



syngenta *flowers*

Jaguar™, Bengal™, Cartwheel™, Elephant™ Gerbera Culture Guide

GERBERA JAMESONII

Minimum Germination Rate: 90%

Seed Product Form: Raw, coated

FLOWERING

Photoperiod Response: Facultative short-day plant; flower initiation is earliest under day lengths of 12 hours or less, but flowering will occur regardless of day length.

Flowering Mechanism: Photoperiod (primary) and daily light integral (secondary). High light and short days shorten time to flower. Best growth and flowering occur under a 12 – 13 hour photoperiod. Day lengths less than 12 hours result in earlier flowering, but more compact plants. Longer day lengths delay flowering by one week or more, and result in plants with larger leaves.

PLUG CULTURE

The timing approximations are based on optimal culture recommendations below:

GERMINATION STAGE 1 (Approximately days 1 – 4)

From the time a seed is sown until radicle emergence takes place; usually with the root penetrating the media and some cotyledon development.

Tray size: 72 to 128-cell size plug tray. One seed per cell.

Cover: Seed cover is not recommended. Seeds require light to germinate.

Light: If using a germination chamber, providing a light source of 10 – 100 foot candles (100 – 1,000 lux) for 16 hours each day will improve germination.

Temperature: Day and night: 74 – 76°F (23 – 24°C) until radicle emergence.

Moisture: Saturated (level 5) for days 1 – 4 or until radicle emergence.

Relative humidity: 100% from the time seeds are sown until radicle emergence takes place, initial root has penetrated media and cotyledons appear. Expect radicle emergence in 3 – 4 days.

Media: pH 5.3 – 5.8. EC 0.7 – 1.0 mS/cm (saturated media extract).

GERMINATION STAGE 2 (Approximately days 5 – 7)

Light: 2,000 – 2,500 foot candles (21,500 – 27,000 lux; 400 – 500 micro mols/m²); DLI (Daily light integral): 6 – 8 mols/day.

Temperature: Once cotyledons have unfolded, reduce temperature to 72 – 74°F (21 – 22°C).

Moisture: After radical emergence, alternate media between moisture levels wet (level 4) and moist (level 3).

Relative Humidity: Lower relative humidity to 40 – 50% (approximately day 5). Provide horizontal airflow to aid in the drying of media through evapotranspiration.

Media: pH 5.3 – 5.8. EC 0.7 – 1.2 mS/cm (saturated media extract).

Fertilizers: 13-2-13 at 50 – 75 ppm nitrogen as needed. Keep nitrogen concentration less than 100 ppm to avoid leaf distortion on young plant tissue.

PLUG BULKING (Approximately days 8 – 28)

The time necessary for the shoots to proportionally fill the plug and for the roots to develop throughout the media. Plug time will vary based on growing environment and culture.

Light: 3,500 – 5,000 foot candles (37,500 – 54,000 lux; 700 – 1,000 micro mols/m²); DLI: 12 – 18 mols/day.

Temperature: 68 – 70°F (20 – 21°C).

Moisture: It is critical to allow adequate dry back between watering to prevent stunted and distorted growth. Alternate between moisture levels wet (level 4) and medium (level 2). Allow media to dry back to level 2 before irrigating back to level 4.

Relative humidity: 40 – 50%

Media: pH 5.5 – 5.8. EC 1.0 – 1.5 mS/cm (saturated media extract).

Fertilizer: Alternate between 13-2-13 and 17-5-17 at 75 – 125 ppm nitrogen to maintain a media EC of 1.0 – 1.5. Supply 8 – 12 ppm phosphorus, 1.5 ppm iron and 0.5 ppm boron.

Plant growth regulators: At this stage, no chemical plant growth regulation should be needed.

Fungicides: Preventive fungicides may be applied for *Rhizoctonia*, *Pythium* and *Phytophthora*. (See table for recommended plant protection products)

INITIATED BULKING (Approximately days 29 – 48)

Seedlings develop from juvenile to mature stage, usually determined by the number of leaves present (cultivar specific). Seedlings are receptive to initiation and flower bud development.

Light: Provide 3,500 – 5,500 foot candles (37,500 – 59,000 lux; 700 – 1,100 micro mols/m²); DLI: 12 – 20 mols/day.

TM

Temperature: 68 – 72°F (20 – 22°C). A temperature drop of 5 – 10°F (3 – 6°C) can be used for two hours at sunrise to reduce stem elongation.

Moisture: Alternate between moisture levels wet (level 4) and medium (level 2), allowing plants to dry back between watering. Too much water and fertilizer will cause deformed plants with thick leaves.

Fertilizers: Alternate between 13-2-13 and 17-5-15 at 100 – 150 ppm nitrogen to maintain a media EC of 1.2 – 1.5. Supply 8 – 12 ppm phosphorus, 1.5 ppm iron and 0.5 ppm boron. If leaves develop interveinal yellowing, supplemental applications of magnesium sulfate (Epsom salts) and chelated iron can be used to green plants.

Plant growth regulators: If needed, a foliar spray of B-Nine® (daminozide) at 1,250 – 2,500 ppm is effective.

Fungicides: A preventive fungicide application may be applied for *Rhizoctonia*, *Pythium* and *Phytophthora*. (See table for recommended plant protection products)

GROWING ON

The approximate timings are based on optimal culture recommendations below. Use care not to plant plugs too deep, planting slightly higher than the soil line from the plug tray. If media covers the plant crown, plants will flower unevenly, become stunted and may be more susceptible to disease. Plants can initially be grown pot tight, but Bengal, Cartwheel and Elephant gerbera should be spaced after approximately three weeks.

TRANSPLANT TO FINISH (Approximately days 49 to finish)

Optimize plant shoot and root growth, which is usually a 1:1 ratio. Flower buds are usually present and developing.

Container size: Jaguar gerbera are best suited for high density production in 4-inch and quart-sized containers. Bengal gerbera is slightly more vigorous for 6-inch or larger containers. Cartwheel and Elephant gerbera work best in larger, patio-ready containers. See table below.

Light: Provide 4,000 – 6,000 foot candles (43,000 – 64,500 lux; 800 – 1,200 micro mols/m²); DLI: 14 – 22 mols/day. Provide an 11 – 13 hour day length for optimum vegetative growth and flowering. Jaguar, Cartwheel and Elephant are facultative short day plants and will flower one week earlier under 10-hour versus 16-hour photoperiods.

Temperature: Start at 70 – 72°F (21 – 22°C) for the first two weeks after transplant and then lower to 65 – 68°F (18 – 20°C). A temperature drop of 5 – 10°F (2 – 5°C) for two hours at sunrise can be used to reduce stem elongation. Flowering is delayed if the average daily temperature (ADT) is less than 63°F (17°C).

Moisture: Alternate between moisture levels wet (level 4) and medium (level 2). Allow media to approach medium (level 2) before irrigating to return to wet (level 4). Adequate dry downs are critical to prevent stunted, distorted growth.

Relative humidity: 40 – 50%

Media: pH 5.5 – 5.8. EC 1.5 – 2.0 mS/cm. Iron deficiency can occur if pH levels rise above 6.0.

Fertilizer: Constant feeding with Cal-Mag™ fertilizers (15-5-15 or 17-5-17) at 150 – 200 ppm nitrogen to maintain a media EC of 1.75 – 2.5. Under high light conditions, 20-10-20 fertilizer can be used. Supply 8 – 12 ppm phosphorus and 1.5 ppm iron. Leaf tip yellowing or interveinal chlorosis can indicate iron deficiency. Additional chelated iron (Sprint®138 or Sprint®330) can be applied at 2 – 4 oz./100 gal to correct an iron-deficiency and to green plants. If magnesium levels are low, a one-time drench with magnesium sulfate (Epsom salts) at 8 oz./100 gal can be applied.

Plant growth regulators: If required, B-Nine (daminozide) at 2,500 – 5,000 ppm or A-Rest® at 1 – 3 ppm are effective for growth control and toning. Plants grown under photoperiods longer than 13 hours can have larger leaves than plants grown under shorter day lengths. Therefore, higher PGR rates or additional applications may be required if finishing under long days. Elephant and Cartwheel have a more vigorous growth habit than Jaguar and Bengal gerbera. For these varieties, apply Bonzi® (paclobutrazol) sprays at 2.5 – 5 ppm or drenches at 0.25 – 0.5 ppm can also be used. Avoid PGR sprays after flower buds reach a diameter of 1 cm (pea-sized) since this can cause small flowers and short flower stems.

DISEASES, PESTS AND CONTROLS

Common Diseases: Foliar – *Alternaria*, *Botrytis* and Powdery mildew; Soilborne – *Phytophthora*, *Rhizoctonia* and *Pythium*.

Common Pests: Aphids, Fungus gnats, Shore flies, Broad mites, Cyclamen mites, Spider mites, Thrips, Whiteflies and Leafminers.

Recommended Plant Protection Products for Gerbera

| Product | Application | Target | Rate |
|---|--------------|--|----------------------------------|
| Fungicides | | | |
| Daconil Ultrex® or Daconil Weatherstik® | Spray | <i>Alternaria</i> , <i>Botrytis</i> , Powdery mildew | 22 oz./100 gal |
| Heritage® | Spray | <i>Alternaria</i> , Powdery mildew | 1 – 4 oz./100 gal |
| Heritage | Spray | <i>Botrytis</i> | 4 – 8 oz./100 gal |
| Heritage | Drench | <i>Rhizoctonia</i> , <i>Fusarium</i> | 0.2 – 0.9 oz./100 gal |
| Medallion® WDG | Spray | <i>Alternaria</i> , <i>Botrytis</i> , <i>Rhizoctonia</i> | 1 – 4 oz./100 gal |
| Medallion WDG | Drench | <i>Rhizoctonia</i> , <i>Thielaviopsis</i> | 1 – 2 oz./100 gal |
| Micora® | Spray/Drench | <i>Phytophthora</i> | 4 – 8 oz./100 gal |
| Palladium® | Spray | <i>Alternaria</i> , <i>Rhizoctonia</i> , Aerial blight | 2 – 4 oz./100 gal |
| Palladium | Spray | <i>Botrytis</i> , Powdery mildew | 4 – 6 oz./100 gal |
| Subdue Maxx® | Drench | <i>Phytophthora</i> , <i>Pythium</i> | 1 oz./100 gal |
| Insecticides | | | |
| Avid® | Spray | Aphids, mites (multiple species), leafminers, thrips, whiteflies | 8 oz./100 gal (8 – 16 fl. oz./A) |
| Flagship® 25WG | Spray | Aphids, fungus gnats, leafminers, thrips, whiteflies | 4 – 8 oz./100 gal |
| Citation® | Spray/Drench | Fungus gnats, shore flies, leafminers | 2.66 oz./100 gal |
| Endeavor® | Spray | Whiteflies, aphids | 2.5 – 5 oz./100 gal |
| Mainspring™ | Spray | Aphids, leafminers, thrips, whiteflies | 1 – 16 fl. oz./100 gal |
| Mainspring | Drench | Aphids, leafminers, thrips, whiteflies | 12 fl. oz./100 gal |

Recommended Bioline™ Biological Control Agents

| Target Pest | Biological Control Agent |
|--------------|--|
| Aphids | Aphiline™ c, Aphiline e, Aphiline ce, Aphiline ace, Aphidoline™ aa, Chrysoline™ c |
| Fungus gnats | Exhibitline™ sf, Hypoline™ m, Staphyline™ |
| Leafminers | Digline™ i |
| Mites | Anderline™ aa, Phytoline™ p |
| Thrips | Amblyline™ cu, Swirskiline™ as, Exhibitline™ sf, Hypoline m, Orline™ i, Thripline™ ams |
| Whiteflies | Encarline™ f, Eretline™ e, Swirskiline as |

SCHEDULING

Plug time: 128-cell trays: 5 – 6 weeks; 72-cell trays: 7 – 8 weeks when grown at an ADT of 68°F (20°C) and under a DLI of 12 – 18 mols/day.

Finish time from transplant: Timing will vary depending on plug size, finish container size and growing environment. At an ADT of 68°F (20°C) and under long days with a DLI of 10 – 15 mols/day: 9 – 11 weeks from transplant of 128 cell plugs (6 weeks old) finished in 6-inch pots. See table. Finish time is 7 – 10 days shorter at an ADT of 73°F (23°C) versus 68°F.

Total crop time: For finishing in 6-inch pots grown under long days, at an ADT of 68°F and under a DLI of 10 – 15 mols/day: 15 – 17 weeks for Jaguar, 16 – 17 weeks for Bengal and Cartwheel, and 15 – 16 weeks for Elephant. These crops are facultative short-day plants and will flower one week faster under photoperiods 12 hours or less.

| Container | Jaguar gerbera | Bengal gerbera | Cartwheel gerbera | Elephant gerbera |
|---|---------------------------------------|----------------|-------------------|------------------|
| 128-cell plug crop time | 5 – 6 weeks depending on time of year | | | |
| 72-cell plug crop time | 7 – 8 weeks depending on time of year | | | |
| Finish crop time from transplant of ‘128’ plug and at an ADT of 68°F (20°C) | | | | |
| Quarts, 4.5 inch | 9 – 11 weeks | N/A | N/A | N/A |
| 6 inch | 9 – 11 weeks | 10 – 11 weeks | 10 – 11 weeks | 9 – 10 weeks |
| 8 – 10 inch, gallons, 10-inch basket | 10 – 12 weeks | 11 – 12 weeks | 11 – 12 weeks | 10 – 11 weeks |
| 12 – 16 inch, 12-inch basket | N/A | 11 – 12 weeks | 11 – 12 weeks | 10 – 11 weeks |

Finish time assumes a six-week old 128-cell plug, 13 hour photoperiod and a DLI of 10 mols/day. Crop time is approximately one week shorter under photoperiods 12 hours or less.

PRODUCT USE

Pots, containers, mass plantings

GARDEN SPECIFICATIONS

Light: Part to full sun

USDA Hardiness Zone: 10

AHS Heat Zone: 12 – 1

For more information, please visit www.syngentaflh.com



Jaguar Mix

syngenta flowers

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