



This evening's presentation tackles the complex but rewarding subject of propagation.

Or making more plants – for free!

You will find out which methods work for which plants, and how to grow them on successfully.

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What We Will Discuss

Benefits of Propagating Your Own Plants

Divide and Conquer

Seeding for Success

Cutting to the Chase



We will spend about 15 minutes each on three propagation methods, and then I'll take questions.

These methods are Dividing, Seeding, and Making Cuttings



Why bothering propagating when you can buy seedlings?

Why Propagate?

Economics

Availability – hard to find varieties

Sharing with friends

Reviving spent plants

Supporting the plant sale

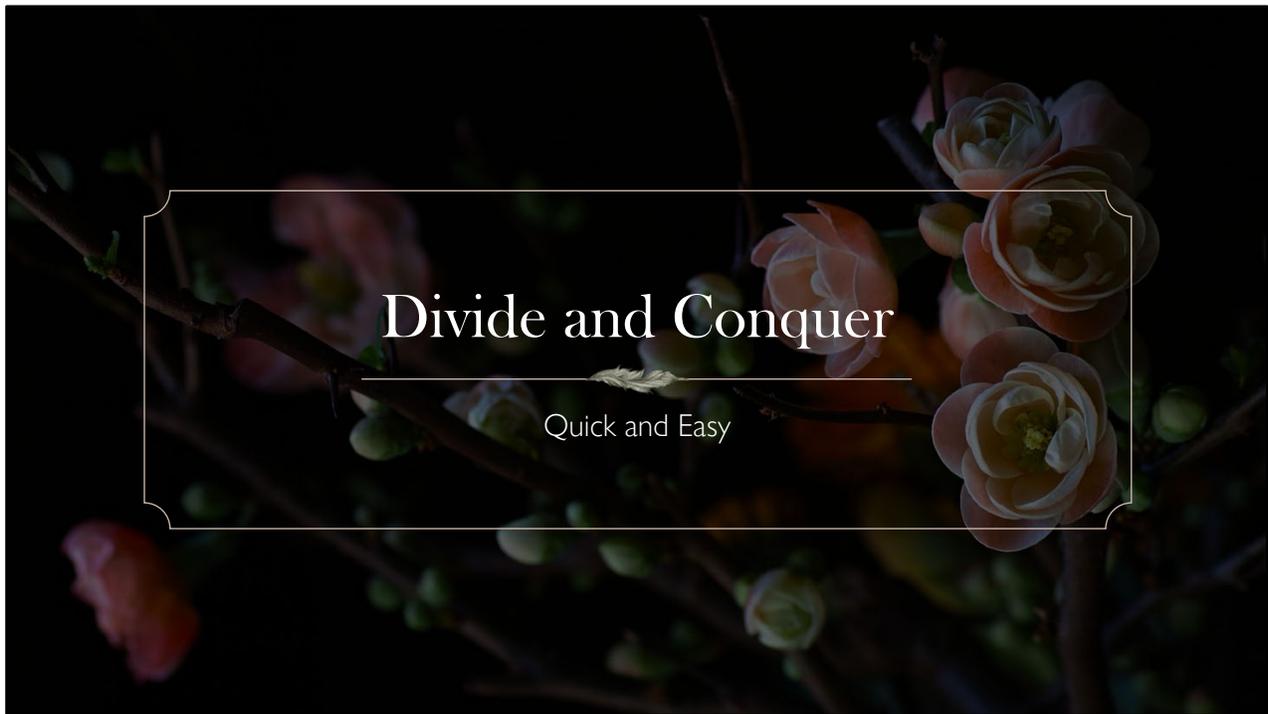


It all comes down to **CHOICE, ECONOMICS** and **GOOD HUSBANDRY**.

In the long run, propagating costs less and opens the door to many more varieties, gardening friends and new skills.

In addition to having plants to share, you will use these skills to renew and rejuvenate established plants.

And, of course, support the plant sale!



Making divisions is the first method – and the easiest.

Perennials and shrubs are the backbone of your garden – faithfully returning each spring.

However, at some point, they lose vigour and produce fewer flowers – even die out in the centre.

Then it is time to dig and divide the plant.

Once divided, the plant produces new root growth, larger and more plentiful blooms and your garden will come alive!

Divisions can be planted elsewhere, shared or donated.

Plant Division

Perennials

- Divide after flowering
- Divide in the fall

Shrubs

- Divide after flowering

Indoor Plants

- As new growth emerges

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Before you leap into action, ask two questions:

First, when do the plants produce their flowers?

This determines when you should divide the plants.

Very early blooming plants must be left to finish blooming before dividing. Divide spring and summer-blooming perennials in late summer or before the fall frost. Summer and fall bloomers are best divided in early spring as new growth emerges.

Four Types Suitable for Division



Clumped or fibrous roots
(offsets)

- Such as daylilies, hosta

Runners

- Such as bee balm,
strawberries, asters

Woody crowns

- Such as peonies, rhubarb

Thick tubers or rhizomes

- Such as dahlia, irises



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Second, what do their roots look like?

When you dig up a plant you will see one of the following four types of roots:

!! Plants with a single taproot or with woody, shrub-like stems such as Lavender, Russian Sage and Asclepias should not be divided. These plants should only be propagated by cuttings.!!



Clumped or Fibrous Roots

Often appear as offsets of original plant

As you divide, you can gently pull away the offsets

Pot up or replant the offset

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Clumped (or fibrous roots) include Daylily, Helenium, Hosta.

Sometimes referred to as offsets, these plants produce smaller plants at the base of the original plant.

This makes it easy to gently pull them away.

Repot or replant the offset.



Runners

Runners are rhizomes or stolons

Dig up the plant if required

Separate a section of stem and roots from the main body

Repot or replant

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Runners are thin rhizomes or stolons.

Examples include Bee balm, Asters, Strawberries.

Rhizomes are horizontal stems that root along the nodes and then send up new shoots. It makes for very easy divisions.

Separate a section of stem and roots from the main body

Make sure to get a healthy bit of root to ensure success!

Repot or replant



Woody Crowns

Look for buds or eyes on the hard crowns

Cut the woody mass cleanly into two or more sections

Repot or replant sections

!! Do not divide plants with a single tap root such as rosemary, lavender or baptisia !!

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Woody crowned plants include Peony & Rhubarb

These present a tougher challenge, with buds tightly placed together on a hard crown.

Only divide well-established specimens.

Cut the woody mass cleanly into two or more sections. Make sure to include several buds or eyes and a good bunch of healthy roots.



Thick Tubers or Rhizomes

Lift the entire clump in early spring

Use a clean, sharp knife to cut emerging rhizomes with a viable bud or "eye"

Dust the cut section with fungicide

Pot or replant the cut sections

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Thick tubers or rhizomes include Bearded Iris and Dahlias.

Technically these tubers or rhizomes are modified stems growing along or underneath the ground. DEMO

Lift the entire clump, being careful to avoid spearing the rhizomes. Gently separate the clump into sections.

With clean, sharp knife, cut new rhizomes from the clump

Make sure that each section has a viable bud (or "eye"), roots and a fan of leaves. Dust cuts with fungicide or cinnamon.

Repot or replant the cut sections

A Note About Dahlias



Dahlias can be propagated by separating tubers, cuttings, or seeds!

Times to divide:

- When bringing out of winter storage
- For dahlias overwintering in the ground – in early spring before growth begins

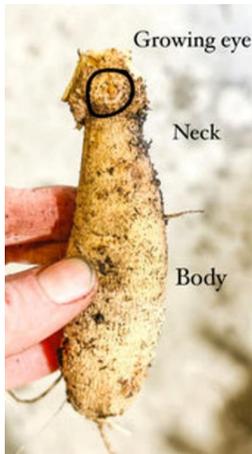
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Dahlias can be propagated by separating tubers, taking cuttings, or sowing seeds!

Dahlias are frost sensitive and usually they are dug up and stored. Divide in spring when you bring them out of storage.

If you are fortunate enough to live in a climate where you can leave them in the ground, dig them up in spring before growth begins.

A Note About Dahlias



Divide as for other thick tubers or rhizomes

!! Make sure each division has one good tuber and at least one strong and healthy dormant bud (or eye)!!

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Divide them into sections and make sure each division has one good tuber and at least one strong and healthy dormant bud (or eye)!!

Plant the divisions 4 -6 " deep, in their flowering site, immediately after dividing.

1. Make a plan – are you setting divisions aside or replanting?
2. Give yourself time to complete the job
3. Dig in!



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Tips & Tools

As soon as you dig up the plant, the clock is ticking.

So plan in advance and have tools at the ready.

Arrange a cool damp place to set divisions.

Know in advance whether you will pot or replant and where.

Tools include a sharp spade, forks, a garden knife or old saw, pots, soil or compost, a hose or watering can, and some newspaper or burlap to keep the roots moist if required..

1. Find the dripline
2. Dig a trench around the plant
3. Make angled cuts into the trench
4. Lift the root ball (in sections if needed)
5. Divide according to instructions for the type of root



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Getting Dirty



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Start by finding the drip line of the plant. Dig a trench around the plant, severing the roots cleanly as you go. cut down and under the plant on all sides.

If large, cut a section at a time. Once the plant is free, carefully lift the soil ball and move it aside.

Now, using what you know about the type of roots, divide carefully and replant or pot up the divided sections. Water in your new plants, even if it is raining, to settle the soil around the newly divided roots.

1. Protect divided plants from strong sun
2. Keep moist but not wet
3. Wait about a month before fertilizing

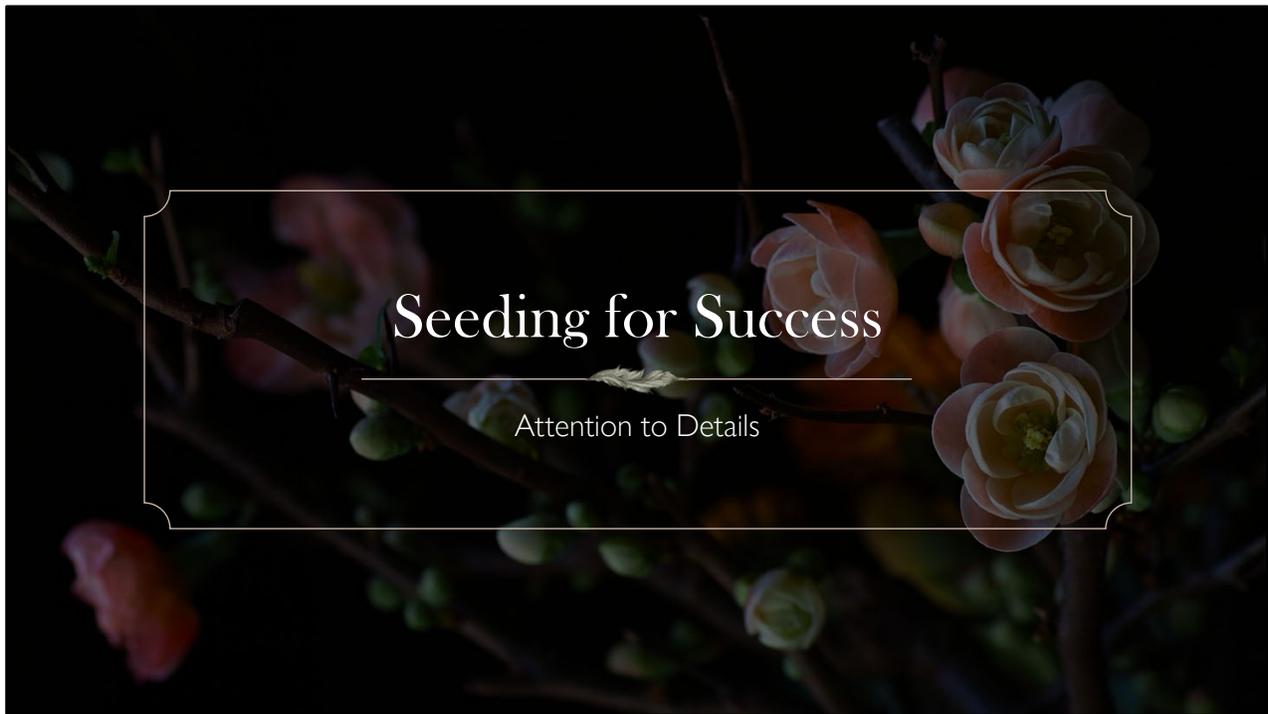


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Aftercare

Shield divided plants with shade cloth while they recover. Wait at least 3 to 4 weeks before fertilizing.

Provide even soil moisture. Overwatering can flood the roots and cause the roots to rot. Under watering will cause the newly formed root hairs to shrivel, stressing the plant and delaying the return of the water to the stems and leaves.



In this next section, I will cover starting seeds, seed packet language, types of seeds, tools & starter mixes needed and methods

Seeding

Why not just buy seedlings?

- Lower cost and better choice
- Seeding is easier than you think – but takes care
- Minimal equipment needed



More and more people have begun to try their hand at growing vegetables, herbs and edible flowers at home.

It's a way of embracing whole foods and organic practices.

Even people living in apartments or condos, can grow a wide variety of plants using containers, raised beds or rooftop spaces.

With just a bit of equipment and seed you can start your plants at home. Seeds allow you to expand your choices. Most garden centres offer a good variety of seedlings but if you want to try heirloom varieties or experiment with something different, then look to the seed companies.

Which to Choose

Seed options include:

- Hybrid
- Organic
- Heirloom
- Shared
- GMO



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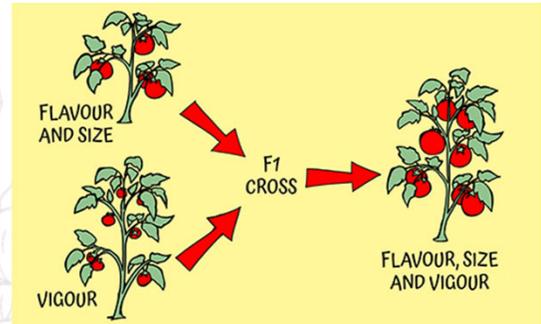
Seed packets have quite a bit of information to tell you about. Good quality seed companies usually include the type, variety, germination rate, maximum size and spacing, recommended start date, days to harvest and a good description of the plant. Start with fresh seed, it guarantees good germination.

What is a Hybrid?

A hybrid is a cross between two varieties.

Designed to offer the best features of each parent plant, such as:

- Flavour
- Disease resistance
- Time to fruit or flower



Hybrid

F1 hybrids are produced by selective and deliberate cross pollination of 2 parent plants. The results often produce a better product. For example; sweeter flavour; more disease resistant or earlier to mature.

Seed collected from

F.1 Hybrids will not come true & will revert back to the characteristics of the parent plants.

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Research Flavour and Disease Resistance



Option	Can you save?	Disease resistance	Flavour
Hybrid	no	better	yes for some/others chosen for durability
Organic	If open pollinated	varies	varies
Heirloom	yes	varies	usually good
Shared	yes	varies	varies
GMO	no – patented	yes	not always priority

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Organic

Open pollinated seeds, can be heritage or heirloom.

Plants grown from OP seeds will generate seed that produce the same plant year after year good for seed saving.

What Seeds Need



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Water softens the hard shell of the seed. Without water seeds will not germinate. Too much water will drown or cause disease.

Oxygen in the soil is needed for respiration. If too much water or the seed is planted too deep, it will be starved of oxygen. Make sure containers have bottom drainage holes.

Warmth. Soil temperature impacts the metabolic rate of seeds & seedlings. Germination requires a temperature range between 16 & 32 C (60-90 F). A heat mat helps to control the temperature. They really work! If you don't have a heat mat find someplace reliably warm.

Get Ready



The right space

- Plant stand or table
- Heat mat or warm location as required
- Grow light or sunny, south-facing window

The right materials

- Seed starting mix and fresh seed
- Seed trays with cover and waterproof base
- Watering can and spray bottle
- Labels and marker



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Use a **good seed starting mix**, OR a soil-less mix of peat or coir, perlite or vermiculite, plus sand. Look for OMRI certified (Organic Materials Review Institute). NO garden soil. NO mixes with fertilizers.

Clean containers with drainage holes ideally with cells, and waterproof trays.

Heat mat or reliably warm space to place the trays to germinate.

Watering can and spray bottle

Labels & Marker.

Grow Light if possible once seeds germinate

#5454 See photo at www.reneesgarden.com

Little Hero F1 Container Baby Leaf Spinach

PLANT IN	SUNSHADE	PLANTING DEPTH	SEEDS	DAYS TO GERMINATE	DAYS TO HARVEST
Feb - May Aug - Sept	Full Sun	1/2 inch	2 inches	7 - 10 days	Approx. 40

CONTAINER PLANTING
Plant in early spring when danger of hard frost is over. Use a pot at least 15-18 in. in diameter and 12 in. deep, and start with fresh potting mix. Sow seeds 2 in. apart or simply broadcast seeds thinly, aiming for 2 in. spacing. Cover with 1/2 inch of potting mix and firm soil well over seeds. If first sowing germinates unevenly, plant more seed as seedlings will catch up fast.

GROWING NOTES
Birds love tender young seedlings, so protect as necessary with netting or floating row cover. Sow again in late summer for a fall crop. Keep spinach well watered and weeded and fertilize every few weeks and especially after harvesting.

HARVEST AND USE
To harvest by the "cut and come again" method: when plants are 4 to 5 in. tall, cut as much as you need, by using scissors to shear off leaves 1 to 2 in. above the soil level. Water well and fertilize lightly and plants will regrow for several more cuttings.
Little Hero's tender, baby leaves are delicious in fresh salads with additions like thinly sliced sweet onions, sliced radishes, thin wedges of apple or orange, toasted nuts, chopped scallions, crispy bacon bits, hard-cooked egg quarters and grated cheese. Or stirfry, braise or sauté very quickly for healthy, tasty greens.

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How to Plant

Check package for instructions!

Fill containers with moist mix and tamp gently

Plant 1 or 2 seeds per cell and cover with mix

Mist the surface

Label the tray

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Fill your containers with moistened seed starter mix. Gently tamp down so surface is smooth.

Put one or two seeds in each cell and cover lightly with seed starter mix using the recommended depth. Some seed is so tiny that you won't even need to cover them. Lettuce, basil & poppies are good examples.

Mist the surface to saturate the medium and settle the seed.

Or put your cell trays in a tray of warm water until the medium is damp.

Don't forget to label. Write out the name of the seed, variety and the date.



Take Care

Check heat and light requirements for germination

Place tray under vented cover

When seeds emerge, move to bright light

Keep moist and transplant as they grow

Harden before planting outside

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Move to heat mat. Cover with something to keep out the light. Most seeds don't need light, they need warmth and moisture. Read your seed packet or research the seed type to make sure you are doing it right. When seeds germinate, seed leaves or cotyledons will appear. These leaves supply food while the seedling develops true leaves and can perform photosynthesis.

Move to sunny south window sill or grow light. If serious about growing seeds, invest in a full spectrum grow light system. DEMO

If more than one seedling germinates in your cell, you can thin it to 1 seedling with scissors or snips.

Keep the seedlings moist until true leaves appear. Transplant if needed, then harden off before planting out.



Cuttings can be taken from stems, leaves, or roots. The three I will be discussing are types of stem cuttings. Softwood, semi hardwood and hardwood.

Duplicate Your Favorites



Where and when to take cuttings varies

- **Softwood** cuttings for coleus, chrysanthemum, dianthus, lavender
- **Semi-softwood** cuttings for currants, hydrangeas, roses, rhododendrons
- **Hardwood** cuttings for lilac, forsythia, viburnum, dogwood, hardy hibiscus

Be prepared to wait for successful rooting

Many woody plants go through these growth phases in their first-year growth.

Herbaceous (young growth in spring)

Fine, pliable growth that will bend

Softwood (starting to toughen up)

May snap when bent.

Semi-ripe or **semi-hardwood** (woody bark starting to form)

Hardwood (late summer and fall)

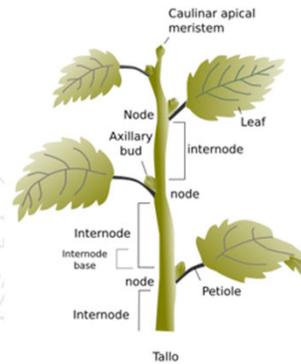
With its tough, protective coat, a healthy woody stem is unlikely to snap when bent.

Tips for Success



All cuttings need a node top and bottom

- cut top at an angle to keep track of tips versus toes!
- the bud at the node indicates direction
- use hormone rooting powder for better success rate



All cuttings need to have a node at top and bottom. Look for the bud at the node to indicate the direction. The bud should be facing up.

Rooting Powder

Read label for description of requirements for each cutting type. Three types are:

Gels

- more expensive/can become contaminated

Liquids

- require mixing/less convenient

Powdered

- easiest to use



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Rooting hormones are available as powders, gels and liquids. In my opinion, powder is the best & easiest form to use.

Gel is expensive and can become contaminated if you dip into the original container. Liquid requires mixing and is less convenient.

Some brands include Plant Prod and Pro Mix

The basic active ingredient is IBA (Indole-3-Butyric Acid).

Plant Prod - Stim Root comes in 3 different strengths for each type of cutting.

Softwood cuttings 0.1%

Semi Hardwood 0.4%

Hardwood 0.8%

Tools

- Sharp knife disinfected with alcohol or lysol
- Rooting hormone powder
- Dibber or something to make a hole
- Pots or trays with drainage holes
- Cover of some sort to prevent drying out
- Misting bottle

When taking cuttings be sure to disinfect your pruners & knife with isopropyl alcohol or household Lysol.

Protect cuttings from drying out as you go.



Softwood Cuttings

In late summer, choose healthy side shoot

No buds or flowers and 4 to 5 nodes

Strip off the lower leaves but **not** the growing tip

Insert cutting into rooting medium 3 to 4" apart

Keep moist until well rooted

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A softwood cutting is taken from a stem while it is still green and has not yet formed bark. Usually taken from the tip of the branch & bends really easily.

Take the cuttings in late spring or early summer. Should include 4 to 5 nodes. Strip off the lower leaves but **not** the growing tip, it contains new tissue and the cells are actively growing. These cuttings will need moisture and warmth to root.

Advantages: will root fastest as it already has a growing tip.

Disadvantages: it can dry out or wilt easily, it needs to be kept moist.

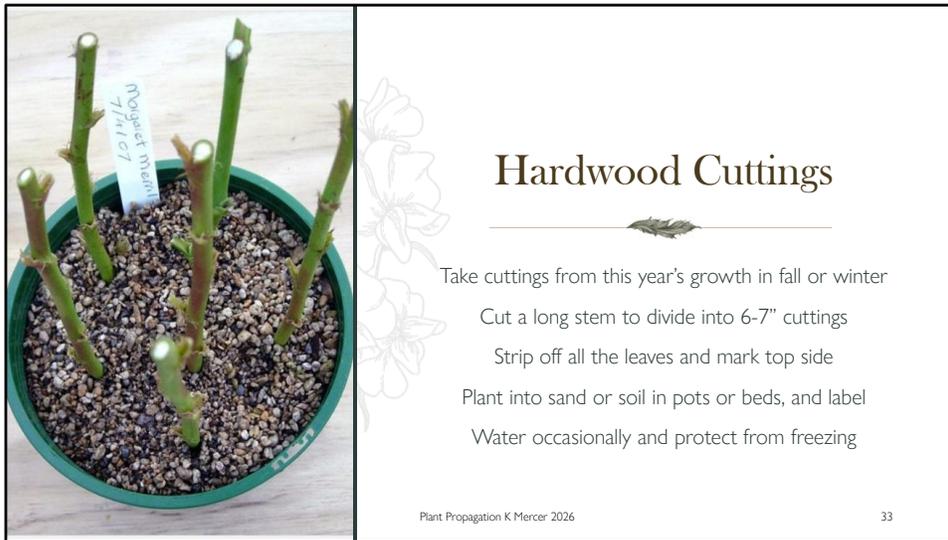


Choose wood from this year's growth, firm but pliable, bends slightly but does not break.

Advantages: easier to root than hardwood, less likely to dry out than softwood, needs less heat & moisture. Disadvantages: takes longer to root than softwood, dries out more easily than hardwood, can't have too much moisture. Make your first cut just below the bottom node, count 3 to 4 nodes and then cut above the top node. Strip off all lower leaves reduce the top leaves by half. This will prevent moisture loss.

Dip the bottom of the stem in rooting hormone powder & plant immediately in a pot of moist all-purpose potting soil. put several cuttings in a 4-inch pot, well-spaced around the pot.

put in a semi shady spot and mist frequently. Use a dome, with ventilation holes, over the cuttings. Be Patient!



Take cuttings from this year's growth, firm green or light wood that hardly bends without breaking. You can take cuttings in early to late winter.

Advantages: doesn't wilt or dry out easily. Disadvantages: slowest type to root.

Cut long sections of stem so you can make a few 6-7" cuttings. Label & bundle stems upright, to remind you which side is up.

Make a cut just below a node & measure up about 7 to 10 inches and cut above the node. Strip off all the leaves. Dip into rooting hormone. Place cuttings, evenly spaced, into sand or other suitable well drained potting soil in pots. Remember to label. Water occasionally.

Place in a cool spot unheated garage. But it must stay above freezing!

Alternatively, you can stick the cuttings into a raised bed with good drainage.

Plant 2/3's of the height of the cutting into soil. Make sure they are well spaced and labeled. May take 6 months; requires ventilation, may need lighting, once leaves begin to grow.

More Cutting Options



1. Root cuttings
2. Leaf cuttings
3. Air layering
4. Soil layering
5. Grafting and bud grafting



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There are many other types of cuttings such as . . .



Thank you!

Kathleen Mercer

Questions

I hope you enjoyed my presentation and thank you so much for your attention.