

ORNAMENTAL PLANTS ROOTING & GROWING ON CHART

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Crop	PROPAGATION (Note: Most crops root well at 68-72°F/20-22°C soil temperature.)					GROWING ON FROM ROOTED CUTTING							
	Rooting Hormone	Days with Mist ¹	Pinch	Average Propagation Time (weeks)	Comments	Soil pH	Light Levels	Temperature (Day/Night)	Fertilizer (ppm N)	Number of Pinches	Plant Growth Regulators (PGR) ³ (S)=Spray (D)=Drench	Crop Time from Rooted Cutting ⁴	Comments
Alternanthera	No	6-8	Yes	3-4	Pinch to improve branching.	5.8-6.4	4,000 & > ²	65-72°/60-65°F 18-22°/15-18°C	225-300	0-2	A-Rest 25-132 ppm (S); Bonzi 1-3 ppm (S) in propagation. Do not use Cycocel.	4-6	Pinch early in propagation (10 to 12 days) to increase branching.
Angelonia	No	7-9	Yes	3-4	Avoid stretch. Pinch 18 to 21 days after sticking.	5.5-6.2	6,000 & > ²	75-85°/62-70°F 24-29°/17-21°C	175-225	0-2	B-Nine 1,500-3,000 ppm/Cycocel 750-1,000 ppm tank mix (S)	5-8	High light will significantly improve plant quality by encouraging branching, earlier flowering and the ideal plant habit. Well-suited to mid to late Spring and Summer programs.
Argyranthemum	No	4-7	No	3-4	Avoid water stress.	5.8-6.4	6,000 & > ²	65-78°/50-60°F 18-25°/10-15°C	225-300	0-1	B-Nine 1,500-2,000 ppm/Cycocel 750-1,000 ppm tank mix (S); Bonzi 2-5 ppm (D)	6-9	High light and cool temperatures produce high-quality plants.
Bacopa (<i>Sutera</i>)	No	6-8	Yes	3	Stick 2 cuttings per cell.	5.8-6.2	4,000 & > ²	65-75°/55-60°F 18-24°/13-15°C	175-225	1-2	B-Nine 1,000-1,500 ppm (S); Cycocel 500-750 ppm (S); Florel promotes branching	5-7	Pinch as needed to shape. Grow Bacopa bright and cool to maximize branching and encourage best possible habit. Test soil regularly for high pH/iron deficiency.
Bidens	No	6-9	Yes	4-7	Reduce and eliminate mist as soon as possible.	5.8-6.4	5,000 & > ²	58-75°/52-62°F 14-24°/11-17°C	175-225	1-3	B-Nine 3,500 ppm (S)	4-6	
Brachyscome	Yes	6-8	Yes	4-5	Avoid burying growing point. Reduce mist as soon as possible. Stick 2 cuttings per cell.	5.8-6.4	6,000 & > ²	65-72°/55-60°F 18-22°/13-15°C	175-225	0-1	B-Nine 2,500-3,750 ppm (S)	4-6	Cool temperatures and high light will produce the best habit.
Bracteantha (<i>Strawflower</i>)	No	6-9	No	3	Reduce mist as soon as possible.	5.8-6.4	6,000 & > ²	65-75°/55-60°F 18-24°/13-15°C	175-225	0-1	B-Nine 2,500 ppm (S); Bonzi 20-30 ppm (S); Sumagic 10-20 ppm (S)	6-8	High light and cool temperatures will improve plant quality significantly.
Calibrachoa	No	6-8	Yes	3-4	Avoid wide fluctuations in soil moisture. Apply preventative fungicide drench at 18 to 21 days after sticking.	5.5-6.0	6,000 & > ²	70-75°/50-58°F 21-24°/10-14°C	225-300	1-2	B-Nine 2,500-5,000 ppm (S); Bonzi 3-8 ppm (D); Florel 350-500 ppm (S) promotes branching	6-9	Cooler air temperatures and high light will reduce or eliminate any need for plant growth regulators. Maintain pH at 5.2 to 5.8 to optimize plant health. Crop times will be shortest as days lengthen in Spring. Apply preventative broad-spectrum fungicide drench early (7 to 10 days after transplant). Avoid saturated media and excessive feed levels.
Coleus	No	4-6	No	2-3	Avoid stretch. Transplant on time.	5.5-6.4	4,000-8,000	75-85°/60-70°F 24-29°/15-21°C	175-225	0-2	Sumagic 5-10 ppm (S); Bonzi 15-45 ppm (S); B-Nine 2,500-3,500 ppm/Cycocel 1,000-1,500 ppm tank mix (S)	5-7	Pinch early to shape. Scout plants regularly for whittety. Avoid crowding at all stages. Light requirements vary by variety.
Cuphea	No	6-8	Yes	3-4	Stick 2 cuttings per cell for Allyson Heather.	5.8-6.4	6,000 & > ²	70-80°/60-65°F 20-26°/15-18°C	175-225	1-2	B-Nine 2,500 ppm	6-8	Pinch as needed to shape. Keep soil moderately dry and maintain adequate air circulation during finishing to avoid Oedema. Fertilize regularly. Crop times will be shortest under high light.
Dahlia	Yes	7-10	No	3-4	Hormone will improve rooting. Night-break lighting (10 p.m. to 2 a.m.) will reduce likelihood of tuber formation.	5.8-6.4	4,000-6,000	65-75°/60-65°F 18-24°/15-18°C	225-300	0-1	B-Nine 2,500-4,000 ppm/Cycocel 1,000-1,500 ppm tank mix (S); B-Nine 5,000 ppm (S); Bonzi 15-45 ppm (S)	6-9	During short days, night-break lighting will reduce likelihood of tuber formation.
Diascia	No	6-9	Yes	3-4	Stick 2 cuttings per cell.	5.6-6.0	4,000-8,000	62-75°/52-60°F 17-24°/11-15°C	175-225	1-2	B-Nine 3,500-5,000 ppm (S); Florel 200-300 ppm (S) promotes branching	5-7	Best if grown cool and with high light levels.
Euphorbia (<i>Euphorbia hypericifolia</i>)	Yes	7-10	Yes	3-4	Ethylene sensitive – stick as soon as possible. Flower buds are common in propagation. Reduce mist as soon as possible.	5.8-6.4	6,000 & > ²	65-75°/60-65°F 18-24°/15-18°C	175-225	1-2	B-Nine 2,500 ppm Cycocel/750 ppm tank mix (S) 7-10 days after transplant. Do not use Florel.	5-7	Sensitive to overwatering. Pinch for a better habit especially in larger containers.
Evolvulus	Optional	6-10	Yes	4	Apply preventative fungicide spray after sticking. Reduce mist as soon as possible.	5.8-6.4	5,000 & > ²	75-80°/60-65°F 24-26°/14-18°C	225-300	1-2	None	6-8	Pinch as needed to shape. Fertilize regularly. Avoid extremely high humidity or saturated media, both of which will encourage disease.
Felicia	Optional	5-10	Yes	4-5	Hormone will improve rooting. Remove flower buds. Pinch to improve habit and bulk rooted cutting.	5.8-6.4	5,000 & > ²	65-75°/50-55°F 18-24°/10-13°C	225-300	1-2	B-Nine 2,500-4,000 ppm (S); B-Nine 2,500-4,000 ppm/Cycocel 1,000-1,500 ppm tank mix (S)	8-10	Allow soil to dry moderately between waterings. Pinch as needed to build and shape the plant. Crop time can be shortened slightly by increasing average daily temperature.
Fuchsia	No	5-7	Yes	4-5	Produce liners in short days (less than 11 hours) to maintain vegetative growth.	5.5-6.2	4,000-8,000	70-75°/60-65°F 21-24°/15-18°C	225-300	1-2	Florel 500 ppm (S) promotes branching; B-Nine 750-2,500 ppm/Cycocel 500-1,000 ppm tank mix (S)	8-10	Fuchsias need to be exposed to long days (more than 12 hours) to initiate flowering. Plants require at least 25 long days to initiate flower buds. Flower buds will continue to develop regardless of daylength once buds have been initiated.
Geranium, Interspecific	Optional	9-13	No	4-5	Stick immediately upon arrival. Geraniums are best rooted in a media in strip form to allow for maximum air flow and avoid foliage overlap. Can be grouped with Ivy Geraniums for propagation stage. Remove flower buds at transplanting.	5.8-6.4	4,000-6,000	65-75°/62-68°F 18-24°/17-20°C	225-300	0-1	Cycocel 750-1,500 ppm (S); Bonzi 10-30 ppm (S); Florel 350-500 ppm (S) promotes branching	8-9	Keep foliage dry. Provide good air circulation. Maintain pH at 5.8 to 6.4.
Geranium, Ivy	Optional	9-12	No	3-4	Stick immediately upon arrival. Geraniums are best rooted in a media in strip form to allow for maximum air flow and avoid foliage overlap. Ivy geraniums require 25 to 30% less mist in propagation compared to zonals. Propagate under separate mist programs. Remove flower buds at transplanting.	5.5-5.9	3,500-4,000	65-75°/62-68°F 18-24°/17-20°C	225-300	1-2	Cycocel 750-1,500 ppm (S); Bonzi 10-30 ppm (S); Florel 350-500 ppm (S) promotes branching	8-10	Avoid drastic swings in soil moisture to reduce Oedema.
Geranium, Zonal	Optional	9-12	No	3-4	Stick immediately upon arrival. Geraniums are best rooted in a media in strip form to allow for maximum air flow and avoid foliage overlap. After initial rehydration, careful misting is required to optimize callus and root initiation. Mature leaves should show slight wilting at midday and regain turgor in the late afternoon under ideal mist conditions. Leaf petiole wilting indicates undermisting. Overmisting leads to <i>Botrytis</i> . Remove flower buds at transplanting.	5.8-6.4	4,000-8,000	65-75°/62-68°F 18-24°/17-20°C	225-300	0-1	Cycocel 750-1,500 ppm (S); Bonzi 10-30 ppm (S); Florel 350-500 ppm (S) promotes branching	8-9	Keep foliage dry. Provide good air circulation. Maintain pH at 5.8 to 6.4.
Helichrysum (<i>Helichrysum petiolare</i>)	Optional	7-10	Optional	3-4	Propagate in low-volume mist group. Avoid high feed on foliage. High humidity tents are effective. Pinch as needed to shape plants or hold crop.	5.5-6.4	6,000 & > ²	65-75°/50-60°F 18-24°/10-15°C	175-225	1-2	Florel 350-500 ppm (S) promotes branching	5-7	Avoid saturated media at any time. Pinch regularly to shape.
Heliotrope	Optional	6-9	No	3-4	Stick immediately upon arrival. Apply preventative fungicide spray after sticking. Reduce mist as soon as possible.	5.8-6.4	5,000 & > ²	70-75°/50-60°F 21-24°/10-15°C	175-225	1-2	B-Nine 1,500-3,000 ppm Cycocel/750-1000 ppm tank mix (S)	6-7	Cool temperatures and high light will reduce or eliminate any need for plant growth regulators.
Impatiens, Double (<i>Impatiens walleriana</i>)	No	5-8	No	2-3	Reduce mist as soon as possible to reduce stretch. Transplant on time.	5.8-6.4	4,000-6,000	65-75°/65-75°F 18-24°/18-24°C	175-225	0-1	Bonzi 5-10 ppm (S) early, Bonzi 0.5-1.0 ppm (D) as crop matures; Florel 350 ppm (S) promotes branching and is also useful to inhibit flowering for 6-8 weeks	6-9	Start feeding immediately after transplanting. Avoid water stress in all stages of crop. Avoid cold stress (night temperatures below 65°F/18°C). Maintain EC above 1.0 (SME). Use early PGR application to achieve ideal finished plants. A light Bonzi drench when plant is three-quarters of finish size will promote flowering above the foliage.
Impatiens, Exotic (Interspecific hybrids)	No	5-8	No	3	Avoid saturated media. Reduce mist as soon as possible. To reduce stretch, transplant on time.	5.8-6.4	4,000-6,000	68-75°/65-75°F 20-24°/18-24°C	175-225	0-1	Bonzi 5-10 ppm (S)	6-8	Start feeding immediately after transplanting. Avoid water stress in all stages of crop. Avoid cold stress (night temperatures below 65°F/18°C). Maintain EC above 1.0 (SME). Use early PGR application to achieve ideal finished plants. A light Bonzi drench when plant is three-quarters of finish size will promote flowering above the foliage.
Impatiens, New Guinea (<i>Impatiens hawkeri</i>)	No	7-8	No	3-4	Apply preventative fungicide spray after sticking. Reduce mist as soon as possible. Scout regularly for <i>Botrytis</i> .	5.8-6.4	4,000-6,000	68-75°/58-65°F 20-24°/14-18°C	175-225	0-1	Bonzi 5-15 ppm (S) early, Bonzi 0.25-1.0 ppm (D) as crop matures; Florel 350 ppm (S) promotes branching and is also useful to inhibit flowering for 6-8 weeks	7-9	Maintain 68°F (20°C) average daily temperature to optimize bloom size and reduce time to flower. Grow crop somewhat dry to help control growth and hasten flowering. Begin feeding at low to moderate rates to 7 to 10 days after transplant. Avoid excess micro-nutrients and high salts in the soil. With good cultural practices and environmental conditions, little or no PGRs will be needed.
Impatiens, Trailing (Interspecific hybrids)	No	6-8	No	3	Reduce mist as soon as possible to reduce stretch. Transplant on time.	5.8-6.4	4,000-6,000	68-75°/58-65°F 20-24°/14-18°C	175-225	0-1	Bonzi 5-15 ppm (S) early, Bonzi 0.25-1.0 ppm (D) as crop matures; B-Nine 1,500-2,000 ppm (S) in propagation will reduce early stretch	6-8	Grow crop moderately dry to help control early growth and hasten flowering. Maintain feed in moderate range (New Guinea feed program).
Iresine	No	4-7	No	3-4	Apply Bonzi spray (3 to 5 ppm) on vigorous varieties between Days 7 and 11 to control early stretch.	5.8-6.4	4,000-6,000	70-80°/62-68°F 21-28°/17-20°C	175-225	1-2	None	7-9	Pinch regularly to encourage branching and improve habit.
Lantana	Optional	7-11	Yes	4	Stick immediately upon arrival. Apply preventative fungicide spray after sticking.	5.6-6.4	6,000 & > ²	75-85°/62-68°F 24-29°/17-20°C	225-300	1-3	B-Nine 2,500-5,000 ppm/Cycocel 1,000-1,500 ppm tank mix (S); Bonzi 20-40 ppm (S); Sumagic 10-20 ppm (S); Florel 350-500 ppm (S) promotes branching	6-10	Allow plants to dry regularly between waterings. Pinch as needed to shape. Feeding at recommended levels will promote vigorous plants that will continue to actively grow and flower.
Lobelia	Optional	6-9	Optional	4	Hormone will improve rooting. Pinch 18 to 21 days after sticking to improve branching.	5.8-6.2	5,000-8,000	70-80°/55-65°F 21-28°/13-18°C	175-200	1-2	Bonzi and Sumagic are reported to be effective. Results vary by variety.	8-10	High light and cool temperatures produce the best plants.
Nemesia	No	6-9	Yes	3-4	Stick 2 cuttings per cell.	5.6-6.0	4,000-7,000	65-75°/50-60°F 18-24°/10-15°C	175-225	1-2	B-Nine 2,500-4,000 ppm (S); Sumagic 20-30 ppm (S)	5-7	Grow cool and with high light levels. Avoid water-logged media.
Osteospermum	Yes	9-12	Optional	3-4	Maintain uniformity in mist and soil temperature. Do not allow cuttings to wilt. Pinch to increase branching.	5.5-6.4	6,000 & > ²	60-75°/45-55°F 15-24°/7-13°C	225-300	1	B-Nine 2,500-4,000 ppm/Cycocel 750-1,000 ppm tank mix (S); Bonzi 15-30 ppm (S)	10-13	After transplanting, allow plants to become established for 1 to 2 weeks at 60 to 65°F (15 to 18°C). Once plants are well established, pinch and begin growing at recommended cool temperatures. After 4 to 6 weeks of cool conditions, plants can be forced in 6 to 8 weeks.
Perilla	No	4-7	No	2-3	Avoid stretch. Reduce mist as soon as possible to reduce stretch. Transplant on time.	5.8-6.4	4,000 & > ²	75-85°/60-70°F 24-29°/15-21°C	175-225	0-1	B-Nine 2,500-5,000 ppm (S)	5-7	Plants should be pinched as needed to control habit. Crop times will be shorter under long days or warmer temperatures.
Petunia	No	6-9	No	3-4	Avoid stretch by moving crop to cooler air temperature in second and third weeks of propagation. Transplant on time.	5.6-6.0	6,000 & > ²	58-75°/52-62°F 14-24°/11-17°C	225-300	0-1	B-Nine 1,500-2,500 ppm (S); Bonzi 0.25-1.0 ppm (D)	6-8	Cool temperatures and high light will reduce or eliminate any need for PGRs. Monitor pH regularly for high pH and possible iron deficiency. Flowering will be best as days lengthen in late Spring and Summer. Daylength of more than 14 hours will hasten flowering.
Plectranthus	No	6-10	Optional	3-4	Apply preventative fungicide spray after sticking.	5.6-6.2	4,000-7,000	75-80°/58-65°F 24-26°/14-18°C	175-225	0-1	B-Nine 1,500-2,500 ppm/Cycocel 750-1,000 ppm tank mix (S); Bonzi 5-20 ppm (S)	6-8	Regularly allow the media to dry between waterings. Pinch regularly to improve habit.
Poinsettia	Optional	18-21	No	3-4	Fertilize at low rate and treat with fungicide as roots develop. Use PGRs on more vigorous varieties. Lower humidity and increase ventilation as the cuttings root.	5.5-6.5	4,000-6,000	70-76°/65-68°F 21-24°/18-20°C	225-300	0-2	Cycocel 3,000 ppm (D) or 1,500-2,000 ppm (S); B-Nine 800-2,000 ppm/Cycocel 800-2,500 ppm tank mix (S); Bonzi 0.5-2 ppm (D) or 10-30 ppm (S); Florel 500 ppm (S)	12-18	Because of the diverse cultural requirement of the various varieties and the many sizes that may be grown, consult information published by the breeders for detailed culture.
Purslane	No	4-7	Yes	2-3	Pinch as needed to remove flower buds and improve habit.	5.8-6.4	6,000 & > ²	70-80°/62-68°F 21-28°/17-20°C	225-300	1-2	Bonzi and Sumagic are of limited effectiveness.	5-6	Regularly allow the media to dry moderately between waterings, especially in cool periods. Regular pinching and constant feeding will improve habit and flowering.
Rosemary	Optional	6-10	Optional	3-8	Reduce mist as soon as possible. Apply preventative fungicide drench if soil temperature is lower than recommended. Propagate in low-volume mist group.	5.8-6.4	6,000 & > ²	67-75°/62-68°F 19-24°/17-20°C	175-225	1-2	None	6-8	Avoid saturated media at any time. Under some conditions, a broad-spectrum preventative drench may be needed.
Salvia (<i>Salvia greggii</i> , <i>Salvia microphylla</i>)	Optional	7-11	Yes	4-10	Pinch 18 to 21 days after sticking to improve branching and remove flower buds.	5.6-6.0	6,000 & > ²	65-78°/50-55°F 18-25°/10-13°C	225-300	1-2	B-Nine 1,000-2,000 ppm (S)	7-9	Regularly allow the media to dry between waterings, especially during cool periods. Regular hard pinching will improve the habit at flowering. Grow <i>Salvia greggii</i> cool, slow and bright for best habit.
Salvia (<i>Salvia longispicata x farinacea</i>)	No	5-8	Optional	3-6	Apply B-Nine (2,500 ppm) spray in propagation once between Day 9 and 11. Reapply after transplant if growing under long days.	5.8-6.4	6,000 & > ²	70-80°/62-68°F 21-26°/17-20°C	175-225	1-2	B-Nine 2,500-5,000 ppm (S)	6-8	Regularly allow the media to dry moderately between waterings, especially in cool periods. Proper pinching and moderate feeding will improve habit and flowering.
Scaevola	Optional	7-10	Yes	3-4	Reduce mist as soon as possible. Maintain warm soil temperature to optimize rooting.	5.8-6.4	5,000 & > ²	75-80°/60-65°F 24-26°/15-18°C	175-225	1-2	Bonzi 1-3 ppm (D) or 20-40 ppm (S)	5-7	Use a well-drained media and allow to dry between waterings. Night temperatures lower than recommended will significantly slow the crop and lead to problems with root rot.
Snapdragon	No	7-12	Yes	4-5	Soil temperature is critical. Apply preventative fungicide drench if soil temperature is lower than recommended. Pinch 18 to 21 days after sticking. Avoid damaging root system when pinching.	5.5-6.0	4,000-7,000	65-75°/50-55°F 18-24°/10-13°C	175-225	1-3	Bonzi 30-60 ppm (S); Sumagic 20-45 ppm (S)	6-8	Cool temperatures and high light will reduce or eliminate any need for PGRs. Monitor pH regularly for possible iron deficiency. Allow soil to dry between waterings.
Thunbergia	No	7-12	Yes	4-5	Stick immediately upon arrival. Spray immediately after sticking with a surfactant such as CapSil to help rehydrate unrooted cuttings. Use night mist for 7 to 8 days as needed. Avoid wilt during first 24 to 48 hours.	5.8-6.4	6,000 & > ²	70-80°/60-65°F 21-26°/15-18°C	225-300	1-3	B-Nine 2,500-3,500 ppm (S)	6-8	Thunbergia is a warm-season crop that prefers night temperatures above 60°F (15°C). Pinch regularly to shape.
Verbena	No	6-9	Yes	3-4	Reduce and then eliminate mist as soon as possible. Apply preventative fungicide spray after sticking.	5.6-6.4	5,000 & > ²	70-80°/62-65°F 21-26°/17-18°C	225-300	1-2	B-Nine 2,500-3,500 ppm/Cycocel 750-1,000 ppm tank mix (S); Bonzi 5-20 ppm (S); Florel 350 ppm (S) promotes branching	5-7	Regularly allow plants to dry between waterings. Pinch as needed to shape. May require PGR use under normal conditions.
Viola	Yes	6-10	No	4-9	Reduce and then eliminate mist as soon as possible.	5.4-5.8	4,000 & > ²	60-75°/45-55°F 15-24°/7-13°C	175-225	0-1	Sumagic 1-5 ppm (S)	5-8	High light and cool temperatures produce the best-quality plants.

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 and PGR recommendations are only guidelines. It is the responsibility of the applicator to read and follow the current label directions for the specific chemical being used in accordance with all regulations.

¹Days with Mist: Generally the sooner the mist can be reduced or eliminated, and the cutting remains turgid, the better the quality.

²Light Levels: Plants grow best with full light. Some shade may be required to control temperature.

³Plant Growth Regulators (PGRs): Plants are responsive to the PGRs indicated, but may not be needed in all growing situations. Be aware Florel will inhibit flowering in many crops for 6 to 8 weeks.

⁴Crop Time from Rooted Cutting: Crop times indicated for most crops are for one plant per 4-in. (10-cm) container. Add 2 weeks for 6-in. (15-cm) containers. Add 4 to 6 weeks for 10 to 12-in. (25 to 30-cm) containers. Additional plants per container are generally required for the larger sizes. This information is intended as a general starting point in developing a production program.