Calibrachoa xhybrida - New Crop Summary & Recommendations

By Brian Jensen

2012

Series: New Floricultural Crops: Formulation of Production Schedules for Wild, Non-domesticated Species

Part of the requirements for
Horticultural Science 5051: Plant Production II
University of Minnesota

Brian Jensen
HORT 5051
New Crop Assignment: Calibrachoa
April 2010

Calibrachoa xhybrida, selection 20080512x2 and 20080512x3.

Taxonomy.

- Scientific Name (genus, species, subspecies): Calibrachoa xhybrida
- Common Name(s): Million Bells, Superbells, Mini Petunia, Trailing Petunia
- Family: Solanaceae

Geographic Distribution.

- Continent(s):
  South America
  North America (*Calibrachoa parviflora)*

- Country(-ies):
  Calibrahcoa humilis is native to Southern Brazil, west to Peru and Chile.
  Calibrachoa parviflora is native to United States, Mexico.

- Latitudinal Range(s):
  In South America, *Calibrachoa humilis* is roughly between 15 and 30 degrees south.

  In North America, *Calibrachoa parviflora* is roughly between 20 and 35 degrees north.

- General Climactic Conditions:
  Grows in warm, moist to moderately dry environments.

- Tendency to naturalize or become invasive:
  C. parviflora has been shown to naturalize in Florida.

Native Habitat.

- Habitat:
  Calibrachoa is shown to be drought-tolerant. It grows best in moist, organically-rich soils in full sun; it will grow in light shade, but produces fewer flowers.

  While petunias often decline in summer heat, Calibrachoa typically remains vigorous.

  Calibrachoa parviflora (seaside petunia) is becoming naturalized in portions of Florida, although it is not native to North America (Atlas of Florida Vascular Plants).

Taxonomic Description.

- Overall Plant Habit/Description:
  Mounding/trailing habit
  Grows to height of 3-9 inches; spreads 6-24 inches.
  Fine-textured foliage

- Root System Type:
  Calibrachoa has a fibrous root system.

- Leaves:
  Leaves are simple round-oblong. They are arranged in an alternate pattern before flowers develop, then become opposite.

- Flower:
  1" wide bell-shaped flowers in a wide range of colors, including violet, blue, pink, red, magenta, yellow, bronze, and white.

- Season of Bloom:
  Late spring-fall (May-October). Will even continue blooming when temperatures fall into the 20s F.

- Other uses:
  Used most commonly as a container/ hanging basket plant, although in hardy ranges it can be used as a perennial landscape plant.

- Additional Notes:
  Its drought-tolerance and no need for deadheading makes calibrachoa a relatively low-maintenance crop.

Name and Description of Varieties/Cultivars on the Market.

'Lirica Showers' series
'Million Bells' series – first series on the market
'Terracota' series
'Starlette' series
'Colorburst' series
'Superbells' series
'Callie' series – well-branched

Propagation Method(s).

- Vegetative vs. Seed:
  Vegetative propagation is standard, as most cultivars produce very little seed

- If veg., plant tissue source(s):
  Ball Horticultural Company

- If veg., proposed propagation method(s) & temperatures:
  Use a well-drained medium with an EC of 0.75 to 0.80 mmhos.
  Over-application of mist should be avoided.
  When rooting cuttings, constant temperatures between 20 and 23 degrees C are optimal.
  Apply up to 2500 ppm IBA or 500 ppm NAA to improve rooting uniformity.
  As roots develop, fertilize with 150 to 200 ppm N CLF.
  Once roots have developed, the medium should not remain saturated.

Product Specifications.

- Crop Ideotype (the ideal phenotype that a marketable cultivar will possess)
  Flowers that open/remain open on cloudy days
  Able to grow in higher pH regimes

Market Niche—Identification & Justification.

- Target sales date(s):
  It is grown primarily for spring and early summer sales (Mother's Day weekend), but its cold tolerance also makes it a good candidate for late summer/early fall sales.

- Programmability, i.e. could this be forced year-round:
  Calibrachoa could be forced year round. It is a facultative long-day plant; therefore, additional indoor supplemental lighting may be necessary for late-season production.

- Crops with which this will compete in the market:
  Its mounding/trailing habit may compete with other mounding/trailing plants such as petunia and verbena.

- Will this ever be a major crop (why or why not):
  Its flower power and drought tolerance have helped to make this a major crop.

- What will be the initial crop limitations/problems:
  Calibrachoa is very susceptible to nutrient deficiencies due to elevated pH levels. In excessively wet soils, root rot can devastate a crop.

- Is this product already identifiable to the growers & consumers:
  It is not yet identifiable to most customers by name, although many customers will recognize it when they see it.

Anticipated Cultural Requirements.

- Winter Hardiness (USDA Zones):
  Zone 9-11

- Heat/Drought Tolerance:
  Calibrachoa is known to be heat and drought tolerant.

- Temperature (day/night):
  Day temperatures: 21-24 degrees C
  Night temperatures: 10-14 degrees C
  Temperatures higher than this may cause unwanted stretch and poor branching.

- Light quantity, quality, duration; photoperiod response:
  5000-8000 foot candles
  Low light levels may cause unwanted stretching.
  Long days promote better flowering.

- Nutrition:
  Calibrachoa are heavy feeders. A fertilizer with 250-300 ppm N CLF should be used. Additional iron should be supplemented to avoid chlorosis. If high salt levels build up, clear water should be used every third watering.

- Soil:
  Calibrachoa requires a well-drained medium with a pH of 5.4-5.8.
  pH should be tested every 14 days or when early signs of elevated pH become evident. To lower pH, an acidic feed or drench of chelated iron can be applied.

- Plant growth regulators:
  Starting two weeks after transplanting, one or more applications of 1500-3000 ppm B-9 can be used to control stretch. 20-50 ppm A-Rest, 20-30 ppm Sumagic, and/or 3-9 ppm Bonzi can also be used. PGR use can delay flowering by 1 to 2 weeks; therefore, they should not be applied after VBD has been reached.

- Container size (through entire production cycle):
  From rooted cuttings, Calibrachoa can be grown in 4" pots (1 plant/pot), 6" pots (1-3 plants/pot, or 10-12" containers (4-5 plants/pot).

- Disease Resistance/Susceptibility:
  Calibrachoa is susceptible to a number of diseases and pests, such as Gray Mold (*Botrytis cinerea & paeoniae*), root rot, leaf spots, and slugs. Cloudy days with wet weather tends to cause delayed flowering. Flowers close on cloudy days and at night.

Complete Production Schedule (from cuttings).

Weeks from Receiving Cuttings	Unrooted	Pre-Rooted
0	Apply up to 2500 ppm IBA to cuttings	
1		Apply 1500 ppm B-9/ 20 ppm A-Rest/ 3 ppm Bonzi
2		
3	Ready to transplant in 24-28 days	Apply up to 3000 ppm B-9/ 50 ppm A-Rest/ 9 ppm Bonzi
4	Apply 1500 ppm B-9/ 20 ppm A-Rest/ 3 ppm Bonzi	
5		
6	Apply up to 3000 ppm B-9/ 50 ppm A-Rest/ 9 ppm Bonzi	Finished 4" pot: 6-9 weeks
7		Finished 6" pot: 7-11 weeks
8		Finished 10-12" container: 8-12 weeks
9	Finished 4" pot: 9-13 weeks	
10	Finished 6" pot: 10-15 weeks	
11	Finished 10-12" container: 11-16 weeks	
12		
13		
14		
15		
16		

Needs Assessment for Genetic Improvement

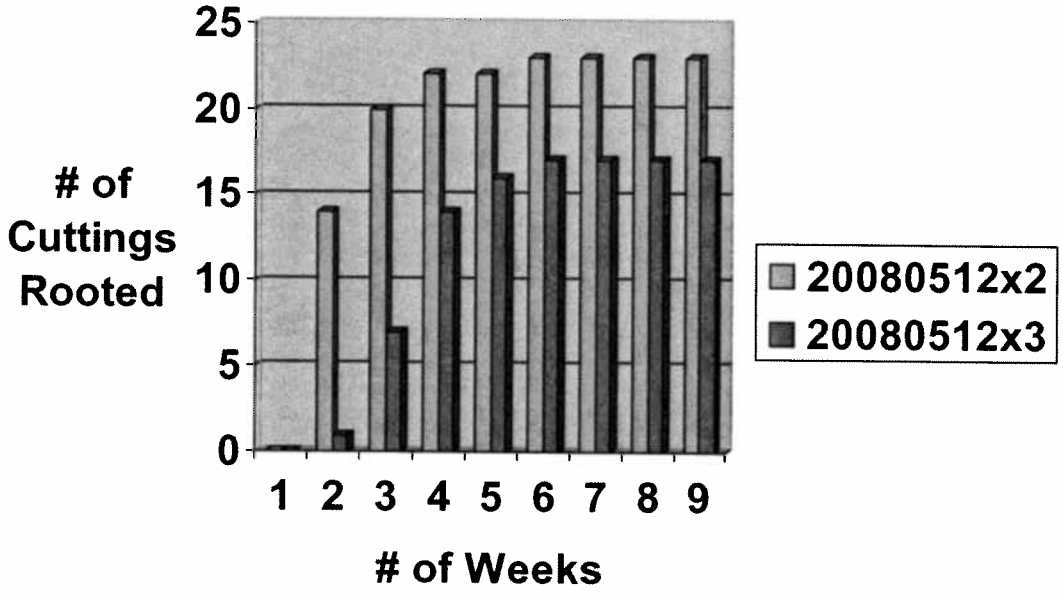
Based on the sensitivity of existing hybrids to elevated pH, future hybrids should be selected for tolerance of high pH.

Summary of my Experimental Procedures/Data

- 50 cuttings each for selections 20080512x2 and 20080512x3 were taken from stock plants on March 8.
- Cuttings were generally between 1.5 and 2 inches long. Existing flowers and flower buds were removed.
- Cuttings were treated with 2500 ppm IBA in talc. Cuttings were rooted in medium-grade vermiculite in two 72 trays.
- Trays were placed under mist in B-2.
- Rooting data was taken on a weekly basis.
- Once cuttings had rooted, each was transplanted into a 606 cell tray filled with Sunshine Professional Growing Mix.

Total Number of Rooted Cuttings, by Week		
Weeks from taking cuttings	**20080512x2**	**20080512x3**
1		0
2	4	1
3	14	7
4	20	14
5	22	16
6	22	17
7	23	17
8	23	17
9	23	17

Yield Potential (%)	
20080512x2	**20080512x3**
18/50 (36%)	15/50 (30%)



The results of my data indicate a very poor rooting percentage and yield potential of both Calibrachoa selections, particularly 20080512x3. Based on this, I cannot recommend the propagation of these particular selections in the floriculture industry. However, I cannot rule out their future use, either. Additional research must be conducted; work must be done to improve the health and vigor of the stock plants before future cuttings are taken. This may perhaps allow for larger cuttings and lead to higher rooting percentages and yield potential than what was seen in this study.

Literature Cited

Argo, Bill and Paul Fisher. 2009. Understanding plant nutrition: Calibrachoa. [Online]. http://www.greenhousegrower.com/magazine/?storyid=2809. Accessed 19 April 2010.

Calibrachoa. Atlas of Florida Vascular Plants, 2010. Institute for Systemic Botany. [Online]. http://florida.plantatlas.usf.edu/Genus.aspx?id=226. Accessed 25 April 2010.

Calibrachoa Cabaret. GrowerFacts, 2010. Ball Horticultural Company.

Calibrachoa: Colorburst, colorburst trailing, and colorburst cat's eye. The Flower Fields, Eche Ranch, 2007. [Online]. http://www.ecke.com/datasheets/ff_ffx_pcal.html. Accessed 21 April 2010.

Calibrachoa (group). Kemper Center for Home Gardening. [Online]. http://www.mobot.org/gardeninghelp/plantfinder/Plant.asp?code=A119. Accessed 23 April 2010.

Callie calibrachoa culture information. Fischer Breeding Company. [Online]. http://www.fischerflowers.com/category.cfm/catID/3. Accessed 22 April 2010.

Fact sheets: Production guidelines for four crops: Osteospermum, Angelonia, Calibrachoa, and Ornamental Sweet Potato. University of Massachusetts Extension. [Online]. http://www.umass.edu/umext/floriculture/fact_sheets/specific_crops/newcrops.html. Accessed 18 April 2010.