

A Beginner's Guide to Begonias: Vegetative Propagation¹

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Introduction

When proper environmental conditions are met, *Begonia* can be propagated from plant material with ease. Vegetative propagation allows the breeder to produce a new generation of clones with the exact same traits as the mother stock, allowing nursery producers and enthusiasts alike to retain favorable traits with little difficulty. Vegetative propagation can be accomplished using shoot cuttings and leaf cuttings (Figure 1). When it comes to tuberous and rhizomatous begonias, they can be propagated via tuber and rhizome cuttings as well. Details of these methods will be covered in *A Beginner's Guide to Begonia: Tuberous Begonia and Rhizomatous Begonia*.

This EDIS publication is written for Florida nursery operators, landscape professionals, and individuals interested in propagating their own begonias. This guide will go into detail on how to multiply begonias via vegetative propagation. If you would like to learn more about seed propagation of begonias, go to *A Beginner's Guide to Begonias: Seed Propagation*. There are two methodologies for vegetatively propagating your own begonias: through shoot cuttings and leaf cuttings. For more information on begonias in Florida, check out *A Beginner's Guide to Begonias: Classification and Diversity*.



Figure 1. Begonia leaf cuttings waiting to root. Taken from Harmony Foliage Farm.

Credits: Matthew Creech, UF/IFAS

Shoot Cuttings

Begonia cuttings can be taken at any time throughout the year. Applying rooting hormones, such as auxins, is not necessary but does promote rapid root development. It is important to note that the growth habit of the cuttings will vary depending on multiple factors including but not limited to ontogenetic aging and topophysis (Davies et al. 2018). Propagate your shoot cuttings of begonias using the methods outlined below:

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1. Collect shoot cuttings from the begonia of interest. Be sure to take into account the location the cutting is taken from and ensure there is a meristem (apical or lateral) at the tip of the cutting. A meristem is a specific tissue on the plant that cells are actively dividing (Figure 2). Cuttings should be 3 to 4 inches (8–10cm) long with 2 to 3 leaves. It should include 2–3 nodal sections. The cut should be just below the bottom node, because this is where they will root the best. If leaves are too large for the cutting, cut them back to a manageable size (Figure 3).



Figure 2. Blue circle in the left image indicates the meristem region of the shoot. In the right image, the numbers indicate the nodes, and the dashed line is where the cutting should be made.
Credits: Julian Ginori, UF/IFAS

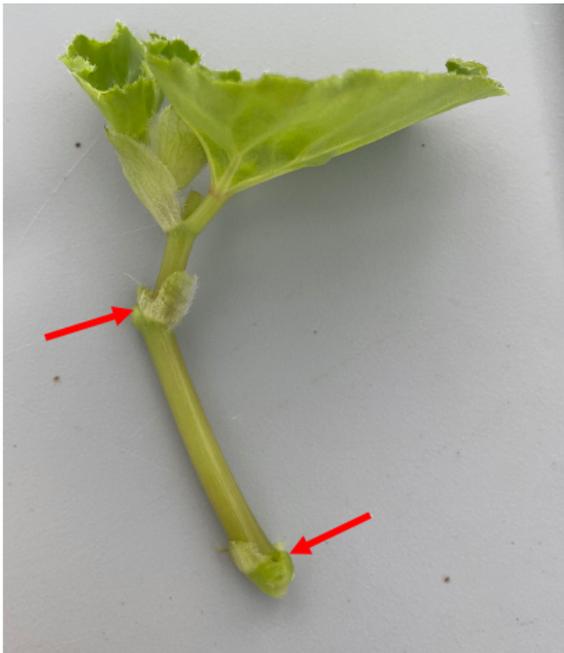


Figure 3. Typical begonia shoot cutting. Red arrows indicate where additional leaves were removed from the shoot.
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2. Dip the end of the cutting in rooting hormone. Ensure the exposed end of the shoot is fresh prior to coating with rooting hormone. See Figure 4 for details. Typical rooting hormone has an IBA concentration of 0.1% and can be found at any nursery supply store. The rooting hormone

can be purchased in liquid or powder form. Though not necessary, dipping the end of the cutting in rooting hormone such as IBA or NAA can speed up adventitious root development.



Figure 4. On the left is a fresh shoot cutting with exposed vascular tissue. On the right we have the same cutting coated in rooting hormone powder.
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3. Place cuttings in moist/wet media and cover with a humidity dome to prevent cuttings from drying out (Figure 5). It may be beneficial to carefully water the cuttings prior to placing the dome to cool the leaves and prevent stress due to drying out. Alternatively, a mist system can be used for a large-scale propagation.



Figure 5. Typical humidity dome (left). Row of misters used to ensure the begonia cuttings do not dry out (right).
Credits: Julian Ginori, UF/IFAS

4. Allow at least two weeks for roots to form. Occasionally check the rooting progress by lightly tugging on the stems of the cuttings. If roots have formed, you will feel slight tension as you lightly pull the cutting.

Leaf Cuttings

When propagating begonia via leaf cutting, the leaf or the leaf with petiole are used to produce clones. The important factor is the development of both roots and shoots from either the base of the petiole or the major veins in the leaves. Two methods for propagating begonias from leaf cuttings are using the leaf blade and petiole or using the leaf

blade alone. See Figure 6 to see what the major veins and the leaf petiole are.

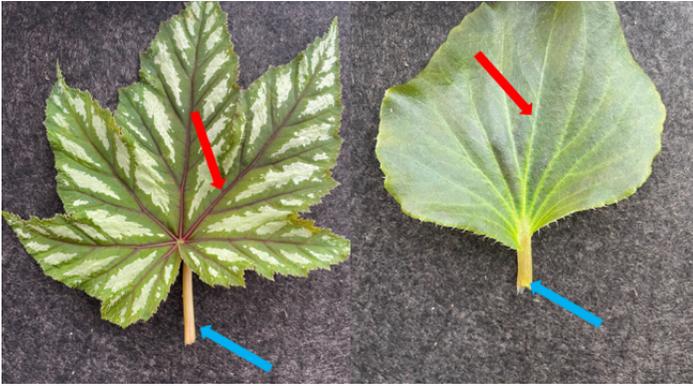


Figure 6. Blue arrows are directed at the leaf petioles. Red arrows are pointing to the primary veins radiating out from junction where the petiole meets the leaf blade.

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Leaf Blade and Petiole

1. Collect healthy leaves and petioles from the begonia of interest (Figure 7).



Figure 7. Begonia leaf (left) and petiole cutting (right). For larger leaves, it may be beneficial to cut back the leaf because it is unnecessary for root and shoot development (blue circle).

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2. Place the petiole in moist/wet soil and cover with a humidity dome to prevent the leaf cutting from drying out.
3. After rooting has occurred, you should notice new shoots sprouting up from the base of the petiole (Figure 8).



Figure 8. New shoots sprouting from the base of the petiole.

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Leaf Blade Only

1. Collect fully grown, healthy leaves from the begonia of interest.
2. Cut the leaves into small sections, being sure to include primary veins in each section. Typically, sections are made into triangular shapes with the primary vein at one tip. Avoid making the leaf cuttings too small or they will be unsuccessful. Refer to Figure 9 for cutting size.



Figure 9. Begonia leaf and leaf cuttings. On the left is a fully grown leaf of the begonia variety 'Dalia'. On the right is the same leaf cut into multiple leaf cuttings that can be used to develop new clonal plants.

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3. Gather the leaf cuttings made in step 2 and insert them vertically into the soil with the primary vein tip entering the media (Figure 10). Be sure not to bury the cutting too deep in the soil, as to avoid rotting the leaf. Approximately half an inch in the soil should be enough.
4. Place cutting under a humidity dome or misting bed to prevent the leaf cuttings from drying out.

5. After 3–5 weeks, roots will develop from the main vein, and a shoot will develop shortly after (Figure 11).



Figure 10. Tray of freshly made leaf cuttings. Notice few leaf and petiole cuttings scattered throughout the tray. For the larger leaves, once the leaf cuttings are taken, the remaining petiole and leaf can be used as a cutting.

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Figure 11. Rooted leaf cutting. Red arrows are pointing to newly developed roots on leaf cuttings. Blue arrows show newly developed shoots that sprout after sufficient roots have been developed.

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Problems with Vegetative Propagation

Vegetative propagation is the dominant method for begonia propagation because it produces identical clones. On rare occasions, chimeras, or “bud sports” can develop due to mutations that can occur in the shoot apical meristem (Davies et al. 2018). Additionally, vegetative propagation is faster than sexual seed propagation, as you do not have to wait for seeds to germinate and grow, a process that can take months. However, vegetative propagation may require a significant amount of adult plant material, which could be

an issue if you only have a small amount of parent plants. Fungal disease is also an issue that is commonly observed when the humidity is not well controlled, and it can easily lead to the death of vegetatively propagated plant material.



Figure 12. Successful leaf cutting. From left to right: newly planted leaf cutting, new shoots sprouting from the planted leaf cutting, and a fully grown plant from the leaf cutting.

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