

## Vermicompost Trial Summary

After analyzing the complete data set for all the individual trials, the following conclusions have been derived.

### Plant Height

Plants usually grew taller when grown in vermicompost amended media. Typically, with most trials, treatments with lower concentrations of vermicompost were taller than plants grown in higher concentrations of vermicompost. However, there is no direct relationship between vermicompost and plant height as illustrated in figures 1 and 2.

Figure 1

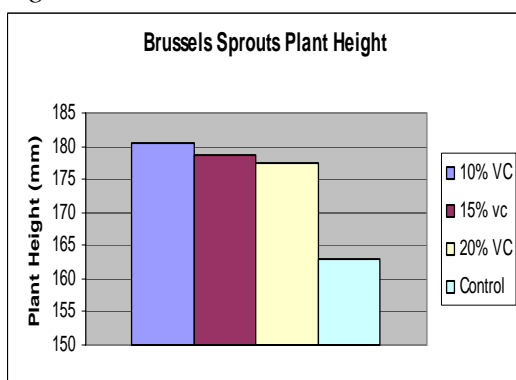
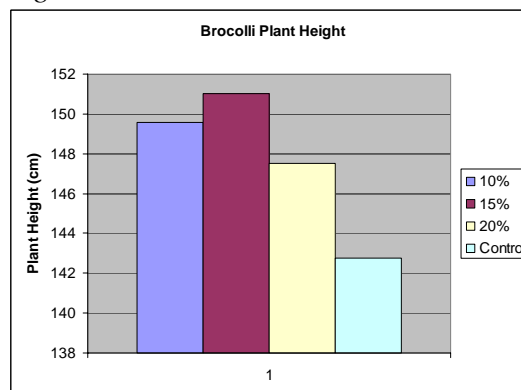


Figure 2

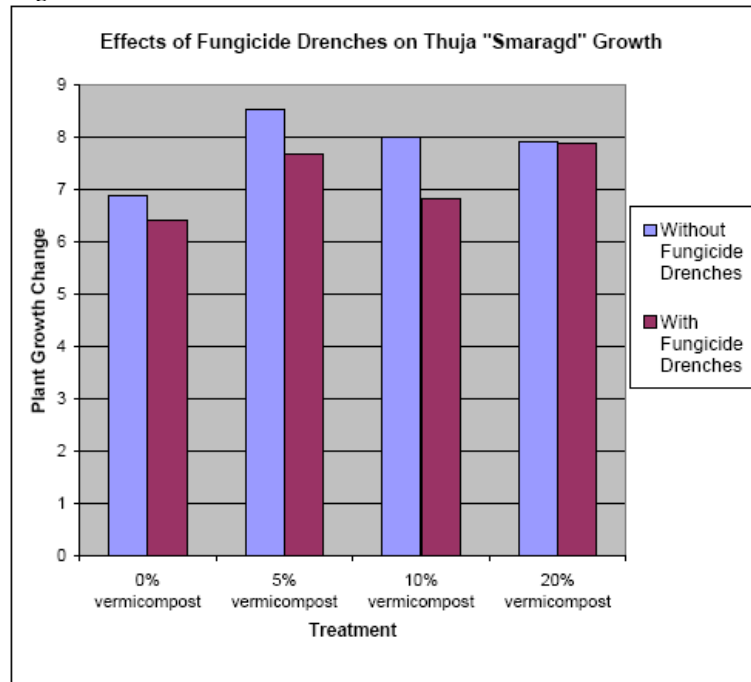


These results are similar to research done in Ohio by R.M. Atiyeh, C.A. Edwards, S. Subler and J.D. Metzger, and reported in "Pig manure vermicompost as a component of a horticultural bedding plant medium: effects on physiochemical properties and plant growth." Biosource Technology 78 (2001) 11-20.

Increased plant height is not always a benefit to growers. On many greenhouse crops, chemical growth regulators are used to reduce plant height.

Because Worm Castings are biologically active, fungicides will reduce the positive growth commonly seen as shown in figure 3.

Figure 3



As Figure 3 illustrates, fungicides reduce plant growth. This reduction can be overcome by incorporating up to 20% Worm Castings into the media. However, this is a costly strategy. By incorporating even 5% worm castings into the media, the microbiology in and around the worm castings will fight soil borne diseases.

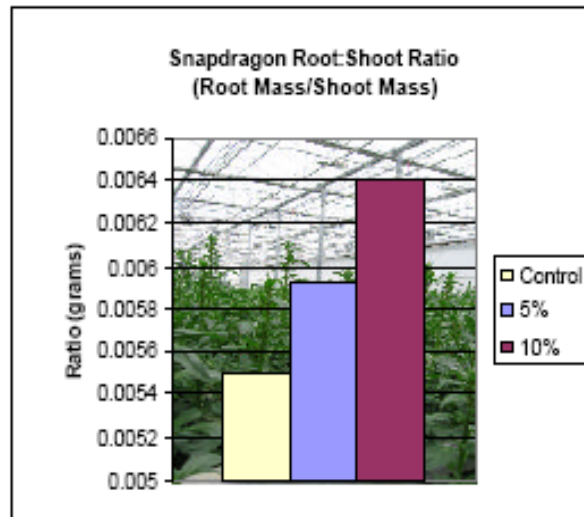
### Plant Mass

Plant mass per centimeter of shoot was typically greater (although statistically insignificant).

### Root Mass

On almost every trial, plants grown in vermicompost have had a substantial increase in root mass (Figure 4). A larger root base increases the water and nutrient absorption capabilities, and theoretically must translate into a stronger, healthier plant. However, if the shoot mass increases disproportionately to the root mass, there is a risk that the plant will become root bound, and requires transplanting, while the top growth is still small enough that it does not require transplanting. In one trial, the root bound plants reduced plant growth in August. Most growers however feel that a strong, healthy root system is valuable.

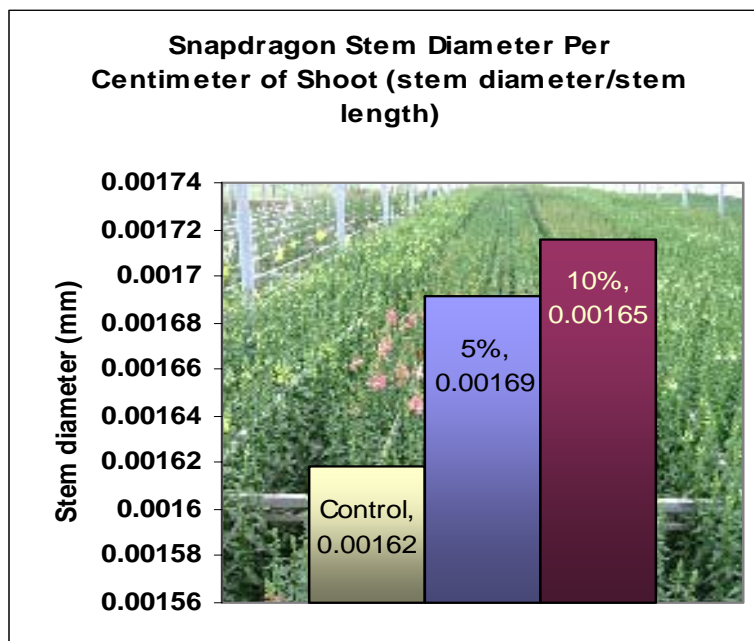
Figure 4



### Stem Diameter

On most trials, the stem diameter increased when plants are grown in vermicompost. Usually, however, the increase in stem diameter was not statistically significant, except for the cut snap dragon trial shown in Figure 5.

Figure 5



### Flower Size

On the cut snapdragon trial, the flower spike length increased significantly when the plants were grown in vermicompost. This is valuable since the flowers are graded among other aspects by flower size. Also, since most of the flowers are purchased by bidding,

flowers that are bigger usually attract more buyers, and consequently the flower price increases.

### **Plant Development Rate**

Plants grown in vermicompost usually developed and grew faster. The snapdragon trial had a 2-3 day reduction in total crop time. The Broccoli trial had more leaves at the time of transplanting, which is important since transplant time is determined by the number of leaves the plant has. In other trials however, it is difficult to determine a development rate, or, total crop time since the shipping date usually depends on client demand, and is relatively insensitive to crop age.

### **Conclusions**

The somewhat variable plant response to vermicompost amended media can be explained based upon several factors. First, because of the broad scope of the trials, there were differing climates where the plants were grown. Secondly, the growing practices for each nursery or greenhouse where the trials were held, were different, and consequently plant response to the vermicompost will be varied. Plants that are growing optimally will have a more limited or no response to increased nutrient and other biochemical additives to the soil, while plants that are growing under sub-optimal conditions will respond much more dramatically to the vermicompost. More research will be required to determine how much less fertilizer and pest control substances is required when plants are grown in vermicompost. This will have an important economic impact on the horticulture industry.