ARUGULA MICROGREENS

CROP DATA

TRAY SIZE	1020 Tray (10" x 20")	Paperpot Tray (12" x 24")
DRY GRAMS OF SEED PER TRAY	28 to 30 grams	36 to 39 grams
TRAYS PER POUND OF SEED	15 trays	11.5 trays
TRAYS PER KILOGRAM OF SEED	33 trays	25.5 trays
KWIK KLIK® TOP PLATE (3mm)	7 to 8 mm diameter holes (1 click)	7 to 8 mm diameter holes (1 click)
SEED SOAK TIME	*Do not soak* arugula before sowing	
GERMINATION TIME (STACKED)	3 to 4 days	
IDEAL GERMINATION TEMP	75°F to 82°F (24°C to 28°C)	
DAYS TO MATURITY	7 to 8 days	
TARGET CROP YIELD PER TRAY	200 to 250 grams (7 to 9 oz)	250 to 325 grams (9 to 11.5 oz)

HYPOTHETICAL ECONOMICS

TRAY SIZE	1020 Tray (10" x 20")	Paperpot Tray (12" x 24")
HARVEST UNIT	50 grams of microgreens per clamshell	
HARVEST UNITS PER TRAY	5 units (per 1020 tray)	6.5 units (per paperpot tray)
PRICE PER UNIT	$6.00	$6.00
REVENUE PER TRAY	$30.00	$39.00

OVERVIEW

Arugula is a great standard for your microgreens operation. Arugula's unique nutty flavor is popular with consumers and it's easy to grow - making it popular with growers. This cole crop likes moderate to warm temperatures and can be harvested in as little as six days but usually takes 7 to 8 days. Great in salads or as a garnish.

MICROGREENS SOIL

Like most microgreens, arugula benefits from a well-drained, nutritious soil consisting of:

- Peat or coir for rooting and holding water (75%)
- Perlite or vermiculite for drainage and aeration (20%)
- A small amount of high-quality compost for nutrition (5%)
- Lime to neutralize pH

Many sources state that microgreens do not need nutrients to grow as they have “all the nutrients they need already in the seed”. In our experience, microgreens grow better with additional soil nutrients, which can be provided with a small amount of compost in your soil mix. Good-quality compost also adds microbial life, which can help reduce crop disease. However, too much compost, especially nutrient-rich compost like worm castings, can result in surface mold and reduced water uptake due to nutrient salt content.

When filling trays with soil, fill to the top rim of the tray and then tamp the soil with an empty tray or a custom wooden press. This ensures a nice flat surface for sowing and even seed-to-soil contact.

SANITIZING ARUGULA SEEDS

Sanitizing your seed helps reduce the likelihood of human pathogens in your crop. Zerotol is a peracetic-acid-based sanitizer approved for organic use in Canada and the United States.

Arugula is a small seed and is best sowed when dry. This affects how the seed is sanitized.

Arugula seed can be sanitized by one of two methods:

1. Immersion, then dry (preferred)
    a. The seed is sanitized by immersion in sanitizer and then dried before sowing. The immersion method ensures the seed is fully engulfed in sanitizer to improve its efficacy. This is an effective but tedious process.
2. Spray after sowing
    a. The seed is sanitized after sowing. This method only exposes one side of the seed to the sanitizer, so it is less effective than the immersion method.

SOWING ARUGULA MICROGREENS

A) SPRINKLING METHOD

The sprinkling method can be done using a “shaker”, a small handled sieve, or even a small jar or cup - everyone has their preferred method. When sowing seeds by hand, the goal is to get even coverage so you don’t end up with some areas too dense and others too sparse. Make several passes while sprinkling the seed lightly instead of trying to get perfect distribution in one heavy pass.

B) KWIK KLIK® DROP SEEDER METHOD

When sowing microgreens with the Kwik Klik® Drop Seeder, you will need top and bottom plates to match your tray type - 1020 or Paperpot. The Kwik Klik® frame is universal and will accommodate both style plates.

After installing your microgreens bottom plate, install the appropriate top plate for arugula microgreens, 3mm thick with 7 mm diameter holes (as noted in the crop data table above).

Pour more than enough seed over the surface of the top plate, and rotate the drop seeder until each hole is evenly filled with a cluster of seeds. Align the seeder over your tray, then squeeze the handle to align the holes in

the top plate with the holes in the bottom plate. This will drop all the seeds, sowing the entire tray at once. The Kwik Klik® Drop Seeder method ensures a perfectly even dispersion of seeds every time. This translates to better airflow, a healthier crop, and consistent results every time.

GERMINATION

The germination stage can set the crop up for success or failure. Poor germination can be difficult to recover from, so optimizing germination conditions is crucial for a successful grow.

Arugula germinates well at room temperature and even a bit below, but germinates quicker at warmer temperatures. The germination phase does not require any light.

STACKING TRAYS FOR GERMINATION

Arugula does well when “stacked” during germination. This is where seeded trays are stacked on top of each other, encouraging strong roots and even germination.

Stack trays to a **maximum of 3 trays high** to prevent toppling. This reduces pressure on the bottom tray. Place an empty tray with a 14 lb concrete paver on the top of the stack. The microgreens in the top tray will initially grow taller than the bottom tray but come harvest time, they will completely even out.

UNCOVERING TRAYS

Arugula microgreens are best uncovered when they are ½- inch to one inch tall. Do not let the crop stay covered with weight for too long or the stems will bend and not recover - making harvest more difficult and reducing yield.

Water thoroughly when removing them from the germination stage and moving to the light. The fresh water after three to four days in germination seems to help stimulate growth. After the first overhead watering, practice “bottom watering” for the remainder of the grow (see watering section below).

LIGHTING

Arugula microgreens thrive in 14 to 16 hours of light at 5000K to 6500K or in natural light. If using LED or fluorescent lights, keep them close enough to the crop to prevent stretching. The appropriate distance depends on the intensity of your lights. In general, lights should be 6-12 inches above the crop.

Online information shows a wide range of optimum PPFD values for microgreens production, ranging from 50 to 400 μmol m^{-2} s^{-1} (Liu et al., 2022; MechaTronix, 2023). We have had great results with PPFD values as between 100 and 150 μmol m^{-2} s^{-1} and a DLI of 7 to 8 mol m^{-2} d^{-1}.

WATERING MICROGREENS

Many growers like to water their crops using the “bottom watering” method, allowing the soil to absorb water from below instead of from above. This method keeps the crop dry, which can reduce disease pressure and make for easier harvesting. To do this, place a solid tray below your perforated growing tray and fill that solid tray with water. How much water you add will depend on how dry the crop is and takes some time to master. Do not overwater, as waterlogged trays are at higher risk of crop disease.

HARVESTING

Arugula is an easy crop to harvest and process. Keeping arugula leaves dry in the last 24 to 36 hours of growth can be harvested and placed right into packaging.

Cut arugula microgreens close to the base of the stem with a sharp, good-quality knife. Do not use scissors, as this will tear the base of the stem and reduce storage time. Arugula does not have a firm stem, so be gentle when cutting. Cut small sections at a time with a quick motion with the knife to ensure a good quality cut.

PACKAGING

For retail locations, growers typically use a clamshell to optimize display and storage. For bulk packaging options, you can use roll bags or reusable containers.

STORING HARVESTED MICROGREENS

Like most microgreens, arugula should be kept dry and stored in a fridge between (2° to 4° C or 35° to 39° F) at all times. Be sure to maintain the cold chain during transport by using coolers with ice or a refrigerated vehicle.

POST-HARVEST TRAY SANITIZING

It's critical to wash and sanitize your trays after each crop cycle to reduce the potential for disease. To do this, dump the harvested tray's soil and root matter into bins or wheelbarrows to be taken to the compost. Soaking the trays will help loosen attached roots which can be completely removed with a good scrub brush.
Spray down the tops and bottoms of your trays to completely remove all debris then immerse the trays in a suitable sanitizer such as Zerotol or sodium hypochlorite (bleach). There is no need to dry the trays afterward.

PRICE-TO-YIELD MATRIX

Arugula - 1020 Tray

Crop:	Arugula			Yield/1020 (g):		250
Clamshells/Tray -->	3.33	3.57	3.85	4.17	4.55	5
Amount (g)/Clamshell -->	75	70	65	60	55	50
$3.00	$9.99	$10.71	$11.55	$12.51	$13.65	$15.00
$3.50	$11.66	$12.50	$13.48	$14.60	$15.93	$17.50
$4.00	$13.32	$14.28	$15.40	$16.68	$18.20	$20.00
$4.50	$14.99	$16.07	$17.33	$18.77	$20.48	$22.50
$5.00	$16.65	$17.85	$19.25	$20.85	$22.75	$25.00
$5.50	$18.32	$19.64	$21.18	$22.94	$25.03	$27.50
$6.00	$19.98	$21.42	$23.10	$25.02	$27.30	$30.00
$6.50	$21.65	$23.21	$25.03	$27.11	$29.58	$32.50
$7.00	$23.31	$24.99	$26.95	$29.19	$31.85	$35.00
$7.50	$24.98	$26.78	$28.88	$31.28	$34.13	$37.50
$8.00	$26.64	$28.56	$30.80	$33.36	$36.40	$40.00

Arugula - Paperpot Tray

Crop:	Arugula			Yield/Paperpot Tray (g):		325
Clamshells/Tray -->	4.33	4.64	5	5.42	5.91	6.5
Amount (g)/Clamshell -->	75	70	65	60	55	50
$3.00	$12.99	$13.92	$15.00	$16.26	$17.73	$19.50
$3.50	$15.16	$16.24	$17.50	$18.97	$20.69	$22.75
$4.00	$17.32	$18.56	$20.00	$21.68	$23.64	$26.00
$4.50	$19.49	$20.88	$22.50	$24.39	$26.60	$29.25
$5.00	$21.65	$23.20	$25.00	$27.10	$29.55	$32.50
$5.50	$23.82	$25.52	$27.50	$29.81	$32.51	$35.75
$6.00	$25.98	$27.84	$30.00	$32.52	$35.46	$39.00
$6.50	$28.15	$30.16	$32.50	$35.23	$38.42	$42.25
$7.00	$30.31	$32.48	$35.00	$37.94	$41.37	$45.50
$7.50	$32.48	$34.80	$37.50	$40.65	$44.33	$48.75
$8.00	$34.64	$37.12	$40.00	$43.36	$47.28	$52.00

Prepared by Chris Thoreau, MSc, P. Ag., Seth Davis, and Arielle Roxas, DVM. April 2024.