

## The Art, Science, and Craft of Profitable Onion Production

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NOFA SUMMER CONFERENCE

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### Nutrition & Flavor

While considered by some a commodity... onions are a kitchen staple in many cultures and demand for local production, while clearly not matching the fair-weather mania of tomatoes or sweet corn, is strong.

By addressing key “leverage points” along the production timeline we can ensure bountiful and profitable production annually; contributing a significant potential profit for small scale growers... **of course it all depends on your markets, it all depends on markets and your production systems.**



### Pyruvic Acid & “Sweet” Onions

Consumers Seeking “Sweet” Onions - Vidalia “Demand”

Low Sulfur Soils

<http://extension.psu.edu/plants/vegetable-fruit/news/2010/factors-affecting-pungency-in-sweet-onions>

We don’t focus on low Sulfur onions at Brix... in fact we emphasize Sulfur in our fertility program

“Selenium & Sulfur to Produce Allium Functional Crops”

<http://www.mdpi.com/1420-3049/22/4/558/pdf>

### Sulfur & Selenium

Elemental Sulfur – Tiger 90 Organic

Sulfur pastilles: 20-40# per acre annually to build S levels... require soil biology to release, which require warmer soil temperatures

#### Sulfate forms of Sulfur

Calcium Sulfate (Gypsum) – 200# per acre will supply ~34 # S

Sul Po Mag (K-Mag or Trio)

Potassium Sulfate

**Selenium – Sodium Selenite, Sodium Selenate**

### Cabernet Onions – August 3, 2016



### Evaluating Yields and \$ per bed foot

Cabernet Onions 2017 – a good fresh onion

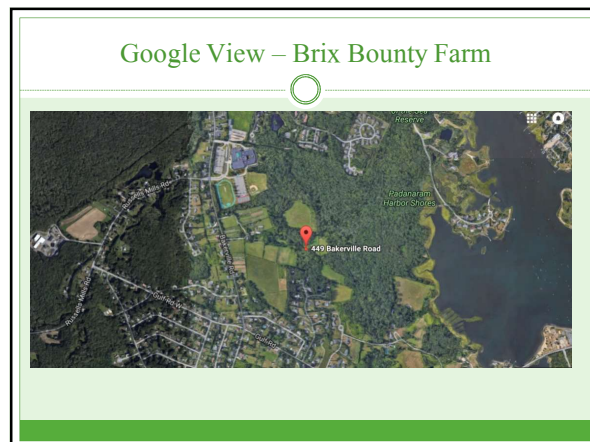
Trial 6” spacing in highest fertility field

Yields = 21 heaping pints

Selling at \$3 per for early onions (late July)

\$63 / 6 bed feet = \$10 plus per bed foot

... consider post harvest costs, including storage, potential losses, and “topping”



### Context – Brix Bounty Farm, Dartmouth, MA

- Dartmouth – population ~35K, New Bedford 95,000
  - Agricultural Community, UMass Dartmouth, Coastal, Summer Population
- Derek Christianson – growing veg in NE since 2002.
- Brix Bounty Started in 2008 – Leased Land
  - Moved to larger acreage in 2014 -- ~10 acre footprint
- 3 Full-time Farmers “in-season” including myself
  - 1-2 additional part-time during the high season
- All Produce Direct Marketed - ~\$185K in Veg Sales in 2017
  - Summertime CSA - \$42K
  - (Honor System) Farmstand - \$124K
  - Farmers Market (downtown NB) – \$10K
  - Wintertime CSA - \$10K

### Context - Brix Bounty FY17 Budget Highlights

- Veg Income: \$185 K + Other Farm Income: ~ \$5K
  - ~7-8 acres in production w/ some 2x cropped, 3 full-time farmers in season, 1-2 part-time, + a few harvest helpers...
- Expenses (top categories):
  - Personal Salary (Owner’s Draw) \$40-45K (24%)
    - × 3500 hours/year... as many as 90 hours/week + in high season
    - × Katie (wife) is primary caretaker for our 3 children, support for long hours
  - Labor \$65K – continue to increase wages as farm budget allows (35%)
  - Rent \$12-14K (note: includes some hired tractor work)
  - **Fertility \$18K (~10%)**
  - Seeds \$9K (~5%)
  - Supplies \$9K (~5%)      Capital Improvements \*varies – \$5.5K in '16 (3%)
    - ..... ~\$30K in '17 (fieldhouse & farm truck)

### Considering Costs – Materials are “in-expensive”

Full Spectrum Fertility in '17 at \$2K acre for materials  
 this includes everything from cover crops, potting mix, soil testing, to amendments...

**Supercharge a bed at \$400/acre for amendments/fertilizer**  
 Sidedress a bed at \$100-\$200/acre for materials

At Brix ~1,200 sq./ft. beds (ca. 200' x 6')  
 Yield 500 marketable heads of Lettuce  
**\$2,000/acre > \$55 per bed or \$.11 per head**

At (“low yield”) 4# per bed foot onions - **cost \$.07 per pound**  
 Supercharge cost of \$12 per bed or < \$.02 per pound



### “Qualifying Considerations” – Water Decisions

- All of our crops are direct marketed, we do not maintain wholesale accounts, and the farm can handle varied maturity dates each season.
- Our coastal location is less extreme than other parts of Massachusetts, lower summer temperatures.
  - In 2016 we received ~5” of rain from June 1 – Sept 15, better than some... in 2017 we have received <1 inch of rain in the last 5 weeks
- Peak marketing Season is August... we don’t grow massive amounts of storage crops for the late fall/winter.
- We do occasionally experience crop failures...

### Variety Selection

At Brix we select varieties for yield, marketability, and highlight diversity

Storage is less critical for our market season



### Current Onion Variety Selection at Brix

Early Mini Onions - Late June/July  
**Eclipse & Purplette**

Fresh (early) Onions – Mid July – August  
**Ailsa Craig, Cabernet, Sierra Blanca, Tropea**  
**(trials '17): Zoey, Blush**

Storage Onions – September onward  
**Cortland, Patterson, Yankee, Red Hawk, Red Wing**



### Cluster Planting

4 seeds/cell in 98’s  
(aim for 3 plants/cluster)

tp – 3 rows/bed  
9” spacing in row

Mini-onions – 128’s  
(or high fertility beds)  
6” spacing in row



### Growing Onion Starts

Prefer cluster planting from cells b/c of efficiency at TP... alternative > nicer onions from open trays set individually

Target starting date – final week of February – early March  
could start as early as Feb 1 with heated prop house

Target TP date – early April through early May ... depending on the season

Target – maximize top growth before the solstice

### Greenhouse Onion Fertility

We use Vermont Compost Fort Vee

Either drench or (“inject” with Hozon”) additional N (and calcium ?) if looking tired and/or delayed transplanting...  
 2007 spring April snowstorm in NY > delayed onion transplant

Now, typically standard to inject to improve TP vigor


Fish – Organic Gem or Neptune’s Harvest  
 Liquid Nitrogen  
 BioMin N - <http://jhbiotech.com/docs/Biomin-N.pdf>

### Field Fertility

Include focus on Calcium  
 early season N & P ...  
 may use row cover to accelerate early growth

**Sidedressing**  
 Late May/Early June  
 if necessary  
 (avoid late Nitrogen)

Late Sept Scallions 2016



### Strategies for Onion Maggot Control

**Blue Sticky Cards > Monitor & Trapping**

**Beneficial Nematodes**  
*Steinernema feltiae*



### Cultivation, Cultivation, Cultivation

- 1<sup>st</sup> cultivation: scuffle hoe & wheel tracks
- 2<sup>nd</sup> cultivation: handweeding
- 3<sup>rd</sup> cultivation: scuffle hoe & wheel tracks
  - (optional sidedressing beforehand)
- 4<sup>th</sup> cultivation: cobra & handweeding (aeration)
- 5<sup>th</sup> cultivation – wheel tracks only
- 6<sup>th</sup> cultivation – handweeding if necessary
  - This final cultivation, especially important for long season varieties

**Or... black plastic, mechanical cultivation, etc...**

### July 15 2016 – Leeks & Carrots



### Pests & Diseases

Root Maggots

Thrips

Purple Blotch (Alternaria)

### Shallots



### Harvesting & Marketing

Important to consider labor costs related to harvest & post harvest (significant for most onions)...

**We target 1 minute per bed foot (for the crew) for fresh onions**

We bunch early onions if we are trying to make an impression and if tops are nice quality

Otherwise top & cut roots in the field...

Spray clean for early fresh types

Otherwise "dry" for later types

### Reduced "sorting" times

We often sell our onions & shallots by the volume...

½ pints for shallots - \$3

Pints for early mini onions - \$3

Quarts for onions - \$5

Sorted sizes: Small (\$.50 ea.), Medium (\$.75 ea.), Large (\$1 ea.), Jumbo (\$1.25 - \$1.50 ea.)

**Target \$2+ per pound for Onions**



### Takeaways & Leverage Points

Solid Transplants

Plant Population (Root Maggot Control)

Early Season Growth

Weed Management

Harvest and Post Harvest Efficiencies

### Thank You

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