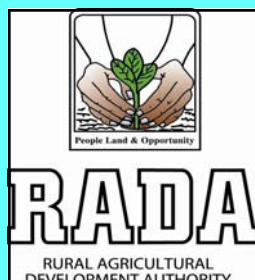


Quick Tips

- Use high quality, indeterminate seeds for growing in greenhouses
- Keep proper records
- Follow a strict fertilizer plan to maximize your crops
- Inspect plants regularly for any signs of disease or pests to avoid an outbreak



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Crop Bulletin # 4

Growing Greenhouse Cucumbers *Basic Information*

1. Cucumbers are considered a quick crop because it only takes about 2 weeks to get a seedling ready for transplanting. Also, after transplanting, it should only take approximately 30 days to begin reaping, with harvest continuing for upwards of 3 months.
2. Cucumber plants need about 8-10 square feet of greenhouse space.
3. You can re-use your growing media for cucumbers because they adapt easily to high nitrogen levels.
4. Cucumber plants grow well in warm and humid conditions.
5. Cucumber plants are heavy producers; yields of 30 lbs or more per plant (after a 4-month crop) are possible.
6. Cucumber plants do not need any pollination, as they are all female.

Selecting Seeds

- Always use seeds of greenhouse varieties.
- When selecting seeds, be aware that there are many newer varieties on the market with varying resistance/tolerance to diseases.



Planting Cucumber Seeds

- When planting the seed, it is best to lay the seed flat.
- The taproot will extend out from one end of the seed and the growing point of the plant will come from the other end.
- Plant seed about 1/4 inch deep, lightly cover; planting the seeds too deep can delay germination.
- Best germination temperature is 75°-78°F. Temperatures above these levels (ex: 85°F) are too high.
- Seeds are expensive, but you can expect nearly 100% germination in 2-4 days.
- Cucumbers grow in a wide variety of media: perlite, rock-wool, coir, soil, and other mixtures.
- **Note:** You can cover the seed trays with newspaper during germination. Keep moist.

Cucumber Greenhouse Varieties

Gherkin Spanish Cucumber

- Small cucumber (6 inch)
- Green or striped skin



East Long French Cucumber

- Green skin
- Long cucumber (8 inch to 10 inch)



Dutch Cucumber

- Smooth skin and larger leaves
- Exceeds 10 inch

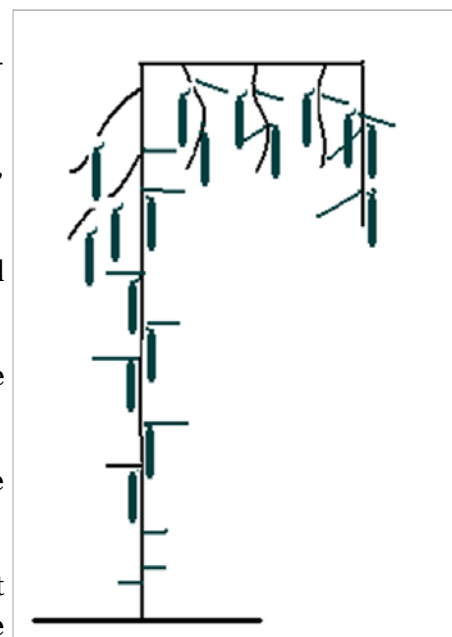


Seedlings and Transplanting

- Cucumbers are planted in single rows per bed.
- As an example, if you have a 120 foot greenhouse, approximately 80-90 plants will be planted per row and bed.
- Initial growing temperature for cucumbers is 80°-85°F (26°-29°C).
- Cucumbers tolerate higher temperatures if the relative humidity is 70% or higher.
- 2 support wires are positioned over each row, about 28in-30in apart.
- Cucumber plants are brittle and do not need to be “leaned and lowered” when they reach the support wires. The plants can cross each other (every other plant) to be attached to the support wires (See training section for more details)
- As the seedlings grow, a plant clip is used to attach a support string to each plant.

Pruning and Training

- As plants begin to grow, it is important to allow them to develop a strong root system, which will enable the plant to support more fruit and grow quicker.
- All laterals (suckers), fruit, and tendrils should be removed.
- Continue this pruning until the plant has developed 10 true leaves: the plant will be about 3 feet high before you allow any fruit to develop. This should take about 20 days from the time of transplanting.
- The removal of fruits during this stage of growth allows the plant to develop a strong root system.
- The last few leaves at this stage of growth should develop to nearly 12 inches across.
- As the plant grows, the support string should be twisted around the stem, approximately one revolution every 6in-9in. Always twist in the same direction.
- After 10 true leaves have developed, you can begin to allow fruit development.
- There should only be one flower at each leaf node; in case there are more, prune and leave one flower.
- As the plant continues to grow up the support string, remove all lateral growth (suckers) and tendrils.
- As the plant approaches the support wire, you should begin to remove the bottom leaves (2-3 leaves at a time every few days).
- Excess pruning at any given time can cause too much moisture loss in the plant and may result in aborted flowers.
- About 30 days after transplant, the plant should approach the support wire; there are several methods for training the plants once they reach the support wire.



Lateral Growing Techniques

TRELLIS METHOD

- Run additional support wires over the top of the aisle.
- The plants grow across the top of the aisle towards the plants on the other side of the aisle, forming an arch with the fruit hanging down above the aisle.

UMBRELLA METHOD

- Terminate the growing point of the plant about 2 leaves above the support wire.
- Two laterals are allowed to grow from the plant (in opposite directions)
- They grow for about 8 inches and then grow back down for 3-4 inches., forming an umbrella.

NUMBER "7" METHOD

- Each plant is trained in the shape of a number 7 (see picture above)
- The growing point of each plant is trained to grow along the support wire in the same direction.
- Grow 8-12 inches from main stem on wire; as it grows, allow 2 lateral shoots to join the main one; then allow the plant to grow downwards to form a "7".

Crop Nutrients and Fertilizer

- Greenhouse cucumbers require a large amount of nutrients and grow very rapidly when sufficiently supplied with the right nutrients.
- NITROGEN and POTASSIUM are required in the largest amounts. However, a complete nutrition program, including essential minor elements, is required for proper plant growth.
- Target pH of the nutrient solution for the plants should be between 5.5 and 6.0

Cucumber Nutrient Solution Concentration (ppm)

Nutrient	N	P	K	Ca	Mg	S	Fe	B	Cu	Mn	Zn	Mo
Seedling to 1 st Fruit	133	62	150	130	50	70	2.5	.44	.05	.62	.09	.03
1 st fruit to Termination	240	62	150	260	50	70	2.5	.44	.05	.62	.09	.03

Pest and Disease

- Cucumber plants may be affected by fungi, such as *Botrytis* and *Powdery Mildew*. Always maintain proper ventilation to prevent this from happening.
- Like most plants, many root diseases can attack the crop, to include: *damping off*, *Fusarium*, *Ryzyoctonia*, and *Pythium*. The regular use of *Trichoderma* may help reduce this problem.
- Cucumbers may also be attacked by the following insects: whiteflies, spidermites, thrips, aphids, and *fungus gnats*. Use sticky traps for early detection.
- Sanitation is very important. Keep the greenhouse free of debris, old plants and material.

Harvesting

- Harvest can usually begin about 30 days after transplant.
- When harvesting, it is important to remove the fruit stem back to the main stem of the plant. Any “stub” that is left can be attacked by the fungus *Botrytis*.
- Early morning harvesting (while the fruit is still cool) will help maintain the fruit crisp.
- Harvest is usually required 3 to 4 times per week and it is important to have continued, timely harvesting to keep the plants productive.