MICROGREENS WEEKLY DIGEST

Nutrition | Science | News

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WHAT YOU MISSED THIS WEEK

Penn State researchers just flipped everything we thought we knew about preserving microgreens. Their study on radish microgreens shows that drying at 95°C actually keeps more nutrients intact than "gentler" 65°C temperatures. Turns out, high heat immediately shuts down destructive enzymes that would otherwise chop up valuable compounds during longer drying times.

Meanwhile, Cuban architect Oliesky Fabre transformed crisis into opportunity. When Cuba's agriculture collapsed 50% during the pandemic, he started growing microgreens in shipping containers. Now his company Enparalelo teaches elderly residents to grow their own superfood while supplying upscale Havana restaurants.

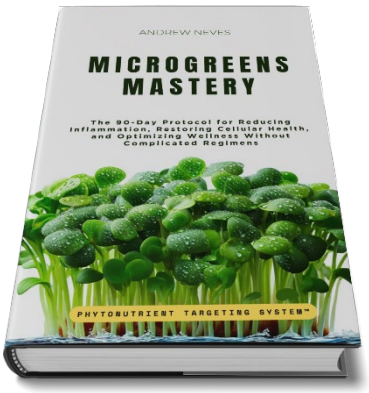
Up north, University of Manitoba researchers discovered that AI-controlled growing conditions can supercharge microgreens with four to eleven times more disease-fighting compounds. Their animal studies show improved heart function and lower blood pressure.

Plus, we learned about far-red light boosting yields up to 47%, and how smart growers are creating multiple revenue streams from pet food to skincare products. Busy week in microgreens science.

THE HIGHLIGHTS

- Hot air drying preserves more nutrients surprisingly
- Far-red light boosts yields up to 47%
- Cuban crisis sparks innovative container-based business model
- AI-grown microgreens show enhanced disease-fighting compounds

MICROGREENS MASTERY



This microgreens guide teaches optimal variety selection for maximum nutrition. Science-based system targets wellness goals. Limited copies, November release.

Pre-Order Now

NUTRITION SCIENCE

Hot Air Drying Microgreens: The Temperature That Changes Everything

Penn State researchers just overturned conventional wisdom about preserving microgreens. Their groundbreaking study on radish microgreens reveals that higher drying temperatures actually preserve more nutrients than gentler heat—a finding that could revolutionize how growers handle post-harvest processing.

The Counterintuitive Discovery

Dr. Joshua Lambert's research team compared freeze-drying with hot air drying at 45°C, 65°C, and 95°C. The results challenge everything we thought we knew about heat and nutrition preservation.

At 95°C (203°F), total phenolic compounds—powerful antioxidants linked to disease prevention—remained stable compared to freeze-dried samples. Meanwhile, the "gentler" 65°C treatment caused a 21% loss of these same compounds. This counterintuitive result stems from enzyme activity patterns during the drying process.

Think of plant enzymes as molecular scissors. At moderate temperatures, these scissors stay active longer, continuously cutting up valuable nutrients throughout the extended drying time. High heat immediately inactivates these destructive enzymes, preserving more nutrition in less time.

Nutrient Retention Across the Board

The vitamin profile tells a compelling story. B vitamins (B1, B3, B9) showed remarkable stability across all drying temperatures. B2 actually became more bioavailable after 65°C treatment. Vitamin C experienced the steepest losses—57% to 67% compared to freeze-dried controls—but retained meaningful levels for nutritional impact.

Glucoraphenin, a crucial glucosinolate compound found in radish microgreens, remained stable at lower temperatures but dropped 21% at 95°C. This represents the only significant nutrient loss at the highest temperature, suggesting an optimal balance between preservation speed and compound retention.

The researchers conducted comprehensive metabolomic analysis, identifying 72 different compounds.

Freeze-dried samples showed higher concentrations of glucosinolates, while 95°C-dried samples retained more flavonoids—demonstrating that different drying methods preserve different beneficial compounds.

Practical Applications for Commercial Operations

This research validates hot air drying as a viable alternative to expensive freeze-drying equipment. Commercial freeze-dryers cost $30,000 to $100,000. Quality food dehydrators run under $500.

Drying time dramatically favors higher temperatures. Reaching safe moisture levels below 10% took only 74 minutes at 95°C compared to 438 minutes at 45°C. Faster processing means lower energy costs, higher throughput, and reduced labor investment.

The shelf-stable products created through hot air drying last months instead of days. This transforms microgreens from highly perishable crops into value-added ingredients for restaurants, supplement manufacturers, and health food companies.

Quality Considerations

Visual changes occur during hot air drying. Samples become darker and more brownish compared to bright green freeze-dried products. While this affects presentation, the nutritional density justifies the appearance trade-off for many applications.

Water activity levels dropped below 0.6 across all treatments—well within safe storage parameters that prevent microbial growth. Protein content and digestibility remained unchanged regardless of drying method.

Implementation Strategy

Start with small test batches using existing dehydrator equipment. Document drying times, final moisture content, color changes, and customer acceptance. Focus initially on radish microgreens since the research specifically validated this variety.

Consider developing multiple product lines: *whole dried microgreens for garnishes, ground powders for smoothie blends, and concentrated extracts for supplement applications.* Each format serves different market segments.

Your Next Steps

This study provides scientific backing for affordable microgreen preservation techniques. The 95°C method offers the best combination of speed, energy efficiency, and nutrient retention.

Try the high-temperature drying process with your next harvest batch. **Document results and share findings with the Microgreens World community.** Real-world validation of laboratory research benefits everyone in the industry.

Sources: Jauregui, Marjorie J., Ezekiel R. Warren, Francesco Di Gioia, Misha T. Kwasniewski, and Joshua D. Lambert. "Effects of Hot Air Drying on the Nutritional and Phytochemical Composition of Radish (Raphanus sativus L.) Microgreens." *Journal of Food Science* 90 (2025): e70426. https://doi.org/10.1111/1750-3841.70426.

PRO GROWING IDEAS

Unlock Far-Red Light Magic

Want to supercharge your microgreens without breaking the bank?

Most hobbyists use standard red and blue LED grow lights, but new research uncovers a hidden gem: far-red light (700-800 nm wavelengths, mostly invisible to the human eye).

This special light mimics shade, triggering a "*shade avoidance*" response in plants. Your microgreens, like radishes, mustards, and kohlrabi, grow taller, sprout bigger leaves, and yield 10-47% more biomass, especially in packed trays.

Far-red light improves light capture without needing brighter bulbs. Get adjustable LEDs with far-red diodes, set them for 16-18 hours daily, and watch your indoor garden thrive.

It's an easy, affordable way to level up your microgreen game! Try it now!

WELCOME NEW MEMBERS

NAME	CITY	STATE	COUNTRY
Paulo Komatsu	São José dos Campos	São Paulo	Brazil
Stephen Halloway	Walsall		England
Nithya Priya	Salem	Tamil Nadu	India
Ashvin Apathak	Prāntij	Gujarat	India
Mukesh	Hyderabad	Telangana	India
Jay Katadiya	Jetpur	Gujarat	India
Santhosh Namma	Bengaluru	Karnataka	India
Shivani	Indore	Madhya	India
Ramanan	Chennai	Tamil Nadu	India
Geetha Dharmaraj	Chennai	Tamil Nadu	India
Ulises	Mérida	Yucatán	Mexico
Aina Nanyemba	Windhoek	Khomas	Namibia
Jones	New Braunfels	Texas	USA
Elizabeth	Seneca	South Carolina	USA
Raul	Los Angeles	California	USA
Joanne Baffic	McDonough	Georgia	USA
Karen Dixon	Bladensburg	Maryland	USA
Samantha Wasser	Washington	DC	USA
Fred Keefer	Corsicana	Texas	USA
Rhoda Screen	Union	New Jersey	USA
Samantha	Syracuse	New York	USA
Erika Hart	Newport	Kentucky	USA
Matthew	Daytona Beach	Florida	USA
Jessica	Oceanside	New York	USA

COMMUNITY CORNER

Crisis Drives Cuban Microgreens Business Innovation

When Cuba's agriculture collapsed by 50% during the pandemic, architect Oliesky Fabre started growing microgreens on his balcony. That crisis moment sparked something bigger. Today, his company Enparalelo operates from shipping containers in Havana's poorest neighborhood, teaching elderly residents like 74-year-old Grispina Torres to grow their own superfood.

Fabre's innovation earned recognition from the UN World Food Programme—one of only 10 winners from 200 projects across Latin America. His model works because it tackles multiple problems simultaneously. One container grows microgreens for upscale restaurants. The second rolls on wheels as a mobile classroom, training residents who can then sell their harvest back to the company, to neighbors, or keep it for family meals.

The system thrives on community participation. Using coco fiber mesh instead of soil, families grow nutrient-dense greens that studies show protect against heart disease, Alzheimer's, diabetes, and cancer. Training focuses especially on elderly residents—who make up 30% of the local population—turning their experience into economic opportunity.

Since launching as an official business in 2021, Enparalelo employs a dozen workers and partners with universities and government ministries. With Cuba importing 70-80% of its food, this local solution creates both food security and income streams. The mobile classroom travels between vulnerable neighborhoods, proving that container-based microgreens farming offers a replicable template for urban food systems worldwide.

Source: Nelson Acosta and Alien Fernandez, "Cuban start-up grows microgreens and dreams big," Reuters, September 15, 2025, https://www.reuters.com/business/environment/cuban-start-up-grows-microgreens-dreams-big-2025-09-15/.

AI-Grown Microgreens Show Remarkable Disease-Fighting Power

Dr. Miyoung Suh and her team at the University of Manitoba stumbled onto something pretty remarkable when they started growing microgreens with artificial intelligence. Working with Opaskwayak Cree Nation—a community where nearly half the adults live with diabetes and high blood pressure—they discovered that computer-controlled growing conditions could create "supercharged" vegetables.

Here's what happened. AI systems regulate light, nutrients, water, and carbon dioxide to push young greens like kale, broccoli, and cabbage to produce way more disease-fighting compounds. These compounds—called phenolics and glucosinolates—help control blood sugar, reduce inflammation, and support heart health.

The lab results were striking. When they tested these AI-grown microgreens against store-bought vegetables, the samples showed four to eleven times higher levels of key nutrients like beta carotene, potassium, and manganese.

But the real excitement came from the animal studies. Rats fed these enhanced microgreens on high-fat, high-sugar diets showed improved heart function, lower blood pressure, and reduced body fat—even when their weight stayed the same. The team is now running trials with diabetic rats to see if the benefits hold true.

Of course, we need human clinical trials before making definitive claims about disease prevention. But the preliminary data suggests microgreens could be powerful allies in managing chronic conditions naturally.

The community has embraced these nutrient-dense greens by incorporating them into familiar foods like chili and cornbread muffins—proving that functional nutrition doesn't have to sacrifice taste.

Source: "What Does it Take to Grow Vegetables that Fight Disease?" UM Today. University of Manitoba, September 2025. https://news.umanitoba.ca/what-does-it-take-to-grow-vegetables-that-fight-disease/
Nandasiri, Ruchira, Breanne Semenko, Champa Wijekoon, and Miyoung Suh. "Air-Frying Is a Better Thermal Processing Choice for Improving Antioxidant Properties of Brassica Vegetables." Antioxidants 12, no. 2 (2023): 490. https://doi.org/10.3390/antiox12020490.

Local Farm Tour Reveals Growing Secrets

Glenda George-Green knows something most microgreens growers don't. At her Baby Greens Family Farm in Crown Point, she places a brick on top of her seeding trays—but only on the south side of her building.

"We've been doing it for these trays because if we don't, the seeds move around, and you get empty spots that are susceptible to mold," George-Green told visitors during the NWI Food Council's Farm Hop event. She's still figuring out why that particular side needs the extra weight.

Her method fascinates both beginners and experienced growers. She measures exactly 12 grams of arugula seeds, sprinkles them like powdered sugar over her soil mix, then mists with hydrogen peroxide-infused water to prevent mold. Simple steps, but the precision matters.

The September farm tour connected 30 participants with two tracks: "Farm to School" and "Food is Medicine." Both programs show how fresh microgreens and produce create real health impacts. At Nurse-Family Partnership in Hobart, their "Farmer to Momma" program delivers two bags of farm-fresh food monthly to 150 Lake County families.

Students from Merrillville High School's culinary program walked away buzzing about cross-contamination techniques and edible flowers. "We learned a lot about handling produce," senior Alyssa Watson noted.

These hands-on learning experiences reveal growing techniques you won't find in basic guides. Local farmers like George-Green develop site-specific solutions through trial and observation—knowledge that transforms how you approach your own growing setup.

Source: Quinn, Michelle L. "Farm Hop Focuses on NWI's Innovative Food Programs." Chicago Tribune, September 17, 2025. https://www.chicagotribune.com/2025/09/17/farm-hop-focuses-on-nwis-innovative-food-programs/.

Learn How Microgreens Create Multiple Revenue Streams

Mitchell and Gloria Cherny started growing microgreens in their basement. Two years later, they're opening Penn Grows in Trevose, PA—and their success story shows how smart growers are thinking way beyond salad garnish.

Here's what caught my attention: they turned one crop into three distinct product lines. Food-grade microgreens for restaurants and health-conscious consumers. Beardie Greens for pet owners (their dog Finley's cancer prognosis went from 6 months to over 2 years with daily microgreens). And Microglams skincare products packed with vitamin C from fresh greens.

That's brilliant market positioning. Instead of competing solely on price in saturated produce markets, they created premium niches where customers pay more for specialized benefits.

The science backs their claims too. Microgreens contain up to 40 times more nutrients than mature plants, concentrated with lutein, carotenoids, and essential minerals that support immunity, heart health, and cellular repair.

What really matters for our community: they're proving local indoor farming works commercially. Pesticide-free production using less water and space while delivering fresh products daily. Their grand opening on September 26th (5-8 PM, 25% off everything) isn't just another business launch—it's validation that microgreens represent a sustainable, profitable farming model.

For growers considering expansion, chefs seeking reliable local suppliers, or health enthusiasts wanting peak nutrition, Penn Grows demonstrates how one focused crop can serve multiple markets simultaneously. Smart agriculture meets smart business.

Source: Murway, Cate. "Cate's Spotlight: New Microgreens Business Comes To Lower Bucks County." Levittown Now, September 18, 2025. https://levittownnow.com/2025/09/18/cates-spotlight-new-microgreens-business-comes-to-lower-bucks-county/.

CREATIVE RECIPES

Wheatgrass Through Time

Despite popular claims linking wheatgrass to ancient Egypt and China, no credible historical evidence supports these marketing myths.

Wheatgrass consumption actually began in the 1930s with agricultural scientist Charles Schnabel, who discovered young wheat shoots' nutritional density and created the first commercial products by 1940.

Ann Wigmore independently began promoting wheatgrass juice in the 1940s, founding Boston's Hippocrates Health Institute in the 1960s. Her therapeutic approach resonated with counterculture movements, spreading through publications like Viktoras Kulvinskas' "Survival in the 21st Century" in 1975.

The 1980s brought commercial explosion as juice bars proliferated, particularly in New York City. Today's $200+ million global market offers powders, supplements, and fresh shots. While modern research shows promising anti-inflammatory and immune-supporting properties, larger clinical studies are still needed to confirm health claims.

Emerald Broth (Wheatgrass-Enhanced Vegetable Soup)

Three months ago, I stared at a jar of wheatgrass powder thinking, "How do I make this taste like actual food?"

My first attempt was a disaster. Added too much, cooked it too long. The result? Bitter green sludge that tasted like I'd liquefied my lawn. But I kept experimenting. Turns out, wheatgrass needs gentle treatment and smart partnerships.

This soup came together when I realized wheatgrass works best as a finishing touch, not a main event. The secret is building a rich, savory base that can handle its earthy intensity, then stirring in the wheatgrass powder right at the end. No cooking the powder - that kills everything good about it.

What you get is a warming, nourishing soup with that distinctive green boost. The wheatgrass adds depth without overwhelming your taste buds. Plus, you're getting real nutritional benefits from research-backed wheatgrass without the usual punishment factor.

1

Recipe Information

Prep Time: *10 minutes*
Cook Time: *20 minutes*
Category: *Soup*
Method: *Simmer and finish*
Cuisine: Health-focused comfort food
Yield: *4 individual portions*

2 Ingredients

- 2 tablespoons olive oil
- 1 medium onion, diced
- 3 garlic cloves, minced
- 2 medium carrots, diced
- 2 celery stalks, diced
- 6 cups vegetable broth
- 1 large potato, cubed
- 1 cup fresh spinach
- 2 tablespoons wheatgrass juice powder (not whole powder)
- 1 tablespoon fresh lemon juice
- 1 teaspoon nutritional yeast
- Salt and pepper to taste
- Fresh herbs for garnish (parsley or chives)

3 Preparation

1. Heat olive oil in a large pot over medium heat.
2. Add onion and cook until soft, about 4 minutes.
3. Add garlic, carrots, and celery.
4. Cook for 5 minutes, stirring occasionally. You want the vegetables tender but not mushy.
5. Pour in vegetable broth and add cubed potato.
6. Bring to a boil, then reduce heat and simmer until potatoes are fork-tender, about 12 minutes.
7. Add spinach and cook just until wilted, maybe 30 seconds.
8. Here's the crucial part: remove the pot from heat completely.
9. Let it cool for 2-3 minutes. This prevents the wheatgrass from getting shocked by extreme heat.
10. In a small bowl, whisk the wheatgrass powder with 3 tablespoons of the warm (not hot) broth until smooth. No lumps.
11. Stir the wheatgrass mixture back into the soup.
12. Add lemon juice and nutritional yeast. The lemon brightens everything and helps balance the grassy notes.
13. Taste and season with salt and pepper.

The soup should taste earthy and satisfying, not like you're drinking grass clippings.

4 Plating

Ladle into warmed bowls.

Sprinkle with fresh herbs and maybe a light drizzle of good olive oil.

The color is beautiful - a rich green that looks healthy but appetizing.

Serve with crusty bread if you want something more substantial.

5 Making Your Own Wheatgrass Powder (Optional)

Start with clean, fresh wheatgrass microgreens. Wash and clean your microgreens. Dry the microgreens using paper towels or your salad spinner. Remove as much moisture as possible - wet microgreens take longer to dehydrate and might develop mold.

While you prepare your microgreens, preheat your electric dehydrator between 92°F and 118°F (33°C and 48°C). Though controversial among "purists," in this range, your microgreens are still raw. I use 110°F (43°C) - it's the sweet spot for preserving nutrients while getting good results.

Spread the microgreens out on a dehydrator tray. Don't overlap them. Air needs to circulate around each piece.

Drying time can vary from two to four hours. Microgreens are dry when they crumble, and stems break when bent. Check them every hour after the 2-hour mark. You'll notice they shrink dramatically - about 25-35% of their original volume.

Conditioning Step (Important):

Place the microgreens in a quart-size (freezer) plastic bag. Leave them in the bag for 8-10 hours. Open and inspect the bag for any moisture. If you find any moisture, put them back in the electric dehydrator. This prevents mold during storage.

Once fully dry and conditioned, grind the dehydrated wheatgrass in a clean coffee grinder or food processor until you get a fine powder. Store in airtight glass containers away from light and heat.

Get the details on [Microgreens World]

6 Benefits of Wheatgrass Microgreens for Health

Wheatgrass is an especially rich source of chlorophyll, a green pigment known for its antioxidant and cellular-supporting properties. Research shows it contains vitamins A, C, E, and K, plus essential minerals like iron and magnesium.

"Chlorophyll exhibits a wide range of benefits, including antioxidant, antimutagenic, and antigenotoxic activities."

A study published in the Scandinavian Journal of Gastroenterology observed positive changes in digestive comfort and wellness among participants who regularly consumed fresh wheatgrass juice compared to a placebo group.

IN THE NEWS

Fight Bacteria Naturally

A Finnish research team published findings that should worry anyone about heart health. They analyzed coronary plaque from 217 people and found something disturbing: *mouth bacteria had migrated into heart arteries.*

The culprit? Streptococcus bacteria found in dental plaque and saliva. These microbes form biofilms that rupture arterial plaque, triggering blood clots and heart attacks.

Researcher Pekka Karhunen explained how oral bacteria travel from mouth to heart, causing inflammation that destabilizes coronary arteries. They examined sudden cardiac death victims and surgical patients - same result.

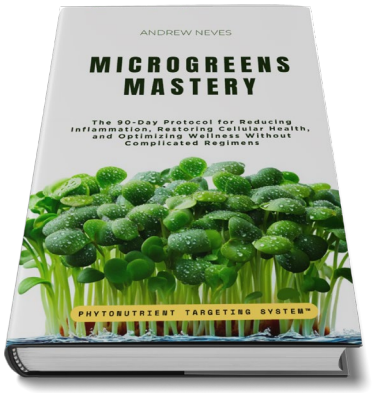
What strikes me: millions ignore oral health's connection to heart disease. They brush, floss, visit dentists. Good. But they miss a nutrition angle.

Peppermint microgreens contain natural antibacterial elements. *Sage* offers anti-inflammatory benefits for gum tissue. *Fennel* promotes saliva production - natural defense system. *Parsley* delivers antioxidants fighting inflammation.

Your mouth bacteria aren't just bad breath anymore. They're potential heart attack triggers lurking in biofilms, waiting to break free. Dismiss this connection? You pay later. Heart disease kills 19.8 million annually. Skip learning how nutrition fights oral bacteria? You're gambling with your heart.

Our **bookstore** features "Nourish Your Skin Naturally" and "From Plate to Bloodstream" - showing how microgreens transform health.

Source: Karhunen, P.J., et al. (2025). Journal of the American Heart Association. https://www.ahajournals.org/doi/10.1161/JAHA.125.041521



Join Microgreens World for a four-week deep-dive into the most common avenues for building and strengthening your microgreens customer base. Unlike most programs, you're watching a bunch of long and boring theoretical videos that leave you more confused than when you started. The goal of the Commercial Microgreens Startup program is to do this together, one step at a time - so you can finally have financial independence!

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