

Improving Growth of *Calibrachoa* × *hybrida* (Cerv.) in Hanging Flower Pouches

Unique growing containers and non-traditional types of plant presentation may lead to new production problems for growers.

Figure 1. Normal, well proportioned bacopa in a hanging pouch (A), bottom-heavy impatiens (B), top-heavy fuschia (C), and begonia plants (D).



This study was conducted to evaluate the growth of calibrachoa in hanging flower pouches using different growing substrate compositions, polymer amendments, and the layering of substrate types with the goal of achieving more uniform plant growth and improved after-sale maintenance.

Table 1. Chlorophyll (SPAD) values for fully expanded leaves at the top or bottom of the hanging pouches.

		Top	Bottom
Single mixes	Control	34.2 ± 0.6	11.6 ± 1.5
	Porous	39.2 ± 0.5	31.4 ± 0.6
	Compost	36.0 ± 0.9	17.2 ± 0.9
Polymer-amended	16.6% polymer	35.4 ± 0.7	12.2 ± 2.3
	28.8% polymer	36.4 ± 0.6	18.4 ± 1.8
Layered	70%:60%:50%	37.3 ± 0.7	13.9 ± 2.1
	80%:70%:60%	35.9 ± 0.5	14.6 ± 2.0
	Porous:Compost	37.0 ± 1.5	21.0 ± 1.8
	Compost:Porous	37.2 ± 0.7	33.4 ± 1.4

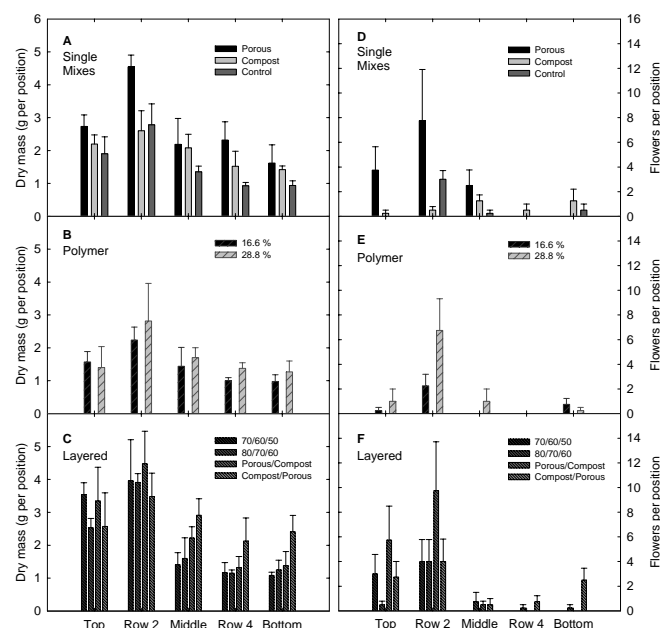
Light, porous substrates resulted in the most uniformly green plants and high numbers of flowers from top to

bottom. A layered pouch with heavy, compost-amended substrate above a light, porous layer also produced high quality, uniform plants. This enabled water to be more uniformly distributed throughout the container volume.

Table 2. Average dry mass and flower number per hanging pouch.

		Mass (g per pouch)	Flowers per pouch
Single mixes	Control	7.9 ± 0.7	3.8 ± 1.1
	Porous	13.4 ± 0.5	14.0 ± 5.4
	Compost	9.8 ± 0.6	3.8 ± 0.5
Polymer-amended	16.6% polymer	7.2 ± 0.6	3.3 ± 0.8
	28.8% polymer	8.6 ± 0.7	9.0 ± 3.5
Layered	70%:60%:50%	11.1 ± 0.7	7.0 ± 3.3
	80%:70%:60%	10.4 ± 0.5	5.8 ± 1.9
	Porous:Compost	12.7 ± 1.4	16.0 ± 6.9
	Compost:Porous	13.5 ± 1.1	10.5 ± 3.1

Figure 2. Average dry mass (A, B, and C) and flower number (D, E, and F) for each plant row in the hanging pouch, grouped in single mix (A and D), polymer amended (B and E), and layered treatments (C and F).



This study provides fundamental information on how container geometry and soil moisture retention can influence water management decisions by the grower.



For more information, contact: Jonathan Frantz, jonathan.frantz@ars.usda.gov USDA-ARS-ATRU, University of Toledo, Mail Stop 604, 2801 W. Bancroft, Toledo, OH 43606