Microgreens

Name of Presenter

Contact Email (optional)
Vegetable crops harvested at an immature growth stage:

Sprouts: germinated seeds with emerging root

Microgreens: 2-3 inches in height; 7-21 days (harvest stem, cotyledons, and emerging true leaves)

Baby greens: 4-6 inches in height; 21-40 days

Mature greens: >6 inches in height; 40-60 days
Why grow MGs?

• Fun & easy to grow
• Harvest in 10-14 days
• Grow year-round
• $1/oz. in Whole Foods

Why eat MGs?

• Vivid colors
• Tender texture
• Intense flavor
• Nutritious
• Versatile
Pea shoots and other microgreens growing in restaurant dining area
Assessment of Vitamin and Carotenoid Concentrations of Emerging Food Products: Edible Microgreens

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ABSTRACT: Microgreens (seedlings of edible vegetables and herbs) have gained popularity as a new culinary trend over the past few years. Although small in size, microgreens can provide surprisingly intense flavors, vivid colors, and crisp textures and can be served as an edible garnish or a new salad ingredient. However, no scientific data are currently available on the nutritional content of microgreens. The present study was conducted to determine the concentrations of ascorbic acid, carotenoids, phylloquinone, and tocopherols in 25 commercially available microgreens. Results showed that different microgreens provided extremely varying amounts of vitamins and carotenoids. Total ascorbic acid contents ranged from 20.4 to 147.0 mg per 100 g fresh weight (FW), while β-carotene, lutein/zeaxanthin, and violaxanthin concentrations ranged from 0.6 to 12.1, 1.3 to 10.1, and 0.9 to 7.7 mg/100 g FW, respectively. Phylloquinone level varied from 0.6 to 4.1 μg/g FW; meanwhile, α-tocopherol and γ-tocopherol ranged from 4.9 to 87.4 and 3.0 to 39.4 mg/100 g FW, respectively. Among the 25 microgreens assayed, red cabbage, cilantro, garnet amaranth, and green daikon radish had the highest concentrations of ascorbic acids, carotenoids, phylloquinone, and tocopherols, respectively. In comparison with nutritional concentrations in mature leaves (USDA National Nutrient Database), the microgreen cotyledon leaves possessed higher nutritional densities. The phytonutrient data may provide a scientific basis for evaluating nutritional values of microgreens and contribute to food composition database. These data also may be used as a reference for health agencies’ recommendations and consumers’ choices of fresh vegetables.

KEYWORDS: Microgreens, phytonutrients, ascorbic acid, carotenoids, phylloquinone, tocopherols, HPLC
Nutrients assessment

• **Objective:** to analyze the concentration of vitamins and carotenoids in 25 commercially available microgreens.

• **Nutrients analyzed:**
  1) Ascorbic Acid (Vc)
  2) Phylloquinone (V_{K1})
  3) Tocopherols (V_E)
  4) Carotenoids (Provitamin A: β-Carotene, Lutein/zeaxanthin, Violaxanthin.)
Top 5 microgreens rich in carotenoids (provitamin A)

- No. 1 Cilantro
- No. 2 Red sorrel
- No. 3 Garnet amaranth
- No. 4 Red cabbage
- No. 5 Pea tendrils
Simple steps to microgreens

• Fill a shallow container with 1-1.5 in. of moist soilless growing media
• Sow seeds thickly and evenly
• Water from bottom
• Harvest with scissors when 2-3 in. tall & just as true leaves beginning to develop
• ENJOY!
Try a variety of crops, containers, and locations
What can I grow?

- **Fast and easy:** arugula, kale, radish, broccoli, mustard, broccoli raab, bok choy, komatsuna and other Asian greens, cress, lettuces (fragile)

- **More challenging:** amaranth, beet, Swiss chard, cilantro, basil, pea and sunflower shoots

- **Questionable:** spinach (hulls), cabbage (odor?)
Organic Non-GMO Micro Greens

Micro-greens are riding a wave of popularity onto the plates and into the greenhouses of restaurants, homes, and farms all across America, and for good reason: easy to grow, easy to harvest, easy to prepare, delicious to eat, highly nutritious, and highly marketable! Whether you are a commercial grower looking to expand a niche into fresh supply for restaurants or a home gardener wanting to add a little healthy zest to your diet, we’ve got the seeds you need to do the job - and as always, you can be assured that all of our seeds are 100% certified organic!

Organic Non-GMO Micro Greens

- Organic Green Kale Micro Greens
- Organic Mild Mix Micro greens
- Organic Onion Micro Green
- Organic Spicy Mix Micro greens
- Organic Broccoli Micro Green
- Organic Purple Orach Micro Greens
- Organic Arugula Micro Greens
- Organic Red Beet Micro Greens
- Organic Green Chard Micro Greens
- Organic Golden Chard Micro Greens

Quick View
1 ½-in. depth of growing media

Tray-in-tray or container-in-container for bottom watering
Repurposed shallow food container (lid becomes saucer)
Indoor growing: need light and heat

- Window light may be insufficient
- Lettuce, arugula, mustards, Asian greens will grow ok in low light
- T-8 fluorescent lights can supplement or replace sunlight (keep tubes < 2 in. from plants)
- Cut at “soil line” when greens are 2-3-in. tall
- No re-growth
- Refrigerate for up to 10 days
Resources

• http://www.growingmicrogreens.com/-commercial site for microgreen supplies
• http://agnr.umd.edu/news/mighty-microgreens-UMD AGNR research project
• http://www.ext.colostate.edu/pubs/foodnut/09373.html- Health Benefits and Safe handling of Salad Greens

Books:
• Microgreen Garden- Mark Braunstein
• Microgreens- Fiona Hill
• Microgreens- Eric Franks & Jasmine Richardson
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