

Peace Tree Farm

# Living Soil, Sterile Water—Growing sans Chemicals

EXPO-FIHOQ November 2018

### Simplest Talk EVER!!

### START Clean, Stay Clean

### Never a Problem!!

### Well, maybe NOT!

### GLOBAL Shipping!!

#### Hitchhikers!

- -Xanthomonas
- -Xylella
- -Ralstonia
- -EAB, Spotted Lanternfly
- -SWD

### World Wide Travel

### CIVILIANS

### LOCAL Interaction

# Visitors Events Friends, Kids

### BIOSECURITY

# Structural AND Cultural Controls

### Ontario Vegetable Propagator

## We do it to OURSELVES!!

### Holding Stock

### Pet Plants!

# Long Term Crops

### Root Mealybug Root Aphid Pupal Insects Diapause, Dormancy

#### SPORES!!

# Can be MANY years!

### Phytophthora

### Pythium

### Thielaviopsis

Lives on concrete?

### WATER Related

## Empty Toolbox!

#### Start EARLY

# BEFORE a crop!!







### PACE 49

### RESIDUAL!!

## Before you BUILD!!

### SANITATION













#### If you have Weeds, You have INSECTS!!

## IT'S A MULTITUDE OF SMALL AND LARGE TARGETED STEPS

# MUCH tougher once it is inside the GH!

# HOW do we keep problems OUT?

#### PROTOCOLS

#### Accountability!

### Follow the RULES!

### Seems so BASIC, right?





### EVERYONE washes!!

### Especially the Ag Inspector!

#### Certifications!

## USDA Certified Organic

#### GAP

#### FSMA

# Food Safety, but effective first line

#### Are OUR issues more elemental?

### Pest and Disease

#### Quarantine and Exclusion!

#### CLEAN Sourcing

#### Prophylactics!

#### ENTRY MATS?

## CARTS? TRUCKS?

#### Double Door

#### Disease Complex

### Incorporating Biologicals!

### LOTS of options, FINALLY

- Cease
- Milstop
- Rootshield, Actino stuff
- Regalia----Stargus-----SAR?
- Coppers
- Peroxides?
- LOTS MORE COMING FAST!!!

### Water and AIR management

- CELLULAR interface
- Oxygen
- Pathogen threshold
- Insect Acceptability?
- ENVIRONMENTAL CONTROL!!
- Breeding, Cultivar, Consumer

## WATER is the key!!

#### LIVING SOIL, STERILE WATER!

### Hard to ADD Biology to Soil

# EASY to REMOVE from Water

### Soil Microbiology

#### INOCULANTS

### Composts, Teas

### Nurturing and Shelf Life!

#### BIOCHAR!!

### FERTILITY

### ORGANIC ISSUE

## MIX at time of Use!!

#### The Peace Tree Mix

- 12.5% HydraFiber, plus Yucca
- 7% Compost!
- 2 types of Peat plus Coir—AIR!!
- Rootshield+
- pH adjusted, lime, etc
- Verdanta N-Vita at potting
- TerraGrow

# ALWAYS look to build the soil and microbial life









#### IRRIGATION



### KEY: Remove Organic Matter!!

# We are Filtering down to 5 MICRONS



### OZONE

## Oxidize microbes

#### NO Resistance

#### Hyper-oxygenation

#### >10PPM Dissolved 02 Anaerobes really struggle!!

## ORDO THEY?

#### U. Of Florida

## Oxygen Crucial

## **NO** Evidence for Hyperoxygenation

### Advantages

- High \$\$ upfront, low ongoing
- NO resistance!
- The O2 is a key---no toxic residues
- Better Germ—5-7% claimed
- Faster turn, 2 weeks.... supposedly
- Fertilizer efficiency
- Microbial environment!!





#### GLASS Filter



## Isolated systems!



# Beware the Snake Oil Salesmen!!











#### Water Options

- Ozone
- Chlorines
- Peroxides
- Sand Filtration—slow or fast
- UV Light
- Charcoals?

#### Quarternary Ammonium Salts?

#### CAREFUL!!

#### CHEMICAL-FREE? Multi-cultural

## Why, That is IMPOSSIBLE!!

#### Propagation @ Peace Tree





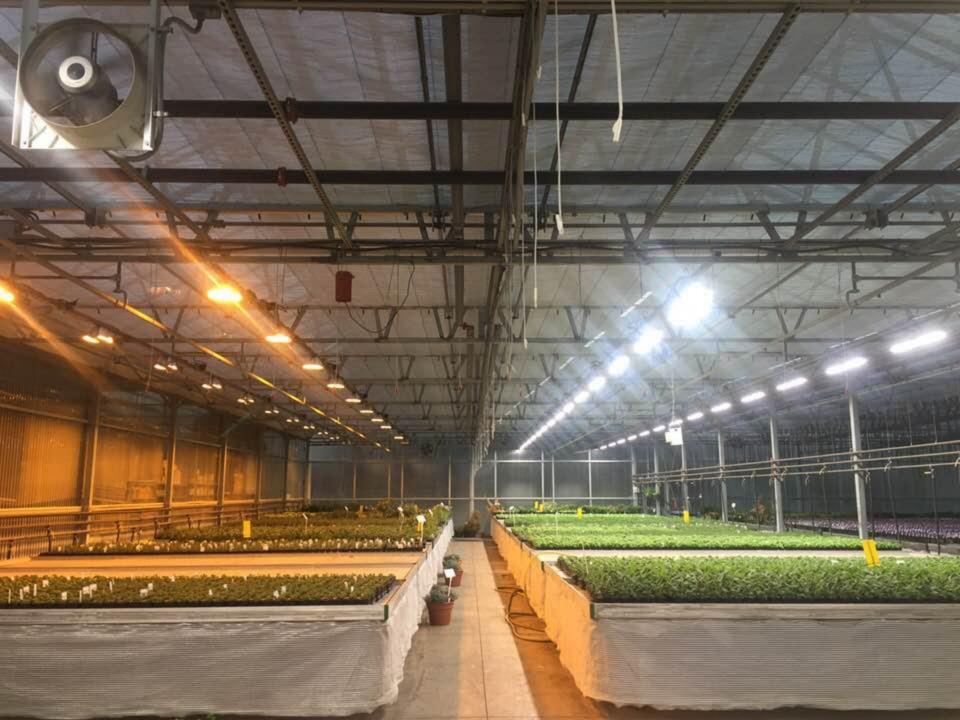


#### INTENSITY!!

### Most INTENSIVE Part of ALL

- -ENERGY!
- Technical Germ
- Optimization
- -Environment-light, temp, management
- Seed storage and counts

# Lights for Disease Control!!



## Basil Downy Mildew

#### Blue Wave!

#### Prop is ALL about management of the ENVIRONMENT

### ALL the Environments!!



# Particularly the SOIL!

#### Moisture, Oxygen, Pore Space, Vascular Interface

# OPTIMIZED Environment









**ORG Caulifl Veronica** 





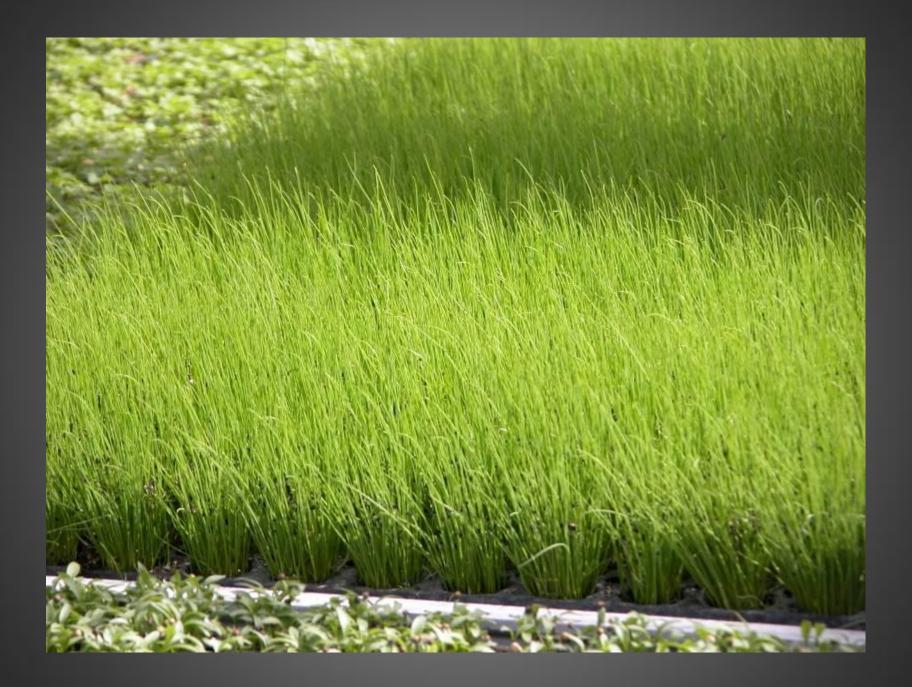




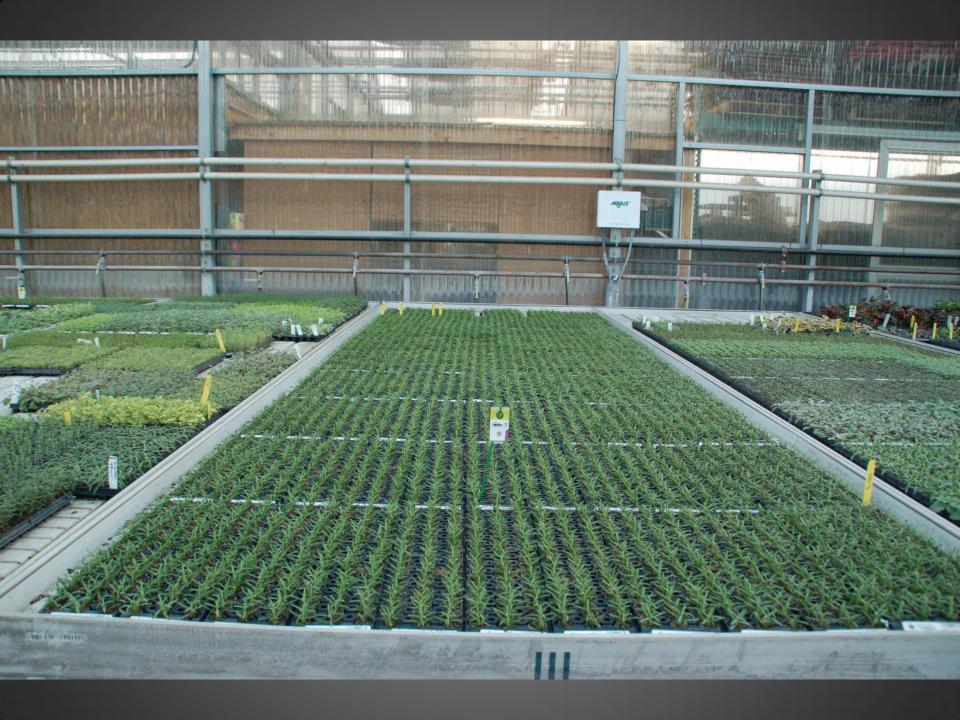
#### UNIFORMITY!

#### BOOM SYSTEMS













# Size of Operation is immaterial





# It Ain't EASY Being GREEN!!



