Fertigation for Blackberry Production in Florida

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Hybrid IST 32388
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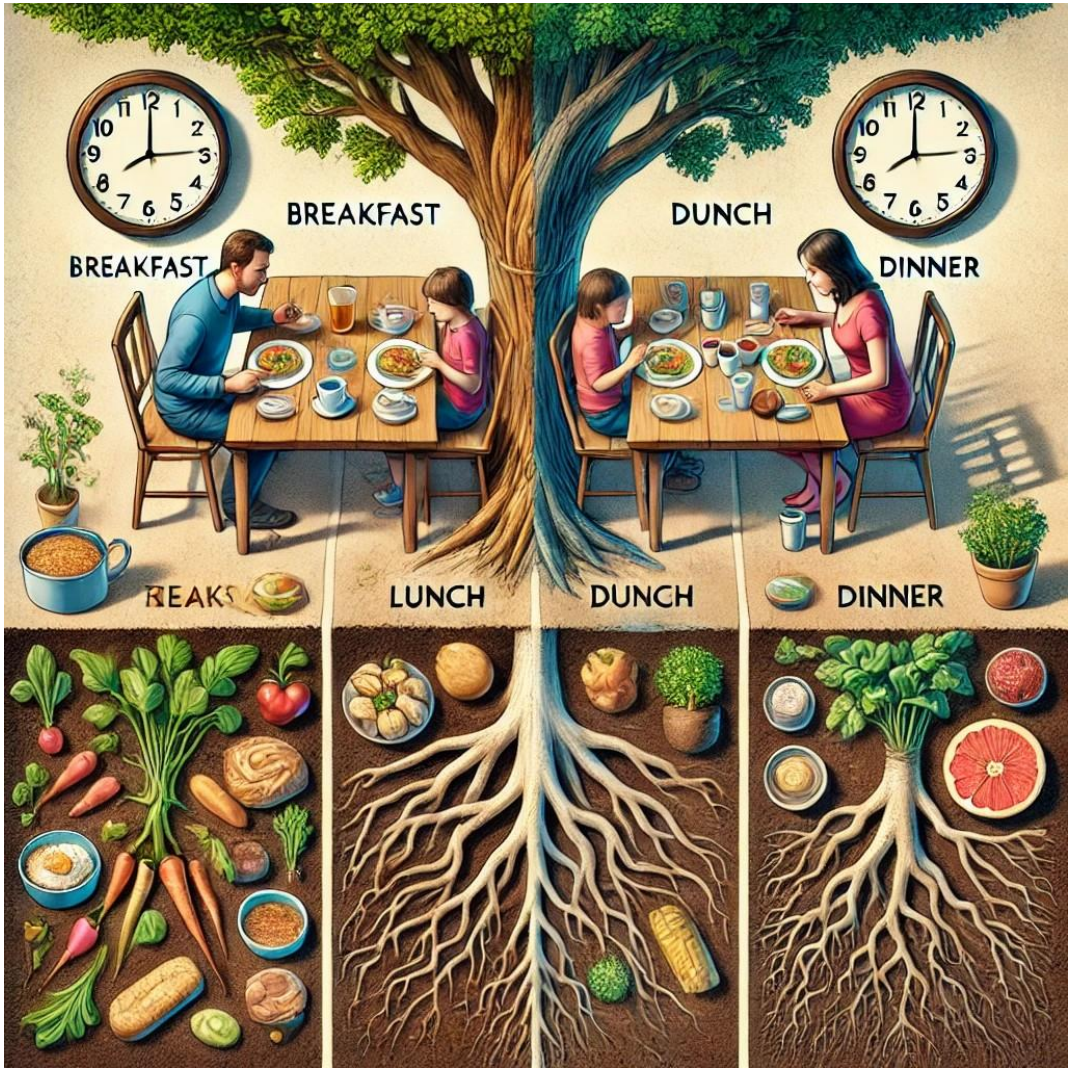
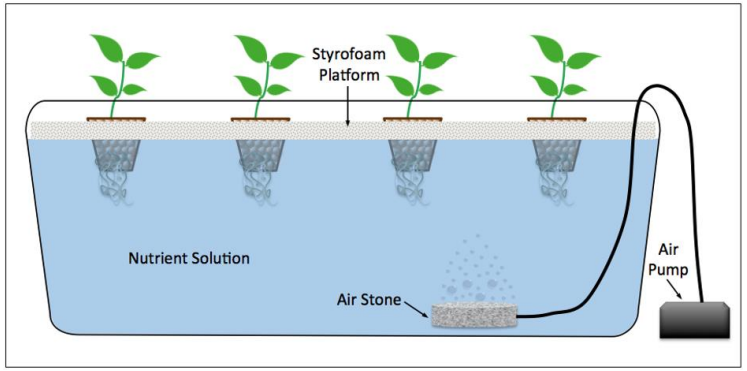
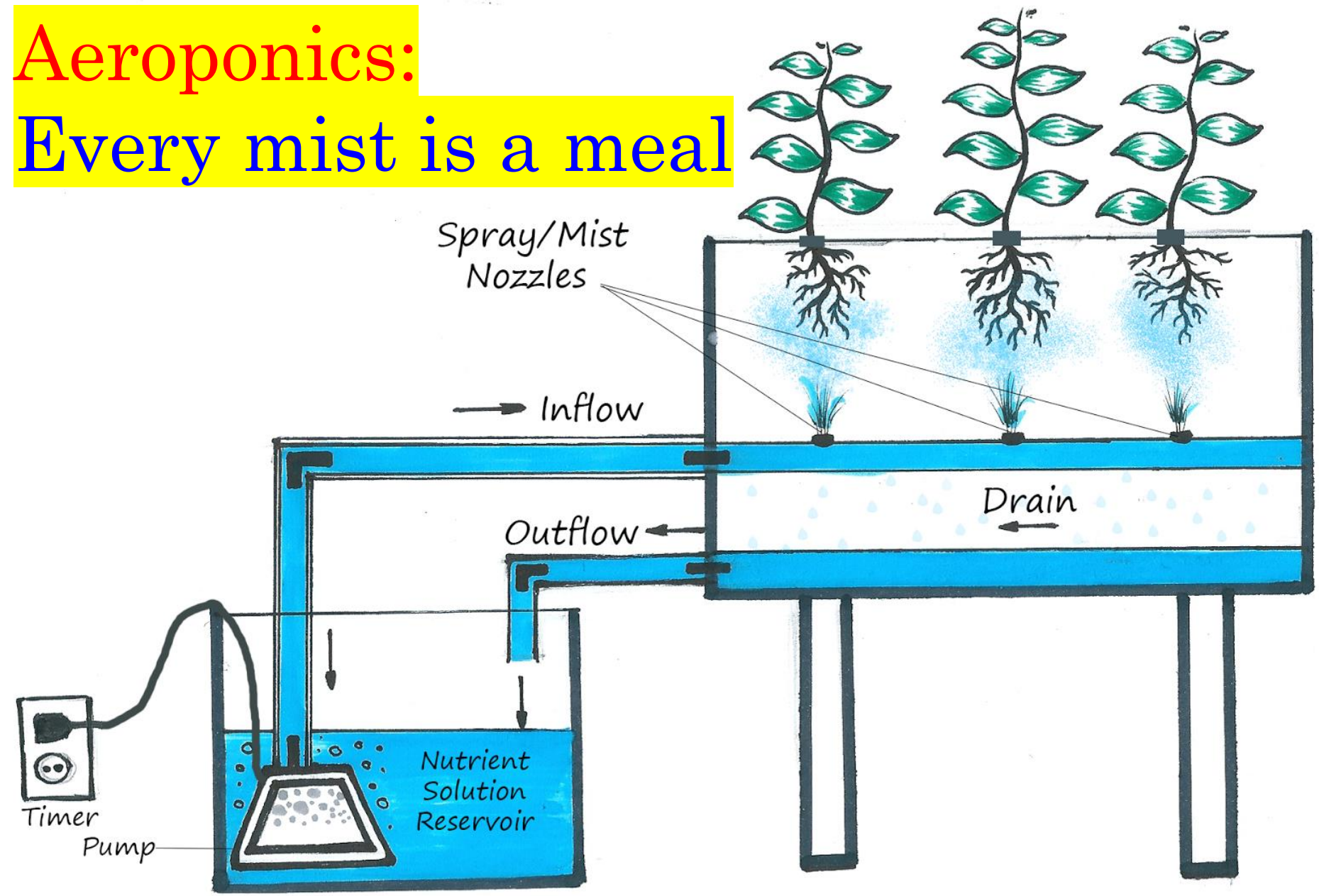
How Many Meals Do Plants Take Daily?





Hydroponics: Plants eat constantly

Aeroponics:
Every mist is a meal



https://hydroponicpassion.blogspot.com/p/aeroponic-system.html

What Is Fertigation?

- **Fertigation** is the practice of applying fertilizers through irrigation systems
- Typically drip or sprinkler systems.
- It allows precise timing and placement of nutrients in Synchronize with crop water demand.

What Advantages?

1. Precise timing
2. Precise placement of nutrients
3. Synchronize with crop water demand
4. Micro dosages of nutrients
5. Minimal leaching losses
6. Saving labor
7. Better yield

Why Fertigation?

Because it allows precise timing and placement of nutrients in sync with crop water demand.

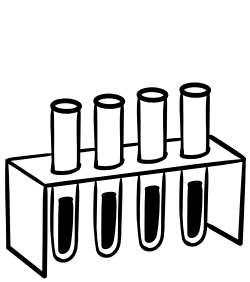
How to Fertigate Your Crop?

- Sprinkler irrigation systems.
- Drip irrigation systems.

https://qr.me-qr.com/ady8DrU4

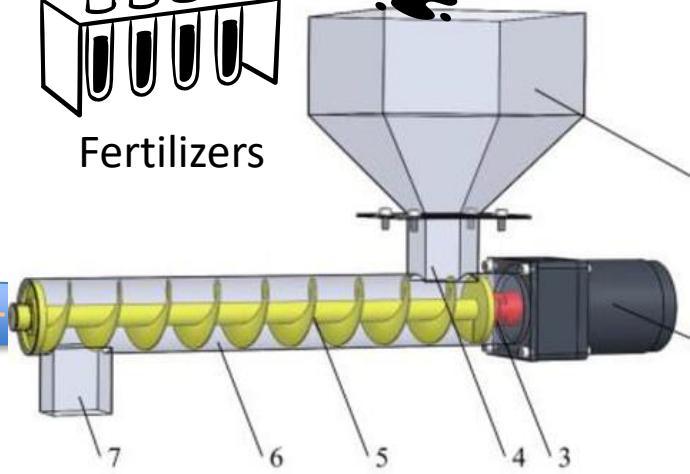
Fertigation via Drip Irrigation

- **Precise timing**
- **Delivery** to root zone
- Crop performance
- Supports **healthy growth & high fruit quality**
- Enables **split applications** = less leaching, **nutrient losses**



Fertilizers

Applies nutrients **via irrigation systems**



Steps Overview

IRRIGATION SETUP

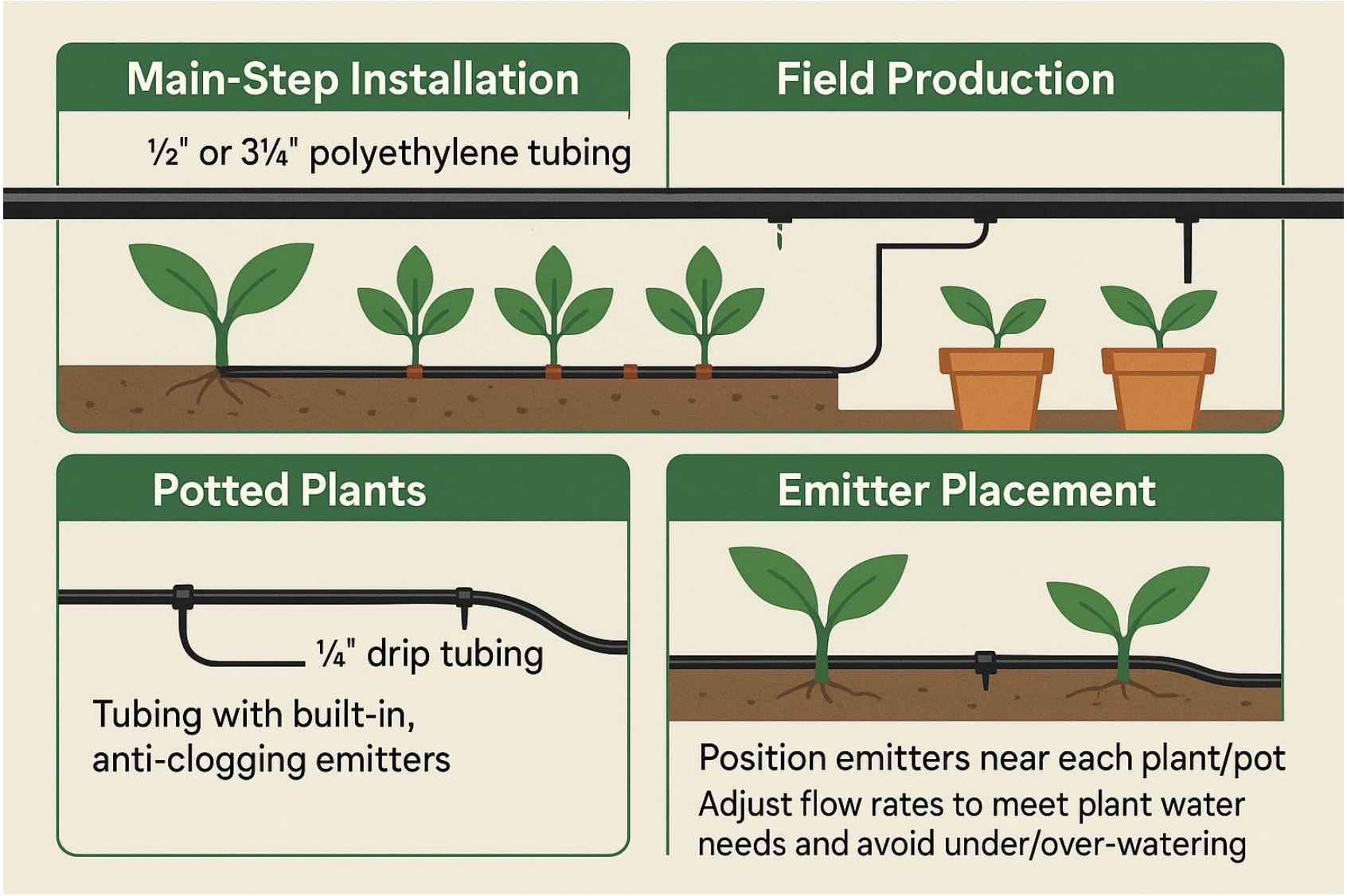
FERTIGATION SYSTEM SETUP

SYSTEM CHECKS

FERTILIZER SELECTION

IMPLEMENTATION

Step 1 - Drip Irrigation Setup



Key Components for Irrigation Systems

connectors

Timer

Pressure regulator

Pressure regulator

Hole punch tool

Step 2 - Fertigation System Setup

🚿 **After installing drip irrigation, set up a fertigation system** to deliver liquid or water-soluble fertilizers directly to plant roots.

Venturi Injector:

🛠 Key Features:

- Water- or power-driven.
- Cost-effective; ideal for small farms and low-pressure systems.

Dosatron Injector:

- Water-powered;
- Delivers precise ratios like 1:50 or 1:100 (water:Fertilizer).

Step 2 - Fertigation System Setup (II)

Peristaltic pump:

- Compressor-release mechanism.
- Controlled delivery of fertilizers (dosage)

Centrifugal Pump:

- Powered by gas-fueled engine.
- Larger use-case (Higher yield capacity).

Fertilizer Tank: Stores and feeds liquid fertilizer to the injector.

🌱 **Why It Matters:**

- Delivers **nutrients directly to roots** for better absorption.
- Ensures **accurate and consistent dosing**, optimizing growth and yield.
- Reduces **fertilizer waste** and environmental impact.

Choose the Right Fertilizer

- Use **liquid or fully water-soluble fertilizers** only
- Select **fertigation-grade fertilizers** for optimal absorption and system compatibility
- Avoid fertilizers that form **scum, sludge, or sediment** (Russan, 2018)
- **Pre-mix** in a separate container before injection
- **Stir continuously** to prevent settling (Hakkim et al., 2016)

Fertilizer Selection

🔬 Understand Plant Needs First

- Conduct **soil analysis**: reveals pH, nutrients, texture, OM
- Perform **leaf tissue analysis**: shows real-time nutrient status
- Combine both for **precise nutrient targeting** (Strik et al., 2016)

🧪 Fertilizer Recommendation

- Choose a **water-soluble fertilizer** like *Dyno Flo 5-2-8 YZ*
- Ensures even nutrient delivery via irrigation
- Designed for fertigation with optimal NPK ratios
- Include micronutrients like **Microplex** if needed
- Supports **yield and quality** (Sriti et al., 2024)

Calculation Summary

Fertilizer needed:
→ 2.2 lbs ÷ 0.05 = **44 lbs Dyno Flo**

Convert to gallons:
→ 44 ÷ 10.24 = **4.3 gallons**

Irrigation Flow Info

3,840 ft dripline @ 0.5 GPM/100 ft = **19.2 GPM**

Dilution Factor: 250 (for 200 ppm N)

Injection Rate: 19.2 ÷ 250 = **0.077 GPM ≈ 290.7 mL/min**

Injection Time: 4.4 gal ÷ 0.077 GPM = **~57 minutes**

Fertilizer Dosage Calculation – A Step-by-Step Guide

Blackberry Fertigation Example (PSREU, Citra, FL)

Fertigation Area: 19,200 sq. ft. (0.44 acres)

Fertilizer: Dyno Flo 5-2-8 YZ (5% N, 10.24 lbs/gal)

Target: 5 lbs N/acre/week → 2.2 lbs N needed

PREPARATION: 🔄 Mixing Instructions

- Add **25 gallons water** into fertigation tank
- Add **4.4 gallons Dyno Flo 5-2-8 YZ**
- Add **0.25 oz Microplex** per application

Running Fertigation

Mix	Mix thoroughly—no particles or sludge
Start	🚀 Start Fertigation
Pressurize	Pressurize irrigation system (run 10 mins before)
Begin	Begin fertigation after pressure is stabilized
Ensure	Ensure uniform application through monitored flow

Post-Fertigation Monitoring

After Application

Flush the system with clean water to prevent clogs

Inspect plants for signs of nutrient uptake

Record-Keeping & Assessment

Log:

- Amount applied
- Time & duration
- Observations

Evaluate plant response and **adjust dosage as needed**

Goal: Promote healthy growth, avoid nutrient imbalances, and fine-tune future fertigation schedules

Tips for Success

Minimizing runoff

Efficient irrigation

Responsible nutrient use

Regular maintenance

Monitoring plant health

Periodic testing

Acknowledgements

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PSREU staff

Cooperative Growers

Thank you!

Questions/Comments?

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