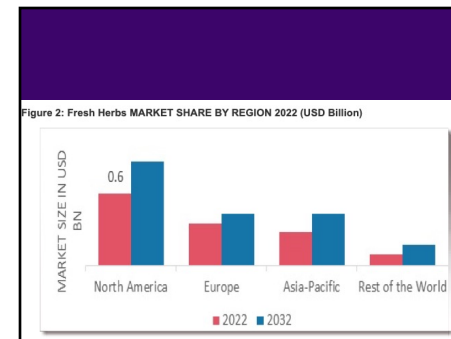


Opportunities to Potted Herbs in Greenhouses and other Controlled Environment facilities

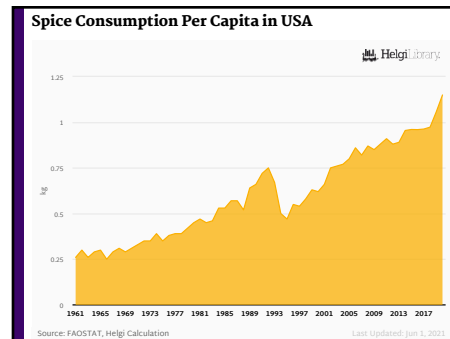



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America's favorite herbs and spices, according to Instacart

To determine relative popularity, Instacart took the number of orders containing each of the most common herbs and spices and divided it by the total number of Instacart orders that contained any herb or spice in 2022. This resulted in a list of the top 10 dried and fresh herbs and spices sold via Instacart. Here is the full list, beyond cilantro:


1. **Cilantro** (use it to whip up a batch of Cilantro Ranch Dressing)
2. **Dried garlic** (perfect for making imitation Papa John's garlic sauce)
3. **Flat-leaf parsley** (use in an easy gremolata or chimichurri)
4. **Dried onion** (found in everything bagel seasoning)
5. **Cinnamon** (make our brown butter cinnamon rolls)
6. **Thyme** (a secret weapon in mushroom pasta)
7. **Ground paprika** (you deserve some chicken paprikash)
8. **Dried basil** (pizza sauce's best friend)
9. **Dill** (for all your pickling needs)
10. **Chili powder** (not just for chili, but also Doritos powder)

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Potted Herb Production



- Propagation
- Environmental Requirements
- Nutrition
- Diseases and Pests
- Other/New Areas



5



Many herb species can be direct sown into pots.

This is often the preferred method for some of the most common herbs such as basil, dill, parsley, oregano

Direct sowing reduces labor costs compared to transplanting plugs, plug costs and is considered most when seed cost is cheap.

In general, 5-25 seed are sown per pot (4-8" pots).

Herb seed have a broad temperature range for germination, however, most seed are germinated in media maintained at 68-78°F.

Use frost cloth to shade (in summer) or retain heat (winter/early spring).

6

Many herbs are easily propagated by cuttings. Cutting propagation can reduce production time, allow for propagation of desirable unlicensed herbs and is especially profitable when cuttings are harvested from your own production and direct stuck.



7



Purchasing liners is another option.

Consider treating liners with sprays/drenches to control height, pests and diseases BEFORE you plant into the finished containers.

8

Must haves. . . .

- Overhead watering
 - By hand is possible with callused cuttings
 - By hand is also possible when cuttings are covered with frost cloth or shade
 - An overhead sprinkler/boom system allows for rooting a wide variety of callused and un-callused cuttings.
- Heat!
 - Ideally media temperatures are maintained at 70-76F just like a liner (72-75F optimal).
- Reduced Light
 - Ideally reduce light to <1000-1500 footcandles.

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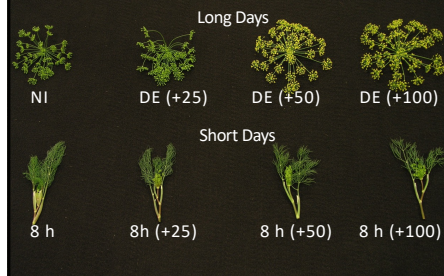
Herbs that can be readily propagated from cuttings

- Oregano (SD; 10 hr)
- Spearmint (SD; 10 hr)
- Peppermint (SD; 10 hr)
- Tarragon (LD, NI Lighting)
- Sage (LD; NI lighting)
- Rosemary (Warm; 74F)



10

Effect of Daylength and Supplemental Lighting on Dill 'Mammoth' Flowering

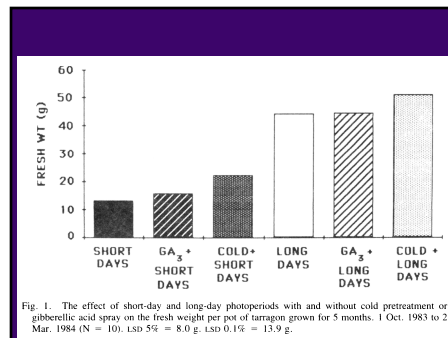


11

Tarragon MUST be grown under long days. Consider interrupting the night (10 pm – 2 am) with night interruption lighting (10 footcandles) prior to March 21.





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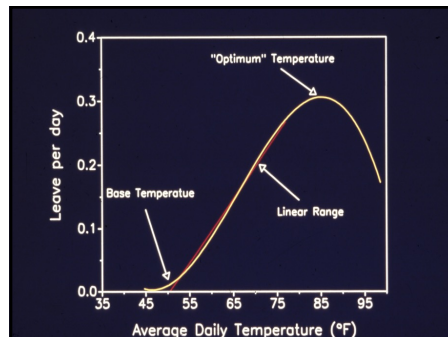
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Potted Herb Production

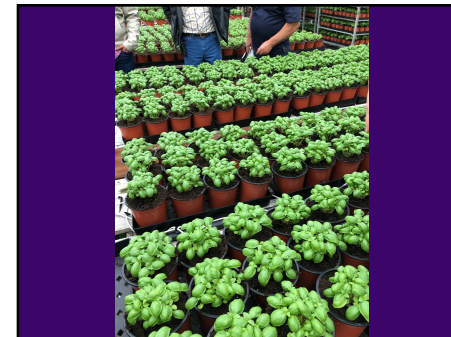
- Propagation
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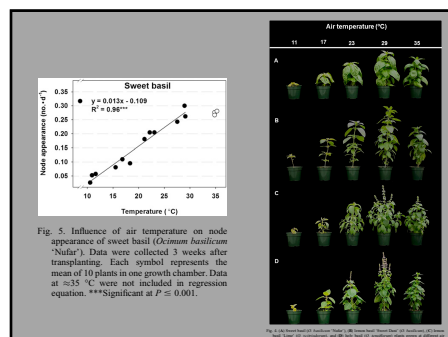
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Photosynthesis and Light Response Curves

- There is a minimum amount of light a plant needs to just maintain itself (light compensation point)
- Photosynthesis increases as light intensity increases and then levels off, or 'saturates'.

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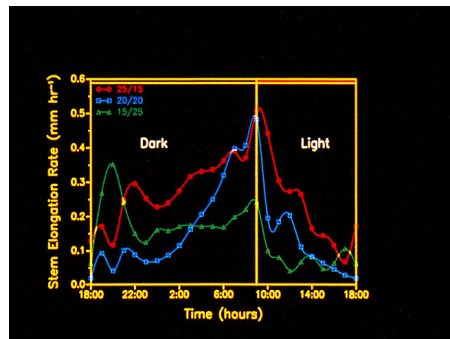
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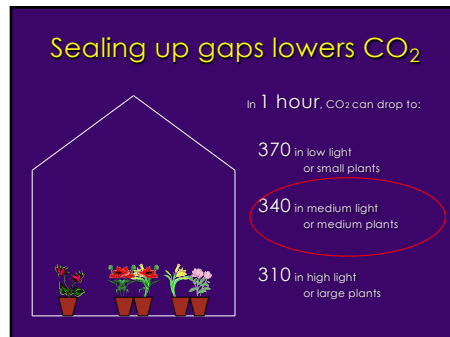
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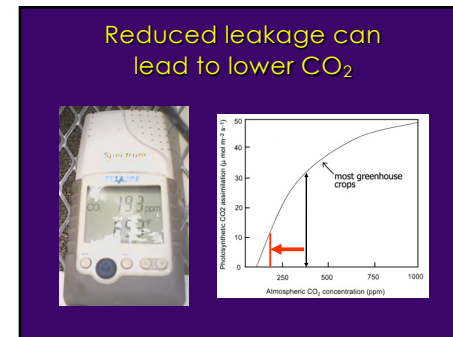
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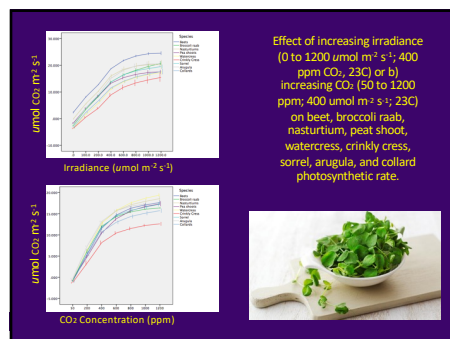
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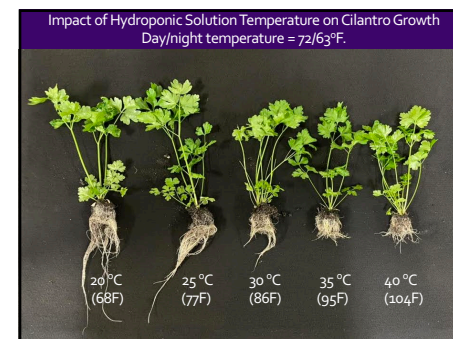
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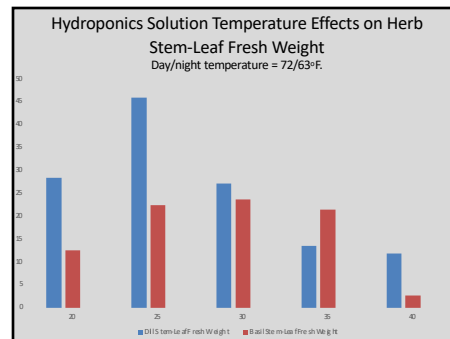
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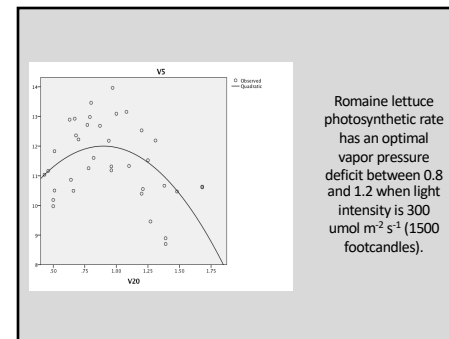
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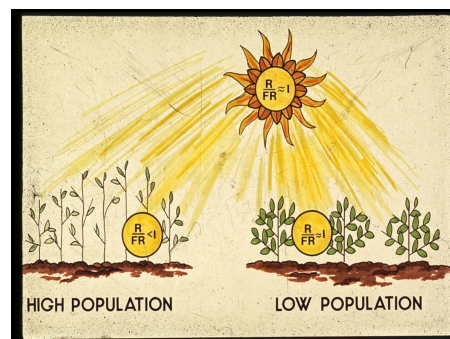
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Plants use light color, and day/night temperature to alter their shape to insure survival.

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Potted Herb Production



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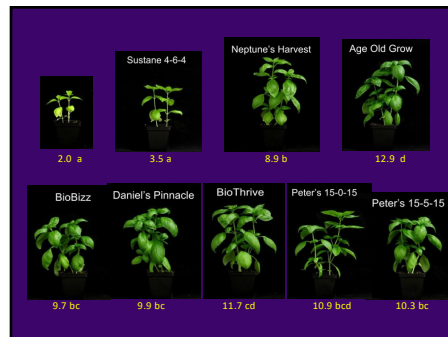
Recommended Fertilizers

- Consider using fertilizers that are lower in phosphorus (middle number) and higher in the nitrate form of nitrogen:

- 13-2-12
- 15-0-15
- 15-5-15

Fertilize (generally 100-200 ppm N) to reach the optimal EC.

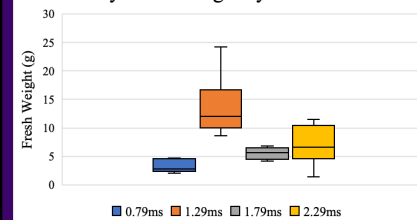
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Herbs have an optimal EC that appears to range between 1 and 1.5 with many species.

Parsley Fresh Weight by EC Treatment



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Postharvest

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Water stress approx. 2 weeks prior to sales/shipping can increase flavor and postharvest life of potted herbs. Water stress is defined as till wilt.

REDUCED IRRIGATION SUPPLY TO CULINARY HERBS




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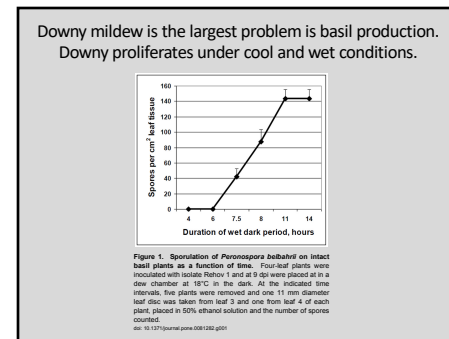
Potted Herb Production



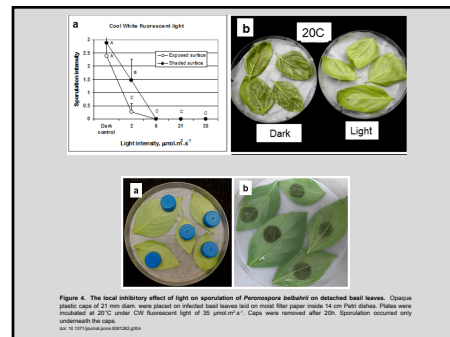
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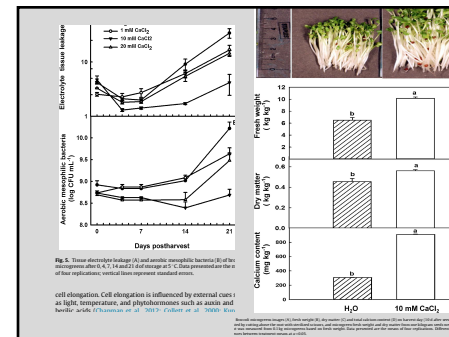
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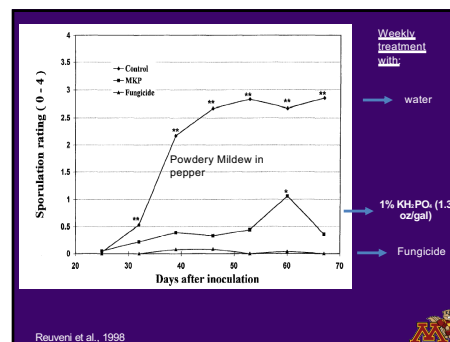
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Most common Diseases/Pests

- Downy mildew (basil)
- Rhizoctonia
- Bacteria
- Aphids
- Mites

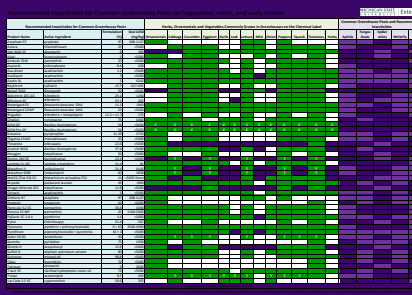
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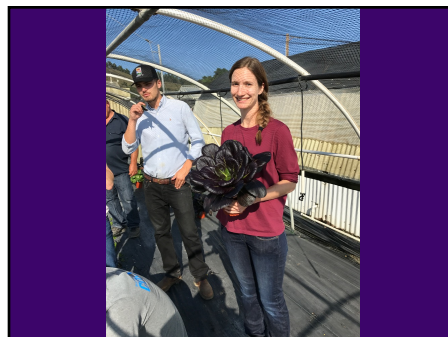
Liner Treatments:

- Cease
- Sanitate
- Altus
- Beneficial insects
- Other registered materials

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Potted Herb Production



- Propagation
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University of Maryland Partners

- Maryland Nursery, Landscaper and Greenhouse Association
- Maryland Agriculture Experiment Station
- Floriculture and Nursery Research Initiative (USDA-ARS)
- Society of Allied Florists (AFE)
- Grower Partners:
 - Altman Plants, Inc.
 - Rocket Farms, Inc.
 - Smith Greenhouses, Inc.
 - Green Circle Growers, Inc.
 - Wagner's Greenhouse
 - Go Green Agriculture
 - Plainview Greenhouses
- SPECIAL THANKS TO Longwood Gardens!!



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