

# Quantum Growth® Improves Plant's Root Development, Water Management and Nutrient Up-Take

## Root Development and Soil Biology of Knockout® Red Roses

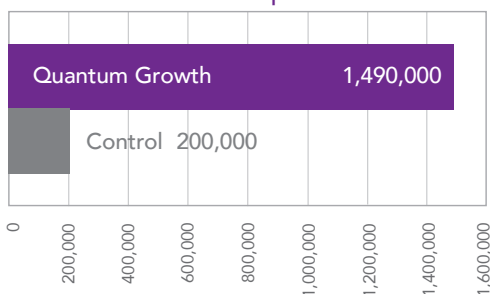
A trial was conducted to determine the benefits of using Quantum Growth on the root development and soil biology of Knockout red roses. In the trial, a block of 5,000 roses were treated with Quantum Growth, while a second block of 5,000 roses used only the grower's best practices (control). 130 oz. of Quantum-Light and 130 oz. of Quantum-VSC were applied to the treated roses weekly from Nov. 11 – Dec. 16, 2013. Samples were taken from both the roots of the Quantum roses and control roses. The bioassay was conducted by Earth Fort Laboratories.



Root comparison at 7 weeks.  
Note the root color and volume, as well as flowering.

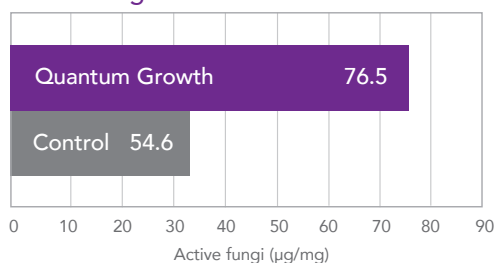
Root comparison at 12 weeks.  
The treated plant's root volume is noticeable greater.

### Bacterial Number Comparison at 6 Weeks



**645% Increase**

### Active Fungi



**40% Increase**

Note: Both groups of fungi had hyphal diameters ranging from 2.85 to 2.9 µm.

### Other examples of Quantum Growth's effectiveness



For more information visit  
**GrowQuantum.com**  
or call 866.871.0154.

The Quantum Growth® Series



## Quantum Growth – Water Retention

A trial was conducted to determine the benefits of using Quantum Growth to improve water retention. The trial consisted of two vinca plants purchased from a local nursery. The plants were watered once at the beginning of the trial with the control vinca receiving 6 oz of water while the treated vinca received a solution of water and 2% Quantum. The trial was conducted in August in Jacksonville, FL. The plants were placed on an asphalt surface in direct sunlight for 6 days in a row. Neither plant received any additional water.



Vinca plants start of Day 1



Vinca plants completion of Day 6

## Quantum Growth – Nitrogen Fixation and Transfer

A trial was performed at a commercial greenhouse to compare various rates of additional fertilizer with and without Quantum Growth. As can be observed from the photo below, the best result came from 0 (zero) ppm additional fertilizer and Quantum Growth. We cite this result as a demonstration of the ability of the beneficial bacteria in Quantum Growth to sequester atmospheric nitrogen and make it available to the plant. Note how the excess nitrogen in both sets of flats leads to unregulated growth characterized by pronounced stem elongation and lack of blooms. Quantum Growth bacteria can provide supplemental nitrogen and facilitate plant nutrient uptake resulting in improved fertilizer efficiency and decreased fertilizer rates.



0 ppm	40 ppm	80 ppm	Fertilizer Rate	0 ppm	40 ppm	80 ppm
<b>Control</b>				<b>Quantum Growth</b>		



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The **Quantum Growth**® Series  
 Developed by  
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