

Asexual Propagation: Comparison of Leaf-Petiole & Leaf-Bud Cuttings as Methods of Asexual Propagation

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Introduction to Treatments Used

1. Leaf-Bud Cuttings - Control
2. Leaf-Bud Cuttings - Quick-dip 8000 ppm IBA
3. Leaf-Petiole Cuttings - Control
4. Leaf-Petiole Cuttings - Quick-dip 8000 ppm IBA

Plant material

Peperomia scandens 'Variegata' (Variegated False Philodendron; Peperaceae, Pepper (the spice) Family)

Results

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

- **March 23, 2006** - Very few of the plants have started growing at this point. Being planted just last week, they have not had very much time to put down roots or send up shoots. I expect the leaf-bud cuttings to grow faster, with better shoot development, because they already

contain a dormant meristem, just waiting to grow into a shoot. The leaf-petiole cuttings are all doing approximately well, with the same average root and shoot ratings for both the control and IBA-treated cuttings. Their average root rating is 0.4, and the average shoot rating is 0.0. For the leaf-bud cuttings, the plants treated with the IBA have started growing much better than those not treated. The plants treated with the IBA have an average root rating of 0.8, with an average shoot rating of 0.4. This is because two of the five leaf-bud cuttings treated with IBA have started to grow visible shoots. This is very exciting. The control treatment for the leaf-bud cuttings have not started growing at all. Their average root and shoot ratings are still at zero.

- **March 30, 2006** - Almost all of the groups in this experiment have started showing signs of shoot development. The exception to this generalization is the leaf-petiole control treatment group, where no shoots have formed. They are at an average root rating of 2.4, and an average shoot rating of 0.0. The best looking plants overall are the leaf-bud cuttings treated with IBA, which are at root ratings of 1.6 and shoot ratings of 0.6. The leaf-bud control treatment group has average ratings of 0.8 for roots and 0.4 for shoots. The leaf-petiole IBA treated plants have an average root rating of 1.6 and one plant has sprouted a shoot, giving the group an average of 0.2.
- **April 6, 2006** - Since the last week, the rooting has just exploded in quality. Three out of four groups are already up to a 2.4 / 5.0 root rating, those groups being leaf-bud IBA treated, and both leaf-petiole groups. The other group, leaf-bud cuttings control treatment, are at averages of 1.4 for roots and 1.0 for shoots. The leaf-bud IBA treatment has average shoot ratings of 1.2. The leaf-petiole control treatment still has no shoot development at all, so it remains at a shoot rating of 0.0. The leaf-petiole IBA treatment has an average shoot rating of 0.2.
- **April 13, 2006** - By far, the best looking plant cuttings belong to the leaf-bud IBA treated group. Their average root rating is 2.8, with an average shoot rating of 1.4. This matches the same shoot rating as the leaf-bud control treatment group, which also has a root rating of 1.8. This make sense, because the IBA treatment is intended to encourage adventitious root development. Since the IBA doesn't appear to effect shoot development, identical ratings makes sense. For the leaf-petiole plants, the control treatment still has not developed any shoots. It has root ratings of 2.4. The leaf-petiole IBA treatment has root ratings of 2.6, with a shoot rating of 0.4

Tables

Average Root and Stem Ratings for <i>Peperomia scandens</i> Format: (Root Rating, Stem Rating)				
Treatments	3-23	3-30	4-06	4-13
Leaf-Bud - Control	(0.0, 0.0)	(0.8, 0.4)	(1.4, 1.0)	(1.8, 1.4)
Leaf-Bud - 8000 ppm IBA	(0.8, 0.4)	(1.6, 0.6)	(2.4, 1.2)	(2.8, 1.4)
Leaf-Petiole - Control	(0.4, 0.0)	(1.4, 0.0)	(2.4, 0.0)	(2.4, 0.0)
Leaf-Petiole - 8000 ppm IBA	(0.4, 0.0)	(1.6, 0.2)	(2.4, 0.2)	(2.6, 0.4)

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

The rating scale for stem growth was based on the relative size the girth of the shoots when compared to the rest of the samples growing in this experiment.

Discussion

Overall, the hypothesis of this experiment, that the leaf-bud cuttings would have greater shoot development, appears to be correct. By the end of the experiment, the leaf-bud cuttings had a much better average shoot rating, 1.4, especially when compared to the leaf-petiole cuttings. Again, this makes sense, because the leaf-bud cuttings have a preformed meristem waiting to grow into a new shoot. The leaf-petiole must form this meristem from the callus at the base of the cut. The roots appeared to start growing before the shoots started to appear. The roots grew directly from the base of the leaf-petiole cutting, and from both sides of the original stem in the leaf-bud cuttings. In the leaf-bud plants, the shoots appeared from the once-dormant bud, but in the leaf-petiole cuttings, the shoots appeared to emanate from the end of the petiole, which was underground. Only a single plant was produced

from each leaf-bud or leaf-petiole cutting, but since each only requires one leaf, this makes it very easy to propagate many daughter plants from one large parent plant.

Recommendation

For propagating *Peperomia scandens* from leaf-bud or leaf-petiole cuttings, the best type of cuttings is the leaf-bud cutting.