

Introduction to Experimentation: Herbaceous Stem Cuttings

Matthew Beckler
beck0778@umn.edu
Horticulture 1001
Laboratory Section 005

February 15, 2006

1 Introduction to Treatments Used

Two treatments are used in this lab:

1. Control
2. 1000 ppm IBA in talc

2 Plant material

The plant used in this lab is: *Solenostemon scutellarioides*
[syn. *Coleus x hybridus*] (Coleus; Lamiaceae, Mint Family)

3 Results

Here are the results and observations for this experiment, sorted by week:

- **January 26, 2006** - No real roots have been found yet on any of the treatments. More significant growth has been found on the control treatment, where three of five plants had small root hairs growing in addition to the callous growth. At this time, all of the plants have callous growth at their terminal ends. Of the plants treated with the IBA, none of them had root growth. The plants appear to be relatively hydrated and springy, as they are in the mist benches. None of the lower leaves are showing signs of rot.

- **February 2, 2006** - The specimens have show great growth since the last period of observation. Most of the plants are between root rating three and five. The average rating for the control treatment is approximately 3.8, and the average rating for the plants treated with IBA is 4.4. The results from the IBA group has now surpassed the control group. There are roots growing from all along the part of the stem that is under the surface. The largest roots appear to be sprouting from the area immediately around the nodes.
- **February 9, 2006** - The roots have continued to grow, almost to the point where it is hard to seperate the root balls from their neighbors. Almost all of the plants are fives, with only a few fours present. The averate root rating for the control group is 4.6, and the average rating is 4.8 for the IBA treatment. The roots have formed a clump about 1.5” in diameter on average. The largest roots are still growing from the nodes.

4 Table

Root Ratings for <i>Solenostemon scutellarioides</i> Root ratings were made on individual stem cuttings, (5 per treatment), and averaged for each date.			
Treatments	Average Root Rating		
	January 26	February 2	February 9
Control	1.6	3.8	4.6
0.1% IBA in talc	1.2	4.4	4.8

The rating scale for root growth was:

- **0** - No root growth
- **1** - Callus only
- **2** - Few root beginnings
- **3** - Substantial root growth
- **4** - Significant root growth
- **5** - Very significant root growth

5 Discussion

Overall, the roots appeared to grow from the entire length of the stem that was underground. Thicker roots grew out of the nodes, mostly from just below the nodes. One of the plants fell over in the sand, and roots started to grow from the node suspended just above the sand. This is very interesting, as it appears the plant has some way to detect that it is in close proximity to the ground. Initially, the plants treated with IBA appeared to lag behind the control treatment, but the IBA treated plants caught up with and surpassed the control group. This is to be expected from information from the readings, but I would have expected the IBA treated group to start growing before the control group started growing. It would be very interesting to add more treatment options, such as differing concentrations of IBA, or using different types of auxins. Another variable I would like to experiment with is the specific species of plant, to determine if other species are more or less sensitive to IBA.

6 Recommendation

For the successful propagation of the Coleus plant, a talc-based treatment of 1000 ppm IBA appears to be the best treatment investigated.