Crop Performance
- Reading Soil Maps – Web Soil Survey
- Expected Yields
- Resource: New England Veg Management Guide
- Soil Testing & Interpretation
- Nutrient Budgeting – Nitrogen Example
- Creating a Fertility Plan
- “Outcome” Testing – Single Variable Trials
- Amendment & Fertilizer Resources

### Focusing our Lens: Profitability through Fertility


At Brix Bounty:  
 We emphasize fertility investments to ensure our labor investments are well rewarded...



Sun Peach Tomatoes  
 July 15, 2016



### Perspective - Initial Investments and R.O.I.




Return on Investment

Capturing & Converting **Solar Energy**

Red Cabbage June 3, 2016

### Crop Evaluation

- Examine Your Crops aka "Read the Field"  
Healthy vs. Stressed Growth? Pests, Diseases, Low Yields?



Beets May 2016 & Sweet Corn June 2015

### Prior Land Use & Crop Performance

**Geology, Climate, & Human Impact > Soil Potential**

- Conventional Corn Silage
- "Worn-out Hay Fields"
- Brush & Early Successional Woods
- Your Scenario \_\_\_\_\_

### Reading Soil Maps and Soil Types

Web Soil Survey  
<https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>

County Soil Maps – Hard Copy & Online

Reminder: Soil Maps aren't always 100% accurate

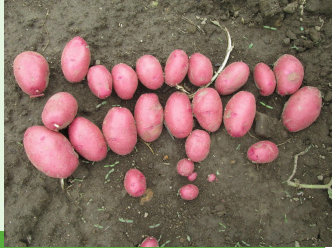
CEC (Cation Exchange Capacity) is determined by clay and Soil Organic Matter.  
 a low CEC = low nutrient holding capacity > spoon feeding

### Expected Yields

Focus on Nitrogen and Calcium  
 Potassium for fruiting crops and root crops

Alternative Strategy  
 Crop Density and Plant Spacing

**Crop Signaling**  
Red Thumb Fingerling Potatoes, July 2016



Resource: **New England Veg Management Guide**

URL - <https://nevegetable.org/>

Hard Copy - \$25.00

Nutrient Recommendations for Different Crops

Good Place to Start, Review Nutrient Demands

e.g. High Demand for N & K – Celery  
<https://nevegetable.org/crops/celery-and-celeriac>

**A Tool: Soil Testing & Interpretation**

**Umass Soil Lab** – Modified Morgan Analysis – Recommended for considering Available P  
<http://ag.umass.edu/services/soil-plant-nutrient-testing-laboratory>

**Logan Labs** – Mehlich-3 Analysis (“bank account”)  
 Bionutrient Food Association - <http://www.bionutrient.org/soil-test>  
 \$30 for Base Plus – includes cobalt, molybdenum, selenium, silicon

Comparison 3 tests from UMass:  
 Old Hayfield (A), Old Corn Silage (B), Mature Veg (C)

**Nutrient Budgeting: Nitrogen Worksheet**

See Worksheet (per acre example)


Total Nitrogen Needed \_\_\_\_\_

(minus) Organic Matter Credits  
 (minus) Soil Biology Credits  
 (plus/minus) Crop Residue/Carry Over

Nitrogen Needed to Import (or Apply) \_\_\_\_\_



**Focus on Quality – Full Spectrum Priorities**



Suggested to Prioritize Calcium and Phosphorous?

**Calcium** required for all plant cells = Quality Growth

**Phosphorous** = Crop Energy especially early season

Lettuce Mix - April 26, 2016 (2 weeks after transplant)

**Creating a Fertility Plan**


**Carbon, Hydrogen, and Oxygen**  
**Focus on Macros 1<sup>st</sup>**  
**N-P-K + Calcium, Magnesium, & Sulfur**

Traces: Boron, Copper, Iron, Manganese, Zinc, etc.

Cobalt, Molybdenum... Selenium

Silica

January 2, 2016 – “Prop” House



Initial Fertility Amendments October 2015  
3 Month Prior

Fertility Perspective through Time

Early Years may require:  
Major initial upfront investment (e.g. high compost market garden)

Using Liquid & Soluble Nutrients (e.g. Organic Gem fish fertilizer, Bio-Link Trace Minerals)

Fertility investment approach depends on projected income, longevity of tenure, local resources, etc.

Outcome Testing: a case for “Single” Variable Trials

Prove a Crop Response with Single Variable Testing for your Soils and your Crops... include a focus **on balance**

For Example... Potatoes are known to have a high demand for potassium (K).

**Split 1 bed in 2 parts (a) and (b)...**

- (a) Control – follow standard fertility plan
- (b) Add 100#/acre potassium sulfate + 10#/acre QB-10 (Boron)

**monitor crop yields and performance**  
Similar K “tests” possible for beets, celery, tomatoes, etc.

Develop a Plan & Remain “Nimble” Adjust in Season

2016 Onion Crop ... it was dry

At Brix Bounty our N budget for the season included alfalfa meal composted chicken manure, and crab meal plus a starter of Chilean nitrate



Sidedressing b/c dry conditions decided > additional Chilean nitrate  
Sierra Blanca Onions June 29, 2016

Amendment & Fertilizer Resources

Progressive Grower (West Wareham)  
Kreher’s, Lancaster Ag, Fertrell, etc.

Organic Gem (Liquid Fish in New Bedford)

NOFA/Mass Bulk Order (deadline Jan 31 each year)

Bionutrient Food Association – Mineral Depots  
Crop Production Services  
Fedco Organic Growers Supply

Thank You

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