Propagating Hardwood Cuttings

November 15, 2024

Slide 1 – Intro
Be sure to ask questions, if you have any, as we go along

Slide 2 – Acknowledgements

Slide 3 – To Propagate

When giving a program, it is a good idea to take a look at the definition of what we are going to talk about. In this case, the definition of propagation is to create a new plant that is identical to the original plant

Slide 4 – US Plant Patent Act

If you ask about the legalities - take a moment to reads a bit about the US Plant Patent Act. As a footnote, none of Mitchie's hybrids are patented, nor will any of mine be. With that said…

Slide 5 – Propagation

In this case, "propagation is the multiplication or reproduction of a kind or species, via sexual or asexual methods". What is the difference?

Slide 6 – Sexual Propagation
Note: Mouse click brings in each line

- From seeds
- Transferring pollen from the anthers of one rose to the stigma of another - this is the hybridization process
    - Fertilization occurs and seeds are produced
    - Every seed will produce a unique plant!

Slide 7 – Asexual Reproduction
Note: Mouse click brings in each line

- Here is where we use parts of a growing plant **other** than the seeds.
- There are several types:
    - Cuttings
    - Layering
    - Division or separation

- Budding
- Grafting
- Tissue culture

For this program, we are going to take a look at the first one listed – propagating cuttings…

Slide 8 – Some beauties!

Let's take a look at what we would do if we wanted to make more of these lovelies! None are patented, no permission needed.

Slide 9 – Cutting

- Any detached plant part which, when grown under favorable conditions, will produce a new plant identical to the parent plant
- The three types of cuttings include:
  - Root
  - Leaf
  - Stem

*Note: We will be discussing **stem** cuttings in this program*

Slide 10 – Stem Cuttings
Note: Mouse click brings in each line

- One of the simplest methods of propagating new roses is to cut off pieces of the stem and plant them into a growing medium, where they will take root

Note – this is what our Grandmothers did and covered the cutting with a Mason jar

- There are two different methods - softwood and the hardwood. The principal difference is the hardness or softness of the tissue which differs based on the time of year when collecting
  - Hardwood – taken in late fall or early winter
  - Softwood – taken during the growing season.
- For this session, we will talk about **hardwood** cuttings

Slide 11 - Procedure

- Gather materials

- Obtain and label cuttings
- Prepare rooting media
- Prepare cuttings
- Dip in rooting hormone
- Place cuttings in media
- Protect your cuttings

Let's take a closer look at each step…

Slide 12 – Gather materials
Note: Mouse click brings in each line

First up – gather what you need before getting started:
If you are going to plant in containers, some good sterile potting soil, some Perlite, containers and some or Root Riot cubes or oasis (floral foam). Some rooting hormone, a cup, labeling materials, pruners, and a water source. You also need some protective covering. You probably know which healthy plants will supply the cuttings and have them identified. You want a place to plant, if you do in the ground, where you can leave them for one year! *(This is the main difference of the after care for the hardwood cutting in the ground)*

Slide 13 – Obtain cuttings
Note: Mouse click brings in each line

Take your cuttings in late September – November from healthy, disease-free donor plants. Take cuttings from firm but young stems. On a repeat-flowering variety, that would be stems on which the flowers are fading or from which the petals have just fallen. Roses root best if the cutting has some leaves still attached, to provide sugars from photosynthesis as well as root-promoting hormones. Some varieties will root from leafless cuttings, but it's better to allow two sets of leaves to remain. We are in Zone 8, so the time may vary depending on your zone. Cut canes that are about pencil thickness to about the same length (6 - 7 inches) with three sets of leaves. When working with miniatures and minifloras your cutting will be smaller and normally will be stuck in oasis or rooting cube in either a container or in the ground. Put a label on right away before you get them mixed up! We prefer to use a 4-inch piece of telephone wire. There are many different pairs of colors in a large cable. We use the same concept to identify different pollens when hybridizing. Then plunge in a bucket of water before planting.

Slide 14 – Taking cuttings

Here is one cutting, cut to pencil length, labeled and ready to put in water

Slide 15 – Cuttings in a bucket of water

Leave them in water till you need them to start the preparation

Slide 16 – Root Riot Plant Starter Cubes
Note: Mouse click brings in each line

- Made of fine grade Canadian peat moss
- They are pH balanced and pre-moistened
- They have a spongy texture that provides the ideal air to water ratio and allows them to maintain a consistent moisture level
- They are specially inoculated with micro-nutrients and growth hormones to nourish young plants and aid in rapid root development

Slide 17 – Root Riot Plant Starter Cubes
Note: Mouse click brings second photo with text

- There is a small hole in the center in which to stick your cutting
- Here you can see their relative size to a golf ball

Note – Another brand of these plant starter cubes is Rapid Rooter, which some users say that the larger hole cored into the center seems oversized and doesn't conform to the smaller diameter of the stem. The Root Riot plugs had a smaller opening that really closed around the stem nicely.

Slide 18 – Some Technical Stuff
Note: Mouse click brings in each line

- Most plant cuttings will produce their own rooting hormones in time. Many clone easily by placing the cutting in clean water.
- Others may take a long time to develop roots without the use of a rooting hormone.
- Auxin is a plant hormone that aids in the initiation of adventitious roots. Indole-3 acetic acid (IAA) is naturally occurring in plants and affects about every aspect of plant growth. But some plants don't produce adequate supplies of auxin and are difficult to root. Thus we help!
- Adventitious - occurring in unusual or abnormal places, e.g., roots growing on a stem

Mouse click brings in: Photo of roots growing on the stem, then roots at the bottom

- Most rooting products do not contain IAA, but rather a synthetic form of indole butyric acid (IBA) and/or naphthalene acetic acid (NAA), to improve propagation success.

Note: Rooting hormone is not really required, but it often helps to promote the production of a new root system.

Slide 19 – Rooting hormone
Note: Mouse click brings in each line

- Synthetic forms include powder (Rootone®, Hormodin®, etc.), liquid (Dip 'N Grow®, Wood's, etc.) or gels, such as Clonex®
- Naturally occurring hormones include;
- Willow extract contains two auxin hormones found in high concentration in the growing tips of the branches – works as well as synthetics! *(see note at end)*
- Honey or cinnamon can protect the tender cuttings from pathogens and allow the natural rooting hormones to work

Note: Honey has some natural antiseptic and anti-fungal properties that can help keep bacteria and other microorganisms from getting into the cut stem and causing infection.

Note: Cinnamon doesn't actually act as the plant's auxin hormone (rooting hormone), rather, it's a natural antibacterial, antimicrobial agent, that works as a fungicide. This allows the natural rooting auxins that are found in the green growth of your cuttings to thrive without competition.

Slide 20 – Some rooting hormones

This Rootone® is an oldie! Hasn't been used in years! Most likely not very effective!

The Rootone® and the Hormodin® have been used for years. Clonex® is a gel, and the Wood's® is a very concentrated product that must be diluted. From the label, I diluted 1 part to 20 of water. Shown below each photo is the percentage of indole butyric acid, or IBA, a plant hormone.

We use both the powder form (Hormodin) and the gel Clonex.. The biggest advantage of the powders is their long shelf life. Place enough in a separate container so you can dip the basal end into the powder. When you are through with your cuttings, discard what is left. We will show the use of Clonex for this program.

Slide 21 – A Gel Hormone We Use
Note: Mouse Click brings in each line

- Clonex Rooting Gel encourages rapid root development while helping to minimize plant stress

- Gels have an advantage - It will remain in contact around the stem, sealing the cut tissue and then supplying the hormones needed to promote root cell development
- It is registered with the EPA and is approved for use on all food crops, including medicinal plants

Note - *A high performance rooting compound!* ***Clonex® Gel*** *will remain in contact around the stem, sealing the cut tissue and supplying the hormones needed to promote root cell development, and vitamins to protect the delicate new root tissue.*

Slide 22 – Using A Rooting Hormone
Note: Mouse click brings in each line

- With all synthetics – put a small amount for use into a separate container to avoid contamination of the entire supply
- Liquid forms can be ready-to-use or concentrated. Do as above with the ready-to-use, while the concentrated requires dilution, so it is made in a separate container
- Gels have an advantage – they help seal the cut plant tissue and promote new root growth

Slide 23 – Preparing Growing Container
Note: Mouse click brings in each line

- A 4-inch container (top) is probably big enuf for minis or minifloras
- The 6-inch (lower) or a half gallon would work well with the larger roses
- Put sterile potting mix in bottom so top of rooting cube will be just below top of container
- Insert rooting cube
- Fill container around rooting cube with sterile potting mix and water well
- Repeat for each cutting

Note: *Use a good soil mix as you would when potting any rose. Add some Perlite (1 part Perlite to 2 parts ready-mixed potting mix) to your soil to keep it from getting too compacted over time.*

Slide 24 – Preparing the cutting
Note: Mouse click brings in each line

Remove the prickles (thorns) that will be below soil level. Remove the lower leaves – leaving the upper two sets

Slide 25 – Preparing the cutting (cont.)
Note: Mouse click brings in each line

Reduce the leaf area by 50%. Use your pruning shears to cut the basal (bottom) end at an angle just below (1/8") a stem bud or leaf node. This part of the stem is hard and more resistant to rot. Wound (scrape) stem lightly opposite the eye. This wounded area will callus over and provide an additional spot for roots to form.

Slide 26 – How to Use a Rooting Hormone
Note: Mouse click brings in each line

- Put a small amount for use into a small cup
- Dip cut stem in cup, **not** in bottle!
- Discard leftover rooting hormone when finished with all cuttings

Slide 27 – Sticking the Cutting and Covering
Note: Mouse click brings in each line

- Gently insert cutting into the rooting cube, just far enuf so it is supported
- Don't push the stem down thru the bottom of the rooting cube
- A cover helps retain moisture – use a large plastic soda bottle or a half gallon milk container

Slide 28 – Using an Oasis or Root Riot Cube in the Ground
Note: Mouse click brings in each line

- If using an oasis, make a small hole in top center with a stick
- Gently insert cutting down into the oasis or Root Riot cube, **until** it is supported
- It should go almost to the bottom of the oasis or cube, but **NOT** thru it!
- If using oasis, gently firm it around the stem

Follow the same steps as when using a container as in previous slide.

Slide 29 – Fall and Winter Care
Note: Mouse click brings in each line

- If in containers, move to sheltered area or bury to rim – provide adequate protection if you don't bury
- Be sure and leave the caps **off** the protective covers
- Too much moisture inside and plants will mold!
- Mulch around protective covers in cold weather
- If in containers, OK to remove in spring
- If you can, leave plants alone for a year
- Then you can dig and transplant

Slide 30 – Protecting Cuttings in Containers
Note: Mouse click brings in each line

- If you bury, bury to the rim
- A cover helps retain moisture, and protects in cold weather
- Leave the cap off!
- Too much moisture inside and plants will mold!
- Will mulch up and around the container when mulching the rest of the roses

Slide 31 – Protecting Cuttings Stuck in Ground – no containers
Note: Mouse click brings in each line

- A cover helps retain moisture, and protects in cold weather
- Be sure and leave the caps off!

Slide 32 – Moisture inside cover

Look at the moisture inside this bottle on a 50-degree overcast day!

Slide 33 – Mid-February @ 26°
Note: Mouse click brings in each line

Here are the cuttings safely inside their covers with the temp hovering at 26 degrees. Look at frost and ice buildup from condensation the day before. This ice will melt as the sun hits it and the moisture will run down the inside to keep the cutting well watered.

Slide 34 – Same day - cuttings in mid-Feb

Here is a shot (cover temporarily removed) of two of the cuttings after 4 months. Temperatures since they were planted in mid-October have been as low as 14 degrees! As you can see, the leaves on one are still green and there is new growth in the leaf axil.

Slide 35 – The first day of spring

Here is a shot (cover temporarily removed again) of two of the cuttings the first day of spring (March 20th). Lots of new growth. One of them still has not dropped its leaves.
Now if we were to dig up either one of these, this about what we would see;

Note: Mouse click brings in a photo of the roots on a cutting.

Slide 36– Mid June

4 of the 5 cuttings in this row survived the winter and are growing nicely. Here is the first one to bloom – one of our seedlings.

Slide 37 – One Year Later

These are ready for transplanting.

Slide 38 – Requirements for Success
Note: Mouse click brings in each line

- Be Patient! Varies by variety.
- Most will will root this way – give it a try!
- When new growth starts to appear in the spring, don't be too hasty to disturb the cutting
- Sometimes they have rooted, but often they have only calloused
- Encourage additional shoot formation and branching by removing flower buds
- Keep well watered in spring and summer
- Fertilize normally during growing months
- Let them grow the year in their temporary home (best if you can)
- Next fall they can be safely dug up with as much root as possible and transplanted to a permanent location.
- Lastly – don't be discouraged!

Slide 39 – Questions? - Thank you

Added note - ***Willow Extract –*** Willow extract is probably the best natural, organic rooting stimulator available. There are many products available that use it as the main ingredient. The reason willow extract works so well is because it contains two auxin hormones: salicylic acid (SA) and indolebutyric acid (IBA). SA is involved in signaling a plant's natural defenses, while IBA—once thought to be only available synthetically—stimulates root growth.

This hormone is found in high concentrations in the growing tips of willow branches. Products made with willow extract contain these two powerful hormones and can naturally provide the same success rates as synthetic rooting hormone products. In fact, it is not uncommon for growers to experience root growth in a matter of days when using willow extract as the rooting stimulator.