

### Recommended varieties for baskets

- **Calliope**<sup>®</sup> hybrid geraniums: ideal for large mounding/semi-trailing baskets.
- **Caliente**<sup>®</sup> hybrid geraniums: best for large mounding/semi-trailing baskets with minimal maintenance and great heat tolerance.
- **Temprano**<sup>™</sup>, **Freestyle**<sup>®</sup>, **Contessa**<sup>™</sup> semi-double traditional ivy geraniums.
- **Cascade**<sup>™</sup> and **Blizzard**<sup>™</sup> geraniums (alpine types): Large, trailing, single-flowered ivy Cascade geraniums that are very heat tolerant and require minimal maintenance.
- **Tango**<sup>™</sup>, **Fidelity**<sup>®</sup>, **Classic**<sup>™</sup> and compact **Americana**<sup>®</sup> zonal geraniums (**Americana White Splash 2011**, **Americana Rose Mega Splash**, and **Americana Light Pink Splash**): Ideal for compact-to-medium vigorous, upright baskets with a traditional zonal geranium look.

All work great in combination with Scaevola, Bidens, Bacopa, and Lobelia

### Plants per Containers

Bigger is better for the consumer. For the grower, close attention to irrigation and space management is needed. Four plants per 10-inch basket and four to five plants for premium 12-inch baskets work best. For Calliope, three to four plants per 12-inch basket are sufficient. It is best to remove the saucer until plants become established. Re-attach the saucer before hanging established baskets or right before selling.

### Media

Be sure to choose a growing media with adequate water-holding capacity and aeration.

### Irrigation

If possible, start everything on the bench so the crop can be monitored early. Get plants established and rooted, then group them together when hanging. To prevent edema on traditional ivy geraniums, avoid high humidity, excess media moisture, and provide good air circulation.

### Fertilization

Ivy geraniums prefer low pH of 5.4 to 5.8. Monitor closely for yellowing tips, which can be caused by iron and manganese deficiencies. Zonal geraniums prefer high pH of 6.0 to 6.4. "High-lime" mixes can be used if pH tends to drop. Monitor closely for iron and manganese toxicities (bronze speckling) and check pH and EC weekly. Hybrid geraniums do best with pH levels of 5.8 - 6.2. Constant liquid feed at 200 ppm nitrogen of Cal-Mag<sup>™</sup> fertilizers like 15-5-15, 14-4-14 and 17-5-17 generally work well. Drench the media with iron chelates like Sprint 330<sup>®</sup> or Sprint 138 at 2-4 oz/100 gal in case of iron deficiency.

### Basket placement

Try to start everything on the bench. Get plants rooted and avoid early over-watering. If desired, top-dress with a controlled release fertilizer right before hanging. It is also easier to spray plant growth regulators (PGRs) and pesticides while baskets are on the bench. If possible, avoid hanging geraniums above each other because of the possible spread of bacterial diseases. For the production area below the baskets, choose crops with low light requirements like foliage plants, ferns, vines or impatiens. The most ideal location to hang baskets is above aisles. Baskets should be hung so the shadows move across the greenhouse to ensure an equal amount of light for all baskets. Monitor for *Botrytis* on crops below baskets, especially if the crops are being grown under tight spacing.

### Temperature

Begin production with well-rooted cuttings. Start warm with day temperatures higher than 70°F (21°C) and night temperatures higher than 64°F (18°C) for the first four to six weeks. This allows PGRs to work effectively and gets the plants well established. Once established, night temperatures can be dropped to 50-55°F (10-13°C) with day temperatures staying around 60-65°F (16-18°C). Cooler temperatures will delay flowering, but can help control growth and size of the plants.

### Pinching and growth regulation

Pinching is only needed on vigorous ivy geraniums. Use proper temperature management whenever possible. For cool morning dip, start lowering temperature to 50°F (10°C) before sunrise and maintain for two to three hours. Flowering will be delayed if cool temperatures are maintained throughout the day. Early PGR sprays are essential for high-quality geraniums. For more compact varieties like Tango, compact ivies or Caliente, a spray of Florel<sup>®</sup> plant growth regulator at 350 ppm two weeks after planting, followed by Cycocel<sup>®</sup> plant growth regulator at 750 ppm to 1000 ppm works well. For vigorous ivies like Cascades, Blizzard and Calliope, Florel sprays at 350 ppm two and three weeks after planting, followed by sprays of Bonzi<sup>®</sup> plant growth regulator at 2.5 ppm or Cycocel (750 ppm-1000 ppm) plus B-Nine<sup>®</sup> plant growth regulator (1000-1500 ppm) are recommended. If you need to slow down the growth or hold these more vigorous geraniums, drench with Bonzi a few weeks before finishing at 0.1-0.25 ppm, depending on temperatures. Make sure the Bonzi does not drip into the crops grown below. For additional tips on growth regulation of Calliope Hybrid geraniums, download our white paper here.

### Pest management

Scouting is crucial. Be sure plants are clean and disease-free before hanging. Check baskets two to three times per week for insects and diseases, scouting intensively for thrips, mites and *Botrytis*. Drench plants with a neonicotinoid insecticide, like Flagship<sup>®</sup> insecticide, before hanging; this provides good long-term control for aphids, whiteflies and mealybugs. For an integrated crop management approach, consider using beneficial insects and mites from Bioline to complement your program. To control thrips, a minisachet of [Amblyline cu](#) or [Swirskiline as](#) on each basket provides effective control for 4-6 weeks. Botrytis control can be achieved with [Heritage](#)<sup>®</sup> fungic