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For a complete listing of which varieties were planted in each bed, please refer to the chart at the top of page 8 regarding water usage.
Colorado State University
2012 Annual Flower Trial Garden
Performance Report
Dr. James E. Klett, David Staats and Paul Freebury

Introduction

The W. D. Holley Plant Environmental Research Center (PERC) on the Colorado State University campus has been in operation for 38 years. Dr. James E. Klett is the Director of PERC and the faculty coordinator for the Annual Flower Trial Garden. In 2000, the trial garden was moved from its site at PERC to the park located on the north-west corner of Remington and Lake Streets (1401 Remington Street). The relocation of the garden to this more spacious and visible site furthered its mission by more effectively extending education, research and outreach to students, home gardeners, Master Gardeners, community members and Green Industry personnel.

The outdoor display and test areas were established to allow students, researchers, industry representatives, homeowners and extension personnel to learn, teach and evaluate horticultural research and demonstration projects in the Rocky Mountain/High Plains region. The Annual Flower Trial Garden is both an All-America Selections® display and trial site. The garden is open to students, industry personnel and the public for viewing, gathering ideas about new varieties, studying the different growth habits, tolerances and visual characteristics of many annual flowering varieties.

The purpose of the trial garden is to evaluate the performance of annual flower varieties under our unique Rocky Mountain environmental conditions. Our growing conditions are characterized by high altitude, intense solar radiation, drying winds, severe hailstorms, large fluctuations between day and night temperatures and a season-long need for irrigation. Plants are evaluated for plant vigor, uniformity, floriferousness and tolerance to environmental and biotic stresses. Performances of these cultivars are judged in early August, and again in early September, by selected students, faculty, industry representatives, public horticulturists and advanced Master Gardeners.

The project is funded, in most part, by the entry fees collected from the plant breeding seed and vegetative companies who have chosen to participate in the trials. Additional financial assistance and supplies for the trial operations are donated by a number of sources. These sources include various state horticulture industry associations, foundations, nurseries, greenhouse growers and plant and seed production companies from across the nation and world. The trial garden at Colorado State University receives no operating dollars directly allocated from state funds. Some operational and staff dollars have come from the Colorado State Agricultural Experiment Station, Extension, the College of Agricultural Sciences and the Department of Horticulture and Landscape Architecture.

* Professor and Extension Landscape Horticulture Specialist; Horticulture Research Associate; Environmental Horticulture undergraduate student and 2012 Garden Coordinator
Acknowledgements

The Department of Horticulture and Landscape Architecture at Colorado State University would first like to thank the many plant and seed companies who continue to participate in the trials year after year. Without their cooperation and support, the research done at the trial garden would not be possible.

This year, the following 22 vegetative and seed companies participated in the trials, entering 1,013 varieties of annual bedding plants.

<table>
<thead>
<tr>
<th>AmeriSeed Inc.</th>
<th>Grolink</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Takii Inc.</td>
<td>Keift Seed Co.</td>
</tr>
<tr>
<td>Ball Horticultural Co.</td>
<td>PanAmerican Seed</td>
</tr>
<tr>
<td>Ball FloraPlant</td>
<td>Plug Connections and Cultivaris</td>
</tr>
<tr>
<td>Ball Ingenuity</td>
<td>Proven Winners</td>
</tr>
<tr>
<td>Benary Seed</td>
<td>Sakata Seed America Inc.</td>
</tr>
<tr>
<td>Burpee Home Garden</td>
<td>Selecta First Class, Inc.</td>
</tr>
<tr>
<td>Danziger</td>
<td>Suntory Flowers, Ltd.</td>
</tr>
<tr>
<td>Dummen USA, Inc.</td>
<td>Syngenta Flowers Inc.</td>
</tr>
<tr>
<td>Eason Horticultural Resources, Inc.</td>
<td>Takii Europe</td>
</tr>
<tr>
<td>Fides North America</td>
<td>Westflowers</td>
</tr>
</tbody>
</table>

A very special thank you goes out to Welby Gardens of Denver, Colorado. Every year, Welby Gardens germinates and grows-on all of the seed propagated varieties for the trials. Their generosity is greatly appreciated, as they do this for us at a significantly reduced cost.

We would like to recognize other companies that have donated supplies to the program. Thanks are extended to Green Care Fertilizers, Inc. for donating the water soluble fertilizer used in both the greenhouses and the garden. We would like to thank Sun Gro Horticulture, Inc. for donating the potting media for all the vegetatively propagated plants grown in our greenhouses. Thank you to Organix Supply, Inc. for donating 50 yards of Growers Mix media to amend the beds, for use in the outdoor containers and for the quick release fertilizer that was applied to the ground beds prior to planting. Also thank you to the Scotts-Sierra for donating the slow release fertilizer for the ground beds and containers.

We would like to thank our Trial Garden Advisory Committee for their constant advice and feedback on the overall operation of the trials. We are fortunate to have such a diverse group of industry leaders that are willing to volunteer their time for the benefit of our program. Our committee is comprised of the following individuals:

Harvey Lang (Syngenta Flowers), Celia Tannehill, Danny Brooks (Benary Seed), Dan Gerace (Welby Gardens), Al Gerace (Welby Gardens), Diana Reavis (Eason Horticultural Resources Inc.), Duane Sinning (Cargill), Eric Pitzen (Syngenta Flowers), Frank Yantorno (Center Greenhouse, Inc.), Galen Dokter (Syngenta), Gary Douglas (Denver City Park Greenhouse), Gene Pielin (Gulley Greenhouse), Jim Devereux (Michell’s), John Williams (Tagawa Greenhouses), Karl Trellinger
We also thank all the Larimer County Master Gardeners who volunteered their time and hard work this year. They were instrumental in completing the huge tasks of transplanting thousands of plugs in the greenhouses this spring and planting the thousands of plants in the garden in the early summer.

Perhaps most importantly, much thanks and appreciation goes to the PERC and annual garden staff at the university that has worked diligently to prepare and maintain the garden. These people include:

Undergraduate Trial Garden Coordinator  Paul Freebury
Undergraduate Trial Garden Staff  Caitlin Nase
                                Benjamin Ott
                                Jaclyn Salts
                                Vanessa Sandoval

Undergraduate PERC Staff  Hunter Konchan
Horticulture Research Associate  David Staats

For further information on the Annual Flower Trial Garden at Colorado State University, feel free to write, call or e-mail:

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Colorado State University
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Fort Collins, CO 80523
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E-mail: jim.klett@colostate.edu

This report is also available online at: www.flowertrials.colostate.edu
Cultural Data

Growing

All seeds were sent to Welby Gardens in Denver, CO in January and February 2012 for germination and growing-on in their greenhouses into 3.5” jumbo 4-cell packs. Seed varieties from Welby Gardens were all received on June 7th and planted in the garden shortly thereafter. All vegetative varieties were received as plugs and transplanted into 4.5” pots shortly after arriving at Colorado State University from mid-March to mid-April.

Fertilization in the Greenhouses

Dosatron® fertilizer injectors rated at 7 GPM were used in the greenhouses to fertilize plants each day they were watered, with the exception that every other weekend they were watered with clear water. Greencare 14-4-14 water soluble fertilizer was used. Plants were grown in the greenhouses at the Plant Environmental Research Center (PERC). They received fertilization at a rate of 200ppm. New Guinea Impatiens were fertilized at this same rate, every other time they were watered. Clear water was used for the alternate waterings.

Chemicals Used in the Greenhouses

A drench of Banrot® (6 oz/gallon) and Rootshield® (0.5 tsp/gallon) was applied to all vegetative plugs immediately after arrival and prior to potting up.

Other chemical treatments that were applied in the greenhouse are as follows:

May 2nd: X-Clude (Pyrethrins, Piperonyl butoxide) was applied to all Dahlias to control thrips.
May 3rd: Cycocel® was applied to geraniums as requested by company at a rate of 1 oz/gallon (1st application). B-9® was applied to all Petunia, Calibrachoa & Combos as requested by company at a rate of 1.1 grams/gallon.
May 4th: Insecticidal soap was applied to control aphids on all Dahlias.
May 9th: Topcide 10WSB (lambda-cyhalothrin) was applied to all Dahlias to control thrips and aphids.

---

2 No endorsement of products named is intended nor is criticism of products not mentioned.
Geranium PGR Application

Since 2007, participants entering Geraniums in the trials were given the opportunity to choose the number of PGR treatments to be applied to their entry plants while in the production greenhouse. They were given the choice of no treatments, one treatment or two treatments. The number of treatments applied to each Geranium variety in the trials is included in the information presented in the trial results section of this report.

Soil Amendments and Preparation

All beds were raked clean of old mulch, planting material and weeds prior to planting. Where necessary, RoundUp® was sprayed on weeds. Prior to planting, 1-2” of new Grower’s Mix media from Organix Supply Inc. was added to all sun beds. The beds were roto-tilled to a depth of 8” which helped incorporate the new media. After tilling, the beds were crowned for better drainage and raked smooth. For containers, the top 5-6” of media was removed and ¼ teaspoon of Banrot® was sprinkled over the remaining soil and watered in. The containers were then re-filled with the same new Grower’s Mix media used on the sun beds.

Planting

Plants are grown either in the sun or under our shade structure that provides approximately 60% to 70% shade. The plant companies are given the option to choose whether they want their varieties grown in a ground bed, a container or in both locations. Each trial entry in the ground is planted in 2 parallel rows of up to 12 plants per row for a maximum of 24 plants. Each 20” container is planted with 5 plants of the same variety. Holes were pre-dug for each row in the ground beds using a 4” auger. A string stretched from the front of the row to the back was used as a guide to keep the spacing uniform.

The majority of plants were planted during organized planting sessions with Master Gardeners on May 22nd, 25th, and 31st. The remainder of plants were planted by the garden staff on June 4-8th, 11-14th, 18th and June 25th.
Container Spacing

Due to an increase in the number of container entries one of the ground beds was converted for container display. Also, there were extra containers located by the University Center for the Arts. These containers were filled with combination varieties which were also located at the main container area.

Bed Spacing

This year, we had a decrease in shade entries allowing for increased spacing in shade bed spacing.

Variety 1
Ex. White Petunia

Variety 2
Ex. Pink Petunia

<table>
<thead>
<tr>
<th>Variety</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Begonia</td>
<td>12”</td>
<td>20”</td>
</tr>
<tr>
<td>Verbena</td>
<td>16”</td>
<td>23”</td>
</tr>
<tr>
<td>Geranium</td>
<td>14”</td>
<td>21”</td>
</tr>
<tr>
<td>Antirrhinum, Dianthus, Ipomoea, Lavendula,</td>
<td>12”</td>
<td>18”</td>
</tr>
<tr>
<td>Gazania, Osteospermum, Scaevola</td>
<td>12”</td>
<td>16”</td>
</tr>
<tr>
<td>Petunia</td>
<td>14”</td>
<td>23”</td>
</tr>
<tr>
<td>Other Sun Varieties</td>
<td>12”</td>
<td>21”</td>
</tr>
<tr>
<td>Angelonia</td>
<td>14”</td>
<td>24”</td>
</tr>
<tr>
<td>Sun Impatiens</td>
<td>12”</td>
<td>17”</td>
</tr>
<tr>
<td>Marigold</td>
<td>16”</td>
<td>25”</td>
</tr>
<tr>
<td>Shade New Guinea Impatiens, Impatiens (double, seed), Torenia</td>
<td>16”</td>
<td>24”</td>
</tr>
<tr>
<td>Lantana</td>
<td>16”</td>
<td>23”</td>
</tr>
<tr>
<td>Portulaca</td>
<td>14”</td>
<td>21”</td>
</tr>
</tbody>
</table>

= sign (one variety)
Watering

Plants were watered on an “as needed” basis while in the greenhouses. All plants were thoroughly hand watered after being planted in the garden or in the container. Container trials were irrigated three times a day (depending on rain), every day, for about the first two weeks after planting and then twice a day after that. Each container has 2 drip emitters positioned towards the center that are rated at 1 GPH. All sun containers ran for one hour per cycle and the shade containers ran for 45 minutes per cycle. Beds are zoned according to weekly water-use requirements of 0.5”, 1.0” and 1.5” of water per week, and were watered 2-3 times a week for varying amounts of time, depending on the bed’s water-use rating. Because of the lack of precipitation and intense heat in early to mid-summer, the irrigation was sometimes increased depending on how much water the individual beds needed.

<table>
<thead>
<tr>
<th>Water-use Rating</th>
<th>Beds</th>
<th>Varieties</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5” per week</td>
<td>H, I, J, K, L</td>
<td>Agastache, Ageratum, Bidens, Coreopsis, Galardia, Gazania, Gomphrena, Lantana, Marigold, Mecardonia, Petunia, Petchoa, Portulaca, Salvia, Scaevola, Stachys, Vinca, Zinnia</td>
</tr>
<tr>
<td>1.0” per week</td>
<td>C, D, E, F, G</td>
<td>Calitunia, Cleome, Dianthus, Euphorbia, Evolvulus, Geranium, Gerbera, Helichrysum, Ipomoea, Lavendula, Leonitis, Lobularia, Mecardonia, Nierembergia, Osteospermum, Pennisetum, Pentstemon, Pentas, Tropaelum, Verbena</td>
</tr>
<tr>
<td>1.5” per week</td>
<td>A, B, M, N, SA, SB, SC</td>
<td>Angelonia, Argyanthemum, Begonia, Bidens, Brachyscome, Bracteantha, Coleus, Dahlia, Delphinium, Dianthus, Impatiens, New Guinea Impatiens, Ornamental Kale, Ornamental Millet, Ornamental Pepper, Otomeria, Phlox, Salvia, Santivalia, Torenia, Tradescantia, Zea</td>
</tr>
</tbody>
</table>

After September 19th, watering of the beds was reduced to 1-2 times a week, depending on the weather, meaning the total amount of water being applied per week was variable and considerably less than during the summer.

Fertilization in the Garden

All beds were top-dressed with Pro Rich® Fertilizer (14-5-5) at the rate of 1 pound N per 1000 square feet prior to planting.

Before planting, Osmocote® (14-14-14) was mixed into the media of all sun containers at a rate of 130 grams/pot.

Before planting, Osmocote® (14-14-14) was mixed into the media of the shade containers at a rate of 65 grams/pot.

After planting, Osmocote® (14-14-14) was applied to all sun beds—including the All America Selections display bed and the CSU “Best-Of” bed—at the rate of 6.4 grams/sq. ft. (suggested medium rate on label) or approximately 140 grams/variety.

Osmocote® (14-14-14) was applied to all shade beds at the rate of 3.2 grams/sq.ft. or approximately 70 grams/variety.
Greencare water soluble fertilizer (20-10-20) was dispensed through a 100 GPM Dosatron® twice a week at a rate of 200 ppm. This fertilization schedule was maintained until September 6th, which was the last day the garden was ferti-irrigated for the season.

Chelated iron (FeATURE®) was applied at the rate of 3 lbs/100 gallons to all Petunias and container Calibrachoas on July 12th and to container Petunias on July 20th.

**Maintenance of Flowers & Pinching**

<table>
<thead>
<tr>
<th>Greenhouse Maintenance</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bidens, Lobularia, Helichrysum, Torenia</td>
<td>Pinched 5/17</td>
</tr>
<tr>
<td>Calibrachoa, Petunias</td>
<td>Pinched 5/11</td>
</tr>
<tr>
<td>Combos</td>
<td>Pinched 5/11</td>
</tr>
<tr>
<td>Dahlias</td>
<td>Dead-headed 5/2</td>
</tr>
<tr>
<td>Geraniums</td>
<td>Dead-headed 4/27</td>
</tr>
<tr>
<td>Mecardonia, Scaevola, Verbena</td>
<td>Pinched 5/10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Garden Maintenance</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Dahlias</td>
<td>Dead-headed 7/3, 7/26,</td>
</tr>
<tr>
<td>Geraniums</td>
<td>Dead-headed 5/22, 7/10, 7/26, 8/29</td>
</tr>
<tr>
<td>Potted Dahlias &amp; Geraniums</td>
<td>Dead-headed 7/3, 7/26</td>
</tr>
<tr>
<td>Gerbera, Penstemon</td>
<td>Dead-headed 7/10</td>
</tr>
</tbody>
</table>

**Weed Control**

RoundUp® was applied to all beds prior to tilling in the spring, as well as a spot treatment around the edges of the beds and in the pathways as needed. Additional wood chip mulch was applied to the pathways between the beds on July 18th. Otherwise, all weeding was done by hand throughout the season.

**Pest Control in Garden**

Flea Beetles were detected on the Cleome varieties planted both in the ground and in containers. Malathion was applied at a rate of 8 tbsp/gallon on June 19th to control this insect. Later in the season, thrips and aphids were detected on the Calibrachoa varieties. Malathion was applied at a rate of 8 tbsp/gallon on August 10th to control these insects.
**Disease Control in Garden**

Due to the recent passage of new federal regulations, this year was the first year we did not fumigate with Vapam® in the fall. In previous years this was done as a preventative measure against *Xanthomonas*, which was a problem in the garden five years ago. In 2012 Zerotol was applied as soil drench prior to planting in effort to mitigate soil borne diseases. The annual garden has its own supplies and tools which are disinfected on a regular basis in order to reduce the potential spread of disease from other sites.

**Dates of Severe Weather**

This summer consisted of intense high heat that arrived early in the season and persisted throughout the trial period. Also, precipitation was below average until early July.

### Monthly Temperatures and Precipitation for Summer 2012

<table>
<thead>
<tr>
<th>Month</th>
<th>Avg. Maximum Temperature</th>
<th>Avg. Minimum Temperature</th>
<th>Precipitation (Inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>May (22(^{th}) – 31(^{st}))</td>
<td>77.8° F</td>
<td>47.0° F</td>
<td>0.69</td>
</tr>
<tr>
<td>June</td>
<td>89.6° F</td>
<td>55.7° F</td>
<td>0.61</td>
</tr>
<tr>
<td>July</td>
<td>90.3° F</td>
<td>61.7° F</td>
<td>3.11</td>
</tr>
<tr>
<td>August</td>
<td>88.2° F</td>
<td>57.4° F</td>
<td>0.03</td>
</tr>
<tr>
<td>September</td>
<td>76.8° F</td>
<td>48.6° F</td>
<td>1.33</td>
</tr>
</tbody>
</table>

*Weather information for the Annual Flower Trial Garden area provided by the Department of Atmospheric Science at Colorado State University:  [http://ccc.atmos.colostate.edu/](http://ccc.atmos.colostate.edu/)*

**Data Collection Methods**

**Plant Size**

Height and width measurements were taken twice during the growing season, July 13\(^{th}\) and August 9\(^{th}\). This was done to get a feel for the average size of the plants and each variety’s growth performance.
For consistency in bed data collection, the second plant from the front of the right row was measured; however, if that plant was noticeably smaller or larger than average on August 9th, an alternate plant was selected for measurement and the location was noted so the same plant would be measured when the second measurements were taken. Measurements were taken at the highest and widest parts of the plant, including any flowers. This may account for the decrease in height on some varieties. For containers, measurements were taken at the highest and widest parts of overall growth.

Flowering Performance

Since 2007, data on the bloom period for each variety has been taken. In presenting this data, we hope to give a feel for how long the plants were in bloom and how well they bloomed during that period of time. Data was collected on a weekly basis. Plants were evaluated by estimating the overall flowering based on four bloom stages. These stages were first bloom, few flowers, full bloom and no bloom, with full bloom meaning the stage at which the average consumer perceives the plant as being in perfect bloom. One should take into consideration the broad range between these ratings when interpreting these data. A rating of first bloom means the very first flower out of the entire plot has fully opened. A rating of full bloom means the plants were considered to be at peak bloom. If a variety started at full bloom, it means it was already in full bloom in the greenhouse before it was planted. All of this data was summarized at the end of the season. Towards the end of the season, any dead plants in the trial were not considered in the evaluation; thus, the data given always reflects the percent of live plants in bloom.

Soil Samples

Soil samples were taken from individual ground beds on July 16th and August 14th and were combined into a single sample per category for each bed. These categories were sun beds and shade beds. Samples taken from various containers in both the sun and shade areas and were combined into single samples on July 16th and August 14th.
**Soil Analysis**

<table>
<thead>
<tr>
<th></th>
<th>pH</th>
<th>E.C. mmhos/cm</th>
<th>Lime Estimate</th>
<th>% O.M.</th>
<th>NO₃-N</th>
<th>P</th>
<th>K</th>
<th>Zn</th>
<th>Fe</th>
<th>Mn</th>
<th>Cu</th>
<th>Texture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sun Containers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Loam</td>
</tr>
<tr>
<td>7/16/12</td>
<td>6.1</td>
<td>2.9</td>
<td>Low</td>
<td>32.4</td>
<td>473</td>
<td>208</td>
<td>1987</td>
<td>22.5</td>
<td>86.5</td>
<td>11.1</td>
<td>4.1</td>
<td>Loam</td>
</tr>
<tr>
<td>Sun Beds</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sandy Loam</td>
</tr>
<tr>
<td>7/16/12</td>
<td>6.8</td>
<td>0.6</td>
<td>Low</td>
<td>20.6</td>
<td>29.2</td>
<td>188</td>
<td>1148</td>
<td>28.3</td>
<td>115</td>
<td>4.7</td>
<td>4.5</td>
<td>Sandy Loam</td>
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<td>Shade Beds</td>
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<td></td>
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<td></td>
<td>Loam</td>
</tr>
<tr>
<td>7/16/12</td>
<td>6.9</td>
<td>0.8</td>
<td>Low</td>
<td>22.8</td>
<td>86.2</td>
<td>168</td>
<td>962</td>
<td>29.2</td>
<td>180</td>
<td>6.4</td>
<td>3.8</td>
<td>Loam</td>
</tr>
<tr>
<td>Sun Containers</td>
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<td></td>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td>Loam</td>
</tr>
<tr>
<td>8/14/12</td>
<td>6.1</td>
<td>1.5</td>
<td>Low</td>
<td>21.9</td>
<td>258</td>
<td>240</td>
<td>1496</td>
<td>20.9</td>
<td>131</td>
<td>10.5</td>
<td>10.0</td>
<td>Loam</td>
</tr>
<tr>
<td>Shade Containers</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Loam</td>
</tr>
<tr>
<td>8/14/12</td>
<td>6.2</td>
<td>1.1</td>
<td>Low</td>
<td>25.5</td>
<td>248</td>
<td>240</td>
<td>1432</td>
<td>36.3</td>
<td>169</td>
<td>20.2</td>
<td>10.2</td>
<td>Loam</td>
</tr>
<tr>
<td>Sun Beds</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Loam</td>
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*All elements are measured in parts/million*
**Evaluation**

The trial evaluation day was held on August 6th. Approximately 100 judges consisting of industry representatives, master gardeners, university employees and trial garden advisory committee members evaluated the plant varieties for performance using a combination of these criteria:

**Plant Quality:**
- Uniformity of plant habit
- Bushy, well-branched shape versus open and leggy
- Healthy foliage (deep green versus chlorotic, yellow leaves)
- Foliage texture
- Disease resistance

**Flower Quality:**
- Flower power (number of flowers per plant, substance and holding power)
- Flower presentation (i.e. not hidden by the foliage)
- Color uniformity
- Stable color (resistance to fading) and stable pattern (for bicolor)
- Flower size and uniformity of flowers
- Balance of color in a mixture

**Overall Presentation:**
- Overall “clean” look, versus visible spent blooms
- Fragrant flowers and/or foliage
- Good vigorous growth
- Resistance to climatic stress
- Novelty value of unique features
- Overall consumer appeal

Plant varieties were rated on a scale of 1 to 10 (1 = very poor performance; 10 = excellent performance). These numerical evaluations were used to calculate the average ratings for each variety in the trials. Participants were encouraged to circle pre-generated comments on the evaluation form, if appropriate, as well as write in any other comments and observations they had. The pre-generated comments they could choose from included: Low vigor, Vigorous plant, Few flowers, Many flowers, Uniform, Non-uniform, Unique color and Some chlorosis.

**Selection of “Best Of” Winners and other “Plants Rated As Superior”**

Ratings from all evaluators on August 6th were averaged and the top five in each class were placed on a preliminary list. A class is determined to be any group of plants in the same genus that consisted of 10 or more trial entries. The “Best Of” award was given to classes whose top-five list had ratings of at least 6.0 and one of them could be considered superior. A sub-committee of university and industry representatives revisited the garden on September 7th to review the top-five list and verify the superiority of the top rated varieties later in the season and not just on August 6th. A majority vote was taken for each class to determine the final selections for winners. “Plants Rated as Superior” was an award created to recognize other plants that deserved special recognition; especially for those plants that did not have ten varieties to make up a judging class.
## Other Information for the 2012 Trials

<table>
<thead>
<tr>
<th>Description</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of companies participating</td>
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<tr>
<td>Total number of trial entries</td>
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<td>Varieties grown in the ground</td>
<td>461</td>
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<td>Varieties grown in a container</td>
<td>403</td>
<td>40%</td>
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<td>Varieties grown in both locations</td>
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<td>Varieties propagated by seed</td>
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<td>20%</td>
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<td>Varieties propagated by cuttings</td>
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<td>Number of genera represented</td>
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<td>Number of student employees dedicated to the project</td>
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<td>Spring (part-time, 10-20 hrs/wk)</td>
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<tr>
<td>Summer (part-time, 20 hrs/wk, entire summer)</td>
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<tr>
<td>Summer (full-time, 40 hrs/wk)</td>
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<tr>
<td>Entire summer</td>
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<tr>
<td>Temporary (May 19 through June 14)</td>
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<tr>
<td>Fall (part-time, 10-15 hrs/wk)</td>
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</table>
All-America Selections®

Display Garden Varieties

Angelonia ‘Deep Pink’
Canna ‘Red F1’
Echinacea 'PowWow Wild Berry'
Echinacea 'Warm Color Shades'
Gaillardia 'Arizona Apricot'
Marigold 'Moonsong Deep Orange'
Ornamental Kale 'Glamour Red'
Osteospermum ‘Asti White’
Phlox ‘F1 Blue Shades’
Salvia coccinea 'Summer Jewel Red'
Salvia coccinea ‘Summer Jewel Pink’
Snapdragon 'Twinny Peach'
Vinca 'Jams 'N Jellies'
Viola 'Endurio Sky Blue Martien'
Viola 'Rain Blue and Purple'
Viola 'Shangri-La Marina'
Viola 'Skippy XL Plum-Gold'
Zinnia 'Double Zahara Cherry'
Zinnia 'Double Zahara Fire'
Zinnia 'Double Zahara Starlight Rose'

Trial Ground Varieties

Lobelia x speciosa ‘Red w/Purple Bronze Foliage’ (Trial)
Lobelia spec. ‘Compliment Scarlet’
Lobelia spec. ‘Fan Scarlet’
Lobelia ‘Queen Victoria’
Ornamental Pepper ‘Multi Colors’ (Trial)
Ornamental Pepper ‘Chilly Chili’
Ornamental Pepper ‘Loco’
Ornamental Pepper ‘Pretty in Purple’
Ornamental Pepper ‘Sweet Pickle’
Ornamental Pepper ‘Purple F1’ (Trial)
Ornamental Pepper ‘Black Pearl’
Ornamental Pepper ‘NuMex Centennial’
Sunflower ‘Bicolor F1’ (Trial)
Sunflower ‘Ring of Fire’
Sunflower ‘Solar Flash F1’
**2012 Best Annuals from Colorado State University**

**Best of Show** – Dahlia ‘XXL Hidalgo’ from Dummen USA

This plant brings a unique class to the garden dahlia category and was a standout without special care. The flowers are relatively large and noted for having a deep rich “butter-French” color. Flowering started early and continued strong late into the season complimented by the dark green foliage. This dahlia will add stature and glamour to the typical garden.

**Best New Variety** – Lantana ‘Luscious Berry Blend’ from Proven Winners

Besides the prolific flowering, this variety was an eye catcher due to a beautiful blend of bright flower colors. Plants had great vigor and formed a dense canopy. Another superior feature is that it produces virtually no fruit or seeds and saves its energy for a constant show of blooms.

**Best Novelty** – Tecoma ‘Bells of Fire’ from Plug Connections

This plant has a very tropical look to both the foliage and flowers. Besides the unique appearance, flowering often begins as a small plant in the greenhouse and continues throughout the summer. The blooms remind many of those on a trumpet vine. Flowers are an attractive blend of orange/red and showy.

**Best Angelonia** – ‘Carita™ Purple’ from Syngenta Flower

This Angelonia variety performed well in a container but also looked remarkable in the ground. Outstanding features included the many flowers with a deep, rich purple color on an attractive, vigorous plant with good foliage color.

**Best Argyranthemum** – ‘Everest’ from Danziger

Attractive blue/green foliage was combined with the large, white, daisy-like flowers. Blooming was strong and continued through the heat of the summer and late into the season. Plants were uniform in growth habit and slightly larger than most other Argyranthemums.

**Best Begonia boliviensis** – ‘Santa Cruz’ from Benary

This begonia surprised some since it was grown in full sun during a very hot summer and evaluators noted that it was “tougher than you think”. Not only did it survive these conditions but it thrived as evidenced by the robust, seed-grown plants and uniform growth habit. Flowering was strong through the season and blooms have a wonderful fiery shade of red/orange. Colorado’s higher light exposure makes the leaf become more “bronze” in color.

**Best Begonia x hybrida** – ‘Whopper Rose Green Leaf’ from Ball Ingenuity

The adjective “whopper” used in the name is definitely not a misnomer. Its impressive overall vigor is immediately noticeable in the large, uniform growth habit as well as the sizeable flowers. Beautiful green leaves compliment the bright, rose colored flowers. Plant growth excelled in full sun and it is reported they do just as well in shade.

**Best Calibrachoa** – ‘Superbells Lemon Slice’ from Proven Winners

Striking yellow and white bicolor pattern on the flowers is very showy even as a small plant while in the greenhouse. Prolific blooming and good vigor made it very popular with evaluators who also ranked it high for consideration for both “Best of Show” and “Best New Variety”.

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**Best Coleus** – ‘Wasabi’ from Ball FloraPlant
Bright, chartreuse foliage and vigorous growth habit make this plant a standout from across the garden. Up close, the ruffled leaf edge adds some textural interest. Vigor was impressive and it grew to be a large plant even in full sun.

**Best Combo** – ‘Kwik Kombos™ Night in Pompeii™’ Syngenta Flowers
This combo has excellent balance in all areas as no one plant dominated the other (lobelia, petunia, verbena). The striking color combination created a “mysterious, moody” appearance. A nice blend of large and small flowers makes it visually interesting as well. Growth habit is very symmetrical and flowering occurs from the center all the way to the edge throughout the summer.

**Best Dahlia** – ‘XXL Hidalgo’ from Dummen USA
This plant brings a unique class to the garden dahlia category and was a standout without special care. The flowers are relatively large and noted for having a deep rich “butter-French” color. Flowering started early and continued strong late into the season complimented by the dark green foliage. This dahlia will add stature and glamour to the typical garden.

**Best Diascia** – ‘Darla® Deep Salmon 11’ from Syngenta Flowers
Prolific blooming gave this variety an impressive canopy of salmon flowers throughout the summer despite the intense heat. Flower color remained steadfast in the full sun and flowers were relatively large.

**Best Geranium (ivy)** – ‘Grand Idols Purple’ from Fides North America
Prolific, bright flowers combined nicely with the full plants and uniform growth habit. The unique flower color was more of a rose or neon pink than purple as described in its name.

**Best Geranium (zonal)** – ‘Caliente® Fire’ from Syngenta Flowers
Impressive color dominates this plant from the rich red flowers to the unusually dark green foliage. The color contrast is striking but so is the prolific blooming and overall uniformity. It grew well despite a summer of unusually intense heat. The exceptionally good branching habit of this variety brings together its European and American breeding.

**Best Impatiens (seed)** – ‘Impreza White’ from PanAmerican Seed
The floriferous, clean white flowers on this variety made an impressive display with the dark green foliage. Growth habit and flowering was very consistent on each plant. The variety is also noted for remaining manageable in greenhouse production and its ability to hold and not stretch in the pac.

**Best Lantana** – ‘Little Lucky Pot of Gold’ from Ball FloraPlant
Plants were dark green and loaded with rich, gold flowers which created a magnificent contrast. The growth habit was very uniform. This plant was bred for borders and also makes an excellent groundcover.

**Best Lobelia** – ‘Magadi Blue’ from Selecta
Despite two weeks of unexpected temperatures near 100°F in June, flowering remained strong even late in the season on this variety. Blue flowers had a small white eye that shows well with the dark green foliage. Plants had good vigor and no dieback.
Best Marigold – ‘Christy Orange Improved’ from Ameriseed
Relatively large orange flowers were noted as being “super double” due to their high petal count. Short, compact plants with dark foliage not only contrasted nicely with the orange flowers but had the added feature of not lodging despite the overhead watering. This created a problem for some other Marigold varieties.

Best Osteospermum – ‘Serenity Dark Purple’ from Ball FloraPlant
Rich, dark purple flowers were large and very showy. Blooming continued throughout an exceptionally long, hot summer. These healthy plants were noted for having a nice, tight growth habit.

Best New Guinea Impatiens – ‘Super Sonic® Magenta 08’ from Syngenta Flowers
Beautiful rich, red flowers had blue undertones that created a unique shade of magenta. Blooms were huge and very showy. Overall growth of the plants was large but with excellent uniformity.

Best Petunia (veg-mini) – ‘Littletunia Blue Vein’ from Danziger
This plant was characterized by prolific flowers that had attractive dark veins streaking through the petal. Plants were exceptionally vigorous and enveloped the container to create a “ball made of flowers”.

Best Petunia (veg-spreading) – ‘Whispers™ Star Rose’ from Syngenta Flowers
Intense flowering resulted in blooms covering the plant so as to hardly see any foliage. Flowers were a striking combination of white flowers with a rose “star” pattern. Plants were compact early on in the greenhouse but had exceptional vigor and uniformity in outdoor trials.

Best Petunia (seed-spreading) – ‘Trilogy White’ from American Takii, Inc.
The prolific flowers had a crisp, clean white color making a striking display. Plants did not lodge and maintained a uniform, mounded growth habit. Blooms were relatively large.

Best Purslane/Portulaca – ‘Happy Trails Deep Red’ from PanAmerican Seed
Flowers had a very deep red color with double petals. Plants were vigorous, taller than most varieties, and with good foliage color.

Best Scaevola – ‘Bombay® Dark Blue’ from Syngenta Flowers
Dark blue flowers were very numerous throughout the season. Plants liked the unusually hot summer and the growth habit remained tight and uniform.

Best Sun New Guinea Impatiens – ‘Sun Harmony Salmon’ from Danziger
These plants were specifically bred for high sun tolerance and many varieties in this category looked good. Despite the strong competition, ‘Sun Harmony Salmon’ was selected as the best for abundant flowers and vigorous yet uniform plants. It was impressive when grown in either the ground or in a container.

Best Torenia – ‘Summer Wave Large Amethyst’ from Suntory Flowers, Ltd.
These robust plants had green foliage which was dark and glossy. Abundant flowers were noted for having a deep blue amethyst color that made a nice contrast with the foliage.
Best Verbena (spreading) – ‘Lanai® Deep Purple’ from Syngenta Flowers
Competition for the “Best Of” was quite intense in this category but the abundant dark purple flowers won the day for this variety. The plants were vigorous but very uniform and maintained good blooms throughout the season.

Additional “Plants Rated as Superior” for 2012

Lobularia ‘Lavender Stream’ from Danziger
This variety was a standout for its unique rich purple flower color. It was also chosen for a superior growth habit that had excellent controlled vigor. Evaluators stated that it “plays well with others” and would not overgrow other plants in a border.

Ornamental Millet ‘Jade Princess’ from Ball Ingenuity
One of the most unique and eye catching plants in the garden due to the large, fuzzy seed head. As the flower inflorescence emerges the color begins with a rich maroon and chartreuse coloring and maturing into a solid dark maroon plume. The large fluffy panicle flower emerging from the foliage brings to mind the image of a fox sneaking through tall grass. Foliage is a wide chartreuse leaf blade.

For a more complete report and photo’s of all of these winners go to www.flowertrials.colostate.edu.

For further information about the Colorado State University Annual Flower Trials, contact Jim Klett at Jim.Klett@ColoState.edu or phone 970-218-0104.