PLANT PROPAGATION MADE EASY

THE SECRET TO GETTING FREE PLANTS

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Dear Gardener,

Buying plants for your home and garden can be very expensive. After buying my house (and becoming house poor), I didn’t have any money left in my budget to buy new plants. So I had to figure out ways to expand my plant collection for pennies, and that’s when I discovered plant propagation.

I remember when I first started learning about plant propagation, I had no idea what plant propagation even meant (and was a little intimidated by such a big word), but I quickly became obsessed and found myself experimenting with propagating any plant I could get my hands on.

As a result, I’ve successfully propagated all of my houseplants, and many, many of my garden plants. I painstakingly learned, by trial-and-error, the easiest propagation methods for beginners to get them successfully propagating plants as fast as possible - and now I get to share all of my secrets with you.

I hope you will love propagating plants as much as I do! It’s a great way to get free plants and share your favorite plants with friends.

Happy Gardening!

Amy

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Propagation is a big word, but the definition is simple. Plant propagation is the process of creating new plants from existing ones. Plants from plants... how exciting!

SUPPLIES

The good news is that you don’t need a ton of expensive equipment to get started propagating your plants. Awesome, right? But you will definitely need a few things.

To get you started quickly, I put together a list of supplies you might want to buy before you start propagating. Heck, you might already have many of these items on hand.

- Sharp knife or clippers
- Propagation soil ingredients (see recipe on p.15)
- Rooting hormone powder
- Propagation box (or plastic baggie)
- Trowel
- Plant mister or spray bottle
- Plant pots (3” or 4” is a great size for potting up new cuttings)
- Potting soil (for potting up rooted cuttings)
- Plant grow lights (optional)
- Heat mat (optional)
- Fertilizer (optional)
- Soil moisture gauge (optional)
- Humidity monitor (optional)

These are the basic supplies you’ll need to get started propagating your plants. I put together a more comprehensive list for you, which I update on a regular basis. You can find it here. (Be sure to bookmark that page for later reference.)
Before you get started propagating your favorite plants, it’s important to understand a few of the key aspects of propagating plants. In this section, we’ll cover all the basics and I encourage you to give it a quick read before taking your first cuttings. As you start experimenting with propagation, you’ll want to refer back to this section often.

**Growing Mediums**
A growing medium is what you put your cuttings in to propagate them. There are different types of growing mediums you could use for propagating plants, but to keep it simple we’ll stick to using propagation soil or water as our growing mediums. The type of soil you use to propagate your plants is very important for consistent success.

There’s definitely a difference between regular potting soil and the type of soil you should use for propagation. Regular potting soil is too heavy, holds too much water, and doesn’t provide enough airflow for propagating plants; which means cuttings will rot a lot easier if you use potting soil rather than propagation soil. Many types of potting soil also contain slow release fertilizers. Propagation soil should not contain fertilizer because it will damage the cuttings or inhibit the growth of roots.

Propagation soil should be porous enough to allow for good drainage and airflow, but also needs to hold water so that the soil will remain consistently moist. It’s very important that propagation soil is made of high quality, sterile ingredients to ensure the cuttings aren’t exposed to any pests or disease.

I’ve never found pre-mixed propagation soil for sale before, so I always make my own. I’ve been propagating plants for several years, and I’ve come up with two recipes that make the perfect propagation soil. The first mix is a general purpose propagation soil that will work for rooting most types of plants, and it’s the mix I recommend using in your DIY propagation box (see p. 7) or when you use the baggie method for rooting plants (see p. 8). The second recipe is a mix that I created specifically for propagating succulents and cactus plants. See my recipes and instructions for making both of these propagation soils on p. 15.

**Propagation box**
It goes without saying that you’ll need some sort of container to use for propagating plants. You can purchase propagation trays specifically made for propagating plants, or you can make your own. My favorite way to propagate plants is using my own DIY propagation box (see p. 7).

A propagation box, or propagation chamber, is something that can be used for rooting plant cuttings. It works like a mini greenhouse that will protect plant cuttings and give them enough moisture so they can survive until they sprout roots.

**Moisture/Water**
In order to survive and form roots, plant cuttings must be kept consistently moist. Thoroughly moisten the propagation soil before inserting your cuttings, and taking care that there aren’t any dry spots. Dry spots in the propagation soil will absorb the moisture out of the cutting, which will ultimately be fatal to the cutting.

You can also sprinkle the cuttings with water or mist them before inserting them into the moist propagation soil, if desired (do not wet furry leaf plants like African violets). Cuttings shouldn’t need to be watered again until they form roots.

To moisten the soil, you can simply pour water into your propagation box and use a trowel to stir it together, or mix the propagation soil with water in a bucket before adding it to your propagation box.
Humidity
Plants absorb moisture through their leaves, and this is how plant cuttings can survive without roots. Without adequate humidity levels, the plant cutting would quickly die, so it’s crucial to maintain adequate humidity levels around the plant cutting in order for it to survive long enough to grow its own roots. The easiest ways to maintain a consistent amount of humidity around your cuttings is to use a propagation box (p. 7), the baggie method (p. 8) or by frequently misting the cuttings.

Although it’s important to keep the humidity level high around your plant cuttings, it’s also important they get enough ventilation/airflow. So, make sure that the plastic around your cuttings or the lid on your propagation box are not airtight. To allow for airflow around the cuttings, simply poke a few holes in the plastic, or prop the lid open on your propagation box.

Taking Cuttings
Before taking cuttings from a plant for propagation, make sure that the plant is healthy, and pest and disease free. For best results, water the parent plant a few days before taking cuttings to ensure the plant is not dehydrated. The parent plant should be firm and upright, not droopy or shriveled.

It’s important to use a sharp knife or clippers when taking your plant cuttings. Using dull clippers or pinching cuttings off with your fingers can crush the stem, and prevent rooting. It can also cause damage to the parent plant.

It’s also important to use sterile tools to take your cuttings in order to prevent the spread of disease, mildew or bugs. To sterilize your tools, you can dip them in rubbing alcohol or wash them with soapy water before taking cuttings.

After you take the cutting, remove any flowers and flower buds. This will allow the cutting to put its energy into growing new roots rather than flowering.

Rooting Hormone
Rooting hormone helps speed up the rooting process, and increase the number of roots that a plant cutting will form. It can also help protect cuttings from disease and bacteria.

Rooting hormone is not required for propagating plants, but using it will improve your chances of successfully rooting cuttings. I’ve experimented with propagating cuttings both using rooting hormone and without using it, and I’ve definitely had much greater success when I used rooting hormone. So, I recommend using it, especially if you’re just starting out.

Light
It’s best to give cuttings a consistent amount of light; the more light they get the faster they will form roots. Be careful though, because direct sunlight will likely be lethal for the cuttings under plastic or in a propagation box. Direct sunlight will raise the temperature in the box, and end up burning or frying the tender cuttings inside.

You can place the cuttings near a sunny window or add a grow light. Grow lights are ideal because you can control the intensity of the light, and also the length of time the cuttings get light. The ideal setup would be to set the grow lights on a timer so the cuttings get consistent light 12-16 hours a day.

Temperature
Temperature is also an important factor for propagating plants. Ideally, you would keep the propagation medium and the air around your cuttings between 70-75F. If the temperature is kept too cold (or too hot), it will hinder root formation. If the temperature gets too hot, it can damage the cuttings.

In order to keep your cuttings at a consistent temperature, you can add bottom heat under the tray or propagation box using a plant heat mat. You can use the same heat mat you would use for starting seeds.
Plants can be propagated in many ways, and it’s fun to experiment to see which methods of propagation work the best for you. A few of the major methods of plant propagation are by stem or leaf cuttings, stolons or runners and division of offsets or suckers.

**Stem Cuttings**

There are tons of plants that can be propagated by stem cuttings, and it’s one of the best ways to start experimenting with propagating various types of plants.

Generally, you can take stem cuttings from anywhere on the stem, vine or branch of the parent plant. Different plants form roots on different parts of the stem, so it’s best to make sure your stem cuttings have a couple of leaf nodes (the point where the leaves are growing out of the stem) included on the stem of the cutting.

Most stem cuttings are easiest to root using a propagation box (p. 7) or the baggie method (p. 8), and some can even be propagated using plain water (p. 11). The exceptions are succulents and cactus plants, which need to be propagated differently (p. 9).

**Fertilizing**

Cuttings should never be fertilized before they form roots; fertilizer can damage the tender cuttings. It’s best to keep fertilizers out of your propagation soil, so if you’re using a propagation box, don’t fertilize your cuttings until after you’ve potted them up into their own container. Plants that are rooted in individual pots don’t need to be repotted before you begin fertilizing them, and can be fed with a weak dose of fertilizer as soon as roots start to form. (see “Potting Your Cuttings” p. 13)

**Checking For Signs of Root Growth**

Check on your cuttings every few days to see if there are any signs of root growth. I like to use a clear propagation box so it’s easy to check to see if my cuttings have formed roots (simply pick up the box and look underneath for roots). Different types of plants require different lengths of time to form roots, so if you have various plant cuttings in your propagation box, don’t expect them to all root at the same time. If you’re not using a clear container for rooting your cuttings, there are a few easy ways to tell if your cutting has started forming roots:

1. **Usually, the first sign that a cutting has formed roots is new growth will start to form on the top of the cutting.**
2. **Gently tug on the cutting. If you feel resistance, then your cutting probably has formed roots.**

**BASIC METHODS OF PROPAGATION**

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**Leaf Cuttings**

Several types of plants that have soft, fleshy leaves can be propagated from leaf cuttings. If you want to try propagating a plant from leaf cuttings, start with something easy like an African violet or succulents.

Leaves can be removed from the plant by either clipping it off at the point where the leaf joins with the stem of the parent plant (works best for plants like African violets or begonias), or gently taking hold of the leaf you plan to propagate and wiggling it until it breaks off (works well for succulents).

When plants are propagated by leaf cuttings, a tiny new plant will begin forming at the base of the leaf. These new plantlets will eventually grow into a full-grown plant. Once the plantlets start to form and the roots become established, the old leaf will die back and can be discarded.

Most types of leaf cuttings can be propagated using a propagation box (p. 7) or the baggie method (p. 8). Leaf cuttings from succulent and cactus plants need to be handled a bit differently (p. 9).
Stolons or runners
Some plants reproduce by sending out stolons (also called shoots, plantlets or runners), which are miniature versions of the mother plant. Stolons form at the end of a stem that grows out of the top or side of the mother plant. Stolons grow downward from the mother plant in a hanging basket (as with a spider plant) or, in the garden, root themselves in the dirt surrounding the mother plant (as with strawberries).

Wait to remove a stolon from the mother plant until it has begun growing starter root nubs. If the stolon doesn’t have any signs of starter roots or only has tiny nubs, it probably won’t survive. Once you determine a plantlet is ready to be rooted, you can remove it from the mother by cutting it off at the stem. Sometimes the babies will come off easily when you disturb them, this is a good sign they are ready to grow on their own. Stolons can be propagated using a propagation box (p. 7) or the baggie method (p. 8). Most can also be rooted in water (p. 11). They may also be rooted while still attached to the mother plant.

Offsets or suckers
There are many types of plants that send out offsets (also called suckers or pups) as they grow older. These offsets grow from the base of a plant, popping up from underground.

Generally, in order to remove the offsets from the mother plant, the mother will have to be removed from its pot, or you’ll have to dig around the offset in the garden in order to remove it from the mother. This is easier for some plants than others, and can be tricky sometimes. Offsets that don’t have roots of their own should not be removed from the parent plant; they likely won’t survive.

Offsets are propagated by division (p. 12), and can simply be potted into their own pot or relocated in the garden to create new plants.
Make your own DIY propagation box

A propagation box is an essential tool for propagating plants, and it makes the process go much faster. Most types of plant cuttings can be easily rooted using a propagation box. You can purchase commercial propagation trays specifically made for propagating plants, or you can make your own propagation box.

**Supplies Needed***
- Clear plastic storage box with a lid, or a glass fish aquarium with a hood
- General purpose propagation soil (see recipe on p. 15)
- Rooting hormone
- Heat mat (optional)
- Plant grow light (optional)
- Clippers or knife

* Find links to all of these, and many other propagation supplies here... Plant Propagation Supplies

**Step 1: Make the propagation box** - Find or purchase a clear plastic storage box with a lid. You can also use a glass fish aquarium with a hood if you have one on hand. The size of the box doesn’t matter too much, but think about what types of cuttings you will be rooting in there and how tall the box will need to be. The plastic storage box I use is about 16”W x 10”D x 10”H, which is perfect for most cuttings.

**Step 2: Add propagation soil** - Add your propagation soil to the box, and spread it evenly over the bottom of the box. The soil should be about 3-4 inches deep. It’s important to use propagation soil (rather than potting soil) inside a propagation box to ensure success.

**Step 3: Add water** - Add water to wet down the propagation soil. Keep the soil moist but not soggy, and never allow it to dry out completely. If you added too much water to your propagation box, you can simply leave the lid off the box for a day or two to allow the excess water to evaporate.

**Step 4: Add the plant cuttings** - You can root just about any type of plant cutting in this propagation box, so I encourage you to experiment! (see plant lists on p. 5) Whenever I trim a plant or a piece breaks off, I’ll put the cutting into my propagation box. For best results, dip the cut end of your plant cutting into rooting hormone before sticking it into the propagation soil. Make a hole in the soil with your finger and place the cutting into the hole so the rooting hormone doesn’t rub off. Lightly pack the soil around the stem of the cutting to ensure the medium is touching the cutting. At least one leaf node should be below the soil line. Make sure that none of the leaves are below the soil, and pinch off any leaves that are laying on the surface of the soil.

**Step 5: Put the lid on the box** - Put the lid on your propagation box. If the lid on the storage container is airtight, poke some holes in the lid or prop it open slightly to allow air to circulate in the box. Air circulation helps prevent mildew growth in the propagation box. I like to use an electric drill with a small-medium sized drill bit to drill holes in plastic lids because some types of plastic will crack if you try to make holes with a hammer and a nail. Drill the holes 2-3 inches apart on the lid.
Step 6: Where to put your propagation box - Place your propagation box in an area near a sunny window inside the house. If you don’t have a sunny room to put it in, place a plant grow light above the top of the box. It’s best to keep your propagation box inside the house to keep it protected from wind, rain, bugs and too much sun. But, if you must put it outside, it should be kept in the shade and protected from rain so it doesn’t get overwatered. Inside or out, always keep your propagation box out of direct sunlight.

Step 7: Add bottom heat (optional) - Use bottom heat to help speed up the rooting process. You can add bottom heat by placing your propagation box on a heat mat (the same one you use for your seedling trays). During the winter, you can place your propagation box on or near a heat vent (be careful if it’s near a vent, because the dry air from the heat vent will cause the soil in your propagation box to dry out faster).

Check on your propagation box every few days to see if there are any new roots. Soft stem cuttings will root in about three weeks (some will root in as little as a few days), and hardwood cuttings will take about 8-10 weeks.

You’ll also want to monitor the humidity level inside the box, and the moisture level of the propagation soil. The soil should never be soggy or completely dried out, it’s best to keep the soil consistently moist. To water your propagation box, use a gentle spray from the kitchen sink sprayer or a plant mister; you don’t want to disturb the propagation soil once your cuttings are in the box.

Propagating plants with the baggie method
You already know that a propagation box is an excellent tool to have, and it makes propagating your favorite plants a snap! But, if you don’t have the room to set up a propagation box, or you haven’t had the time to get it done, don’t worry! You can still get started propagating even if you don’t have a propagation box - by using the baggie method.

Just like a propagation box, a plastic baggie tented over a plant cutting acts as a mini greenhouse to keep the humidity high around the cutting, which encourages the cutting to grow roots.

Step 1: Fill a plant pot with pre-moistened propagation soil.

Step 2: Dip the cut end of your plant cutting into the rooting hormone, make a hole in the soil with your finger and place the cutting into the hole. Gently pack the soil around the base of the stem to hold it in place.

Step 3: Stick your stakes in the soil surrounding the cutting. (The purpose of the stakes is to hold the plastic up and off the cutting.)

Step 4: Tent the plastic baggie over the top of your cutting and stakes. You can put the entire pot into the bag and tie it at the top if the bag is large enough, or you can tent the bag over the top of the cutting, and use a rubber band to fasten it around the pot.

Supplies Needed For Propagating With The Baggie Method*
- Plant pot
- General purpose propagation soil, pre-moistened (see recipe is on p. 15)
- Rooting hormone
- Clear plastic baggie
- Stakes (make them out of a pencil, popsicle sticks, chopsticks, silverware...whatever you have on hand!)
- Rubber band
- Clippers or knife

* Find links to all of these, and many other propagation supplies here... Plant Propagation Supplies
The baggie method makes it super easy to get started with little equipment, but it does have a few disadvantages.

With the baggie method, it is harder to maintain a steady humidity level; generally, the humidity gets too high inside the tented plastic. It’s also more difficult to keep the plastic from touching the cutting. Any of the leaves that are touching the plastic tend to rot, so the baggie usually has to be pretty large to keep it from touching any leaves - this method is best used for small cuttings. Also, the plastic will settle after a few hours, so even if the plastic isn’t touching the cutting when you first tent it, once it settles, it might end up touching some of the leaves. So, you have to make sure to check on it regularly.

Even though it has a few disadvantages, the baggie method is definitely a great option to use for propagating plants.

**How To Propagate Succulents and Cacti**

While most plants can be propagated using a propagation box or the plastic baggie method, succulents and cactus cuttings will rot if they get too much moisture. So, it’s best to use a slightly different method for rooting succulent and cactus cuttings.

Succulents and cactus plants can be propagated at any time during the year, but it’s definitely easiest to propagate them during the warm summer months. Most varieties are so easy to propagate that many times a piece will break off and start to grow roots in the soil without any help from you. Others will need a little more help. But, generally speaking, succulents and cactus plants are very easy to propagate. So, if you’re trimming back leggy growth on your plant, or you’re simply giving it a haircut, make sure to save the cuttings for propagating.

Most succulents can be easily propagated by stem or leaf cuttings, but it will take longer to get a nice sized plant from a leaf cutting. Cactus plants can be propagated by stem cuttings (for plants like Christmas cactus) or the pads that grow on top of the plant (for plants like a prickly pear cactus).

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**Supplies Needed For Propagating Succulents & Cacti**

- Plant pot
- Succulent and cactus propagation soil (see recipe is on p. 15)
- Rooting hormone
- Clippers or knife

* Find links to all of these, and many other propagation supplies here... [Plant Propagation Supplies](#)

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**Step 1:** Choose where you want to cut the stem to make a new plant. If you’re taking stem cuttings, make sure to get at least a few inches of the stem so you have plenty of area for rooting the cutting. Use clean, sterile clippers or a knife to make the stem cutting. Many times you can simply break off the stem you want to propagate, but using clippers or a knife will ensure a clean cut.

If you’re planning to use succulent leaves or cactus pads to propagate your plant, carefully pull the leaf or pad off the plant, or cut it off with a sharp knife. Sometimes they will break off easily when you disturb them, but others may take a bit more work to remove from the plant. Note: The entire leaf of a succulent must be cleanly broken off the plant or it won’t root. If any part of the leaf is still attached to the stem, discard the leaf and try again.

**Step 2:** After taking a stem cutting, allow the cut end of the cutting to cure (dry out and callus over) for a few days before propagating it. This will help prevent rotting of the cutting. The longer the cutting is, the longer you should let it cure. This isn’t as much of a concern in the summer months, but definitely something you’ll want to do if you’re propagating your plant by stem cuttings during the winter.

**Step 3:** Loosely fill a container with the succulent propagation soil (see p. 15). Do not use the general purpose propagation mix or regular potting soil to propagate succulents and cactus plants because they hold too much water and could cause the cuttings to rot. I use a 3” to 4” pot for propagating my succulents and cacti cuttings. You can use a bigger pot for larger cuttings, or to group several leaves or pads into one container.

**Step 4:** Dip the stem of the cutting, or the bottom end of the leaf or pad into rooting hormone. Make a hole in the rooting mixture with a pencil or your finger, then gently place the stem of the cutting into the hole so the rooting hormone won’t rub off. Lightly pack the soil around the stem of the cutting so it stays in place and the soil is in contact with the stem. Leaf or pad cuttings can be laid on top of the soil, or stuck into the very top layer of soil. You can put several cuttings into one pot, or put them into individual pots if you prefer. Do not cover succulent and cactus cutting with plastic.
**Step 5:** Put the cutting in a spot where it will be protected from full sun. Don’t water your cutting until it has roots. If the soil is too wet, the cutting will just rot. The key to successfully propagating succulents and cactus plants is to keep the soil dry, but the air around the cutting humid. If there’s not much humidity in the air, lightly mist the cutting daily with a spray bottle or plant mister.

Succulent and cactus cuttings only take a few weeks to form new roots. Once you start to see new growth on the top of the cuttings, that’s a good sign that they have started to grow roots. Leaf cuttings laid on top of the soil will sprout roots and start growing a tiny new plant at the base of the leaf cutting. You can bury the exposed roots with a thin layer of soil. Cactus pads laid on top of the soil will usually grow roots at the spot where the pad is touching the dirt.

**Step 6:** Once the roots have formed, you can water the cuttings just as you would the parent plant, and begin fertilizing with a weak dose of liquid fertilizer, if desired. Succulent and cactus plants don’t need a lot of water, allow the soil to dry out completely between watering. If you tend to overwater plants, repot your cutting into a clay pot rather than using a plastic pot. Succulent and cactus plants have shallow root systems, so your cutting can stay in the pot you used to propagate it until it grows larger, or you can repot it into a slightly larger pot if necessary. I recommend using a potting soil that is specifically made for growing succulents and cacti rather than a general purpose potting soil. Always use a clean pot and sterile potting soil when potting plants.

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**Propagating Succulents During Winter - A Fun Experiment!**

It’s extremely easy to propagate succulent plants during the summer. Sometimes all you have to do is stick a succulent cutting in dirt and walk away. Heck, sometimes succulents don’t even need your help; the leaves that fall from the plant will root themselves in the dirt.

Succulent propagation during the winter is a different story. During the coldest, darkest time of the year, succulents are in a dormant state and getting the cuttings to root is much more challenging. It can be frustrating because, during this time, succulent cuttings tend to rot instead of growing roots. But, don’t despair, you can still experiment with propagating your succulents all winter long. Here’s a fun experiment to try...

Take a leaf or stem cutting from your plant (or find one that dropped off by itself, as long as it’s still firm) and place it on the window frame of a sunny window. I use my south facing window, but an east or west facing window will work too.

The window frame will be a cold but sunny spot, and will provide the cutting with moisture from the condensation that builds up on the window. After a few weeks, the succulent cutting will start to sprout roots, or put on new growth around the bottom of the leaf.

If you don’t have a window frame to set the cutting on, you can try putting leaves or a stem cutting into a dry, shallow plastic tray on the window ledge and lightly mist it with a spray bottle or plant mister every day or two (allowing it to dry out between misting). This will provide the same effect as the window frame, and the cuttings will root in the same way.

Once the cutting has sprouted roots, you can pot it up in succulent potting soil and give it a light drink of water, or continue to mist the cutting until it’s more established in the pot. Make sure to keep the soil fairly dry during the winter on all your succulent plants.
Root Plants In Plain Water
Sometimes the easiest way to propagate a plant is by putting the cuttings into water until new root shoots pop out. This won’t work for all types of plants, but many plants like pathos, coleus and ivy are easy to root in plain water. It’s especially fun to propagate plants with this method when you use a clear vase or jar because you can see the roots as they are growing.

Step 1: Take Cuttings - You can take cuttings from anywhere on the stem of the parent plant. I like to make my cuttings about a foot long, so there is plenty of length on the stem for rooting in water. The shorter the stem, the shallower the water should be. So, for example, if you want to root a spider plant stolon in water, then the water should be shallow and only the root nubs should be submerged the water.

Step 2: Remove lower leaves - Any leaves that are underwater or touching the water will rot. Pinch or trim off the lower leaves of the cuttings so the stem is long enough for rooting in water. Make sure that you have enough length on the stem so that two or more leaf node will be submerged under the water.

Step 3: Put cuttings in water - Put the stems of the cuttings into a vase of water. I like to use a clear vase so I can see the roots as they start to form, but any type of vase will work. Remove any of the lower leaves that are touching the water. The cuttings may droop or even drop a few leaves after you put them into the vase, this is normal and they should pop back after a few days.

Step 4: Find a spot for the cuttings - Put the cuttings in a sunny spot, but keep them out of direct sunlight. The warmer the room is the faster the cuttings will root. Most cuttings will start to show signs of root growth after a week, and some will start to root in just a few days.

Keep an eye on the water level because it can evaporate quickly. Don’t let the water level drop below the top leaf nodes on the cuttings. Once the roots are long and thick (to the point where they start to fill the vase), it’s time to plant them into potting soil (see “Potting your cuttings” on p. 13).

After planting the rooted cuttings into their own pot, water it well, allowing the excess water to drain out the bottom of the pot. Keep the soil evenly moist until the plant has become established in its new pot.

Rooting cuttings in plain water is the easiest way to get started propagating plants, but there is a slight disadvantage. Cuttings rooted in water will have finer roots than those rooted in a propagation box. Finer roots means that the plant will suffer greater transplant shock when potted into dirt, and will likely wilt. Because of this, the risk of the cuttings dying after being transplanted into potting soil is much higher.

To minimize the transplant shock, you can put the plant into your propagation box after you’ve potted it up. Or you could mist it daily, or keep it in a humid room (like a bathroom or kitchen) during this time. Once you see new growth, that means the plant is established and you can stop babying it and care for it the same way you do the mother plant.
**Propagating Plants by Division**

There are many types of plants that reproduce by growing pups (also known as babies or suckers) that pop out of the dirt around the base of the parent plant. Banana plants, aloes and yuccas are common examples of this type of plant. When mature enough, the pups from these plants can be removed from the parent plant and made into new plants.

**Step 1: Determine if the pup is mature enough for propagation** - A pup is ready to be propagated once it has started to grow its own root system. To check the pup’s root development, gently remove the parent plant from it’s pot. Then brush back the soil around the base of the pup to see if it has developed its own roots. In the garden, carefully dig down to the base of the pup to inspect for roots. If the pup doesn’t have any roots then it’s not ready to be removed from the mother plant and won’t survive on it’s own.

**Step 2: Untangle the roots** - Once you’ve established that the pup is ready to be removed from the mother plant, gently tease apart the roots of the pup and mother plant, working to free as many of the pup’s roots as possible. Try not to break any of the pup’s roots in the process (have patience, this may be a difficult task).

**Step 3: Remove the pup** - If the stem of the pup is still attached to the mother plant, sever the connection with a sterile knife or clippers. Try not to cut off any of the pup’s roots, just sever the connection to the mother plant if possible. Once the connection is cut, it will be much easier to untangle the rest if the pup’s roots from the roots of the mother plant. Continue to tease the roots of the pup away from the roots of the mother plant until the pup is free.

**Step 4: Re-pot the mother plant** - After you’ve successfully removed the pup from the mother plant, slide the mother plant back into the original pot, or a new one if you want to re-pot it. Now you’re ready to plant the pup into it’s own container, or move it to a new area in the garden.

**Step 5: Pot up the pup** - If the pup you removed has small roots, you can dip it in rooting hormone to help the pups develop strong roots faster. Plant the pup into it’s own pot or in the garden at the same depth it was in the old pot, taking care to cover all the roots.

If you’re dividing a plant like a banana plant, the new pup plant might droop for a few days until it gets used to living on its own. It’s a good idea to keep it out of full sun and well watered until it has perked back up. For aloes and other succulent type plants, leave them out of the full sun for a few days too, but wait several days before watering the pups. This will give them time to recover from the shock. You can mist your pups lightly to help them become established in their new pot.
HARDENING OFF CUTTINGS

If you used either a propagation box or the baggie method to propagate your cuttings, they will need to be hardened off before you pot them up. Once your cuttings have formed roots, it’s time to prepare for potting them up. Just as seedlings need to be hardened off to the harsh life outside, plant cuttings that have spent the past few weeks or months in the warmth and humidity of a propagation box will benefit from being hardened as well.

Some plants will survive the transition from the propagation box to living in a pot with no problem, but others will suffer and may ultimately die if they aren’t hardened off first.

To harden your cuttings, first remove them from bottom heat. Then, simply prop open the propagation box, and slowly remove the lid over the period of a week. If you used the baggie method for propagating your plants, simply open up the holes in the baggie little by little until the bag is ripped apart.

After removing the plant from its greenhouse environment, if you notice a newly potted up cutting is wilting, place it back into the propagation box (pot and all) or tent a plastic baggie over the top for a few days, and slowly harden it off again.

POTTING YOUR CUTTINGS

When it’s time to move the rooted cuttings into regular potting soil, gently remove the cutting from the propagation soil. Don’t pull the cutting out, or you might damage its tender roots. Use a trowel or your hand to dig under the cuttings roots and gently lift it out of the soil. Don’t worry about removing the propagation soil from the roots, you can just leave it on.

Plant your cutting in the new pot deep enough to cover all of the roots. Carefully hold the cutting with one hand and use a spoon or small trowel to add potting soil around the roots of the cutting to fill the pot. Gently press the soil around the cutting to hold it in place. Add more soil as necessary until the soil is about ½” from the top of the pot. Water the soil and add more dirt if necessary once it settles.

Don’t use too large of a pot to plant your cuttings. If the pot is too large, the plant will focus on growing roots to fill the space, rather than growing leaves. Generally, a 3” to 4” pot is the perfect size for potting up cuttings. Larger cuttings might be ok in a pot as large as 6”, but I wouldn’t go any bigger than that until the plant has become established in it’s pot. You can always pot it up into a larger pot once it becomes established in potting soil.

Once your plant has spent a few weeks in its new pot, you can start fertilizing it with a weak dose of liquid fertilizer. I recommend using ¼ strength dose of fertilizer to start, then gradually increasing that to ½ and eventually to full strength once the plant becomes established in the pot. Fertilizer is not required, but can definitely benefit the plant. I recommend using an organic fertilizer like fish emulsion or compost tea rather than chemical fertilizer. Chemical fertilizers can burn plants or build up in the soil and cause damage over time.
Propagating plants is fun and addicting. But, sometimes things can go wrong, causing cuttings to die instead of growing roots, or (even worse) spoiling your propagation box. Here are the most common problems you will face when propagating your plants, and how you can either avoid them, or fix them.

**Leaf Drop**
Some amount of leaf drop is normal when you’re propagating plant cuttings, but if a cutting is dropping most of its leaves, then something is wrong. Check to make sure the soil mix isn’t dried out, and that the humidity level isn’t too low. Also check the cutting for signs of rotting or disease. Cuttings that lose all of their leaves, turn brown or wither should be removed from the propagation box and discarded.

**Cutting Rot**
Rotting is probably the most common problem you will run into when trying to propagate plant cuttings. Plant cuttings need lots of humidity to grow roots, but sometimes it can be too much of a good thing. Rotting is usually caused by keeping your propagation soil too soggy. But rotting can also happen if the plant cutting wasn’t cut properly, if it was infected with bacteria or disease, or it was allowed to dry out too much before being put into the propagation soil.

To avoid rotting, make sure your propagation soil is never soggy (vent the box if you accidentally overwater) and always use sterile equipment when working with cuttings. Dipping the cutting into rooting hormone (which is anti-bacterial) before putting a cutting into your propagation box will also help.

**Mold Growth**
With humidity comes mold, and your propagation box is no exception. A little mold growth isn’t going to cause issues with your plant cuttings - but if it gets out of hand, you could start to have problems. Mold growth is a sign that the humidity level in your propagation box is too high, and the easiest way to stop the mold growth is to ventilate your propagation box more. You can either prop open the lid a bit, or drill a few more holes in the lid. If the mold gets out of hand, you might want to consider dumping out the propagation soil, cleaning the box and starting over with a fresh batch of soil.

**Soil Gnats**
Soil gnats are tiny bugs (commonly mistaken for fruit flies) that lay their eggs in the soil of plants, and they are a very common problem in propagation boxes because they love wet soil and humidity. Soil gnats are generally just an annoyance, and they won’t cause harm to your plant cuttings.

To avoid a soil gnat infestation in your propagation box, keep it indoors at all times. If soil gnats become a major problem inside, remove the cuttings and allow the soil in your propagation box to dry out completely, or replace it with fresh propagation soil. Soil gnats can’t survive in dry soil. Wait a few weeks before you start propagating again to ensure all the adults are gone. Read more about how to control soil gnats.

**Shriveling**
Severe shriveling or drooping is a sure sign that the cutting isn’t getting enough humidity. If you notice your cuttings are shriveling or drooping, the best way to stop shriveling is to mist the cuttings with water from a spray bottle once or twice a day to help keep the humidity high around the cutting. Also, make sure the propagation soil never completely dries out when there are cuttings in the box.

**Other Bugs**
If other bugs, such as aphids, scale, whiteflies or mealy bugs, appear on your cuttings, you can try treating them until roots have formed on the cutting if you really want or need to save the cutting. But once your propagation box gets bugs like these, I recommend discarding the propagation mix, then disinfecting the Box (with soapy water, bleach or rubbing alcohol) and allowing it to dry out completely before starting over with fresh, sterile propagating mix.

To avoid bug infestations in your propagation box, make sure to inspect cuttings for bugs or clean the cuttings before putting them into the box, especially cuttings from plants that are outdoors or in the garden.
Coco Coir vs Peat Moss
You can use either coco coir or peat moss, whichever you prefer. Peat moss is not as sustainable as coco coir is. Peat moss is a renewable resource, but it is very slow to renew so it's not as environmentally friendly. Coco coir on the other hand is very sustainable, as it is the by-product of coconut processing.

Perlite
Perlite is a very lightweight soil amendment. It's the white pieces that look like Styrofoam that you see in many commercial potting soils. It retains very little moisture and prevents soil compaction. In other words, it helps the soil drain faster which is exactly what we want for our propagation soil.

Vermiculite
Vermiculite is a naturally occurring mineral and is commonly found in potting soil mixes. The reason vermiculite is commonly found in potting soil mixes is because it helps the soil retain water. Vermiculite helps to keep the soil evenly moist so you won't have to water as often.

Sand
The type of sand I buy is just the stuff they sell for use in a sandbox. You could use any type of sand, but to ensure fast drainage of your succulent propagation soil, I recommend buying a coarse sand rather than the really fine stuff. Just don’t use sand from the garden, the beach or a sandbox (you never know what nasties will be in that sand).

How To Make Your Own General Purpose Propagation Soil
Ingredients
• Peat moss or coco coir
• Perlite
• Vermiculite
Recipe
• 4 parts (pre-moistened) coir or peat moss
• 4 parts perlite
• 1 part vermiculite (add more vermiculite if you find that your soil dries out too quickly)

How To Make Your Own Succulent & Cactus Propagation Soil
Ingredients
• Peat moss or coco coir
• Sand
• Perlite
Recipe
• 2 parts coco coir or peat moss
• 2 parts sand
• 1 part perlite

Instructions: Dump all ingredients into a bowl or bucket and mix together with a spoon or trowel until they are well blended. Unused propagation soil can be stored in a sealed plastic container.
SUMMARY

There are so many plants in the world that it’s impossible to discuss each one individually. But once you can recognize the basic growth patterns of plants, you will be able to propagate any plant you want, whether it’s a houseplant or a plant out in your garden.

Look around your home or yard. You may already have all the plants you need to fill a new garden area or expand your houseplant collection for free. If you don’t have the plants you want in your home or garden yet, talk to your friends and neighbors to see if they would be willing to share. Propagating plants is the best way to expand your plant collection, even on the tightest of budgets.
MEET AMY

My name is Amy Andrychowicz and I live and garden in Minneapolis, MN, USA growing zone 4b. Gardening is my passion; and I love all types, indoor and outdoor; including perennials, annuals, tropicales, vegetables, houseplants, succulents and even water gardening.

During the long winter months I turn to indoor gardening, tending to my large collection of houseplants, succulents and tropical plants. It’s a lot of work, but I love being surrounded by green foliage and blooming plants year round – especially during our long Midwest winters.

My philosophy on gardening is that it is a learning experiment. I learn by doing, and I experiment with plants and gardening all the time. My goal is to encourage others to do the same. Anyone can be a gardener. Whether you are a first time homeowner, gardening newbie, or simply have a mind that is more creative than your budget; I’ve created a place for you to find the ideas and knowledge to help turn your dream garden into a reality.

Come and join the fun over at GetBusyGardening.com!