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Introduction

The W. D. Holley Plant Environmental Research Center (PERC) on the Colorado State University campus has been in operation for 37 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 Remington and Lake Streets. 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 horticulturalists and advanced Master Gardeners.

The project is funded, in most part, by the entry fees collected from the plant breeding 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. 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; Landscape Horticulture undergraduate student and 2009 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 plant and seed companies participated in the trials, entering 1,078 varieties of annual bedding plants:

<table>
<thead>
<tr>
<th>American Takii Inc.</th>
<th>Hem Genetics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ball Horticultural Co.</td>
<td>McGregor Plant Sales, Inc.</td>
</tr>
<tr>
<td>Ball FloraPlant</td>
<td>Oro Farms, Inc.</td>
</tr>
<tr>
<td>Benary Seed</td>
<td>Pacific Plug &amp; Liner</td>
</tr>
<tr>
<td>Bodger Botanicals</td>
<td>Pan American Seed Co.</td>
</tr>
<tr>
<td>Cohen Nurseries c/o Agrexco</td>
<td>Paul Ecke Ranch</td>
</tr>
<tr>
<td>Danziger Flower Farm</td>
<td>Plug Connection</td>
</tr>
<tr>
<td>Dummen USA, Inc.</td>
<td>Proven Winners</td>
</tr>
<tr>
<td>Fides North America</td>
<td>Sakata Seed America Inc.</td>
</tr>
<tr>
<td>Goldsmith Seeds</td>
<td>Selecta First Class, Inc.</td>
</tr>
<tr>
<td>Grolink</td>
<td>Syngenta Flowers, Inc.</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 very reduced cost. In addition, they also donated media for the outdoor containers.

We would like to recognize the 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 and for the quick release fertilizer that was applied to the ground beds prior to planting. And thank you to Scotts, Inc. for donating the slow release fertilizer that was also used in 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:

- Al Gerace (Welby Gardens), Allen Hammer (Dummen USA), Ann Hartman-Mahr, Celia Tannehill, Charlotte Rose (Benary Seed), Dan Gerace (Welby Gardens), Diana Reavis (Eason Horticultural Resources Inc.), Duane Sinning (Benary Seed), Eric Pitzen (Syngenta Flowers), Frank Yantorno (Center Greenhouse, Inc.), Galen Dokter (Syngenta), Gary Douglas (Denver City Park)
Greenhouse), Gene Pielin (Gulley Greenhouse), Harvey Lang (Syngenta Flowers), Jim Devereux (Michell’s), John Williams (Tagawa Greenhouses), Karl Trellinger (Syngenta Flowers), Keith Stieduahr (City of Westminster), Maria Bumgarner (Denver Botanic Gardens), Mark Sanford (S&G Flowers), Mark Seguin (Syngenta Flowers), Merle Moore (retired, Denver Zoological Gardens), Natalia Hamill (Sakata Seed), Paul Hammer (Dummen USA), Ron Brum (Ball Seed), Ross Shrigley (Denver Botanic Gardens), Stefan Reiner (Selecta First Class), Susan Stauber (Ball Seed), Wayne Pianta (PanAmerican Seed)

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 staff at the university that has worked diligently to prepare and maintain the garden. These people include:

- Undergraduate Trial Garden Coordinator: Danielle Goris
- Undergraduate Trial Garden Staff: Travis Byers, Kara Crist, Mike Honerlaw, Iris Davidson, Tyler Gettel, Guy Kuntz, Caitlin Nase, Alexander Petit, Kati Zybko
- Undergraduate PERC Staff: Kyle Bainer
- 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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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 2009 for germination and growing-on in their greenhouses in 3.5” jumbo 4-cell packs. Seed varieties were all received on June 9th 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.

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 of being watered every weekend with clear water. Greencare 14-4-14 water soluble fertilizer was used. All plants were grown in the greenhouses at PERC, with the exception of the geraniums which were grown at the University Greenhouse. They received fertilization at a rate of 200ppm. New Guinea Impatiens were fertilized at this same rate, every other time they were watered. This alternated with clear water.

Chemicals Used in the Greenhouses

Banrot® was applied to all vegetative plugs immediately after arrival and prior to potting. A drench of 6 oz/gallon was delivered to each plug tray. It was also applied a second time to all Petunia, Calibrachoa, Verbena and Osteospermum on May 8th mainly due to a problem with crown rot found on some Osteospermum.

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

April 16th: B-9® was applied to all Petunia and Calibrachoa in greenhouse at a rate of 1.1 grams/gallon.

April 21st: Insecticidal soap was spot sprayed on specific areas in House 1 to control aphids.

April 29th: Insecticidal soap was spot sprayed on specific areas in House 1 and 2 to control aphids.

April 30th: Cycocel® was applied to geraniums at a rate of 1 oz/gallon. B-9® was applied to all Petunia and Calibrachoa in greenhouse at a rate of 1.1 grams/gallon.

May 8th: Marathon II was applied for aphids throughout the PERC greenhouse.

May 11th: Cycocel® (1 oz/gallon) was applied to geraniums as per request by trial companies.

May 12th: B-9® was applied to all Petunia and Calibrachoa in greenhouse at a rate of 1.1 grams/gallon.

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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. In 2009, 1-2” of new media with organic matter was added to most of the beds except those that were recently fumigated in the fall 2008 (K, L, M, N) and those that had plants remaining from the Cool Season Crop trial (G, H, I). These 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 Banrot® was sprinkled over the remaining soil and watered in. The containers were then re-filled with fresh, new media obtained from Welby Gardens.

Planting

Plants are grown either in the sun or under our shade structure that provides approximately 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 27th, 29th and June 11th. The remainder of plants were planted by the garden staff on June 4th, 12th, 15th, 17th and 24th.

Bed Spacing

This year, two new sun beds were constructed due to the movement of some sun containers to the west side of the University Center for the Arts. Due to the decrease in bed entries in 2009, many sun and shade plants were spaced a little further apart between varieties. All entries were spaced at 12” within the same variety. Lantana and Portulaca were spaced at 33” between the varieties. Calibrachoa, Geranium (Exotic, Ivy, Seed and Zonal), Verbena, Salvia and Sun Coleus were planted at 36” spacing between the varieties. Petunias were spaced at 46” between the varieties. All other varieties in sun beds were spaced 24” between varieties. All varieties in shade beds had more space between varieties in order to utilize all the bed space. Begonia and New Guinea Impatiens were spaced at 36” between the varieties. Coleus and seed/trailing Impatiens were spaced at 48” between the varieties. Again, all plants were spaced at 12” within the variety in the row.
**Watering**

Plants were watered on an “as needed” basis while in the greenhouses. All plants were thoroughly hand watered after being planted outside in the garden or in a container. Containers were irrigated twice a day (depending on rain), every day, for about the first two weeks after planting and then once 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 were watered 2 times a week for varying amounts of time. Species were grouped into beds with other species that shared similar watering requirements. All beds in the garden were zoned according to weekly water-use requirements of 0.5”, 1.0” and 1.5” of water per week. An irrigation audit was conducted at the beginning of the season to determine the irrigation rate per bed. This rate, along with the bed’s water-use rating, was used to calculate the total length of time to irrigate each bed. Because of the amount of precipitation in June, the irrigation was sometimes decreased depending on how much water the individual beds needed.

<table>
<thead>
<tr>
<th>Water-use Rating</th>
<th>Ground Beds</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5” per week</td>
<td>C, D, E, F and G</td>
</tr>
<tr>
<td>1.0” per week</td>
<td>J, K, L, M, N</td>
</tr>
<tr>
<td>1.5” per week</td>
<td>A, B, H, I, SA, SB and SC</td>
</tr>
</tbody>
</table>

After September 21st, watering of the beds was reduced to one cycle 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.

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 10 grams/sq. ft. (suggested medium rate on label).

Osmocote® (14-14-14) was also applied to all sun containers at a rate of 130 grams/pot. Osmocote® was not applied to the shade beds or containers.

Greencare water soluble fertilizer (20-10-20) was dispensed through a 100 GPM Dosatron® twice a week at a rate of 200 ppm. A leak in a frost-free hydrant in mid-June required repairs from CSU Facilities. Unfortunately, they turned off a valve that sent the fertilized irrigation to the sun containers. This problem was not discovered until mid-July. After July 21, Greencare’s 20-10-20 fertilizer formulation was used at the rate of 300 ppm for container fertilization.
This fertilization schedule was maintained until September 1st, which was the last day the garden was ferti-irrigated for the season.

Chelated iron (FeATURE® 6-0-0, 10% Fe) was applied at the rate of 3 lbs/100 gallons to all Calibrachoas in the ground and in pots, and to mini-spaying Petunias in the pots on July 10th. Chelated iron was applied to all Calibrachoas in the ground for a second time on July 24th.

**Maintenance of Flowers**

Plants were pinched and dead-headed as needed in the greenhouse prior to outdoor planting.

**Dead-heading in the garden:**

<table>
<thead>
<tr>
<th>Plant</th>
<th>Location</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argyranthemum</td>
<td>in container</td>
<td>June 23, July 27, August 14, 28</td>
</tr>
<tr>
<td>Dahlia</td>
<td>all</td>
<td>June 25, July 15, 28, August 14</td>
</tr>
<tr>
<td>Dianthus</td>
<td>in ground</td>
<td>July 24, August 14</td>
</tr>
<tr>
<td>Geranium</td>
<td>all</td>
<td>June 18; July 17, 28; August 11, 26</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 on July 10. Additional wood chip mulch was applied to the pathways between the beds on July 23rd. Otherwise, all weeding was done by hand throughout the season.

**Pest Control in Garden**

July 8th – Cleome, Guara and Oenothera were sprayed for flea beetles with a mixture of Marathon II® at 0.5ml/gal and Pyreth-It® at 0.5 tsp/gal. There were no other major or minor pest problems.

**Disease Control in Garden**

Beds K, L, M and N were fumigated with Vapam® last fall as a preventative measure against *Xanthomonas*, which was a slight problem in the garden in 2006. The garden has its own supplies and tools in order to reduce the potential spread of disease from other sites.
**Dates of Severe Weather**

The month of June had more rain than normal and was the second wettest June ever recorded for Fort Collins. On June 7th, the garden suffered a large hail storm (nickel to quarter size) causing severe damage to many of the vegetative trials which had been recently planted. The seed propagated varieties, which had not yet been planted, escaped damage. Varieties damaged by hail are noted as such in a column next to their name in the inventory that follows in this book. There were three smaller hail storms after that as well, all in the month of June. On July 20, a heavy downpour of 1-2 inches of rain fell in less than an hour. Water rose 10 inches on some varieties since the drain could not handle this amount of rainfall in such a short period of time. August and September weather was fairly typical for this region.

**Note**

Calibrachoa grown in containers and Verbena grown in the ground recovered quicker than most other damaged plants in about two weeks following the severe hail storm on June 7, 2009.

**Monthly Temperatures and Precipitation for 2009**

<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 (27th – 31st)</td>
<td>78.1°F</td>
<td>44.8°F</td>
<td>0.08</td>
</tr>
<tr>
<td>June</td>
<td>76.2°F</td>
<td>51.3°F</td>
<td>5.03</td>
</tr>
<tr>
<td>July</td>
<td>83.5°F</td>
<td>56.6°F</td>
<td>3.95</td>
</tr>
<tr>
<td>August</td>
<td>83°F</td>
<td>54.2°F</td>
<td>0.22</td>
</tr>
<tr>
<td>September</td>
<td>77°F</td>
<td>48°F</td>
<td>0.67</td>
</tr>
</tbody>
</table>

*Weather information for the Fort Collins area provided by the Colorado State University at: [http://ccc.atmos.colostate.edu/cgi-bin/summary.pl](http://ccc.atmos.colostate.edu/cgi-bin/summary.pl)
Data Collection Methods

Plant Size
Height and width measurements were taken twice during the growing season, August 6th and September 8th. 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 third plant from the front of the left row was measured; however, if that plant was noticeably smaller or larger than average on August 6th, 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 the container as a whole.

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 bloom quality 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 June 15th, July 29th and August 24th 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 June 15th, July 29th and August 24th. A separate soil sample was also taken from beds A & B on June 15th and August 24th. These beds had containers on them in previous years. A sample from the AAS bed was taken on July 29th.
<table>
<thead>
<tr>
<th>Bed</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 Beds 6/15/09</td>
<td>6.9</td>
<td>0.8</td>
<td>High</td>
<td>28.5</td>
<td>45.8</td>
<td>194</td>
<td>724</td>
<td>30.1</td>
<td>142</td>
<td>7.4</td>
<td>5.7</td>
<td>Loam</td>
</tr>
<tr>
<td>Sun Beds 7/29/09</td>
<td>6.9</td>
<td>0.6</td>
<td>High</td>
<td>17.5</td>
<td>63.3</td>
<td>274</td>
<td>1070</td>
<td>40.8</td>
<td>202</td>
<td>14.3</td>
<td>9.7</td>
<td>Loam</td>
</tr>
<tr>
<td>Sun Beds 8/24/09</td>
<td>6.4</td>
<td>1.3</td>
<td>Low</td>
<td>20.3</td>
<td>158</td>
<td>247</td>
<td>825</td>
<td>34.2</td>
<td>152</td>
<td>4.7</td>
<td>5.7</td>
<td>Loam</td>
</tr>
<tr>
<td>Sun Containers 6/15/09</td>
<td>7.4</td>
<td>0.4</td>
<td>Medium</td>
<td>34.8</td>
<td>0.1</td>
<td>49.8</td>
<td>552</td>
<td>16.5</td>
<td>53.7</td>
<td>13.6</td>
<td>33.5</td>
<td>Loam</td>
</tr>
<tr>
<td>Sun Containers 7/29/09</td>
<td>6.6</td>
<td>0.6</td>
<td>Low</td>
<td>16.2</td>
<td>84.0</td>
<td>101</td>
<td>485</td>
<td>17.7</td>
<td>91.3</td>
<td>14.1</td>
<td>37.2</td>
<td>Loam</td>
</tr>
<tr>
<td>Sun Containers 8/24/09</td>
<td>5.0</td>
<td>1.3</td>
<td>Low</td>
<td>5.8</td>
<td>280</td>
<td>116</td>
<td>651</td>
<td>20.7</td>
<td>107</td>
<td>24.9</td>
<td>34.2</td>
<td>Loam</td>
</tr>
<tr>
<td>New Sun Container Area 7/29/09</td>
<td>7.1</td>
<td>0.5</td>
<td>Low</td>
<td>19.1</td>
<td>30.0</td>
<td>94.8</td>
<td>644</td>
<td>20.8</td>
<td>84.3</td>
<td>20.5</td>
<td>44.1</td>
<td>Loam</td>
</tr>
<tr>
<td>Shade Beds 7/29/09</td>
<td>7.2</td>
<td>0.5</td>
<td>Medium</td>
<td>23.8</td>
<td>52.2</td>
<td>250</td>
<td>778</td>
<td>39.8</td>
<td>219</td>
<td>23.6</td>
<td>8.8</td>
<td>Loam</td>
</tr>
<tr>
<td>Shade Beds 8/24/09</td>
<td>6.8</td>
<td>0.7</td>
<td>Medium</td>
<td>24.8</td>
<td>117</td>
<td>214</td>
<td>923</td>
<td>41.5</td>
<td>171</td>
<td>8.5</td>
<td>4.5</td>
<td>Loam</td>
</tr>
<tr>
<td>Shade Containers 6/15/09</td>
<td>7.4</td>
<td>0.6</td>
<td>Medium</td>
<td>34.5</td>
<td>0.3</td>
<td>102</td>
<td>583</td>
<td>15.9</td>
<td>53.3</td>
<td>17.3</td>
<td>32.3</td>
<td>Loam</td>
</tr>
<tr>
<td>Shade Containers 7/29/09</td>
<td>6.7</td>
<td>0.4</td>
<td>Low</td>
<td>3.3</td>
<td>42.3</td>
<td>69.8</td>
<td>416</td>
<td>16.7</td>
<td>80.5</td>
<td>19.1</td>
<td>37.6</td>
<td>Loam</td>
</tr>
<tr>
<td>Shade Containers 8/24/09</td>
<td>6.7</td>
<td>0.5</td>
<td>High</td>
<td>7.9</td>
<td>32.1</td>
<td>84.8</td>
<td>515</td>
<td>17.2</td>
<td>85.8</td>
<td>9.8</td>
<td>30.9</td>
<td>Loam</td>
</tr>
<tr>
<td>Beds A&amp;B 6/15/09</td>
<td>7.4</td>
<td>0.6</td>
<td>High</td>
<td>19.9</td>
<td>28.2</td>
<td>242</td>
<td>772</td>
<td>28</td>
<td>273</td>
<td>13.2</td>
<td>8.1</td>
<td>Loam</td>
</tr>
<tr>
<td>Beds A&amp;B 8/24/09</td>
<td>7.0</td>
<td>0.9</td>
<td>Very High</td>
<td>14.6</td>
<td>36.8</td>
<td>247</td>
<td>752</td>
<td>24.3</td>
<td>243</td>
<td>5.9</td>
<td>6.8</td>
<td>Loam</td>
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<tr>
<td>AAS Beds 7/29/09</td>
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<td>0.5</td>
<td>High</td>
<td>19.4</td>
<td>38.6</td>
<td>284</td>
<td>757</td>
<td>36.5</td>
<td>331</td>
<td>17.3</td>
<td>12.4</td>
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</table>
Evaluation
The trial evaluation day was held on August 4th. 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 5 (1 = very poor performance; 5 = 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 4th 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 3.0 and one of them could be considered superior. A sub-committee of university and industry representatives revisited the garden on September 4th to review the top-five list and verify the superiority of the top rated varieties later in the season and not just on August 4th. 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 class.
**Other Information for the 2009 Trials**

Number of companies participating..................................................................................22

Total number of trial entries..........................................................................................1,076

<table>
<thead>
<tr>
<th>Variety Type</th>
<th>Number</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Varieties grown in the ground</td>
<td>492</td>
<td>46%</td>
</tr>
<tr>
<td>Varieties grown in a container</td>
<td>420</td>
<td>39%</td>
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<td>Varieties grown in both locations</td>
<td>164</td>
<td>15%</td>
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<tr>
<td>Varieties propagated by seed</td>
<td>257</td>
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<td>Varieties propagated by cuttings</td>
<td>819</td>
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Number of genera represented..................................................................................82

Number of student employees dedicated to the project

<table>
<thead>
<tr>
<th>Time Frame</th>
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<tr>
<td>Spring (part-time, 10-20 hrs/wk)</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 18 through June 12)</td>
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</tr>
<tr>
<td>Fall (part-time, 10-15 hrs/wk)</td>
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## All-America Selections®

<table>
<thead>
<tr>
<th><strong>Display Garden Varieties</strong></th>
<th><strong>Trial Ground Varieties</strong></th>
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</thead>
<tbody>
<tr>
<td>Celosia ‘Fresh Look Yellow’</td>
<td>Agastache ‘Bronze Foliage’</td>
</tr>
<tr>
<td>Dianthus ‘Supra Purple’</td>
<td>Begonia hybrid ‘Encore Rose’</td>
</tr>
<tr>
<td>Diascia ‘Diamonte Coral Rose’</td>
<td>Begonia hybrid ‘BIG Rose Bronze Leaf’</td>
</tr>
<tr>
<td>Gaillardia aristata ‘Arizona Sun’</td>
<td>Begonia hybrid ‘Dragonwing Pink’</td>
</tr>
<tr>
<td>Gaillardia ‘Mesa Yellow’</td>
<td>Begonia hybrid ‘F1 Rose’</td>
</tr>
<tr>
<td>Nicotiana ‘Perfume Deep Purple’</td>
<td>Celosia plumosa ‘Castle Pink’</td>
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<td>Ornamental Pepper ‘Black Pearl’</td>
<td>Celosia plumosa ‘Fresh look Red’</td>
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<tr>
<td>Osteospermum ‘Asti White’</td>
<td>Celosia plumosa ‘Century Rose’</td>
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<tr>
<td>Petunia ‘Opera Supreme Pink Morn’</td>
<td>Celosia plumosa ‘Rose’</td>
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<tr>
<td>Salvia farinacea ‘Evolution’</td>
<td>Echinacea ‘Deep Rose’</td>
</tr>
<tr>
<td>Snapdragon ‘Twinny Peach’</td>
<td>Gaillardia ‘Apricot Shades’</td>
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<tr>
<td>Vinca ‘First Kiss Blueberry’</td>
<td>Gazania ‘F1 Kiss Rose’</td>
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<tr>
<td>Vinca ‘Pacifica Burgundy Halo’</td>
<td>Gazania ‘Sunshine Mix’</td>
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<tr>
<td>Viola ‘Rain Blue and Purple’</td>
<td>Gazania ‘F1 Kontiki Rose’</td>
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<td>Viola ‘Skippy XL Plum-Gold’</td>
<td>Gazania ‘Burgundy/Lavender’</td>
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<td>Viola ‘Skippy XL Red-Gold’</td>
<td>Marigold ‘F1 Deep Orange’</td>
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<td>Zinnia ‘Magellan Coral’</td>
<td>Petunia spreading ‘F1 Rambling Pink’</td>
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<td>Zinnia ‘Zowie! Yellow Flame’</td>
<td>Petunia spreading ‘Easy Wave Pink’</td>
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<td>Zinnia ‘Zahara Starlight Rose’</td>
<td>Petunia spreading ‘Plush Deep Pink’</td>
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<td></td>
<td>Petunia spreading ‘Trailing Vivid Rose Pink’</td>
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<td>Vinca ‘First Kiss Blueberry’</td>
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<td>Vinca ‘F1 Viper Purple’</td>
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<td>Vinca ‘Victory Blue’</td>
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<td></td>
<td>Vinca ‘Purple’</td>
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2009 “Best Of…” Winners

**Best of Show** – Bracteantha ‘Strawburst Yellow’ from Syngenta Flowers
Touted by the breeder as having superior genetics, this variety survived the rigorous evaluation process to be selected as “Best of Show” due to its outstanding appearance all summer long. Large, bright yellow flowers are extremely prolific and created a long lasting show. This standout was the only vegetative variety in the garden that remained in good shape after a devastating hail storm decimated the garden in June. Blooms were noted for growing above the foliage. This strawflower loved the heat and can take a light frost. It looked great both in the ground and in containers.

**Best New Variety** – Gomphrena 'Fireworks' from PanAmerican Seed
Appropriately named ‘Fireworks’, this plant reached for the sky! With impressive (yet uniform) vigor, this plant makes a great temporary hedge. The hot pink-purple flowers also fit the ‘Firework’ name in that the blooms start out fairly round and then develop a multi-dimensional look by turning into a cluster of small globes that stretch outward as they grow. Bright yellow anthers add to the name as they create the appearance of small explosions leaping from the flowers.

**Novelty** – Alternathera 'Red Thread' from GroLink
This plant was a standout without even having a flower! Grown for its dense, colorful foliage, ‘Red Thread’ created a very uniform overall appearance. The long thin leaves were so dense that it created a fuzzy appearance. The bi-color leaf is dark red underneath and a dark green on top. It is a great addition for mixed containers or mounding over the edge of a wall planting.

**Best Angelonia** – ‘Angelmist Deep Plum Improved’ from Ball FloraPlant
The prolific flowers had a deep, rich purple color that continued throughout the summer and into September. Plants were vigorous and were not affected by the summer heat.

**Best Argyranthemum** – ‘Madeira Red’ from Ball FloraPlant
Noted for its bold red flowers, this variety also impressed the evaluators with a strong bloom in summer and with many blooms throughout the early fall. The plant had an excellent mounded uniform growth habit.

**Best Bacopa** – ‘Bahia Lavender’ from Red Fox by Dummen USA
These vigorous plants were covered with soft lavender flowers making an attractive presentation as it trailed over the edge of the container. The flowers were also relatively large and interspersed throughout the plant and not just on the ends.

**Best Begonia (hybrid)** – ‘Solenia Apricot’ from Paul Ecke Ranch
Abundant flowers had a very attractive apricot-colored glow. Glossy dark foliage adds to the overall appearance. The long lasting blooms and vigorous growth habit gave it both good garden and landscape use.
Best **Begonia (wax)** – ‘Coco White’ from Bodger Botanicals
The numerous double, white flowers sit atop dark foliage and resemble frothy cream on top of a mug of coffee. The color contrast between flowers and foliage was especially attractive. The double flowers create a unique texture when compared to other wax begonias. Plants were vigorous and pest free.

Best **Calibrachoa** – ‘MiniFamous Pink’ from Selecta First Class
This variety had clear deep pink flowers that were very abundant and bloomed throughout the plant, not just on the ends. Flowers were a bright fluorescent color and shimmered in the sunlight. The mounding plants had great vigor and exhibited no chlorosis.

Best **Coleus** – ‘Colorblaze Dark Star’ from Proven Winners
The foliage was impressive with a strong dark chocolate color that had no bleaching despite being planted in full sun. It was also noted for having almost no flowering. Plants displayed great vigor and were extremely uniform.

Best **Dahlia** – ‘Dark Angel Dracula’ from GroLink
Bold, rosy wine colored flowers combined with dark foliage created a very unique visual appearance. Plants had a very uniform, compact growth habit.

Best **Dianthus** – ‘Polar Coral’ from American Takii, Inc.
This variety was just one of the ‘Polar’ series that was noted for a good range of flower color. ‘Polar Coral’ had great flower power and bloomed throughout the summer with a solid canopy of coral blooms at its peak. Growth habit was very uniform which added to an attractive overall appearance.

Best **Geranium (interspecific)** – ‘Caliente Orange’ from Syngenta Flowers
Another plant with impressive flower power, this variety had abundant orange blooms covering the top of each plant. The great orange color combined very well with the dark green foliage. Both plants and blooms had excellent uniformity.

Best **Geranium (ivy)** – ‘Pacific Violet’ from Red Fox by Dummen USA
Compact, uniform plants were very floriferous and showy with semi-double blooms. Plants had clean foliage with no disease or insect problems.

Best **Geranium (seed)** – ‘Pinto White’ from Syngenta Flowers
Strong, healthy plants produced abundant flowers that were also relatively larger than most geraniums. Besides the exceptional vigor, blooms were a clear, bright white.

Best **Geranium (zonal)** – ‘Americana Dark Red’ from Syngenta Flowers
The flower petals had a very attractive rich red color that made this variety standout. The vigorous plants produced many flowers but also maintained a uniform overall appearance. This variety has been in the trial for several years and is consistently a good performer.

Best **Impatiens (double)** – ‘Fiesta Ole Purple’ from Ball FloraPlant
Plants were a model of controlled vigor and uniformity with an excellent mounding growth habit. Flowers were numerous and buds were still forming even into September. It would work well in both the ground and baskets.

Best **Impatiens (New Guinea)** – ‘Tamarinda Shocking Pink’ from Fides North America
This variety maintained strong flower power which was better than any other New Guinea in the trial. Flowers were above the foliage for optimum show on very uniform plants.
**Best Impatiens (seed)** – ‘Super Elfin XP Rose Improved’ from PanAmerican Seed
Flowers were abundant all summer long and were still creating new buds in September. Flowers were especially showy with a vibrant rose color on very uniform plants.

**Best Impatiens (trailing)** – ‘Fanfare Bright Coral’ from Ball FloraPlant
This impatiens was noted for doing well in both shade and full sun. In both locations, this variety had a uniform growth habit with compact branching. Flowers were very numerous and the color was a unique shade of coral.

**Best Ipomoea** – ‘Sidekick Black Heart’ from Syngenta Flowers
This variety had excellent vigor yet maintained a controlled growth habit that did not spread like many similar varieties. The attractive heart shaped leaves were a nice purple-black color.

**Best Lantana** – ‘Bandana White’ from Syngenta Flowers
Picture perfect uniformity was the main characteristic of this variety. The mounding plants were covered with ivory colored flowers all season long.

**Best Lobelia** – ‘Techno Heat Upright Light Blue’ from Syngenta Flowers
This plant rated high in both the ground and in containers. Besides being very floriferous, it kept blooming late into the season. Plants had superior vigor with no dieback.

**Best Osteospermum** – ‘Margarita Yellow’ from Fides North America
Abundant flowers and a unique bright yellow flower color on the upper surface of the petals and dark shading on the lower surface made a great aesthetic combination. Later in the season it garnered admiration for resistance to disease that affected many of the other Osteospermum in the trial. Flowering was strong late into the season.

**Best Petunia (mini-spreading)** – ‘Littletunia White Grace’ from Danziger
This winner was chosen for exceptional performance in both the container as well as the ground. The clean, dark green foliage contrasted nicely with the abundant white flowers. The growth habit was compact, dense and very uniform which lead to a superior overall appearance.

**Best Petunia (seed)** – ‘Plush Deep Pink’ from Syngenta Flowers
This variety was selected for a winning combination of clean, bright blooming pink flowers and a nice uniform, mounding growth habit. Plants maintained a good appearance with an even distribution of blooms throughout the plant.

**Best Petunia (spreading)** – ‘Supertunia Vista Silverberry’ from Proven Winners
This was one of the few plants in the garden that people noticed from a long distance. The flower power was amazing along with the plant vigor. The mounding growth habit rose above the surrounding varieties. Flowers have dark veins and a unique silvery color which were resistant to rain and overhead irrigation.

**Best Salvia farinacea** – ‘Velocity Blue’ from Syngenta Flowers
Deep blue flowers were abundant on every plant. Plants began flowering early and maintained their appearance for a long bloom period with no deadheading required. Beside the showy display of blue flowers, the plants were exceptional due to their uniform and compact habit.
**Best Verbena** – ‘Rapunzel Lilac’ from Syngenta Flowers
This was a strong consistently blooming plant with a clean and uniform overall appearance. Lilac flowers were layered throughout the plant. The finely cut foliage combined with the flower color created a delicate look.

**Best Vinca** – ‘Pacifica Burgundy Halo’ from PanAmerican Seed
Plants were very floriferous with attractive burgundy flowers that had a white eye. The overall uniformity of the plant was excellent. This variety also remained disease free despite an unusually wet period early in the summer.

**Best Zinnia** – ‘Profusion Coral Pink’ from Sakata Seed America
This plant is appropriately named considering the profuse soft pink flowers. It was noted for its unique shades of pink as it aged which added to it overall attractiveness. The lack of powdery mildew late in the season added to its overall good performance.

**Additional “Plants Rated as Superior” for 2009**

**Ageratum ‘Patina Purple’ from Syngenta Flowers**
This variety was acclaimed for its solid canopy of flowers and plants that held their shape. It required no deadheading and seemed to love the heat.

**Cleome ‘Senorita Rosalita’ from Proven Winners**
Prolific blooming and attractive growth habit were the outstanding features of this variety. Plants were well branched and had controlled vigor. It tolerated the summer heat and maintained clean foliage all season. This plant would make an attractive temporary hedge.

**Delphinium ‘Diamonds Blue’ from PanAmerican Seed**
The smaller plant size (~18” tall), good branching and plants that didn’t lodge were some of the qualities that set this apart from the crowd. At its peak in early September, the abundant blooms captured attention with its vibrant blue color.

**Lobularia ‘Snow Princess’ from Proven Winners**
This variety kept flowering strong all season – even through the summer heat. The bright white flowers were very fragrant on vigorous plants with a uniform, spreading growth habit.