



**HYDROPONIC VINE CROP TRAINING SERIES:  
CROP SELECTION, NUTRIENTS & LIGHTING**

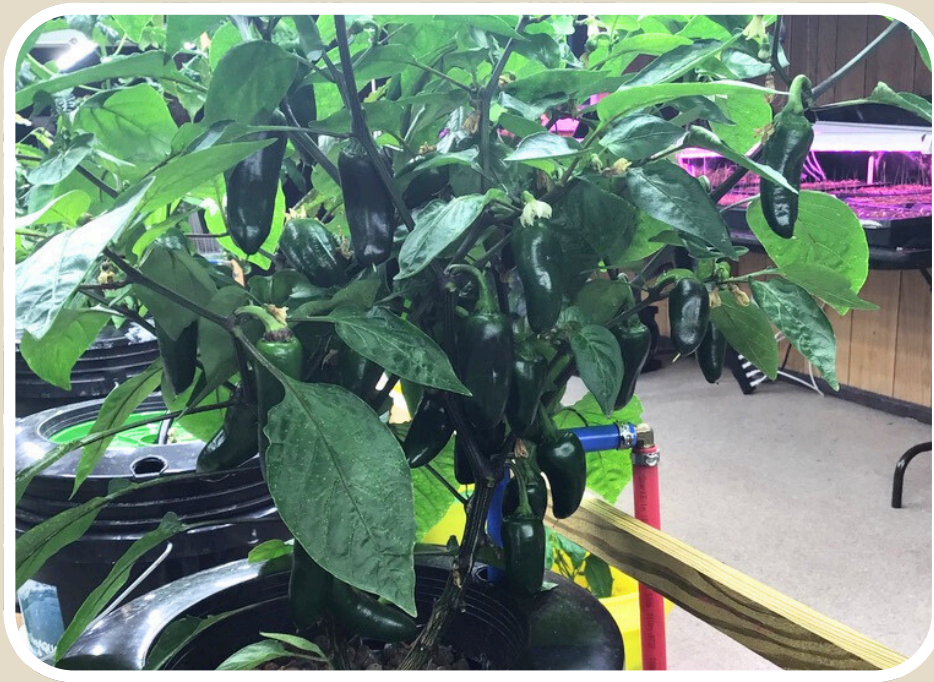
**PRESENTED BY:** JOE KEWAN AND MAX LYONS  
**DEVELOPED BY:** THE KODIAK ARCHIPELAGO LEADERSHIP INSTITUTE  
**SUPPORTED BY:** THE CHUGACH REGIONAL RESOURCE COMMISSION  
AND THE ADMINISTRATION FOR NATIVE AMERICANS

# Presentation Overview

**Crop Selection** - Seed varieties & selecting hydroponic performers.

**Nutrients** - Popular fertilizer options & feeding strategies for vine crops.

**Lighting** - Choosing the correct light source & the importance of different light spectrums.



# Hydroponic Performers: Tomatoes

**“Marbonne”  
Beefsteak**



**“Cauralina”  
Heirloom**



**“Enroza”  
Slicing**



**“Amai” - Grape**



**“Sun Gold” - Specialty**



**“Tidy Treats” - Cherry**



# Hydroponic Performers: Cucumbers

**“Corinto”  
Slicing**



**“Unagi”  
Specialty**



**“Socrates”  
Seedless/Thin Skin**



**“Excelsior” - Pickling**



**“Olly”  
Red Bell**

# Hydroponic Performers: Peppers

**“Ero”  
Mini Yellow  
Bell**

**“Nova” - Orange Bell**



**“Amaretto” - Yellow Bell**



**“Olympus”  
Green/Red Bell**



**“Jedi” - Jalapeño**



**“Hungarian Hot Wax”  
Mild/Hot**



**“Lunchbox Mix” - Sweet**

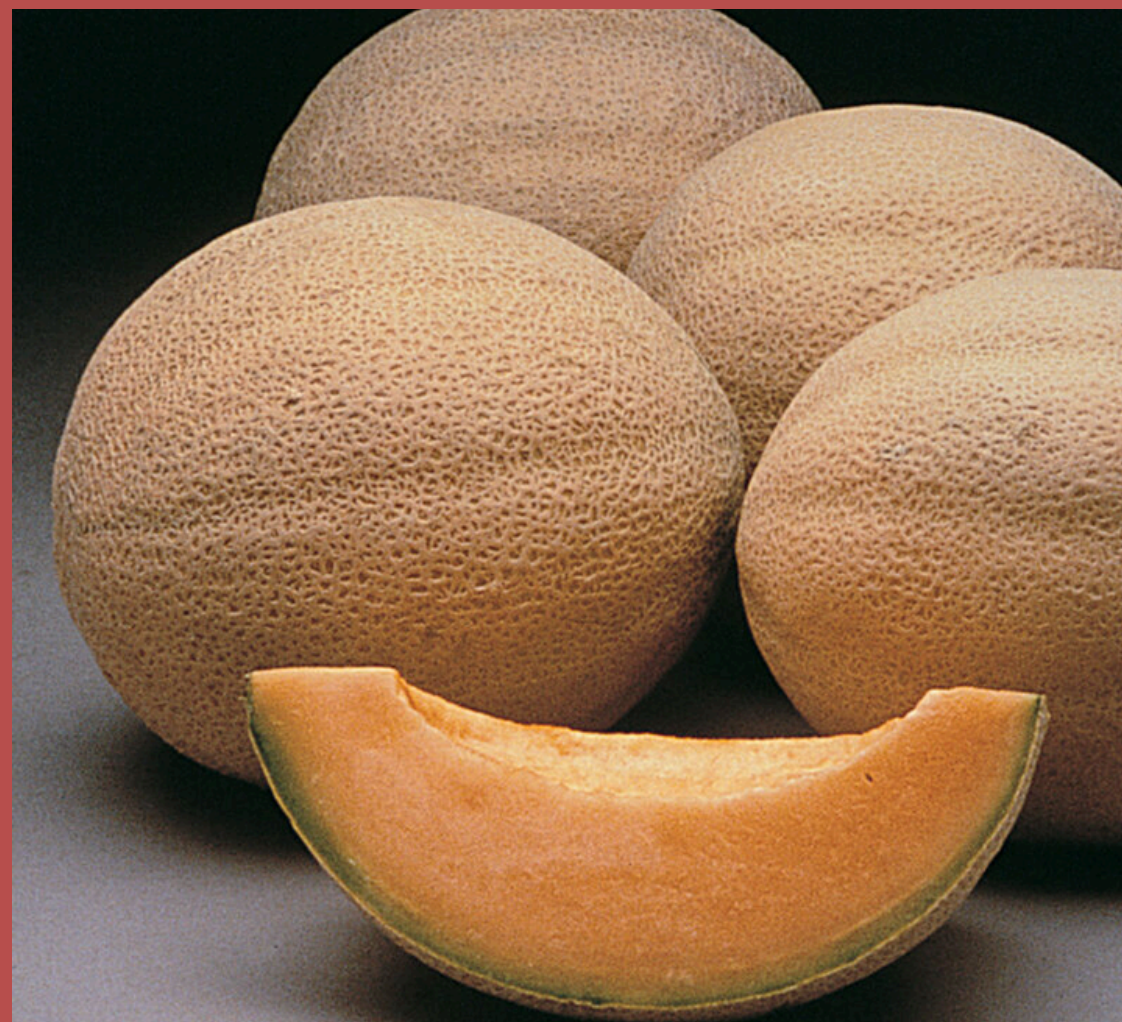


# Hydroponic Performers: Melons

**“Sugar Baby”  
Watermelon**



**“Athena”  
Cantaloupe**



**“Honey Orange”  
Honeydew**



# Plant & Seed Terminology

## Indeterminate vs Determinate

**Determinate:** Plants that grow to a set size and produce most of their fruit in a short period of time.

**Indeterminate:** Plants that continue growing, flowering, and producing fruit throughout the season and beyond.

## Heirloom & Open Pollinated

**Open Pollinated (OP):** Seeds that reproduce true to type, meaning saved seeds will grow plants similar to the parent.

**Heirloom:** A type of open-pollinated variety that has been passed down for generations (often 50+ years) and maintained for flavor, culture, or history.

## Hybrid & F1

**Hybrid:** A plant created by crossing two different parent varieties to combine desirable traits.

**F1 Hybrid:** The first generation from that cross, often bred for uniform growth, vigor, and disease resistance. (Don't save seeds from F1 varieties)

## Hydroponic Performer

A plant variety that performs well in hydroponic systems.

## Parthenocarpic Varieties

Plants that produce fruit without pollination.



# Common Fertilizer Options for Hydroponic Vine Crops

## Dry Fertilizer:

- 2 or 3 part premixed options (Ex. A & B)
  - Crop King
  - Jacks
- Custom Recipes
  - Mix your own recipe with individual nutrient components
- \*Dry fertilizers are more efficient to ship than liquid fertilizers.

## Liquid Fertilizer:

- 2 or 3 part premixed options
  - General Hydroponics
  - Fox Farm

# Feeding Schedule For Tomatoes, Cucumbers & Peppers

## Seedling Germination

Weeks 0 - 2

### Feeding Rate:

EC = 1 (0.5-1)  
pH = 6 (5.5-6.5)

## Leaves & Stem Growth

Weeks 2 - 6

### Feeding Rate:

EC = 1.5 (1.3-1.7)  
pH = 6 (5.5-6.5)

## \*Exception For Peppers\*

- Peppers are less salt tolerant and require a lower EC level. Keep in the “Flower & Fruit” range.
- EC = 2.0 (1.8-2.2)
- pH = 6

## Full Production

Weeks 12+

### Feeding Rate:

EC = 2.5 (2.3-2.7)  
pH = 6 (5.5-6.5)

## Flower & Fruit Growth

Weeks 7 - 12

### Feeding Rate:

EC = 2.0 (1.8-2.2)  
pH = 6 (5.5-6.5)

**Growers Tip:** Mix/Check EC & pH levels in 5-gallon bucket prior to adding to your reservoir to avoid mistakes and develop a consistent routine/ratios!

# Growth Schedule Guidelines For Cucumbers Tomatoes & Peppers

## Cucumbers

Week 0-2 (Day 0-14):  
Planting & Germination

Week 3 (Day 15 - 21):  
“Boost” If Needed

Week 4 (Day 22+):  
Transplant



## Tomatoes

Week 0-3 (Day 0-21):  
Planting & Germination

Week 4 (Day 22-28):  
“Boost” If Needed

Week 5 (Day 29+):  
Transplant



## Peppers

Week 0-4 (Day 0-28):  
Planting & Germination

Week 5 (Day 29-35):  
“Boost” If Needed

Week 6 (Day 35+):  
Transplant



# Fertilizer Considerations

## Function

Does your fertilizer mix contain all of the essential nutrients to grow your selected plant species?

“Complete” nutrient solutions contain all macro & micronutrients required by a plant to complete its life cycle.  
(From Seed to Seed)

## Availability

How long does it take to prepare your nutrient solution? Is the process easy or difficult?

How difficult is the fertilizer to order to your community?

How long is your fertilizer shelf stable?

## Cost

Can you sustain the cost of the chosen fertilizer mix?

How much does shipping cost & how long does it take?

Can it be ordered in small and/or large quantities?

# Memetic Onetai Hydroponic Fertilizer

Learn More At:

fairbankssoilwater.org/hydroponics/



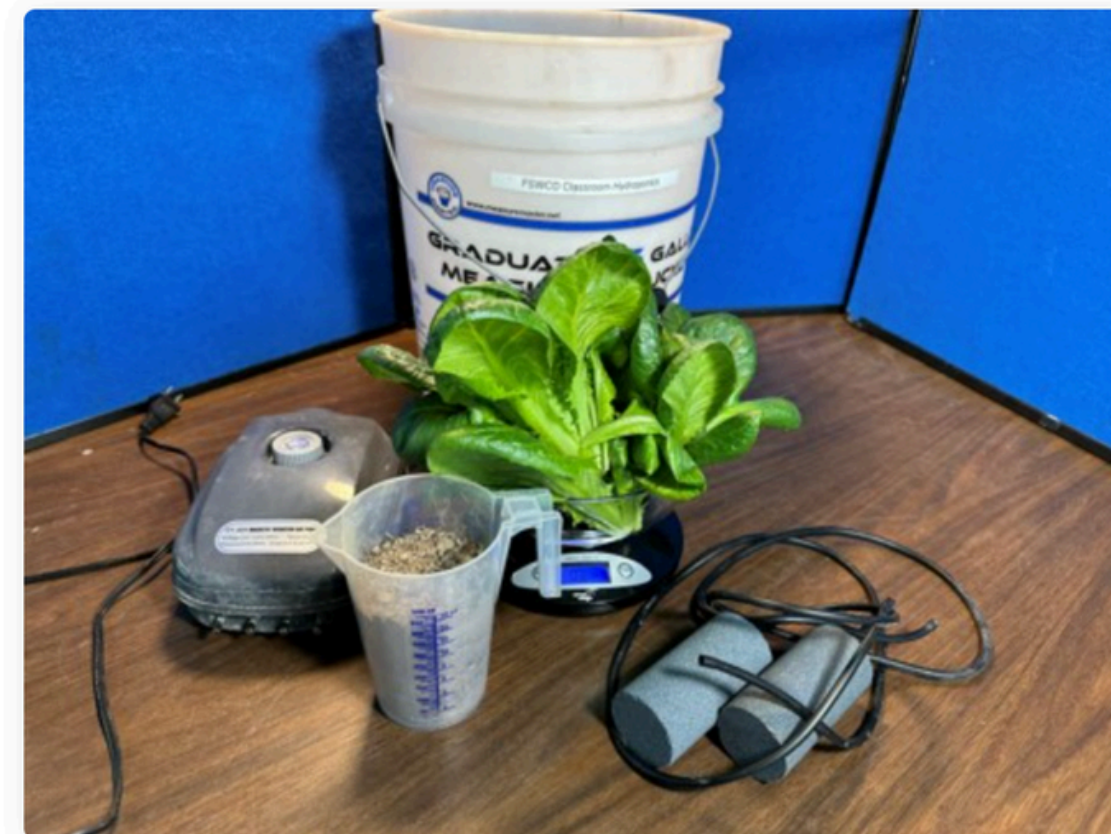
New Chrome available

## Biologic Fertilizer System

We have been developing an easy method of brewing microbe based fertilizer that is somewhat like sourdough. Happy well fed microbes produce food for your plants. An easy system to build and maintain for a consistent source of low cost plant fertilizer. Click on the links below for information on how to build one:

[Memetic Onetai One Page Instruction Sheet](#)

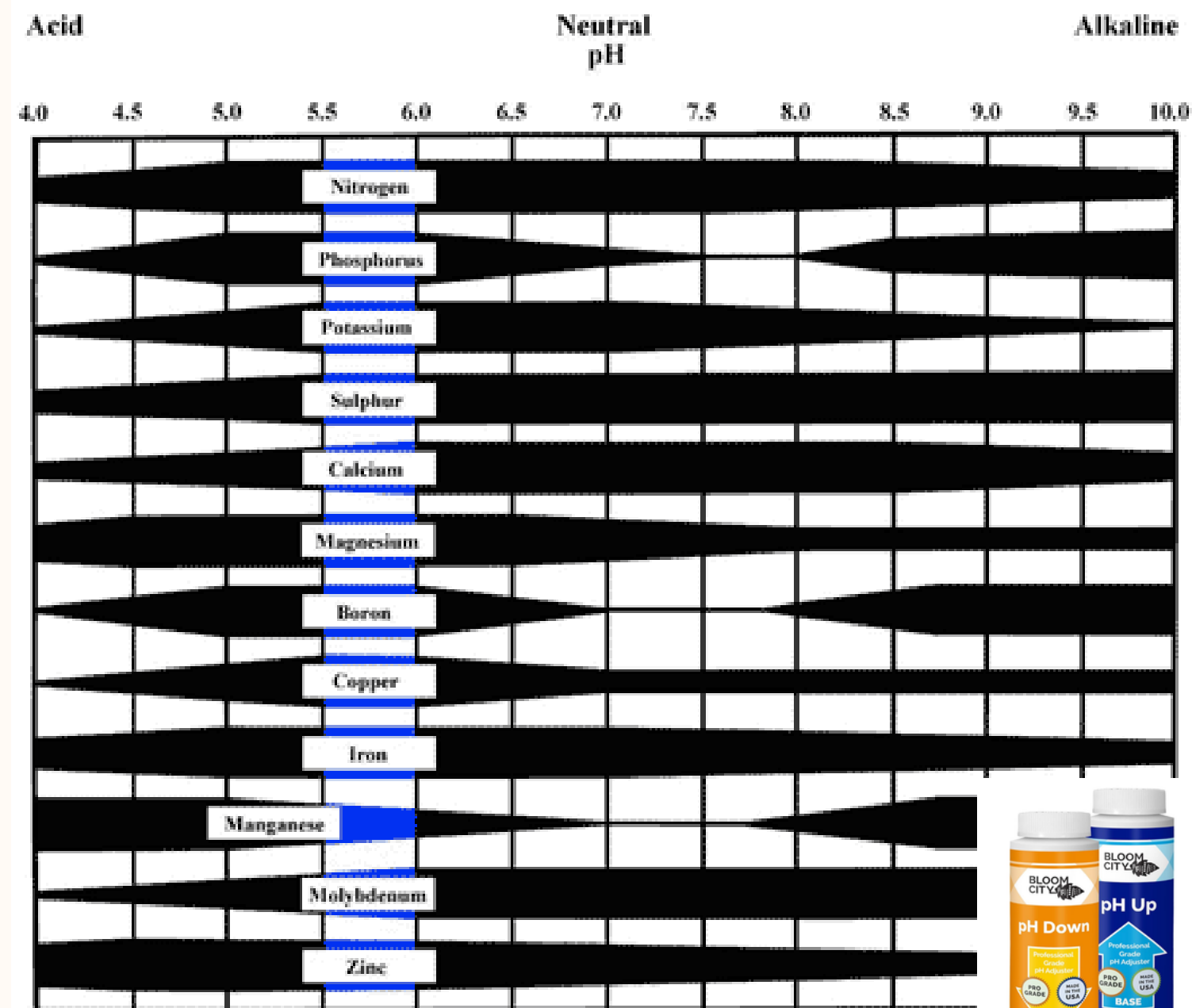
[Memetic Onetai System Information and Directions](#)



# Nutrient Management Guidelines

## pH Management (5.5-6.5).

Influence of pH on the availability of plant nutrients



Adapted from R.E. Lucas and J.F. Davis (Soil Science 92:177-182, 1961)



## Nutrient Management (Recirculating Systems)

- **Monitor nutrient solution regularly** and adjust EC and pH to maintain stable growing conditions. (Don't forget to calibrate your meters!)
- **Completely replace nutrient solutions on a recurring schedule.**
- **As plants grow, they absorb nutrients at different rates**, causing nutrient ratios in the solution to shift over time. (Remember EC is only a general guideline!)
- **Salts can also accumulate in the reservoir**, which may reduce plant health and productivity.
- **General Reservoir Replacement Guidelines**
  - <30 gallons: replace every ~6 weeks
  - 30-100 gallons: replace every ~8 weeks
  - >100 gallons: replace every ~10 to 12 weeks

# The Importance of Lighting

Plants use a broad range of light wavelengths throughout their life cycle. Different parts of the spectrum influence vegetative growth, flowering, and fruit production.

## Blue & White Light – Vegetative Growth

- Supports early plant development during propagation and vegetative stages
- Promotes strong root systems and compact plant structure
- Encourages thicker leaves and prevents excessive stretching

## Red Light – Generative Growth

- Critical for flowering and fruit production during mid to late-stage growth
- Drives photosynthesis efficiency
- Enables plants to convert light energy into sugars (glucose) from carbon dioxide and water while releasing oxygen

## Full Spectrum Light – Mimicking Natural Sunlight

- Provides a balanced mix of wavelengths similar to sunlight
- Supports plants through vegetative, generative, and balanced growth phases
- Full-spectrum LED fixtures are widely used because they simplify lighting management and maintain consistent plant development

A combination of natural and artificial light can be used for vine crop production and is sometimes needed to optimize plant growth.



# Full Spectrum LED Lights

## Full Spectrum LED Options:

ViparSpectra

Vivosun

Dommia

TheOneGrow

MarsHydro

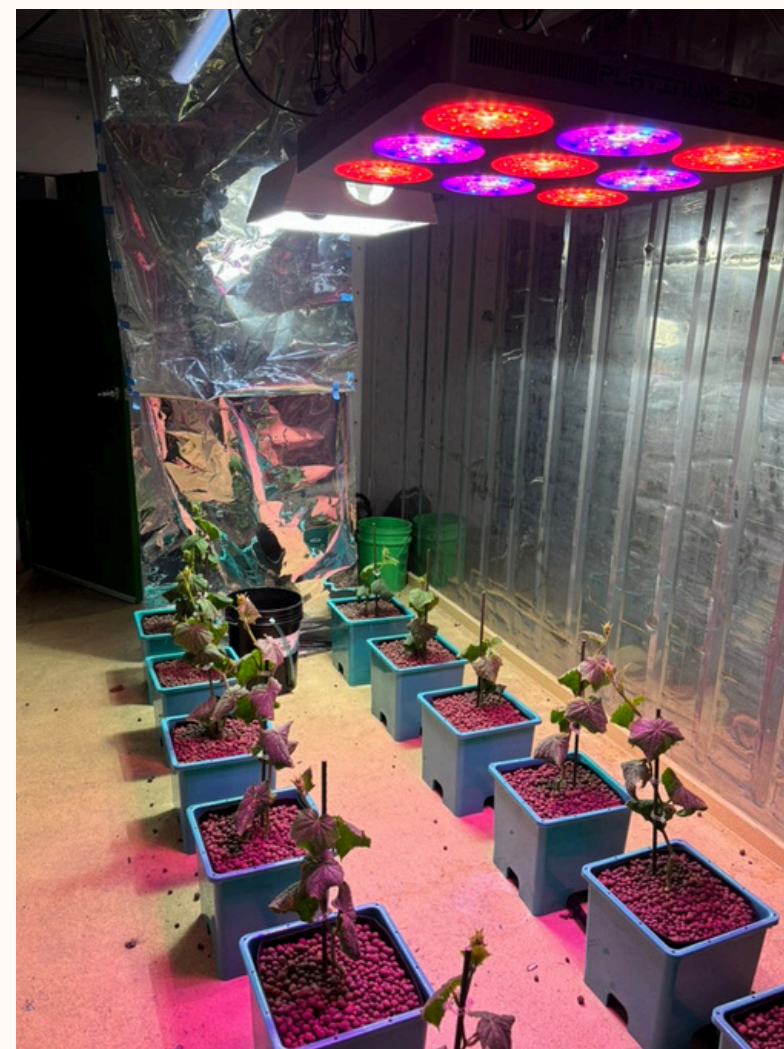
Fluence

Covert

Ace Infinity

## Why Growers Choose Full Spectrum LEDs

- Energy-efficient (lower electricity costs)
- No need to manually switch between color spectrums
- One fixture supports the entire crop cycle



# Vine Crop Lighting Recommendations

## Pre-Transplant (Seedlings / Early Growth)

- Light Height: 6–12" above plants
- Photoperiod: 14–16 hours/day
- Target DLI: 6–10 mol/m<sup>2</sup>/day

## Post-Transplant (Vegetative → Fruiting)

- Light Height: 16–24" above canopy
- Photoperiod: ~16 hours/day
- Target DLI: 25–30 mol/m<sup>2</sup>/day

## How to Calculate DLI

- Use PPFD specifications from the manufacturer
- Measure directly with a PAR meter for higher accuracy

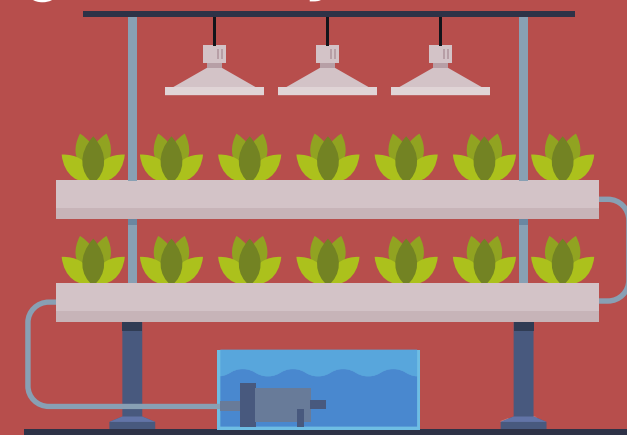
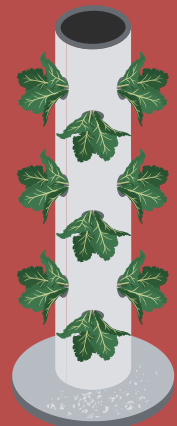
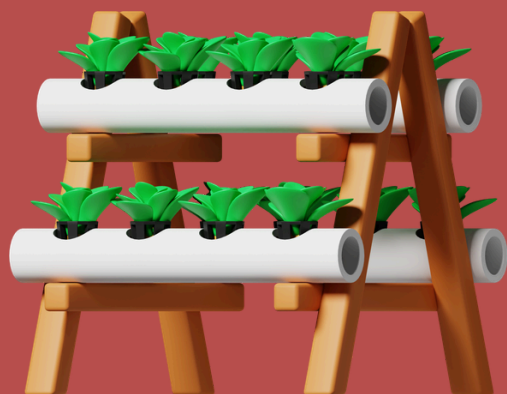
## Why Lighting Matters

- Insufficient light can cause plant stretching, weak growth, and reduced yield.



# Presentation Summary.

- **Choose the Right Plant Varieties:** Select high-performing hydroponic varieties suited to your system, climate, and local market demand. Growing the same crop type within a system often makes management easier because plants share similar growth cycles and nutrient needs. However, multiple crops (e.g., tomatoes, cucumbers, peppers) can be grown together if nutrient levels and spacing are carefully monitored.
- **Manage Nutrients Carefully:** Hydroponic systems rely entirely on a “complete nutrient solution” to support plant growth from seed to seed (harvest). Choose fertilizers that supply all essential macro and micronutrients, maintain appropriate EC and pH levels for the crop, and replace nutrient solutions on a regular schedule to prevent salt buildup. Reservoir size influences this schedule. (Example, a 25-gallon reservoir may require replacement every 4–6 weeks depending on plant size and system uptake.)
- **Provide Adequate Lighting:** Vining crops such as tomatoes, cucumbers, peppers, and melons require higher light intensity than leafy greens or herbs to support flowering and fruit production. Ensure your lighting system delivers the proper intensity, spectrum, and coverage across the entire crop canopy. Efficient full-spectrum LED lighting is typically the most reliable option for maximizing growth, yield, and energy efficiency.



# Quyanaa - Thank you!

## Sources

### **Dr. Triston Hooks**

Assistant Professor of Practice  
Biosystems Engineering  
Hydroponic Specialist - University of Arizona

### **Tom Lance**

Hydroponics Technical Advisor - Kodiak, AK

### **Johnnys Seeds**

johnnyseeds.com



[www.Alutiiqgrown.com](http://www.Alutiiqgrown.com)