

COMMERCIAL PRODUCTION
OF NEW GUINEA IMPATIENS

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New Guinea impatiens have steadily increased in popularity since their introduction into the U.S. in 1972. Today's varieties offer a wide range of flower colors as well as variegated foliage types. The versatility of this plant allows for its sale as bedding plants, 4 inch potted plants, and up to 12 inch hanging baskets.

Propagation

New Guinea impatiens are started from rooted cuttings, except for Spectra F₁ hybrids, which are grown from seed. Most cultivars are patented, so do not take cuttings of New Guinea impatiens unless you are a licensed propagator or you are certain you are growing a non-patented variety. A ³/₄ to 1 inch tip cutting is the best material to propagate. Root cuttings using 72 to 75 °F bottom heat in a mist bed. Cuttings root in 8 to 18 days, depending on the variety; most well-drained substrates are adequate for propagation purposes.

Substrate Selection and Potting

Plant rooted cuttings in a well-drained substrate that does not contain a large nutrient charge; New Guineas are very susceptible to salts injury. A substrate pH of 5.8 to 6.2 is preferable for a soilless substrate. Substrates containing 20% or more mineral soil by volume should have a pH of 6.2 to 6.8. The number of cuttings per container depends on the container size and the production schedule. In general, use a single cutting for 4 and 5 inch pots; two for 6 inch pots; three to four

for an 8 inch and four to five for a 10 to 12 inch basket.

Pinching

Newer New Guinea impatiens varieties are free-branching and **do not** require pinching. Pinching will delay flowering by 2 to 3 weeks. Pinching can be used as a timing device to delay flowering, if necessary.

Watering

After potting, water only with clear water (no fertilizer) for the first two weeks. New Guineas grow best if the substrate is allowed to dry out between waterings, but not to the point of severe wilting. Avoid overwatering plants throughout production.

Nutrition

Do not over fertilize New Guineas. They are susceptible to salts injury. Micronutrient toxicities can occur if substrate pH is too low. Excess micronutrients cause dieback of the growing tips, marginal necrosis of leaves, and eventual plant collapse.

Fertilization should begin once roots are visible in the soil ball at the edge of the pot. Use 100 to 150 ppm nitrogen, 50 to 75 ppm phosphorus, and 100 to 150 ppm potassium at each watering, once plants are established. If fertilizer is not applied at every watering, then use 300 to 350 ppm nitrogen, 100 ppm phosphorus, and 300 to 350 ppm potassium every third

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Table 1. Recommended saturated media (paste) substrate test ranges for New Guinea impatiens grown in a soilless substrate.*

pH	EC	NO ₃ -N	NH ₄ -N	P	K	Ca	Mg	Na	Fe	Mn	Zn	B
5.8 to 6.2	1.5 to 2.25	75 to 125	0 to 10	5 to 10	75 to 125	100 to 200	30 to 70	0 to 20	0.3 to 3.0	0.02 to 3.0	0.3 to 3.0	0.05 to 0.5

*From the University of Minnesota. Units for EC are dS/cm (mmhos/cm). Units for all elements are ppm.

Table 2. Recommended tissue analysis standards for New Guinea impatiens.*

Macronutrients (%)	
Nitrogen	2.5 to 4.5
Phosphorus	0.3 to 0.8
Potassium	1.9 to 2.7
Calcium	1.0 to 2.0
Magnesium	0.3 to 0.8
Sulfur	0.13 to 0.75
Micronutrients (ppm)	
Iron	150 to 250
Manganese	100 to 250
Zinc	40 to 85
Copper	5 to 10
Boron	50 to 60
Mo	1 to 10

*From the University of Minnesota.

watering. Use recommended saturated media (paste) substrate tests and foliar analysis test levels for New Guinea impatiens as guides to monitor the crop's nutrient status (Tables 1 and 2).

Light

Full light is needed during winter and early spring. A minimum of 3000 to 4000 footcandles (fc) is suggested. Too low of a light level reduces variegation and color

Temperature

Proper plant development requires relatively warm temperatures. After rooting, use a 65 to 68 °F night temperature and a 75 °F venting temperature. Night temperatures above 72 °F can cause a delay in flowering and should be avoided. Once plants are well established, the night temperature can be dropped to 62 to 64 °F.

Height Control

Excessive stretching is best controlled through maintaining high light levels, adequate spacing, and proper fertilization and watering

practices. Many of the newest cultivars have a compact growth habit and do not require chemical height control. For cultivars that stretch, use a foliar spray of Bonzi™ at 5 to 30 ppm. New Guinea impatiens also respond to a negative DIF, and height can be controlled by maintaining slightly higher night temperatures than day temperatures.

Spacing and Scheduling

Spacing too close will result in excessive stretching. After cuttings are potted, maintain pot to pot spacing until plant canopies reach the edge of the pot. Afterwards, space out according to need (Table 3).

The timing of New Guinea impatiens depends on several factors, including cultivar, light level, temperature, number of cuttings per pot, and pot size. Use Table 3 as a guide in scheduling your New Guinea crops.

Table 3. Spacing and scheduling recommendations for New Guinea impatiens.

Pot or basket size (inches)	Spacing (inches)	Number of cuttings per container	Weeks from potting to finish
4	7 × 7	1	6 to 8
5	8 × 8	1	7 to 9
6	10 × 10	2	8 to 10
8	14 × 14	3	8 to 10
10	18 × 18	4	12 to 14
12	20 × 20	5	12 to 14

Cultivars

The number of varieties available to growers increases each year. A recent survey conducted by Clemson University concluded that growers

are producing the following percentages of each flower color for their New Guinea impatiens hanging baskets: reds = 30 to 35%; pinks plus pink bicolors = 45 to 50%; lavenders = 10 to 15%; and whites = 5%. This is a good starting point in planning a marketing mix for colors. The problem arises when trying to determine the percentage of leaf colors and variegations. Table 4 lists many of the currently available cultivars to assist in cultivar selection. The final column in Table 4 indicates the landscape performance of many of the cultivars. The performance ratings are from a study conducted at Clemson University in the summer of 1994 under full-sun conditions. These ratings should assist growers in selecting cultivars best suited for the Southeastern landscape.

Insect and Related Pests

The main pest problems of New Guinea impatiens are the two-spotted spider mite, cyclamen mite, and western flower thrips. Western flower thrips is the most serious pest on New Guineas, as they serve as a vector for Impatiens Necrotic Spot Virus (INSV; formerly called Tomato Spotted Wilt Virus), a destructive disease. Thrips can spread this virus to susceptible species throughout a greenhouse, including New Guinea impatiens, garden impatiens, gloxinias, cyclamen, gerbera daisies, and many other floricultural crops. Careful routing of infected plants, monitoring of sticky cards, frequent inspection of flowers to check for the presence of thrips, and thorough spraying are essential in controlling thrips and INSV.

Other insects that can be a problem include fungus gnats, mealybugs, and aphids. Consult the current year's N.C. Agricultural Chemical Manual for suggested control measures for all of these pests.

Diseases

Impatiens Necrotic Spot Virus is the most serious disease on New Guinea impatiens. It starts as foliar and stem lesions and eventually destroys the marketability of plants. The only

control is prevention via purchasing plants from reliable propagators, rouging infected plants, and control of the vector, western flower thrips.

Botrytis blight can be a serious disease on New Guinea impatiens. Too cool night temperatures and / or too high relative humidity can increase the severity and incidence of *Botrytis*, so maintain at least 62 °F night temperatures and vent to reduce humidity in the greenhouse whenever possible. The other major above-ground disease is *Rhizoctonia* stem rot and web blight.

Root rot caused by *Pythium* spp. or *Phytophthora* spp. also affect New Guinea production. Avoid overwatering plants as a water-soaked substrate can increase the incidence of root rot. Consult the current year's N.C. Agricultural Chemical Manual for control measures for the diseases mentioned above.

For Further Information

Contact your County Cooperative Extension Center for related Horticulture Information Leaflets, Ornamental Disease Notes, and Ornamental and Turf Integrated Pest Management Insect Notes. Also consult the current edition of the N.C. Agricultural Chemicals Manual for pest and disease control recommendations. Other general information sources on New Guinea impatiens production used in the development of this handout include:

- Ecke, P. 1994. New Guinea impatiens cultural information guide. Paul Ecke Ranch, Encinitas, California.
- Erwin, J. 1992. New Guinea impatiens production. Minnesota Commercial Flower Growers Association Bulletin. 41(3):1-15.
- Mikkelsen, E. 1994. Cultural information for New Guinea impatiens. Mikkelsen, Inc., Ashtabula, Ohio.
- Miller, W.B. and M.S. Williams. 1994. 1994 New Guinea impatiens landscape trials. South Carolina Greenhouse Newsletter. 8(5):8-10.

Table 4. New Guinea impatiens cultivars sorted by flower color and cultivar.

Flower Color	Series ^z	Cultivar	Leaf Color	Variegated Growth Landscape		
				Foliage? ^y	Habit ^x	Rating ^w
White	Baby Bonita	White	Medium Green	No	1	
White	Celebration	White	Medium Green	No	2	3.4
White	Celebrette	Frost	Medium Green	No	1	
White	Danziger	Waltz	Medium Green	No	3	2.1
White	Harmony	White	Medium Green	No		
White	Lasting Impressions	Innocence	Dark Green	Slight	3	2.8
White	Paradise	White (Moorea)	Medium Green	No	2	2.6
White	Patriot	White	Medium Green	No	3	3.6
White	Pizzazz	White (Jose)	Medium Green	No	3	
White	Pot O' Gold	White	Medium Green	No	2	
White	Spectra	White	Dark Green	Yes	2	2.8
White	Sunshine	Cirrus	Medium Green	Yes	4	2.2
White	Sunshine	Milkyway	Medium Green	Yes	3	3.5
White	Twice As Nice	Allegro	Medium Green	No	2	
White ^w / Pink Eye	Paradise	Pearl White (Improved Samoa)	Medium Green	No	3	4.0
Light Pink	Bull	Melanie	Dark Green	No	3	3.4
Light Pink	Celebration	Blush Pink	Medium Green	No	2	4.1
Light Pink	Celebrette	Light Pink	Medium Green	No	1	
Light Pink	Harmony	Light Orchid	Medium Green	No	2	
Light Pink	Harmony	Light Pink	Medium Green	No	2	
Light Pink	Java	Pearl	Medium Green	No	2	
Light Pink	Lasting Impressions	Illusion	Medium Green	No	4	4.6
Light Pink	Paradise	Light Pink (Woya)	Dark Green	No	3	3.5
Light Pink	Patriot	Soft Pink	Medium Green	No	3	3.9
Light Pink	Spectra	Light Pink Shades	Medium Green	Yes	3	2.1
Light Pink	Sunshine	Equinox	Bronze	Yes*	3	3.4
Light Pink	Twice As Nice	Canon	Medium Green	No	2	
Pink	Baby Bonita	Mid-Pink	Medium Green	No	1	
Pink	Bull	Barbara	Medium Green	No	2	1.4
Pink	Bull	Doerte	Bronze	No	2	
Pink	Bull	Lisa	Medium Green	Yes**	2	
Pink	Bull	Tina	Dark Green	No	3	
Pink	Celebration	Deep Pink	Dark Green	No	2	3.7
Pink	Celebrette	Hot Pink	Medium Green	No	1	
Pink	Harmony	Pink	Medium Green	No	2	
Pink	Java	Pink	Medium Green	No	2	
Pink	Lasting Impressions	Rosetta	Dark Green	No	3	2.3
Pink	Patriot	Pink	Medium Green	No	3	3.6
Pink	Pizzazz	Light Pink (Juan)	Dark Green	No	3	

Table 4., Continued.

Flower Color	Series ^z	Cultivar	Leaf Color	Variegated Growth Landscape		
				Foliage? ^y	Habit ^x	Rating ^w
Pink	Pot O' Gold	Pink	Medium Green	No	2	
Pink	Pure Beauty	Light Pink (Kallima)	Bronze	No	2	1.9
Pink	Pure Beauty	Rose (Aglia)	Medium Green	Yes**	3	3.7
Pink	Sunshine	Gemini	Medium Green	Yes	5	3.3
Pink	Twice As Nice	Minuet	Medium Green	No	2	
Pink	Twice As Nice	Waltz	Medium Green	No	2	
Dark Pink	Bull	Doerte	Dark Green	No	3	2.0
Dark Pink	Celebration	Electric Pink	Dark Green	No	3	4.0
Dark Pink	Celebration	Sangria	Dark Green	No	3	
Dark Pink	Celebrette	Pink Jewel	Medium Green	No	1	
Dark Pink	Danziger	Dandin	Dark Green	No	4	3.6
Dark Pink	Danziger	Dangal	Medium Green	No	3	4.9
Dark Pink	Harmony	Magenta	Medium Green	No	2	
Dark Pink	Paradise	Deep Pink (Bonaire)	Dark Green	No	3	2.9
Dark Pink	Patriot	Pink Salmon	Medium Green	No	2	3.0
Dark Pink	Pure Beauty	Fuchsia (Apollon)	Dark Green	No	5	4.4
Dark Pink	Pure Beauty	Magenta (Jolana)	Dark Green	No	5	4.0
Dark Pink	Pure Beauty	Pink (Dark Delias)	Medium Green	No	1	4.2
Dark Pink	Sunshine	Enterprise	Dark Green	Yes	4	0.0
Dark Pink	Twice As Nice	Etude	Medium Green	No	2	
Pink ^w / Rose Bicolor	Celebration	Candy Pink	Dark Green	No	3	2.9
Pink ^w / Rose Bicolor	Lasting Impressions	Impulse	Medium Green	No	3	4.9
Pink ^w / Rose Bicolor	Twice As Nice	Duet	Medium Green	No	2	
Pink ^w / Fuchsia Bicolor	Liberty	Lilac & Red	Dark Green	No	4	4.1
Pink ^w / Fuchsia Bicolor	Paradise	Fuchsia on Lavender (Improved Guadeloupe)	Dark Green	No	2	3.6
Pink ^w / Fuchsia Bicolor	Pot O' Gold	Purple Bicolor	Dark Bronze	No	2	
Pink ^w / Rose Bicolor	Celebration	Rose Star	Medium Green	No	5	
Pink ^w / Red Bicolor	Paradise	Red on Pink (Pago Pago)	Dark Green	No	2	3.8
Pink ^w / Red Bicolor	Pure Beauty	Lavender on Purple (Octavia)	Medium Green	No	4	
Pink ^w / Red Bicolor	Pure Beauty	Red on Pink (Neptis)	Medium Green	No	4	3.5
Pink ^w / White Eye	Paradise	Pink Frost (Tortola)	Medium Green	No	3	
Light Pink ^w / Fuchsia Eye	Celebrette	Apple Blossom	Medium Green	No	1	
Pink ^w / Red Eye	Paradise	Tahiti	Medium Green	No	2	3.6
Pink ^w / Purple Eye	Danziger	Danlight	Dark Green	No	4	2.9
Pink ^w / Purple Eye	Harmony	Purple Eye	Medium Green	No	2	

Table 4., Continued.

Flower Color	Series ^z	Cultivar	Leaf Color	Variegated Growth Landscape		
				Foliage? ^y	Habit ^x	Rating ^w
Pink ^w / Lavender Bicolor	Paradise	Orchid on Blue (Tonga)	Dark Bronze	No	1	3.8
Light Salmon	Celebration	Light Salmon Improved	Medium Green	Yes	3	
Light Salmon	Harmony	Light Coral	Medium Green	No	2	
Light Salmon	Pure Beauty	Light Coral (Melissa)	Dark Green	No	3	4.2
Lt. Salmon ^w / White Eye	Celebrette	Peach	Bronze	No	1	
Salmon ^w / White Eye	Paradise	Salmon Flare	Dark Green	Yes*	2	
Salmon	Baby Bonita	Salmon	Medium Green	No	1	
Salmon	Bull	Alice	Medium Green	No	3	
Salmon	Bull	Flora	Bronze	No	3	
Salmon	Bull	Marien	Dark Green	No	3	
Salmon	Celebration	Salmon	Medium Green	Yes	3	5.0
Salmon	Harmony	Salmon	Medium Green	No	2	
Salmon	Liberty	Salmon Orange	Dark Green	No	3	3.6
Salmon	Paradise	Deep Coral (Lopinga)	Medium Green	No	2	3.0
Salmon	Paradise	Salmon (Grenada)	Dark Green	No	2	3.0
Salmon	Pizzazz	Salmon (Pablo)	Dark Green	No	3	
Salmon	Pot O' Gold	Salmon	Bronze	No	2	
Salmon	Pure Beauty	Salmon Pink	Dark Green	Yes*	2	
Salmon	Spectra	Salmon Shades	Medium Green	No	3	2.7
Dark Salmon	Celebration	Bright Coral	Dark Green	No	3	5.0
Dark Salmon	Celebration	Deep Coral	Bronze	Yes	3	4.1
Dark Salmon	Harmony	Deep Salmon	Medium Green	No	2	
Salmon Pink	Lasting Impressions	Cameo	Medium Green	Slight	4	3.1
Salmon Coral	Bull	Inge	Bronze	No	2	0.0
Coral	Bull	Natalie	Bronze	No	2	
Salmon Coral	Bull	Rosemarie	Dark Green	No	3	1.4
Salmon Orange	Danziger	Danshir	Dark Green	No	2	3.7
Salmon Orange	Lasting Impressions	Charade	Dark Green	No	2	2.5
Orange	Bull	Mathilde	Dark Bronze	No	3	2.5
Orange	Celebration	Apricot	Dark Green	No	3	
Orange	Celebration	Orange	Medium Green	No	3	
Orange	Harmony	Orange	Medium Green	No	2	
Orange	Java	Orange Flame	Medium Green	No	2	
Orange	Lasting Impressions	Ambrosia	Dark Green	No	4	3.4
Orange	Lasting Impressions	Escapade	Dark Green	No	3	5.0
Orange	Paradise	Apricot	Medium Green	No	2	
Orange	Paradise	Electric Orange (Timor)	Medium Green	No	1	4.6

Table 4., Continued.

Flower Color	Series ^z	Cultivar	Leaf Color	Variegated Growth Landscape		
				Foliage? ^y	Habit ^x	Rating ^w
Orange	Paradise	Orange (Xanthia)	Medium Green	No	2	2.7
Orange	Patriot	Orange	Medium Green	No	3	3.7
Orange	Pizzazz	Orange (Saul)	Dark Green	No	3	
Orange	Pot O' Gold	Orange	Bronze	No	2	
Orange	Sunshine	Nebulous	Dark Green	No	4	4.9
Orange	Sunshine	Zenith	Medium Green	Yes	3	2.4
Orange	Twice As Nice	Sonata	Medium Green	No	2	
Dark Orange	Bull	Suzanne	Medium Green	No	4	2.5
Dark Orange	Celebration	Bonfire Orange	Dark Bronze	No	2	4.4
Dark Orange	Paradise	Tanna	Dark Green	No	3	1.9
Dark Orange	Sunshine	Nova	Dark Green	Yes	2	2.8
Orange Red	Harmony	Flame	Medium Green	No	2	
Orange Red	Pure Beauty	Scarlet (Marpesia)	Dark Bronze	No	3	3.4
Orange ^w / Fuchsia Eye	Celebrette	Orange Crush	Dark Green	No	1	
Orange ^w / White Bicolor	Lasting Impressions	Tempest	Dark Green	Yes	1	1.2
Orange ^w / White Bicolor	Pure Beauty	Orange on White (Lycia)	Medium Green	No	4	3.6
Orange ^w / Pink Bicolor	Lasting Impressions	Ambience	Medium Green	No	3	2.4
Orange ^w / Salmon Bicolor	Sunshine	Sunburst	Bronze	Slight	3	3.5
Orange ^w / Salmon Bicolor	Sunshine	Sunglow	Dark Green	Yes	1	1.4
Orange ^w / Salmon Bicolor	Sunshine	Twilight	Bronze	Yes	3	1.0
Orange ^w / Dark Orange Bicolor	Pure Beauty	Orange on Orange	Dark Green	No	2	
Orange ^w / Red Bicolor	Danziger	Danova	Dark Bronze	No	3	1.9
Orange ^w / Red Bicolor	Pot O' Gold	Red Bicolor	Dark Bronze	No	2	
Rose	Baby Bonita	Rose (Improved Tolinga)	Medium Green	No	1	
Rose	Celebration	Electric Rose	Dark Green	Yes	3	3.3
Rose	Celebration	Rose	Medium Green	No	3	3.5
Rose	Pizzazz	Rose	Dark Green	No	3	
Rose	Spectra	Rose Shades	Medium Green	Slight	3	2.0
Rose ^w / Fuchsia Eye	Paradise	Cherry Rose (Anguilla)	Dark Green	No	2	
Fuchsia	Bull	Wanda	Dark Green	No	3	
Fuchsia	Harmony	Fuchsia	Medium Green	No	2	
Fuchsia	Paradise	Fuchsia (Papete)	Medium Green	No	1	
Fuchsia	Sunshine	Pulsar	Dark Green	Yes	3	3.6
Fuchsia	Sunshine	Radiance	Medium Green	Yes	2	4.6
Fuchsia Red	Bull	Anna	Dark Green	No	3	1.1
Fuchsia ^w / Purple Eye	Celebrette	Hot Rose	Medium Green	No	1	
Red	Baby Bonita	Scarlet	Medium Green	No	1	

Table 4., Continued.

Flower Color	Series ^z	Cultivar	Leaf Color	Variegated Growth Landscape		
				Foliage? ^y	Habit ^x	Rating ^w
Red	Bull	Betty	Dark Green	No	3	
Red	Bull	Karina	Dark Green	No	2	1.9
Red	Celebration	Cherry Red	Medium Green	No	4	
Red	Celebration	Deep Red	Dark Green	No	2	
Red	Celebration	Red	Dark Green	No	3	4.9
Red	Celebrette	Cherry	Dark Green	No	1	
Red	Celebrette	Cherry Rose	Medium Green	No	1	
Red	Celebrette	Scarlet	Medium Green	No	1	
Red	Danziger	Danhill	Medium Green	No	4	3.3
Red	Danziger	Rhondo	Medium Green	No	3	2.0
Red	Harmony	Cherry Rose	Medium Green	No	2	
Red	Harmony	Royal Red	Medium Green	No	2	
Red	Harmony	Scarlet	Medium Green	No	2	
Red	Lasting Impressions	Masquerade	Dark Bronze	No	3	
Red	Paradise	Bright Red (Tarawa)	Medium Green	No	3	3.8
Red	Paradise	Cherry Red (Martinique)	Medium Green	No	2	2.6
Red	Paradise	Red (Lanai)	Medium Green	No	3	
Red	Paradise	Scarlet (Antigua)	Medium Green	No	3	4.4
Red	Paradise	True Red (Moala)	Medium Green	No	3	3.1
Red	Patriot	Red	Medium Green	No	2	3.3
Red	Pizzazz	Cherry Rose (Ramon)	Dark Green	No	3	
Red	Pizzazz	Scarlet Red (Raul)	Dark Green	No	3	
Red	Pot O' Gold	Red	Medium Green	No	2	
Red	Pure Beauty	Bright Red (Prepona)	Dark Green	No	2	1.6
Red	Pure Beauty	Red (Anaea)	Medium Green	No	3	
Red	Spectra	Red Shades	Medium Green	No	3	3.2
Red	Sunshine	Mirach	Medium Green	Yes	3	4.2
Red	Twice As Nice	Largo	Medium Green	No	2	
Dark Red	Harmony	Dark Red	Medium Green	No	2	
Dark Red	Lasting Impressions	Blazon	Dark Green	Slight	3	3.1
Dark Red	Paradise	Wine (Noctua)	Dark Green	No	2	
Dark Red	Patriot	Dark Red	Dark Green	No	3	4.0
Red ^w / Pink Bicolor	Celebration	Cherry Star	Dark Bronze	No	2	2.9
Red ^w / Dark Red Bicolor	Electra	Red	Medium Green	No	2	
Lavender	Baby Bonita	Lavender	Medium Green	No	1	
Lavender	Bull	Jennifer	Dark Green	No	2	
Lavender	Celebration	Lavender Glow	Medium Green	No	3	3.6
Lavender	Celebration	Light Lavender Improved	Medium Green	No	3	

Table 4., Continued.

Flower Color	Series ^z	Cultivar	Leaf Color	Variegated Growth Landscape		
				Foliage? ^y	Habit ^x	Rating ^w
Lavender	Celebrette	Orchid	Medium Green	No	1	
Lavender	Danziger	Flamenco	Medium Green	No	3	1.8
Lavender	Harmony	Lavender Purple	Medium Green	No	2	
Lavender	Harmony	Light Purple	Medium Green	No	2	
Lavender	Java	Lilac Flame	Medium Green	No	2	
Lavender	Lasting Impressions	Heathermist	Dark Green	No	3	3.4
Lavender	Lasting Impressions	Serenade	Medium Green	No	3	3.6
Lavender	Lasting Impressions	Tiffany	Dark Green	No	3	
Lavender	Liberty	Lavender	Dark Green	No	2	3.6
Lavender	Paradise	Lavender Blue (Toga)	Medium Green	No	2	4.1
Lavender	Patriot	Lavender	Medium Green	No	3	2.6
Lavender	Twice As Nice	Baroque	Medium Green	No	2	
Light Purple	Paradise	Orchid (Pascua)	Medium Green	No	2	3.8
Purple	Baby Bonita	Purple	Medium Green	No	1	
Purple	Bull	Mary	Bronze	No	2	
Purple	Celebration	Purple	Medium Green	No	3	
Purple	Celebrette	Grape Crush	Medium Green	No	1	
White	Celebrette	White	Medium Green	No	1	
Purple	Celebrette	Wild Plum	Medium Green	No	1	3.3
Purple	Danziger	Danserra	Dark Green	No	2	2.5
Purple	Danziger	Samba	Dark Green	No	3	1.6
Purple	Harmony	Grape	Medium Green	No		
Purple	Harmony	Purple	Medium Green	No	2	
Purple	Paradise	Violet (Bora-Bora)	Medium Green	No	2	
Purple	Patriot	Lilac	Medium Green	No	2	
Purple	Patriot	Violet	Medium Green	No	3	3.3
Purple	Pizzazz	Purple (Carlos)	Dark Green	No	3	
Purple	Pot O' Gold	Violet	Bronze	No	2	
Purple	Pure Beauty	Light Purple	Dark Green	No	2	
Purple	Pure Beauty	Purple (Aruba)	Dark Green	No	1	4.6
Purple	Pure Beauty	Violet	Dark Green	No	2	
Dark Purple	Lasting Impressions	Rhapsody	Medium Green	No	4	1.7
Dark Purple	Patriot	Purple Lilac	Medium Green	No	3	
Purple Rose	Celebration	Raspberry Rose	Medium Green	No	2	4.5
Purple Red	Danziger	Lambada	Bronze	No	2	4.3
Purple Lavender	Sunshine	Antares	Medium Green	Slight	2	3.9
Purple ^w / Pink Bicolor	Pure Beauty	Purple on Lilac	Medium Green	No	2	
Purple ^w / Lavender Bicolor	Celebration	Purple Star	Bronze	No	3	
Purple ^w / Lavender Bicolor	Lasting Impressions	Shadow	Dark Green	No	3	2.8
Purple ^w / Lavender Bicolor	Sunshine	Sunregal	Dark Green	Slight	1	3.1

Table 4., Continued.

Flower	Color	Series ^z	Cultivar	Leaf Color	Variegated Growth Landscape		
					Foliage? ^y	Habit ^x	Rating ^w
^z Baby Bonita [®] , Paradise [®] , Pizzazz [®] , and Pure Beauty [™] series are products of Kientzler Jungpflanzen, Gensingen, Germany. Bull series is a product of Gartenbau Norbert Bull, Goennebek, Germany. Celebration and Celebrette series are products of Ball FloraPlant, West Chicago, Illinois. Danziger and Harmony series are products of Dan Flower Farm, Beit Dagan, Israel. Electra [®] series is by Harlan and Sue Cosner and is a product of the Paul Ecke Ranch, Encinitas, California. Lasting Impressions [™] , Sunshine [™] , Pot O' Gold [™] and Twice as Nice [™] series are products of Mikkелens, Inc., now owned by Oglevee, Ltd. Liberty and Patriot are products of Dümme USA, Vancouver, Washington. Java [™] and Spectra [™] series are products of PanAmerican Seed Company, West Chicago, Illinois.							
^y Foliage is either non-variegated (No); has white variegation that is prominent (Yes) or slight (Slight); has red variegation (Yes*); or has yellow variegation (Yes**).							
^x The growth habit number indicates how the cultivar develops in the greenhouse during production. The rating ranges from 1 (very compact) to 5 (very vigorous).							
^w Landscape ratings are compiled from trials conducted at NC State University and Clemson University. The rating ranges from 5.0 (excellent) to 1 (poor).							