

Tidal Wave Red Velour F1 Petunia

Master Gardener Project
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Objective: Grow Petunia from seed to maturity at the Urban Garden Center, Pearl City.

- What is Red Wave Petunia?
- What happened in the Greenhouse?
- What were autopsy results?
- What went wrong?
- What is the recommended way to grow red wave petunia from seed?
- What did the Red Petunia Evaluation Sheet look like?
- What were some lessons learned?

What is Tidal Wave Red Velour F1 Petunia?

- **Genus/Species: Petunia/x hybrida**
- **2015 All America Selections (ASS) Flower Award Winner**
- **Breeder: PanAmerican Seed**
- **Characteristics**
 - **strong and vigorous grower**
 - **new blooms continuously pop up and replace old blooms**
 - **cold, heat, rain tolerant**
 - **needs either slow release or weekly fertilizer**

What happened in the greenhouse?

- Same soil used for all plants.
- Paper trays with 10 cups each.
- Two seeds per cup.
- Automatic overhead watering system.
- 100% germination rate.
- 100% dead prior to transplant.



- **Autopsy.** My autopsy showed a root split into four two-inch long strands, while the stem and leaves were less than an eighth of an inch. I expected a root ball about the same size as the plant. Instead, the plant placed nearly all its energy into growing roots instead of leaves.



Mars One

- One week after sowing seed
 - simulated moon soil
 - simulated mars soil
 - compost rich soil

- “On Mars (and moon as well) nitrate, though present, is rather scarce in the soil.”

Experiment conducted at Wageningen UR



What went wrong?

- **The Petunia's visible growth slowed either due to a shortage of nitrogen in the soil (references 1&2), or a low ratio of nitrogen to carbon in the soil (reference 3). The Petunia's response was to allocate a greater portion of its biomass to the root system (reference 4 and autopsy photo). The lack of visible growth caused me to leave them in the greenhouse until they died.**
- Reference 1. Plant Responses to Multiple Environmental Factors: Physiological Ecology Provides Tools for Studying How Interacting Environmental Resources Control Plant Growth, January 1987 by Chapin, Bloom, Field, and Waring. I learned nitrogen is the mineral nutrient that plants require in greatest quantity and that most limits growth.
- Reference 2. Citrus for Hawaii's Yards Gardens, June 2008 by Cooperative Extension Service of University of Hawaii at Manoa. I learned that in Hawaii it can be assumed that soil nitrogen is limited, and adding it will have a favorable impact on growth and yield. Also, I learned that fertilizers are generally a better (more rapid) source than compost or manure.
- Reference 3. Carbon and Nitrogen Balance Signaling in Plants, July 2009 by Zhi-Liang Zheng. I learned plants have a sensing and signaling mechanism to robustly monitor environment and respond. Various C/N combinations cause gene expression.
- Reference 4. How Do Plants Respond To Nutrient Shortage by Biomass Allocation, December 2006 by Hermans, Hammond, White, and Verbruggen. I learned when minerals are scarce, plants allocate a greater proportion of their biomass to the root system.

What is the recommended way to grow red wave petunia from seed?

- From the website www.waverave.com
 - “Fertilize with a liquid feed weekly.”
 - “Do not allow tray to completely dry out.”
 - “Place the tray in a warm and bright location.”
 - “Here’ a quick tip: covering the tray with clear plastic may help to maintain temperature and increase humidity.”
- Watched a video of transplanting petunias. The petunia was easily pulled out with roots intact, and a finger was used to push the petunia into the new soil. The soil that was used successfully was very loose and airy, like peat moss.



greenhouse soil



peat moss

- What did the Red Petunia Evaluation Sheet look like?

AAS All-America Selections - Judge Score Sheet & Evaluation Form

Class UH MG Class of 2015 Plant Name PETUNIA
 Judge's Name CURTIS MASSIE Variety Name RED WAVE
 Trial City, State Pearl City, Oahu, Hawaii

AAS ORNAMENTAL SEED TRIAL 2015

General entry traits:
 Germination rate 100% Date Sown in Greenhouse Feb 20, 2015 Transplanted to NA
 Days to first bloom NA # Weeks in bloom NA

Description of weather conditions for trial:
Greenhouse

Evaluation of plant:		Describe
Greenhouse	Germination rate	100%
	Insect infestation	
	Disease infestation	Failed to grow big enough to transplant.
		Then 100% died.

Judge's Official Greenhouse Score:

Date:

Evaluation		Describe
Bloom	Length of Bloom Season	
	Color	
	Blossom Size (fruit if orn. Pepper)	

- What did I learn?
- Petunia seedlings need special care
 - fertilize their water once or twice a week (with fertilizer that includes nitrogen)
 - Use loose and airy soil, like peat moss
 - Check daily to make sure the soil never dries out
 - Use artificial light to ensure bright light every day
 - Cover with clear plastic to ensure warm even temperature and high humidity