

VEGETABLE & HERB PLUG GROWING CHART

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Crop	Tray Size ¹	STAGE 1*				STAGE 2**			STAGE 3***				STAGE 4****				Total Plug Crop Time (weeks) ⁵	Cultural Comments
		Cover ²	Soil Temperature	Moisture	Days	Soil Temperature	Moisture	Days	Soil Temperature	Fertilizer (ppm) ³	Soil EC ⁴	Days	Soil Temperature	Fertilizer (ppm) ³	Soil EC ⁴	Days		
Basil <i>(Ocimum basilicum)</i>	.75-1 in. (2-2.5 cm)	Yes	65-70°F (18-21°C)	Wet	2-4	65-70°F (18-21°C)	Medium	7	62-65°F (17-18°C)	100-150 1/wk	0.5-1.5	7-10	62-65°F (17-18°C)	100-150 1/wk	<0.75	7	4-5	Control foliar diseases with moisture control, air movement and approved fungicides. Control height with DIF, moisture, a fertilizer low in P and ammonia form of nitrogen, and light. Direct sowing into the final container can reduce crop time and costs.
Borage <i>(Borago officinalis)</i>	.75-1 in. (2-2.5 cm)	Yes	65-70°F (18-21°C)	Medium	5-8	65-70°F (18-21°C)	Medium	7	62-65°F (17-18°C)	100-150 1/wk	0.5-1.5	7	58-60°F (14-16°C)	100-150 1/wk	<1.0	7	3-4	Control foliar diseases with moisture control, air movement and approved fungicides. Control height with DIF, moisture, a fertilizer low in P and ammonia form of nitrogen, and light.
Broccoli <i>(Brassica oleracea Botrytis group)</i>	.75-1 in. (2-2.5 cm)	Yes	65-70°F (18-21°C)	Medium	2	65-70°F (18-21°C)	Dry	5-8	62-65°F (17-18°C)	100 1/wk	0.5-1.5	17-21	62-65°F (17-18°C)	100 1-2/wk	0.5-1.0	7-10	5-6	Control foliar diseases with moisture control, air movement and approved fungicides. Control height with DIF, moisture, a fertilizer low in P and ammonia form of nitrogen, and light.
Brussels Sprouts <i>(Brassica oleracea Gemmifera group)</i>	.75-1 in. (2-2.5 cm)	Yes	65-70°F (18-21°C)	Medium	3-5	65-70°F (18-21°C)	Dry	5-8	62-65°F (17-18°C)	100 1/wk	0.5-1.5	17-21	62-65°F (17-18°C)	100 1-2/wk	0.5-1.0	7-10	5-6	Control foliar diseases with moisture control, air movement and approved fungicides. Control height with DIF, moisture, a fertilizer low in P and ammonia form of nitrogen, and light.
Cabbage <i>(Brassica oleracea Capitata group)</i>	.75-1 in. (2-2.5 cm)	Yes	65-70°F (18-21°C)	Medium	3	65-70°F (18-21°C)	Dry	5-8	62-65°F (17-18°C)	100 1/wk	0.5-1.5	17-21	62-65°F (17-18°C)	100 1-2/wk	0.5-1.0	7-10	5-6	Control foliar diseases with moisture control, air movement and approved fungicides. Control height with DIF, moisture, a fertilizer low in P and ammonia form of nitrogen, and light.
Cauliflower <i>(Brassica oleracea Botrytis group)</i>	.75-1 in. (2-2.5 cm)	Yes	65-70°F (18-21°C)	Medium	3	65-70°F (18-21°C)	Dry	5-8	62-65°F (17-18°C)	100 1/wk	0.5-1.5	17-21	62-65°F (17-18°C)	100 1-2/wk	0.5-1.0	7-10	5-6	Control foliar diseases with moisture control, air movement and approved fungicides. Control height with DIF, moisture, a fertilizer low in P and ammonia form of nitrogen, and light.
Celery <i>(Apium graveolens var. dulce)</i>	.75-1 in. (2-2.5 cm)	Yes	70-75°F (21-24°C)	Wet	4-8	70-75°F (21-24°C)	Wet	10-14	65-70°F (18-21°C)	200 2/wk	0.5-1.5	28-34	65-70°F (18-21°C)	200 1-2/wk	0.5-1.0	7-10	8-9	Do not grow below 60°F (15°C) to prevent bolting. Crop can be mowed before shipping.
Chives <i>(Allium schoenoprasum)</i>	.75-1 in. (2-2.5 cm)	Yes Lightly	70-75°F (21-24°C)	Medium	4-8	70-75°F (21-24°C)	Medium	5-7	65-70°F (18-21°C)	100-150 1/wk	0.5-1.5	21-35	65-70°F (18-21°C)	100-150 1/wk	<1.0	7	7-8	Can mow crop for height control. Control foliar diseases with moisture control, air movement and approved fungicides. Direct sowing into the final container can reduce crop time and costs.
Cilantro (Coriander) <i>(Coriandrum sativum)</i>	.75-1 in. (2-2.5 cm)	Optional	68-70°F (20-21°C)	Medium	4-8	65-70°F (18-21°C)	Medium	5-7	65-70°F (18-21°C)	100-150 1/wk	0.5-1.5	7-10	65-70°F (18-21°C)	100-150 1/wk	<1.0	7	5-6	Direct sowing into the final container can reduce crop time and costs.
Cucumber <i>(Cucumis sativus)</i>	1.5 in. (4 cm)	Yes	75-78°F (24-26°C)	Medium	2	70-75°F (21-24°C)	Dry	5-7	65-70°F (18-21°C)	75 1-2/wk	0.5-1.5	9-17	65-70°F (18-21°C)	100 1-2/wk	0.5-1.0	3-6	3-4	Control foliar diseases with moisture control, air movement and approved fungicides. Decrease night temperature after germination to minimize stretch. Avoid over-feeding to control height. Direct sowing into the final container can reduce crop time and costs.
Dill <i>(Anethum graveolens)</i>	.75-1 in. (2-2.5 cm)	No	65-70°F (18-21°C)	Medium	5-8	65-70°F (18-21°C)	Medium	5-7	65-70°F (18-21°C)	100-150 1/wk	0.5-1.5	17-21	58-60°F (14-16°C)	100-150 1/wk	<1.0	7	6-7	Direct sowing into the final container can reduce crop time and costs.
Eggplant <i>(Solanum melongena)</i>	1 in. (2.5 cm)	Yes	75-78°F (24-26°C)	Medium	5-6	70-75°F (21-24°C)	Dry	5-10	70-75°F (21-24°C)	100 2/wk	0.5-1.5	24-27	68-70°F (20-21°C)	100 1-2/wk	0.5-1.0	7-10	6-7	Avoid cool, wet conditions. Control height with DIF, moisture and light. Control foliar diseases with moisture control, air movement and approved fungicides.
Lettuce <i>(Lactuca sativa)</i>	1.5 in. (4 cm)	Yes Lightly	65-70°F (18-21°C)	Medium	3-4	65-70°F (18-21°C)	Medium	4-8	65-70°F (18-21°C)	75 1-2/wk	0.5-1.5	14-18	62-65°F (17-18°C)	75 1/wk	0.5-1.0	7	4-5	Control foliar diseases with moisture control, air movement and approved fungicides. Direct sowing into the final container can reduce crop time and costs.
Mint <i>(Mentha spp.)</i>	.75-1 in. (2-2.5 cm)	Yes Lightly	70-75°F (21-24°C)	Medium	5-8	70-75°F (21-24°C)	Medium	7	62-65°F (17-18°C)	100-150 1/wk	0.5-1.5	21-28	58-60°F (14-16°C)	100-150 1/wk	<1.0	7	7-8	Control foliar diseases with moisture control, air movement and approved fungicides.
Muskmelon <i>(Cucumis melo)</i>	1.5 in. (4 cm)	Yes	75-78°F (24-26°C)	Medium	2-3	75-78°F (24-25°C)	Dry	3-7	70-75°F (21-24°C)	100 1/wk	0.5-1.5	16-18	65-70°F (18-21°C)	100 1-2/wk	0.5-1.0	3-6	4-5	Control foliar diseases with moisture control, air movement and approved fungicides. Decrease night temperature after germination to minimize stretch. Avoid over-feeding to control height. Direct sowing into the final container can reduce crop time and costs.
Okra <i>(Abelmoschus esculentus)</i>	.75-1 in. (2-2.5 cm)	Yes Lightly	75-78°F (24-26°C)	Medium	4-8	75-78°F (24-26°C)	Medium	7	65-70°F (18-21°C)	100-150 1/wk	0.5-1.5	7-10	65-70°F (18-21°C)	100-150 1/wk	<1.0	7	4-5	Control foliar diseases with moisture control, air movement and approved fungicides. Control height with DIF, moisture and light.
Onion <i>(Allium cepa)</i>	.75-1 in. (2-2.5 cm)	Yes Lightly	70-75°F (21-24°C)	Medium	4-8	70-75°F (21-24°C)	Medium	5-7	65-70°F (18-21°C)	100 2/wk	0.5-1.5	35-42	65-70°F (18-21°C)	100 1-2/wk	0.5-1.0	7	8-9	Can mow crop for height control. Control foliar diseases with moisture control, air movement and approved fungicides. Direct sowing into the final container can reduce crop time and costs.
Oregano <i>(Origanum vulgare)</i>	.75-1 in. (2-2.5 cm)	Yes	70-75°F (21-24°C)	Medium	5-8	70-75°F (21-24°C)	Medium	7-10	65-70°F (18-21°C)	100-150 1/wk	0.5-1.5	10-14	58-60°F (14-16°C)	100-150 1/wk	<1.0	7	6-8	Control foliar diseases with moisture control, air movement and approved fungicides.
Parsley <i>(Petroselinum crispum)</i>	.75-1 in. (2-2.5 cm)	Yes	70-75°F (21-24°C)	Medium	10-18	70-75°F (21-24°C)	Medium	7	65-70°F (18-21°C)	100-150 1/wk	0.5-1.5	10-14	58-60°F (14-16°C)	100-150 1/wk	<1.0	7	6-8	Direct sowing into the final container can reduce crop time and costs.
Pepper <i>(Capsicum annuum)</i>	1 in. (2.5 cm)	Yes	75-78°F (24-26°C)	Medium	5-7	75-78°F (24-25°C)	Dry	5-10	70-75°F (21-24°C)	100 2/wk	0.5-1.5	28-35	68-70°F (20-21°C)	100 1-2/wk	0.5-1.0	7-10	7-8	Avoid cool, wet conditions. Control height with DIF, moisture, a fertilizer low in P and ammonia form of nitrogen, and light. Control foliar diseases with moisture control, air movement and approved fungicides.
Pumpkin <i>(Cucurbita maxima)</i>	1.5 in. (4 cm)	Yes	75-78°F (24-26°C)	Medium	3-7	75-78°F (24-26°C)	Medium	7	65-70°F (18-21°C)	100-150 1/wk	0.5-1.5	7-10	65-70°F (18-21°C)	100-150 1/wk	0.5-1.0	3-6	4-5	Control foliar diseases with moisture control, air movement and approved fungicides. Decrease night temperature after germination to minimize stretch. Avoid over-feeding to control height. Direct sowing into the final container can reduce crop time and costs.
Rosemary <i>(Rosmarinus officinalis)</i>	.75-1 in. (2-2.5 cm)	No	70-75°F (21-24°C)	Medium	10-12	70-75°F (21-24°C)	Medium	7-10	62-65°F (17-18°C)	100-150 1/wk	0.5-1.5	10-14	58-60°F (14-16°C)	100-150 1/wk	<1.0	7	6-8	Control foliar diseases with moisture control, air movement and approved fungicides. Control height with DIF, moisture, a fertilizer low in P and ammonia form of nitrogen, and light.
Sage <i>(Salvia officinalis)</i>	.75-1 in. (2-2.5 cm)	Yes	70-75°F (21-24°C)	Medium	6-10	70-75°F (21-24°C)	Medium	7-10	62-65°F (17-18°C)	100-150 1/wk	0.5-1.5	10-14	58-60°F (14-16°C)	100-150 1/wk	<1.0	7	7-8	Control height with DIF, moisture, a fertilizer low in P and ammonia form of nitrogen, and light.
Spinach <i>(Spinacia oleracea)</i>	1.5 in. (4 cm)	Optional	65-70°F (18-21°C)	Medium	7-10	65-70°F (18-21°C)	Medium	7	62-65°F (17-18°C)	100-150 1/wk	0.5-1.5	7-10	58-60°F (14-16°C)	100-150 1/wk	0.5-1.0	7	4-5	Control foliar diseases with moisture control, air movement and approved fungicides. Direct sowing into the final container can reduce crop time and costs.
Strawberry <i>(Fragaria x ananassa)</i>	.75-1 in. (2-2.5 cm)	Yes Lightly	65-70°F (18-21°C)	Medium	10-14	65-70°F (18-21°C)	Medium	7-10	62-65°F (17-18°C)	100-150 1/wk	0.5-1.5	14-21	65-70°F (18-21°C)	100-150 1/wk	<1.0	7	7-10	Control foliar diseases with moisture control, air movement and approved fungicides.
Sweet Marjoram <i>(Origanum majorana)</i>	.75-1 in. (2-2.5 cm)	Yes Lightly	70-75°F (21-24°C)	Medium	4-8	70-75°F (21-24°C)	Medium	7-10	62-65°F (17-18°C)	100-150 1/wk	0.5-1.5	7-10	58-60°F (14-16°C)	100-150 1/wk	<1.0	7	5-7	Control foliar diseases with moisture control, air movement and approved fungicides.
Thyme <i>(Thymus vulgaris)</i>	.75-1 in. (2-2.5 cm)	Yes	70-75°F (21-24°C)	Medium	3-6	70-75°F (21-24°C)	Medium	7-11	62-65°F (17-18°C)	100-150 1/wk	0.5-1.5	10-14	58-60°F (14-16°C)	100-150 1/wk	<1.0	7	6-7	Control foliar diseases with moisture control, air movement and approved fungicides.
Tomato <i>(Lycopersicon esculentum)</i>	1 in. (2.5 cm)	Yes	75-78°F (24-26°C)	Medium	3-4	70-75°F (21-24°C)	Dry	4-7	65-70°F (18-21°C)	100 2/wk	0.5-1.5	24-27	62-65°F (17-18°C)	100 1-2/wk	0.5-1.0	7-10	6-7	Control foliar diseases with moisture control, air movement and approved fungicides. Control height with DIF, moisture, a fertilizer low in P and ammonia form of nitrogen, and light.
Watermelon <i>(Citrullus lanatus)</i>	1.5 in. (4 cm)	Yes	80-85°F (27-29°C)	Dry	2-4	75-80°F (24-27°C)	Dry	4-8	70-75°F (21-24°C)	100 2/wk	0.5-1.5	21	68-70°F (20-21°C)	100 1-2/wk	0.5-1.0	7	5-6	Control foliar diseases with moisture control, air movement and approved fungicides. Decrease night temperature after germination to minimize stretch. Avoid over-feeding to control height. Direct sowing into the final container can reduce crop time and costs.
Watermelon, Seedless <i>(Citrullus lanatus)</i>	1.5 in. (4 cm)	Yes	80-85°F (27-29°C)	Dry	2-4	80-85°F (27-29°C)	Dry	4-8	70-75°F (21-24°C)	100 2/wk	0.5-1.5	21	68-70°F (20-21°C)	100 1-2/wk	0.5-1.0	7	5-6	Control foliar diseases with moisture control, air movement and approved fungicides. Decrease night temperature after germination to minimize stretch. Avoid over-feeding to control height. Need to grade seedlings by size. Seed coats need to be removed manually after germination.
Winter Squash <i>(Cucurbita maxima)</i>	1.5 in. (4 cm)	Yes	75-78°F (24-26°C)	Medium	2	75-78°F (24-26°C)	Dry	3-6	70-75°F (21-24°C)	75 1 time only	0.5-1.5	7-14	65-70°F (18-21°C)	100 1-2/wk	0.5-1.0	3-6	3	Control foliar diseases with moisture control, air movement and approved fungicides. Decrease night temperature after germination to minimize stretch. Avoid over-feeding to control height. Direct sowing into the final container can reduce crop time and costs.
Zucchini (Summer Squash) <i>(Cucurbita pepo)</i>	1.5 in. (4 cm)	Yes	75-78°F (24-26°C)	Medium	4-7	75-78°F (24-26°C)	Medium	7	62-65°F (17-18°C)	100 1/wk	<1.0	7	58-60°F (14-16°C)	100 1/wk	<1.0	7	4-5	Control foliar diseases with moisture control, air movement and approved fungicides. Decrease night temperature after germination to minimize stretch. Avoid over-feeding to control height. Direct sowing into the final container can reduce crop time and costs.

Note: Growers should use the information presented here as a starting point. Crop times will vary depending on the climate, location, time of year and greenhouse environmental conditions. Chemical recommendations are only guidelines. It is the responsibility of the applicator to read and follow all the current label directions for the specific chemical being used in accordance with all regulations.

***Stage 1:** Sow to radicle emergence

****Stage 2:** Radicle emergence to cotyledon expansion

*****Stage 3:** Cotyledon expansion to growth of all true leaves

******Stage 4:** Growth of all true leaves to toning for transplanting/shipping

¹**Tray Size:** These sizes are the recommended minimum. If direct sowing into the finish container, a larger size may be required.

²**Cover:** Generally coarse vermiculite is recommended.

³**Fertilizer (ppm):** Refers to the parts per million of nitrogen. Alternating 20-10-20 with 14-0-14, 15-0-15 or 15-5-15 is a suggested starting point for a fertilizer program. Fertilizers high in ammonia form of nitrogen and/or phosphorus tend to promote stretch.

⁴**Soil EC:** Electrical conductivity expressed as mmhos/cm from a 2:1 dilution.

⁵**Total Plug Crop Time:** The number of weeks for a Spring crop. *This is intended as a guide only.*