

"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.



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Fisetin: Nature's Anti-Aging Superhero Hiding in Your Microgreens

This Week: Monday, June 24, 2024

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Creative Recipes

Change is Hard: Try Combining Old with New

In a piece for the Beaver County Pennsylvania Times, Charlotte Latvala **humorously** reflects on the increasing exoticism in everyday products, from scented candles to hand soaps and restaurant menus.

She particularly notes the prevalence of unfamiliar ingredients and scents, including microgreens.

Latvala wonders if microgreens have always been around unnoticed or if they're simply regular plants with fancy names.

This observation is part of a broader trend she identifies, where familiar items like apples and pears are being replaced by more exotic produce like **purple cauliflower** and dragon fruit.

The author expresses a sense of bewilderment at these changes, suggesting that even everyday grocery store items now seem foreign.

Overall, Charlotte's piece playfully critiques the trend toward increasingly complex and unfamiliar consumer products and food items.

Source: Latvala, C. (n.d.). Charlotte Latvala: Scents have gotten out of hand. Beaver County Times. Retrieved July 1, 2024, from

https://www.timesonline.com/story/lifestyle/columns/202 4/06/28/charlotte-latvala-scents-have-gotten-out-ofhand-beaver-lawrence-county/74206028007/

So we thought we'd take an old cauliflower recipe from my Nanny's farm, a family favorite, and "spice it up" with some microgreen herbs (or microherbs).

But first, we wanted to start with just a plain old recipe for a **whole roasted cauliflower** seasoned with spices.

Whole Roasted Cauliflower



Ingredients:

- I large head of cauliflower
- 3 tablespoons extra virgin olive oil

- 2 teaspoons smoked paprika
- I teaspoon ground cumin
- I teaspoon garlic powder
- I teaspoon onion powder
- . I teaspoon salt
- I/2 teaspoon black pepper
- I/4 teaspoon cayenne pepper (optional for heat)
- Fresh chopped parsley microgreens for garnish

Instructions:

- 1. Preheat the oven to 400°F (200°C).
- 2. Remove the leaves from the cauliflower head and trim the stem, ensuring the cauliflower can sit flat on the baking sheet.
- 3. In a small bowl, mix together the olive oil, smoked paprika, cumin, garlic powder, onion powder, salt, black pepper, and cayenne pepper (if using).
- 4. Place the cauliflower head on a baking sheet lined with parchment paper. Brush or rub the spice mixture all

- over the cauliflower, ensuring it's evenly coated.
- 5. Roast the cauliflower in the preheated oven for 45-60 minutes or until it's tender and golden brown. To check for "doneness," insert a knife into the center of the cauliflower; it should easily pierce through the flesh.
- 6. Once the cauliflower is roasted, remove it from the oven and let it cool for 5-10 minutes.
- Transfer the roasted cauliflower to a wooden serving board and garnish with fresh chopped parsley.
- 8. Serve the cauliflower whole, allowing guests to cut and serve themselves at the table.
- 9. Alternatively, you can slice the cauliflower into wedges before serving.

This whole roasted cauliflower makes for an impressive and flavorful side dish or vegetarian main course.

The combination of spices creates a smoky, savory, and slightly spicy flavor profile that complements the natural nuttiness of the cauliflower.

But I thought I'd do something different with my Roasted Cauliflower.

Here is an absolutely scrumptious cauliflower recipe!

Cauliflower Rice Pilaf with Herbs

Here are three microherbs (microgreen herbs) that can work well together to flavor your Cauliflower Rice Pilaf:

MicroCilantro: Microcilantro has a fresh, citrusy, and slightly peppery flavor that complements the nuttiness of the toasted almonds and the zesty lemon in the dish.

It also pairs well with garlic and cauliflower.

 MicroBasil: Microbasil has a sweet, peppery, and slightly minty taste that can add a bright, fresh flavor to the pilaf.

It works well with the other ingredients and can help balance the overall flavor profile.

 MicroParsley: Microparsley has a clean, slightly peppery taste that can add a fresh, herbaceous note to the dish. It complements the garlic and lemon zest while providing a subtle, refreshing flavor that doesn't overpower the other ingredients.

These three microherbs have distinct flavors that can work well together, creating a balanced and flavorful Cauliflower Rice Pilaf.



You can adjust the proportions of each microherb to suit your taste preferences.

Ingredients:

- I head of Roasted Cauliflower with Herbs (see above recipe)
- OTHER OPTIONS: I whole head of cauliflower, grated or processed into ricesized pieces (or 4 cups of store-bought cauliflower rice)
- 2 tablespoons extra virgin olive oil
- . 3 cloves garlic, minced
- 1/2 teaspoon salt, or to taste
- I/2 cup toasted almonds, chopped
- I cup mixed microgreens (micro cilantro, micro basil, and micro parsley)
- . Zest of I lemon

Instructions:

I. Crumble the roasted cauliflower using the food processor or grater

- 2. If using a whole fresh cauliflower head, prepare the cauliflower rice using one of the following methods:
 - a. Food Processor: Cut the cauliflower into florets and place them in a food processor. Pulse until the cauliflower resembles the texture of rice.
 - b. Grater: Cut the cauliflower into large chunks and grate them using a box grater.
- 3. Alternatively, you can use store-bought cauliflower rice.
- 4. Heat the extra virgin olive oil (EVOO) in a large skillet over medium heat.
- 5. Add the minced garlic to the skillet and cook for 2-3 minutes or until fragrant and lightly golden.
- 6. Add the cauliflower rice to the skillet and sprinkle with salt.
- 7. Cook for 3-5 minutes, stirring occasionally, until the cauliflower rice is tender and slightly crispy.

- 8. 5. Add the toasted chopped almonds to the skillet and stir to combine.
- 9. Chop the microgreens finely.
- 10. 6. Remove the skillet from the heat and gently fold in the mixed microgreens until they are evenly distributed throughout the cauliflower rice.
- 11. 7. Grate the lemon zest over the top of the pilaf.
- 12. 8. Serve the Cauliflower Rice Pilaf warm as a side dish or a light main course.

Notes:

- To toast the almonds, place them in a dry skillet over medium heat and cook, stirring frequently, until they are fragrant and lightly golden. This should take about 3-5 minutes.
- You can customize the microgreens based on your preference or availability.
- Adjust the salt to your taste preferences. You can also add additional seasoning, such as

black pepper or red pepper flakes, for extra flavor.

To top it all off, let's use some cauliflower rice to make some appetizing sushi rolls.

Raw Vegan Sushi Roll with Cauliflower Rice and Fresh Vegetables



Ingredients:

- I head of cauliflower, grated or processed into rice-sized pieces
- 2 tablespoons rice vinegar
- I tablespoon coconut aminos or tamari sauce
- I teaspoon sesame oil
- 4 nori sheets
- . I avocado, sliced
- I cucumber, julienned
- I carrot, julienned
- I red bell pepper, julienned
- I cup microgreens or sprouts
- Wasabi paste, pickled ginger, and coconut aminos or tamari sauce for serving (optional)

Instructions:

- I. Prepare the cauliflower rice by grating or processing the cauliflower florets until they resemble the texture of the rice.
- 2. In a large bowl, mix the cauliflower rice with rice vinegar, coconut aminos or tamari sauce, and sesame oil. Set aside.

- 3. Place a nori sheet on a bamboo sushi mat, shiny side down.
- 4. Spread a thin layer of the seasoned cauliflower rice evenly over the nori sheet, leaving a 1-inch border at the top.
- 5. Arrange the sliced avocado, julienned cucumber, carrot, and bell pepper in a line across the center of the cauliflower rice.
- 6. Add a small handful of microgreens or sprouts on top of the vegetables.
- 7. Using the bamboo mat, carefully roll the sushi by lifting the bottom edge of the mat and rolling it over the filling, pressing gently to create a compact roll. Continue rolling until the sushi is completely sealed.
- 8. Repeat the process with the remaining nori sheets and filling ingredients.
- 9. Using a sharp, wet knife, slice each sushi roll into 8 equal pieces.

10. Arrange the sushi rolls on a serving platter and serve with wasabi paste, pickled ginger, and coconut aminos or tamari sauce, if desired.

Notes:

- Make sure to squeeze out any excess moisture from the grated cauliflower before mixing it with the seasonings to prevent the sushi rolls from becoming soggy.
- You can customize the filling ingredients based on your preferences or seasonal availability. Other options include sliced beets, red cabbage, or asparagus.
- If you don't have a bamboo sushi mat, you can use a piece of plastic wrap or parchment paper to help roll the sushi.
- For best results, serve the sushi rolls immediately after preparation. If you need to store them, wrap them tightly in plastic wrap and refrigerate for up to I day.

Nutrition Science

Microgreens: Nutritional Powerhouses Paving the Future of Sustainable Nutrition



In the fight against malnutrition, clinical studies on microgreens offer promising insights, suggesting that these nutrient-dense plants could be the future of functional foods.

Microgreens, harvested just days after germination, boast a rich concentration of vitamins, minerals, and bioactive compounds superior to their mature counterparts.

But why does this matter, you might ask?

The research underscores their potential in addressing malnutrition—a severe issue with wide-reaching impacts.

Clinical trials have highlighted microgreens' effectiveness in combating chronic conditions such as heart disease, cancer, diabetes, and more.

For instance, **red cabbage microgreens** have shown the potential to lower cholesterol in diet-induced obese rats.

Meanwhile, fenugreek microgreens were found to inhibit α -amylase activity by 70% in cell cultures, pointing to their role in diabetes management.

Broccoli microgreens not only reduced blood sugar levels in diabetic mice but also showed an ability to decrease inflammatory markers, offering a holistic approach to chronic disease management.

Such findings are revolutionary, proving that

microgreens aren't just a trendy diet addition but a powerful ally in the global fight against dietrelated chronic diseases.

Their potential to integrate into various diets enhances their appeal, making them a versatile tool in the nutritional arsenal.

With ongoing research and increasing awareness, microgreens stand poised to redefine nutritional approaches to health and disease prevention, making the future of food both sustainable and profoundly health-oriented.

Source: Anusree Sobhanan, & Meena, R. (2024). MICROGREENS: PIONEERING THE FUTURE OF SUSTAINABLE NUTRITION. 9–28. https://doi.org/10.58532/v3bcag17p1ch2

The Featured Article

Revolutionizing Cosmetics: How Precision Climate Farming and Microgreens are Transforming the Beauty Industry



Precision climate farming is revolutionizing sustainable agriculture for **cosmetic ingredients**. But what makes it so special?

In a groundbreaking development, precision climate farming is revolutionizing the cultivation of sustainable beauty ingredients, with microgreens leading the charge.

This cutting-edge approach optimizes plant growth in enclosed spaces, free from the limitations of soil, weather, and pesticides.

The result? Astonishingly **fast-growing plants** with significantly higher levels of **phytoactives**.

The implications are staggering.

Precision climate farming slashes water consumption by an impressive 80% compared to conventional methods. It harnesses the power of 100% green energy from wind and solar panels, dramatically reducing the carbon footprint of ingredient production.



 Figure 1. Centella asiatica leaves, both approx. 2 weeks old, from plants grown under normal conditions (left) versus precision climate farming (right)

But that's not all.

By meticulously controlling environmental parameters, precision climate farming unlocks the **full potential of microgreens**, the tiny powerhouses packed with extraordinary levels of vitamins and antioxidants.

In fact, these miniature marvels boast up to **10 times the** concentration of beneficial compounds found in their adult counterparts.

Two shining examples are cress and arugula microgreens.

Cress, a veritable treasure trove of **phenols**, essential amino acids, minerals, and vitamins, offers unparalleled antioxidant properties.

Arugula, prized since <u>Roman times</u>, is a nutritional powerhouse brimming with antioxidants, anti-inflammatory compounds, and <u>regenerative potential for skin care</u>.

The extraction process is nothing short of revolutionary. Without synthetic solvents or stabilizers and powered solely by certified green electricity, the microgreens are transformed into highly potent extracts.



The proprietary internal stabilization technique extends shelf life and stability multifold, preserving the natural antioxidant properties without the need for external additives.

The results are astounding. Precision-farmed cress microgreen oil extract exhibits significantly higher antioxidant capacity compared to commercially available alternatives. In-house studies reveal

remarkable improvements in transepidermal water loss and skin hydration, even hours after application.

But the innovation doesn't stop there.



The microgreen extracts were put to the ultimate test in a waterless cleansing makeup remover balm.

This formula aligns perfectly with the sustainability goals of precision climate farming.

The pilot study proved that the formulation, using only natural and sustainable ingredients, effortlessly removed makeup without relying on synthetic emollients, surfactants, or solvents.

This groundbreaking research heralds a new era for the microgreens industry and sustainable beauty as a whole.

Precision climate farming not only ensures a reliable and eco-friendly source of high-quality ingredients but also alleviates the pressure on ecosystems caused by excessive agricultural practices.



As the demand for natural and sustainable beauty products soars, precision climate farming and microgreens offer an unparalleled solution.

By harnessing the power of these innovative techniques, beauty brands can create revolutionary products that prioritize both efficacy and environmental responsibility.

At Microgreens World, we continue to look for trends like microgreens for skin care. Visit our <u>Microgreens Cosmetics</u> Buyers Guide for 2024.

The future of sustainable beauty is here, and it's greener, cleaner, and more potent than ever before, thanks to the awe-inspiring potential of precision climate farming and microgreens.

Source: "Precision Climate Farming for Sustainable Beauty: A Microgreens Case Study." Cosmetics & Toiletries, 28 June 2024, www.cosmeticsandtoiletries.com/cosmetic-ingredients/natural-sustainable/article/22910864/cosmetics-toiletries-magazine-precision-climate-farming-for-sustainable-beauty-a-microgreens-case-study



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Your 9-Day Blueprint to Microgreen Mastery

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Community Spotlight That Microgreens Guy



Jason and Cherylyn Minto started That Microgreens Guy to fill a gap in the local market for fresh microgreens.

Their operation, based near Milton, Delaware, grows organic microgreens indoors using a simple process that takes 7-10 days from seed to harvest.

The couple highlights the health benefits and visual appeal of microgreens, which are not readily available in grocery stores.

Their growing process involves planting seeds in trays, germinating them in darkness,

and then exposing them to grow lights.

They've adapted their techniques, moving operations indoors to better control growing conditions.

The Mintos sell their products at the Milton Farmers Market and Fifer's Farm Kitchen in Dewey Beach, appreciating the connection to local customers.

The business has already seen repeat customers, which the couple finds rewarding.

Looking ahead, they hope to expand their reach by supplying restaurants and working with chefs interested in incorporating organic microgreens into their dishes.

Source: Mintos filling a local void with That Microgreens Guy. (n.d.). Cape Gazette. Retrieved July 1, 2024, from https://www.capegazette.com/article/mintos-filling-local-void-microgreens-guy/261048

Cultivation Techniques

Microgreens Farm partners with top chefs and restaurants to elevate the fine dining



Greeneration Farm, a UAE-based vertical farming company, has partnered with top chefs and restaurants in Dubai to provide fresh, pesticide-free produce.

Founded by Roman Ulyanov, the company offers over **70 varieties of microgreens**, edible flowers, and specialty leaves, delivered the next day to ensure maximum freshness.

Their sustainable farming methods significantly reduce water usage and CO2 emissions compared to traditional agriculture.

Greeneration has secured partnerships with over 20 esteemed clients, including luxury hotels and renowned restaurants.

The company recently participated in ExpoCulinaire 2024, showcasing its products and hosting a workshop on culinary applications of edible flowers.

Chefs appreciate Greeneration's products for their quality, uniqueness, and sustainability, using them to enhance a wide range of dishes.

The company's commitment to local, sustainable farming aligns with the culinary industry's growing focus on environmental responsibility and high-quality ingredients.

Source: "UAE: Greeneration Farm Partners with Top Chefs and Restaurants to Elevate Fine Dining Experience in UAE." Www.verticalfarmdaily.com, 25 June 2024, www.verticalfarmdaily.com/article/9638760/uae-

greeneration-farm-partners-with-top-chefs-and-restaurants-to-elevate-fine-dining-experience-in-uae/.

Vertical Farming: A Solution for Sustainable Local Development



In Bielaziorsk, Belarus, Elena, and Dzmitry have transformed a metalworking shop into an innovative urban farm. This isn't just any farm, though.

It's a vertical hydroponic system, growing nutrient-dense seedlings in a fraction of the time and space of traditional agriculture.

The results are impressive.

"When I experiment with different plants and cultivation

techniques, I sometimes lose track of the rest of the world.
Observing new life emerge from tiny seeds, grow strong, and transform into healthy, flavorful sprouts is immensely rewarding." — Elena.

Their brand, ShefDoza, now cultivates twelve varieties of baby leaves under carefully controlled conditions. But the impact goes beyond just tasty greens.

This venture showcases the potential of sustainable local development.

By producing food locally, the farm reduces environmental impact and creates economic opportunities.

The benefits don't stop there.

The project is part of a larger initiative by UNDP, the EU, and

Belarus's Ministry of Economy to boost local businesses.

In 2023 alone, this partnership supported 52 SMEs and created 160 new jobs. The effects ripple outward.

Urban farming like this preserves natural ecosystems, reduces resource use, and ensures consistent yields year-round. It's a glimpse into a more sustainable future.

As communities embrace such innovations, they're not just growing food. They're cultivating healthier, more resilient local economies and environments.

This approach to farming is revolutionizing how we think about food production and community development.

Source: "Vertical Farming: A Solution for Sustainable Local Development." UNDP, www.undp.org/belarus/stories/vertical-farming-solution-sustainable-local-development.

Emerging Industry News

Bridging the Gap:
Empowering Smallholder
Farmers and SMEs through
Food Safety Management
Systems and CapacityBuilding Programs



"Global food safety and food security are key principles to be followed in the context of the implementation of Food Safety Management Systems (FSMSs) and capacity-building programs."

In this comprehensive research article, the authors explore the crucial role of food safety management systems (FSMSs) and capacity-building programs (CBPs) in ensuring global food safety and security.

But here's the thing.

Micro-, small-, and medium-sized businesses (SMBs) are vital for economic growth and sustaining livelihoods.
Globally, SMBs account for up to 90% of businesses and 60-70% of employment.

Despite their importance, small and medium-sized businesses (SMBs) and smallholder farmers (SHFs) across various regions face significant challenges in implementing these programs effectively.

The article goes into the significant constraints and barriers, including:

- Climate change and water scarcity
- Crop reduction and soil health challenges

- Reliance on imported grains and cereals
- Food and nutrition insecurity
- Population growth and lack of agricultural job opportunities

And that's not all...

The authors also highlight the challenges in reaching SHFs most in need, such as:

- Inadequate resources and lack of awareness
- Cultural differences and language barriers
- Disconnect among rural communities, food authorities, and government
- Geographic barriers and inability to communicate needs
- Lack of collective organization and labor shortages

But wait, there's more!

The article explores opportunities for collaborative improvement between developed and developing countries, such as:

- Strengthening regulatory frameworks and increasing access to training and education
- Enhancing traceability systems and investing in research and development
- Promoting collaboration among stakeholders and supporting SMBs

So, what's the bottom line?

By addressing these challenges and leveraging opportunities for collaboration, we can work towards a safer, more sustainable global food system that benefits everyone, especially the most vulnerable.

The time to act is now – let's come together to support SHFs and SMBs in implementing effective FSMSs and CBPs for a brighter, more food-secure future!

Source: Ph.D, J. C. L., Sofia Agriopoulou, Ph D., and Theodoros Varzakas. (n.d.). Column-Management. June/July 2024. Retrieved July 1, 2024, from https://digitaledition.food-safety.com/june-july-2024/column-management/

Microgreens Market 2024 Trends | GoodLeaf Farms, AeroFarms, Bowery Farming



The global microgreens market is projected to reach USD 2,500 million by 2030, growing at a CAGR of 13.5% from 2020 to 2030.

Factors such as advances in vertical farming, consumer preference for sustainable and health-conscious foods, and the impact of COVID-19 have driven this growth.

Broccoli microgreens are anticipated to see significant adoption due to their health benefits.

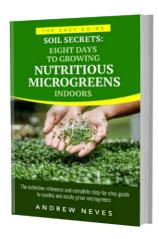
Coconut coir remains a preferred growth medium for its organic properties.

North America is expected to hold the largest market share, supported by technological advancements in vertical and soilless farming.

The market's expansion is further fueled by rising adoption in the food service industry and increased consumer awareness of microgreens' nutritional benefits.

Key players like **AeroFarms** and **Fresh Origins** are investing in innovative farming techniques and geographic expansion.

Overall, the microgreens market is set to flourish with growing interest in functional foods and sustainable farming practices.



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Commercial Best Practices

Growing your own opportunities for Growth potential



Meet Cathy Munro, the owner of Bramble Hill Farm in Pictou County, Nova Scotia, who has been growing microgreens for seven years.

What started as an experiment in her kids' playroom has now become a successful operation that supplies fresh microgreen salad mixes year-round to independent grocers in Nova Scotia. How did she do it?

With the help of a Kickstarter campaign and a loan from FarmWorks, Munro was able to

expand her business and meet the growing demand for her products. But she didn't stop there.

Healthy Farms, Healthy
Food-FarmWorks provides
loans to people operating foodrelated businesses that help
increase the economic, health,
social, environmental, and other
benefits that result from
producing and eating Nova
Scotian food.

Seeking further growth, Munro developed DIY microgreen kits called Micro Garden and even pitched the idea to Dragon's Den.

While she didn't secure a spot on the show, the experience proved invaluable for learning how to pitch to investors. Want to know the best part?

Bramble Hill Farm has been recognized for its success. It now employs four people, providing jobs and contributing to the local economy.

So, what's next for this innovative farm?

Munro plans to continue pushing boundaries and may even pitch another product to Dragon's Den next year.

Keep an eye out for more exciting developments from Bramble Hill Farm!

"Growing Your Own Opportunities for Growth Potential." The Advocate, 28 June 2024,

<u>www.pictouadvocate.com/community/growing-your-own-opportunities-for-growth-potential/article 3d48d182-33c0-11ef-bfaa-2f23aad13a45.html.</u>



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Instructor: M.S. Karla Garcia

- -Hort Americas Technical Service
- -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

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