Baby Leaf Greens & Lettuce Production Guide

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The majority of leafy crops can be grown to the baby leaf stage and harvested as salad mix components. For successful production, however, it is necessary to select the most appropriate varieties and use cultural techniques specific to growing crops for harvest at this maturity stage. This tech sheet outlines basic field production methods available to small-scale growers and the primary aspects of producing a wide range of leafy greens for use as salad/greens mixes.

Refer to key growing information in catalog or website for more detailed sowing specifics.

BED PREPARATION

Stale Seedbed Technique. Weeding crops that are growing at high density can be both time-consuming for the grower and damaging to the crop, so starting with a stale seedbed is imperative for efficiency. Creating a stale seedbed requires the grower to plan ahead, to give weed seeds proximal to the soil surface sufficient time to germinate for the grower to eliminate them, either before seeding or before crop emergence.

The stale seedbed should be prepared *before* seeding fast-growing crops (e.g., brassicas, mustards), but can be prepared *after* seeding slower-germinating crops (e.g., beets, red-veined sorrel) if using a method such as flame-weeding that will not disturb the soil surface.

Application of the following tools and methods offer ways to achieve a stale seedbed.

- **Silage-tarping**
  - Form beds first.
  - Irrigate.
  - Cover with silage tarp for 2–4 weeks, depending on season and weed species pressure.
    - Warmer temperatures will decrease the length of time needed to germinate and kill weed seeds.
    - Some weed seeds need exposure to light to germinate, and may require beds to be uncovered for a period of time to stimulate weed emergence.
  - **Note:** Silage-tarping is regarded as a form of weed *occultation*, which differs from weed solarizing with clear plastic. Whereas silage tarps *block* all light to emerging weeds, causing them to die, solarization relies on the *soil temperature* becoming sufficiently high to kill emergent weed seeds. Unless the likelihood of the soil reaching weed seed-lethal temperatures is assured in your area, silage tarping is a more reliable means of stale seedbed preparation than solarization.

- **Flame-weeding**
  - Useful before seeding fast-germinating crops like brassicas.
  - Form beds first.
  - Irrigate.
  - Can be used after seeding crops that take longer to germinate, such as lettuce. Be sure to flame before your crop seeds emerge, or they will be killed.

- **Tine-weeding**
  - Can be used to create a stale seedbed before sowing crops by removing newly emerged weeds and leaving them to desiccate in the sun.
  - Also used as main method of weed control in baby leaf crops grown at high density. (See details below.)
  - Johnny's offers several tine-weeder designs in a range of sizes. Choose models on the basis of crops and soil type.
    - **Tine Harrow.** Used for stale seed-bedding and cultivation in standard and heavy soils.
    - **Flex Tine Weeder.** Used for cultivation in loose and sandy soils.
    - **Tine Weeding Rake.** Used for stale seed-bedding.

SEEDING

- **Seeding density**
  - Planting at a relatively high density is critical to producing quality baby leaf greens. We recommend using a specialized seeder and experimenting to find the right seeding rate for your needs.
  - Increasing the density (number of plants per area) will generally cause the plants to produce longer petioles and somewhat slower-growing, narrower leaves for an extended baby leaf harvest. Decreasing the density will tend to allow for stronger color development and help delay bolting.
  - A more densely seeded stand will require more water and greater fertility than a thinner stand.
  - Refer to crop or variety-specific key growing information provided in our catalog and website for recommended sowing density.

BABY LEAF LETTUCE & BRASSICA GROWER TIP

For estimating quantities of lettuce or brassica seed needed for baby leaf production

When calculating how much seed you will need when sowing your individual baby leaf varieties or baby leaf mixes, here are a couple rules of thumb:

- **Amount of seed required: $^{1}/_{16}$ oz to harvest 1 lb.**
- **1 oz seed will plant 96 ft^2 and yield 16 lb of salad mix.**

Actual amounts will vary between different varieties, seed lots, and their corresponding seeds per pound, but these rules suffice for planning estimates.

Growing conditions will also influence yield.

- **Seed quality**
  - High germination rates are required to ensure the success of high-density planting.
  - To maintain seed quality, only bring to the field the quantities you expect to use.
  - Variations in temperature, light exposure, and moisture can reduce the viability of your seed. Store in a cold, dark, dry place.
- **Succession planting**
  - To ensure a steady supply of high-quality greens, plant every 1–3 weeks, basing frequency on time of year, crop, variety, and harvest strategy.
  - To learn more about succession planting, visit our Grower's Library, where we offer a set of resources on this subject, including a Succession-Planting Interval Chart for Vegetable Crops and a Succession-Planting Calculator in the form of a downloadable Excel worksheet.

Johnnyseeds.com/succession-planting

- **Seeders**
  - **Jang JP Series Seeders.** Highly customizable for various seed sizes and shapes, in-row spacing, and depth. Single- and multi-row models available.
  - **EarthWay Seeder.** Single-row seeder with multiple plate options for various seed sizes. In-row spacing nonadjustable. Inappropriate for precision seeding or pelleted seed.
  - **Six-Row Seeder.** Good choice for smaller seeds. In-row spacing and hole size adjustable for various seed sizes.
  - **Four-Row Pinpoint Seeder.** Good choice for smaller seeds and planting in tight spaces. In-row spacing nonadjustable.

CROP MAINTENANCE

- **Irrigation**
  Uniform irrigation is critical in baby leaf crop production, to:
  - Ensure good germination;
  - Maintain even growth;
  - Maintain quality color; water-stressed plants can turn yellow or chlorotic.
- **Post-germination weed control**
  - Stale-seed-bedding prior to sowing allows your crops to get a head-start in growth, so that efficient cultivation is possible. There must be a wide enough disparity between the size of your crop and the size of your weeds to effectively cultivate without damaging the crop.

- **Tine-weeding**
  - Targets weeds from thread stage up to the 2–4 true-leaf stage.
  - Use to cultivate directly over established baby leaf crops once they have grown out of the 2–4-leaf stage.
  - Several tine-weeder designs are available in multiple sizes, to suit different crops, stages, and soil types.
    - **Tine Harrow.** The stiff tines are used for stale-seed-bedding and cultivating in standard and heavy soils.
    - **Flex Tine Weeder.** Best used for cultivating in loose and sandy soils. Can also be used over more mature crops as the tines are flexible enough to move around them without causing damage.
    - **Tine-Weeding Rake.** This type of tine-weeder is best used for stale seed-bedding rather than baby leaf cultivation, as its closely-spaced tines render it more aggressive than other tine-weeder models, limiting its window of utility. You may choose to remove every other tine for a less aggressive action.

- **Row Covers**
  - Lay light-weight row covers over brassicas for flea beetle protection.
  - Lay mid-weight row covers over lettuce and other, more cold-sensitive crops for fall season extension.
  - Secure close to the ground, to exclude pest access, by burying the edges with soil or sandbags.

- **Seasonal considerations**
  - Consider switching components for different seasonal slots, according to what you find works best on your farm.
  - Among other desired qualities, look for bolt tolerance in spring-slotted varieties, heat tolerance in summer-slotted varieties, and cold tolerance in fall-slotted varieties.
  - **Spring**
    - Although temperatures may not be high, bolting pressure peaks as day length increases.
    - Accommodate by planning more frequent successions or earlier initial cuttings.
    - Greens that have been cut tend to bolt less quickly than uncut greens.
    - Bolt-inducing effects of increasing daylength can also be minimized with even fertility and irrigation.
  - **Summer**
    - Increased heat can:
      - Wash out color, especially in very dense plantings.
      - Cause crops to grow very quickly, to possibly become oversized or unpalatable before you are ready to harvest.
    - Counteract heat by planning smaller plantings with more frequent successions.
    - Effects of heat can be mitigated with even fertility and irrigation.
  - **Fall**
    - Increased cold and decreased light can:
      - Concentrate sugars and pigmentation.
      - Desiccate crops, especially lettuce.
    - Crunchier, juicier greens, especially lettuce, are more prone to cold damage than other crops.
    - As a function of the decreased growth rate in fall, it becomes less likely for multiple cuts to be obtained from every variety, depending on seeding date.
    - Larger plantings may be required across the fall slow-down to provide consistent yield.
    - Use row cover to provide protection from cold weather and allow crops to be held longer.

HARVEST

- Depending on harvest method, place in trays or totes; protect from sun, wind, and freezing temperatures; and transport to washing and packing area.
  - **Hand harvest.** Cut greens with a knife when leaves reach desired length (3–5"), staying at least 1" above soil level and being certain to harvest above the plant's basal plate to allow for regrowth. For long-stemmed brassicas, you may want to cut higher up, to exclude long stems from your finished product.
  - **Baby Leaf Harvester.** For larger plantings on 30"-wide beds.
  - **Multiple cuts.** Depending on your farm's markets, scale, and location, you may choose to allow the plants to regrow after harvesting for multiple cuts, or harvest just once. Crop quality does tend to decline with regrowth, but under favorable growing conditions it is possible to obtain a marketable second or third harvest from many varieties.

SELECTING COMPONENTS

- **Look for a balance of color, texture, and flavor.**

- **Varieties to optimize success for baby leaf production** are recommended in our catalog and on our website. Crops include lettuce, kale, chard, beets, spinach, mustard greens, mizuna, pac choi, tatsoi, komatsuna, and arugula. Not all varieties will perform well for baby leaf production, so choosing a variety that has been proven in trialing for this use is important.

- **Specialty greens, herbs, microgreens, and edible flowers** can all add visual, textural, and flavor interest.

- **Know your market.**
  - Do they like spicy, sweet, aromatic, and/or bitter components?
  - Is lettuce a must, or do they prefer specialty and/or flavors redolent of regional cuisines?

- **Mixes**
  - Use Johnny's mixes or formulate your own, comprised of varieties that grow at the same rate.
  - If your custom mix is made up of crops and varieties that mature at different rates, sow them sequentially so they reach harvest-stage simultaneously and can be mixed together post-harvest.
  - Typically, brassicaceous greens are ready to be harvested 10–14 days earlier than baby leaf lettuces, depending on the brassica and lettuce being compared. Salanova lettuce is ready to be harvested once the heads are full and relatively dense.

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