

Asexual Propagation Using Leaf-Piece Cuttings: Adventitious Meristem Formation in Response to Distance of Cutting from Leaf Tip

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Introduction to Treatments Used

1. Terminal 3" section of leaf blade
2. 1st sub terminal 3" section of leaf blade
3. 2nd sub terminal 3" section of leaf blade
4. 3rd sub terminal 3" section of leaf blade

Plant material

Sansevieria trifasciata 'Laurentii' (Snake Plant; Agavaceae, Agave Family)

Results

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

- **March 2, 2006** - There has been no noticeable change since planting the leaf cuttings. The leaves, which were placed in the mist-house, have remained green and moist, but there has been no growth of any kind at the cut edge. I expect the leaf cutting closest to the plant's stem,

the 3rd sub-terminal section, to grow the quickest and best, but again, nothing has happened yet. All plants are rated at zeros.

- **March 9, 2006** - Again, there is no change since the last observation period. There are no roots forming, no callus, no shoot formation, no development at all. The leaf cuttings appear to be still living, as they are still green and moist, but they have done nothing towards developing roots or shoots. All plants stayed at root ratings of zero.
- **March 23, 2006** - There is a small amount of white tissue forming at the base of the 3rd sub-terminal section, which is the callus starting to form on the cut. Callus is versatile tissue that can be differentiated into new forms of tissue, depending on what is needed the most. This callus will most likely form adventitious roots eventually. The other leaf cutting section show no signs of growth, but all remain healthy and springy.
- **March 30, 2006** - All of the cuttings except for the terminal piece have started growing very tiny root tips, and healthy amounts of callus. The differentiation between the piece's development has become visible already, as the 3rd sub-terminal section has the longest roots, even if they are only a fraction of a centimeter in length. The terminal section is still rated at zero, while the other three pieces have ratings of 1.
- **April 6, 2006** - The plants are still showing signs of growth, small though they may be. All plants have advanced past the zero threshold, with the 3rd sub-terminal cutting looking the best, with a root rating of 3. The 1st and 2nd sub-terminal cuttings are both rated at 2, and the Terminal cutting is rated 1.
- **April 13, 2006** - As we wrap up this experiment, the plants are looking healthy, and look like they could grow into an entirely new plant. The 2nd and 3rd cuttings have ratings of 4, while the 1st sub-terminal cutting has a rating of 3. The terminal cutting looks the smallest with the worst growth of the experiment, with a rating of 2. No shoots have been found, as all the growth has been oriented downward.

Tables

Average Root Ratings for <i>Sansevieria trifasciata</i>						
Treatments	3-02	3-09	3-23	3-30	4-06	4-13
Terminal	0	0	0	0	1	2
1 st sub terminal	0	0	0	1	2	3
2 nd sub terminal	0	0	0	1	2	4
3 rd sub terminal	0	0	0	1	3	4

Average Root Ratings for <i>Sansevieria trifasciata</i> Group Members' Ratings - April 13						
Treatments	Myself	One	Two	Three	Four	Average
Terminal	2	2	2	2	3	2.2
1 st sub terminal	3	4	3	4	4	3.2
2 nd sub terminal	4	3	3	2	5	3.4
3 rd sub terminal	4	5	2	2	5	3.6

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

Discussion

Overall, the hypothesis of this experiment, that the newest leaf material (closer to the stem) will grow best, appears to be correct. At the end of the experiment, both my personal data and the group's average data indicate the best growth and root development in the 3rd sub-terminal section, followed by the 2nd and 1st sub-terminal sections. The oldest leaf material, located in the terminal section, had the least amount of growth and the worst average ratings. No shoots have developed, noted by the fact that all growth from the base of the cutting has grown downward into the sand. They are all small, white roots. Since we noticed no shoots forming, it appears that roots

appear before shoots when propagating *Sansevieria*. From the growth of these cuttings, only one plant seems to be growing, but we would like to allow this experiment to continue before drawing any conclusions.

Recommendation

For propagating *Sansevieria trifasciata* from leaf-piece cuttings, the best location to make cuttings appears to be close to the stem, where the tissue is the youngest.