Volume 2024 Monday, April 15, 2024 Edition 13

THE MICROGREENS WEEKLY

"Delivered to Your Inbox Every Monday," your summary digest of the latest microgreens, urban, vertical farming, and new trends and exciting startup stories from around the world.

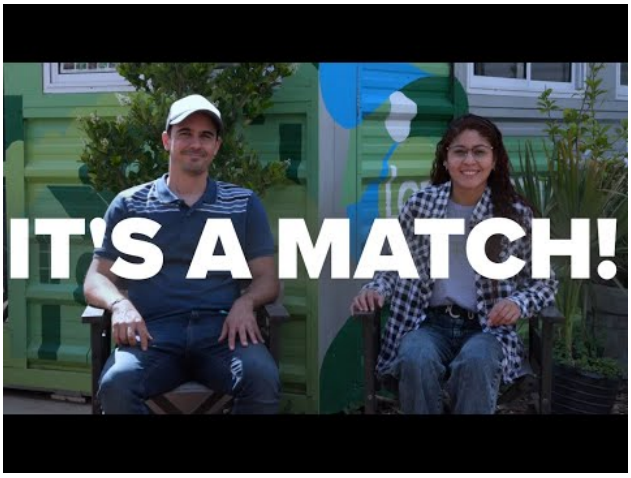
Far-Red Light Can Improve Microgreens. What is it?

This Week: Monday, April 15, 2024

Empowering Refugees Through Sustainable Urban Agriculture: The Inspiring Microgreens Story of Abelis in Argentina

Abelis Carrillo, a Venezuelan engineer, found her passion for urban agriculture at Loopfarms in Argentina.

This sustainable food production model utilizes advanced technology like biogas and hydroponics, maximizing urban space by cultivating microgreens indoors and collecting organic waste for biofertilizer.



Click to watch the video.

Loopfarms not only mitigates climate change by reducing greenhouse gas emissions but also provide opportunities for displaced individuals like Abelis through initiatives by UNHCR.

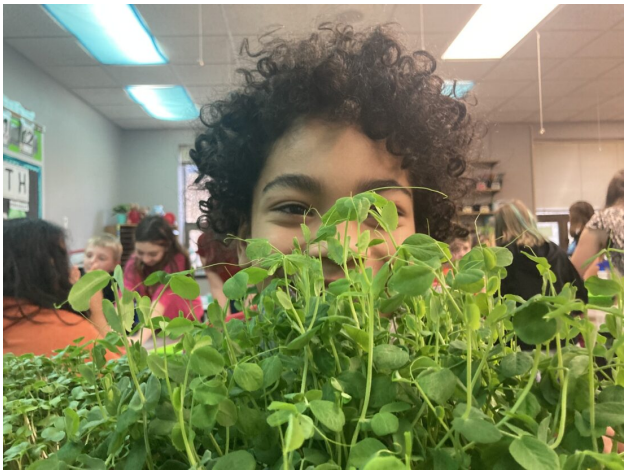
By matching refugees with employers, over 230,000 refugees and migrants will have been found to be included in Argentina by 2023.

Abelis contributes to community resilience by adopting sustainable practices while reconnecting with her cultural roots through traditional dance classes.

Despite missing her homeland, she hopes to integrate into Argentine society and obtain nationality. Stay informed on refugee issues by following UNHCR on social media and subscribing to their newsletter.

UN High Commissioner for Refugees (UNHCR) 2024-04-08

Farm to School Program Enhances Student Learning and Community Relationships



The Farm to School Program connects students with local food sources, integrates locally grown foods into school lunches, and offers hands-on educational experiences.

Partnerships with organizations like the North Dakota Department of Public Instruction and the North Dakota Department of Agriculture facilitate resources for producers. Educational opportunities include field trips,

STEM programs, and hands-on gardening projects.

The program benefits local producers, stimulates the economy, and cultivates healthier eating habits. Overall, Farm to School fosters agricultural awareness supports local economies, and strengthens the bond between food sources and consumers. Minot, North Dakota Daily News, 2024-04-10

Recipe: Sweet and Sour Microgreens Chicken

Enjoy your sweet and sour microgreens chicken, a dish that beautifully marries complex flavors with the nutritional benefits of microgreens!

The radish and beet microgreens add a peppery and earthy flavor that complements the tanginess of the sweet and sour sauce. In contrast, the arugula microgreens add a nutty, slightly spicy touch.

The addition of pineapple in both the sauce and the salad ties the dish together, enhancing the sweet and sour profile.

Ingredients

Chicken

- 4 boneless, skinless chicken breasts cut into bite-size pieces
- Salt and pepper, to taste

- 2 tablespoons olive oil

Sweet and Sour Sauce

- ½ cup apple cider vinegar
- ¼ cup brown sugar
- 1 tablespoon soy sauce
- 1 teaspoon garlic, minced
- 1 teaspoon ginger, minced
- 2 tablespoons tomato paste
- ½ cup pineapple juice
- 1 tablespoon Arrowroot powder dissolved in 2 tablespoons water

Microgreens Salad

- 1 cup radish microgreens
- 1 cup beet microgreens
- 1 cup arugula microgreens
- 1 small red onion, thinly sliced
- 1 cup pineapple, diced

For Serving

- Cooked rice or quinoa
- Sesame seeds, for garnish
- Sliced green onions for garnish

Instructions

1. Prepare the Chicken

a. Season chicken pieces with salt and pepper.
b. Heat olive oil in a large skillet over medium heat.
c. Add chicken and cook until browned and cooked through.
d. Remove chicken and set aside.

2. Make the Sweet and Sour Sauce

a. In the same skillet, add apple cider vinegar, brown sugar, soy sauce, minced garlic, ginger, and tomato paste.
b. Stir to combine.
c. Add pineapple juice and bring the mixture to a simmer.
d. Stir in the Arrowroot mixture and simmer until the sauce thickens, about 2-3 minutes.
e. Return the chicken to the skillet, tossing it to coat evenly in the sauce.
f. Cook for an additional 2 minutes, then remove from heat.

3. Assemble the Microgreens Salad

a. In a large bowl, combine radish, beet, and arugula microgreens with thinly sliced

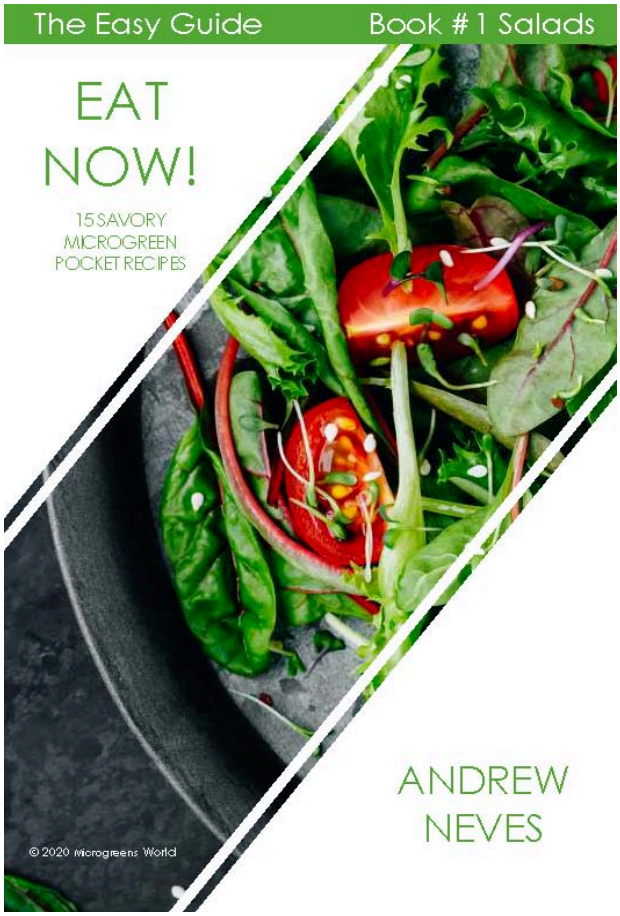
red onion and diced pineapple.

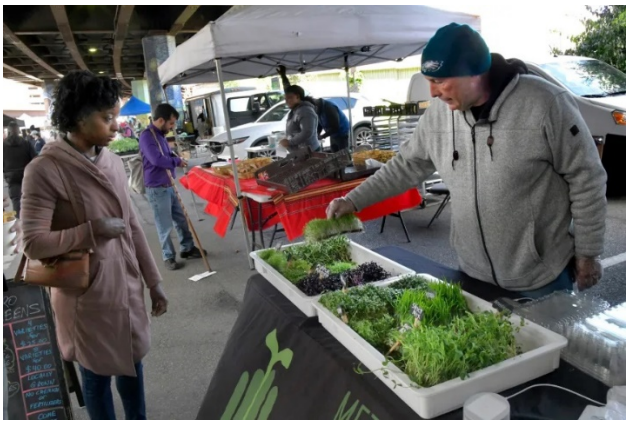
b. If desired, lightly dress the salad with a vinaigrette made from olive oil, a splash of apple cider vinegar, salt, and pepper.

4. Serve

a. Spoon cooked rice or quinoa onto plates.
b. Top with sweet and sour chicken and a generous serving of the microgreens salad.
c. Garnish with sesame seeds and sliced green onions.

Notes: *Arrowroot is gluten-free and results in a clear, glossy sauce, making it a good choice for sweet and sour sauce. It's also freeze-thaw stable.*





Opening day for the 2024 season of the Baltimore Farmers Market under the JFX. (Staff/Amy Davis)

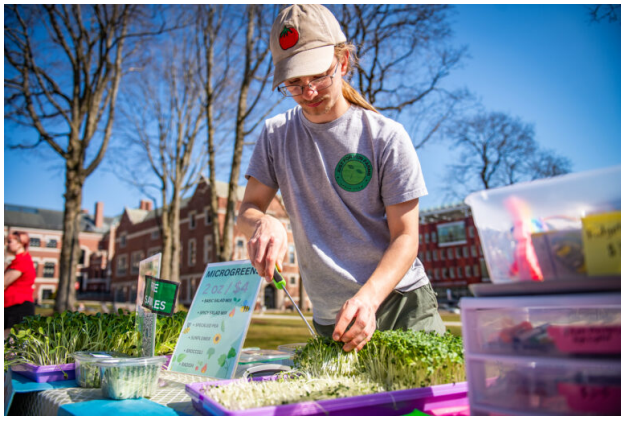
In a recent article in the Baltimore Sun, it was highlighted that the Baltimore Farmers Market is experiencing an expansion, with over 47 vendors, including new plant-based options.

Vendors like **Metro Microgreens** and Nina's Cookie Explosion are popular choices among visitors, offering a variety of fresh produce and treats.

Additionally, the Easy Like Sunday restaurant has opened a new location in Locust Point. Medium Rare is expanding to Columbia, offering fixed-price meals and brunch options.

Other notable dining openings in Baltimore include Facci, Love Pomelo, and Roggenart, bringing new flavors and experiences to the city's culinary scene. Baltimore Sun, 2024-04-10

Clark University Students Shine with Microgreens Business in Entrepreneurial Competition



Clark University student entrepreneurs excelled at the WooTank competition held at Worcester's BrickBox Theater.

Sophie Lee, owner of Sophremacy, and **Owen Chase, founder of Just for Fun Farms specializing in microgreens**, emerged as standout participants. Lee, whose gothic and punk-inspired jewelry business impressed the judges, received the highest individual award of $4,000.

Chase, promoting nutrient-dense microgreens grown for direct sale to students, garnered $3,000.

Their combined $7,000 winnings surpassed other colleges in the competition. Clark Tank winners were also announced, with Chase securing another $3,000 for Just for Fun Farms.

Both students showcased their products at the Clark Collective Pop-Up market. Lee, a studio art major, plans to expand her jewelry business.

In contrast, Chase, a global environmental studies major, is passionate about combating food insecurity through microgreen production.

Their success underscores Clark University's commitment to fostering entrepreneurial talent. Worcester, MA, Clark University 2024-04-11

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The Featured Article

Red Light, Blue Light. What is Far-Red Light?

Far-red (FR) light, with wavelengths between 700 and 800 nanometers, and ultraviolet A (UVA) light have been the focus of recent studies in indoor farming, particularly in microgreen production. While FR light lies just outside the photosynthetically active radiation (PAR) range of 400 to 700 nanometers, it **significantly impacts plant growth and development**.

A study by Hooks et al. (2022) titled "Adding UVA and Far-Red Light to White LED Affects Growth, Morphology, and Phytochemicals of Indoor-Grown Microgreens" investigated the effects of incorporating

UVA and FR light alongside white light-emitting diodes (LEDs) on basil, cabbage, kale, and kohlrabi microgreens.

The study found that adding FR light to white LEDs **increased plant heights** for basil, cabbage, and kohlrabi by 9% to 18%, suggesting its influence on stem elongation. However, the inclusion of FR light also led to a **reduction in plant biomass** for kohlrabi. It did not significantly affect the biomass of other species, indicating a potential trade-off between morphological traits and yield. Furthermore, FR light **reduced total phenolic contents and antioxidant concentrations** in at least one species, affecting the nutritional quality of microgreens.

The study found no significant interaction between FR and UVA light on growth and quality traits, suggesting their effects are independent of each other. This highlights the importance of optimizing light spectra for indoor horticulture to achieve desired growth and quality outcomes. While FR light can enhance certain morphological traits beneficial for mechanical harvesting, it may also lead to reduced biomass and phytochemical concentrations in some microgreen species.

In natural light, FR comprises about 25% of the light within the 400 to 800 nm waveband, with levels increasing during sunset and darkness. The application of FR light in controlled growing environments should be tailored to the specific crop and desired outcomes, considering both the potential benefits and drawbacks.

When it comes to microgreens, blue light is more essential than red light. **Blue light promotes growth**, while red light is primarily used for flowering. Since microgreens are harvested before flowering, using

red lights for their cultivation may be inefficient. However, red light can be **beneficial in slowing down the growth** of microgreens, helping to keep them fresh if a client needs them at a later date.

The potential increase in production costs associated with additional lighting equipment should be weighed against the benefits of modified light treatments.

The study by Hooks et al. (2022) provides valuable insights into the complex interactions between light quality and microgreen production, emphasizing the need for species-specific light treatment strategies in controlled environment agriculture. Future research could further elucidate the optimal light spectra for enhancing both the yield and nutritional quality of a broader range of microgreen species.

Hooks, Triston, et al. "Adding UVA and Far-Red Light to White LED Affects Growth, Morphology, and Phytochemicals of Indoor-Grown Microgreens." Sustainability, vol. 14, no. 14, 13 July 2022, p. 8552, https://doi.org/10.3390/su14148552.

Discover the Nutrient-Packed Microgreens of 'Out From Da Woods' at Davie County Farmers' Markets

Joshua Wood, also known as "Out From Da Woods," is making waves at local farmers' markets with his microgreens.

Located in rural Davie County, North Carolina, Wood's interest in gardening stems from his family's agricultural background. Microgreens, which he started cultivating after exploring aquaponics, have a quick turnaround of about nine days from sprouting to harvest.

Wood's microgreens have garnered interest from chefs and received positive feedback from consumers for their health benefits and delicate flavor.

The article highlights Wood's journey into microgreen cultivation, emphasizing its health benefits and rapid growth cycle. Davie County, NC Register 2024-04-10

Microgreens Exempt From The Codex Guidelines On Food Hygiene

The Codex Committee on Food Hygiene (CCFH) held its 54th session in Nairobi, Kenya, from

11 to 15 March 2024, at the kind invitation of the Governments of Kenya and the United States of America (USA).

The *Codex Alimentarius* "Guidelines for the Control of Shiga Toxin-Producing *Escherichia coli* (STEC) in Raw Beef, **Fresh Leafy Vegetables**, Raw Milk and Raw Milk Cheeses, and **Sprouts**" (CXG 99-2023) was adopted in November 2023. At that time, the parts of the guidance covering the control of STEC in raw beef, raw milk, and raw milk cheeses were completed.

At the recent meeting in Nairobi, CCFH proposed draft Annex II on **leafy vegetables** and draft Annex IV on **sprouts**, agreeing to forward the annexes for adoption at the 47th session of the Codex Alimentarius Commission, scheduled to take place in November 2024.

Dr Evelyne Mbandi, Director of Microbiological and Chemical Hazards Staff, Food Safety and Inspection Service, United States Department of Agriculture (USDA), chaired the session. Prof George Ooko Abong, Chairman of the Department of Food Science, Nutrition and Technology, University of Nairobi, co-chaired the session, which was attended by 56 Member Countries, one Member Organization, and 11 Observer Organizations.

Contaminated seeds have historically been identified as the likely source of most sprout-related outbreaks, particularly those attributed to Shiga toxin-producing Escherichia coli (STEC) contamination, and continue to be the most common source of sprout contamination.

Bacterial pathogens that may be present at low levels on seeds can multiply to very high levels during the sprouting process. Sprout contamination could also

be caused by poor hygienic practices and contamination in production environments.

The ANNEX IV ON SPROUTS

Section 3.1 Scope covers specific guidance for the control of STEC related to sprouts that are intended to be consumed raw. Home sprouting and shoots, cress, and **microgreens where the seed is not kept in the final product are outside the scope of this document**.

For microgreens, plants reach a later stage of growth than sprouts, typically associated with the emergence of "true" leaves. They can be grown in soil or substrate and are harvested above the soil or substrate line; they include both shoots and cress (FAO/WHO, 2022). Codex Guidelines

Vertical Farm Reaches New Heights with Expansion to Retail, Organic Certification

Mycro Greens, a Kelowna vertical farm, has achieved significant growth and success through its expansion into retail and obtaining organic certification.

Kelowna is a city on Okanagan Lake in the Okanagan Valley in the southern interior of British Columbia, Canada. Kelowna is the province's third-largest city and the 20th-largest metropolitan area in Canada.

The business has acquired Avenue M Microgreens, expanded its facility, and plans for further growth and potential

relocation. Despite challenges such as equipment breakdown and the need for human assistance, the farm persists with hard work and dedication.

Community impact and partnerships have been vital, with distribution to local stores and restaurants, contribution to the Central Okanagan economy, and collaboration with Natures Fare Market, Choices Market, and others.

The farm has a production capacity of over 500 trays of microgreens weekly, focusing on quality, variety, and sustainability. It emphasizes continuous improvement in farming techniques and technology for long-term viability.

The benefits of vertical farming highlighted include controlled indoor conditions, weather avoidance, automation, higher crop yield in a smaller space, and sustainable farming practices. CASTANET NEWS 2024-04-06

Discover Sustainable Microgreen-derived Cosmetics: ICSC's Precision Climate Farming Innovations

ICSC (International Cosmetics Science Centre) has introduced **sustainable active ingredients derived from**

microgreens cultivated in their certified Precision Climate Farming facility in Denmark. This facility utilizes controlled environments to optimize plant growth conditions, resulting in higher phytochemical content.

The extraction process employs green technology, avoiding synthetic solvents and minimizing waste. Products from Precision Climate Farming undergo internal stabilization, enhancing shelf life and ingredient stability. These ingredients, such as **Cosmosil® Micro portfolio**, are rich in nutrients and offer nourishing and protective benefits for skin and hair.

ICSC's approach reduces water consumption by 80%, uses 100% certified renewable energy, and avoids pesticides and chemicals.

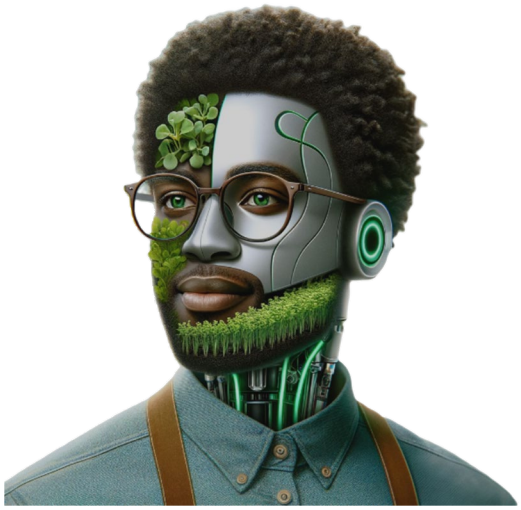
The article emphasizes the environmental sustainability and efficacy of these microgreen-derived ingredients. [ICSC - International Cosmetic Science Centre, 2024-04-11]

Learn all the important aspects of growing through organic hydroponics.

Instructor: M.S. Karla Garcia

- Master in Plant Sciences from The University of Arizona
- Recognition by ISHS in strawberry hydroponic research
- Editor: Book Roadmap to Growing Leafy Greens and Herbs
- CEO at Microgreens FLN

REGISTER



Brought to you by **Doc Green**, Andrew Neves' personally trained AI assistant. "You may ask me anything about microgreens."