



Rose Propagation



Introduction to Growing and Enjoying Roses

The American Rose Society and Mississippi State University Extension Service



Similar to propagation of other landscape plants



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Roses are similar to other landscape plants in that there are several methods to propagate them. Generally, asexual propagation will reproduce a cultivar true to type, where sexual propagation allows genetic diversity to produce new cultivars.



How can you propagate a rose?



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- Seed ◀
- Cuttings
- Layers
- Grafting



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Propagation by seed is sexual propagation. Seed of many species roses will reproduce true to the parents, but seed of hybrid cultivars have the potential to create a new hybrid, different from the parents.



You can make controlled crosses
and develop a new cultivar
or
collect seed from open pollinated
flowers



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Some cultivars produce seed, rose hips, more easily than others. This is 'Ballerina'. Some hybrid teas do not produce many hips.



Need to select the flower when the pollen is mature, but still in the anthers.

Characteristics of the right flower for pollination:

- 1. Sepals unfurled**
- 2. Petals closed (covering the stigma)**
- 3. Petals on the verge of opening**



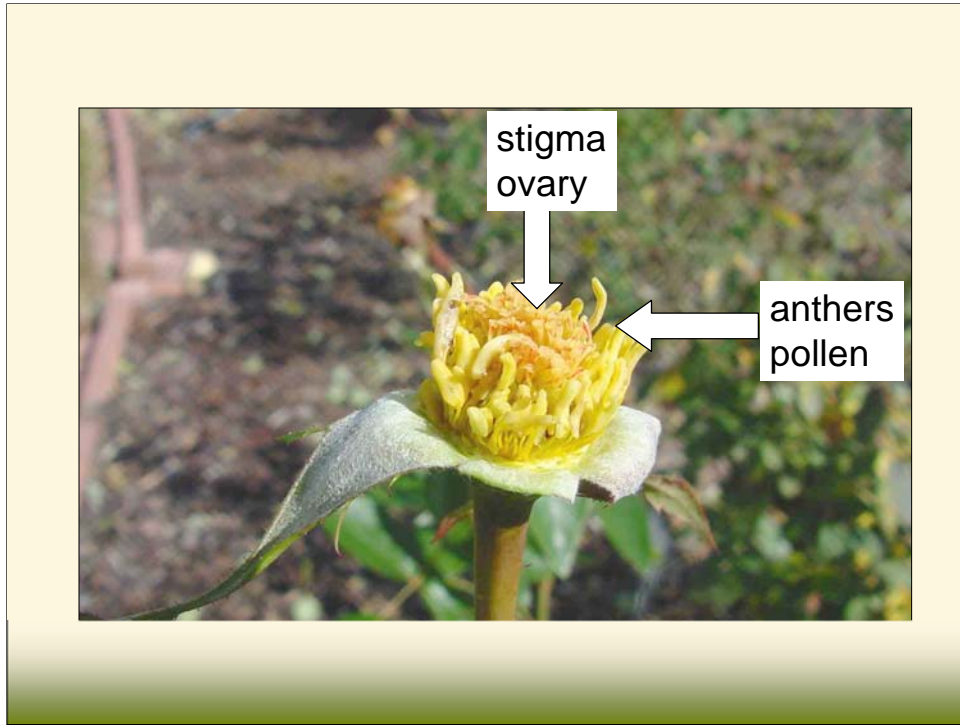
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For a controlled cross, you need to select the parent flowers before the pollen is released from the anthers. Otherwise the flower will self pollinate.



This is a young bloom.



The anthers bearing pollen are on the outside of the flower and the stigma with the ovaries are in the center of the flower.



Cut off the stamens

**Save for pollen or discard them if
you have no use for the pollen**



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The anthers will mature and release the pollen. Transfer the pollen from the desired male parent to the stigma of the desired female parent.



Cover the female flower with a paper bag to prevent unwanted pollination



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Do not allow the female parent to be pollinated by other pollen. After pollination, cover the female flower with a paper bag to prevent pollination from other pollen sources.



Pollen Collection

Leave the anthers

in a covered

container for 24 hours

Do not allow insects to contact the anthers.



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Best pollination conditions:

Temperatures not exceeding 85° F

Do the cross in the morning before the sun stresses the plant

Rose seeds need approximately 4 months to mature



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**When pistils are appear sticky on top,
apply pollen from anthers**

**When the base of the flower, the hip,
begins to swell, you know pollination
has occurred**



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After you cover the female flower with the bag, look at it daily to see if the pistils appear sticky. When they are sticky, the pistils are ready to receive the pollen.



In the Gulf Coast, the best conditions for controlled crosses is in April and May



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Best chance of success are before the summer heat. The successful cross will have a chance to grow into a mature seed before winter.



Some species and cultivars produce seed more easily than others



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Some cultivars rarely produce rose hips. The Old Garden and Shrub roses appear to produce hips, and seed, more easily than the others.



'Dortmund' rose hips.



Remove seed from hips

Stratify seed in moisture in cooler
before planting

One source said 4-5 weeks, another
4 months



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Store the seed in moist, not wet, paper towel, in a plastic bag. Do not store in a refrigerator with fruit or vegetable as the ethylene released could kill the seed. Watch for root emergence from the seed.



This is how new cultivars are developed



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There is a new cultivar named 'Marilyn Wellan'.



- Seed
- Cuttings ◀
- Layers
- Budding & Grafting



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Roses may be rooted at
any time of the year

Summer and fall are
perhaps easier times



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During the heat of the summer, a mist bed is very useful



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The easiest part of the
rose to root is the tip of
stems that have recently
bloomed



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Use vigorous, healthy canes of this year's growth for cuttings.



The flower has matured and the petals are falling off.



You want new, vigorous growth

Mature buds



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Most nurserymen maintain stock plants for cuttings. These plants are pruned each year to produce vigorous, young sprouts for cuttings or budwood.





The flower heads or hips should be removed down to the first set of healthy leaves. Cuttings should be 6 to 8 inches long. Make clean cuts with sharp cutters.



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It is important that the cuttings not be allowed to dry out



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Do not store in the sun or in a hot car. If you are away from home and collecting cuttings, you might consider taking a cooler with a little ice to store the cuttings until you get ready to root them.



Rooting hormones are useful



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There are numerous rooting hormones available.



Scrape bark on the lower
part of the cutting

Most rooting will occur there



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Do not cut into the wood. Scrape the bark. This will encourage the cells in the scraped area to grow to heal the cutting. When the cutting is stuck in the media, the part of the cutting below ground will respond with root growth.



Leave some foliage on 2-3 buds

Have 2-3 buds above ground and 1-2 buds below ground



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Leaving some foliage will allow for photosynthesis to produce energy for the cutting while it is rooting.



The rooting media should
be well drained and loose

Do not want soggy media



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You can add water much more easily than you can remove it

Bright light is good - not direct
sunshine

Need to keep foliage in high
humidity

Periodic mist – most pros would
use this

Bright indirect light is best. If you have a mist bed with periodic mist that you can control, direct sun can be beneficial.



You can create a humid mini-greenhouse with a plastic bag or soda bottle

Watch temperatures – do not allow to get too hot



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You do not want the foliage of the cutting to dry out.



Some species and cultivars more easy to root than others



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These are Fortuniana cuttings. The cutting on the left is 4 months old and the cutting on the right is 2 months old.



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- Budding & Grafting



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This form of reproduction occurs naturally with some plants, such as roses.



Bend a branch to the ground

Scrape or cut the branch where it will be under ground

Rooting hormone on the cut could be useful



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Rooting occurs more easily when the portion of the branch that will be placed under the ground is cut or scraped. Put rooting hormone on the cut. Put something in the cut to prevent it healing before rooting occurs.



Put the branch under ground –
not too deep, 1-3 inches

Make sure the branch stays in
place

Leave all summer

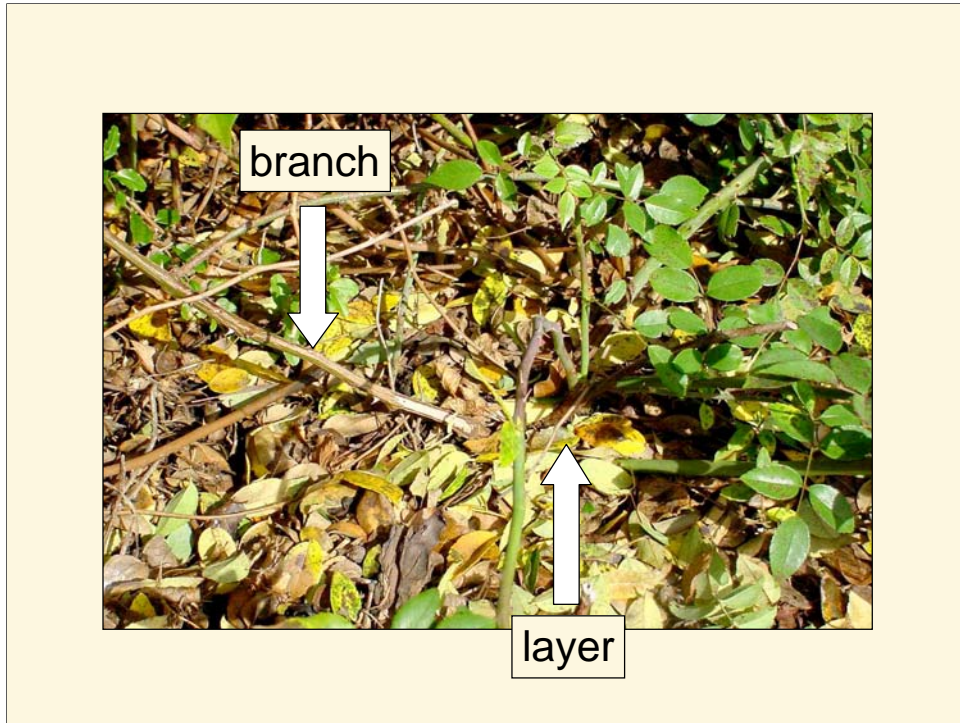


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Might need to put a weight or a stake on the branch to hold it down.

It is possible to do an air layer, where the branch is wounded and moist spagnum peat moss is placed around the wounded branch and then wrapped in plastic to retain the moisture.



A branch from this 'Jacotte' plant grew close to the ground and rooted by itself in the garden.



The new plant has a nice root system. It would be best to leave the new plant attached to the parent plant until next spring. Sever the new plant from the parent plant and move to the desired location.



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Budding

Many roses that you
buy are budded



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Many modern cultivars are not vigorous on their own roots, so nurseries bud them onto vigorous rootstocks.



Weak cultivars perform better on a vigorous rootstock



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Root stock – many choices

- Dr. Huey
- Multiflor
- Fortuniana



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Dr. Huey



Good nursery performance

“Most popular rose in US”



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‘Dr. Huey’ is a climbing rose that blooms once in the spring. It is seen in many landscapes where the purchased rose cultivar died and the rootstock persisted.





Multiflora

Seed propagated so no virus



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Many viruses that afflict roses are distributed through clonally propagated scions and rootstocks.



Fortuniana

Popular in Florida and South



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Cold hardiness is a concern, but rosarians in Memphis and Kentucky have very good luck with Fortuniana. Winter protection is desirable.



'Fortuniana' is a vigorous climber.



Reputed to be

- Very vigorous
- Nematode resistant
- Huge root system



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Rootstock cuttings
in a mist bed



'Dr. Huey' on the left and 'Fortuniana' on the right. 'Dr. Huey' roots easily and grows well in the nursery.



Scion – desired cultivar

Rootsock - roots



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Most nurserymen maintain stock plants for budwood. These plants are pruned each year to produce vigorous, young sprouts for budwood or for cuttings.



The scion should be from a cane where the bloom has matured. The buds must be mature in the leaf axils.



Mature bud.



This is a high quality knife, but the blade is too thick for making a good cut for budding or grafting. The cut is too jagged for a successful graft.



Grafting knife with a straight blade and budding knife with a curved blade. The blades are thin and make a clean, smooth cut.



A razor knife is easy to use and makes a good cut.



Parafilm is a good material to cover the bud or graft cuts. It will decompose in time. You can also use rubber strips, plastic non-stick tape, or other materials.



The cambium layer is right under the bark. This is where cell division and differentiation occurs. Active cambium growth is needed on the rootstock for successful grafts and buds. When the 'bark slips', the cambium is producing new cells so rapidly that the bark is not firmly attached to the wood. This is the ideal time to graft and bud.

Cambium layer is where growth occurs



Need for scion and rootstock to be young and vigorous



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What happens when a graft is successful is the cambium of the scion grows together with the cambium of the rootstock. The tissues grow together to heal the cut. This is similar to what happens when you have stitches in your hand after you cut it, and the two pieces of skin grow together to heal the cut.



T Bud

Active rootstock
Mature, dormant bud



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The scion bud should be mature, but not actively growing. The rootstock is actively growing.



Cambium activity

Rootstock bark slips

If bark does not slip,
problematic



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Need for rootstock to be well watered and fertilized

Active growth

Often, if not always, in the summer



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Actively growing rootstock will greatly increase chances of success.



Make a T cut on the rootstock. The long part of the T goes lengthwise on the rootstock, and the cross of the T goes across the rootstock. Cut just through the bark, do not cut into the wood. If the bark is slipping, the bark can easily be separated from the wood.





Cut the bud from the desired cultivar. If you cut some wood with the bud, remove the wood from the bud. Do not allow any dirt, oil, lotion to touch the cut surfaces of the rootstock or bud. Anything that prevents the contact between the cambium of the bud with the cambium of the rootstock will reduce the chance of a successful bud.



The cambium layer of the bud is under the cambium of the rootstock. There is good contact between the two cambium layers.





Wrap the t-bud tightly to insure good cambium contact between the bud and rootstock. You can wrap the bud with rubber strips, plastic tape, string, parafilm. I would not use a sticky tape, like duct tape, as this might damage the successful bud when you try to pull off the tape.

If the bud is successful, it will remain green and the tissue surrounding the bud will remain green. After a couple of weeks, cut the rootstock just above the bud to force the bud to grow. The bud union will be weak for the first season, and might be top heavy. Watch for wind damage.



This illustration shows parafilm covering the entire bud. In this case, you would observe the bud to see when it started to swell; when swelling starts, you would remove the parafilm from the bud. Parafilm prevents any desiccation of the bud.

Chip Bud



Can be done almost
anytime

Does not require active
rootstock



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Remove bud from the scion. Leave the wood on the bud.



Make a similar cut on the rootstock. Ideally, the chip removed from the rootstock is the same size as the chip bud.



Insert the chip bud. Make sure at least on side of cambium is matching.



Wrap the bud. This is wrapped in parafilm. This particular bud was made in the fall and was allowed to remain dormant until the following spring. The chip, if successful will have healed by spring, and the parafilm would be removed. The rootstock will be cut off just above the bud to force the bud to grow.



Grafting

More than one bud



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Cleft graft, whip and tongue, bark graft. Roses are pretty easy to graft. A graft requires more budwood than budding.



Making a cleft graft cut on the rootstock. I cut a v notch to receive the scion. I think this makes a better fit. Some grafters would just make a cleft cut. Note the bud on the rootstock. I will line up the lowest bud on the scion with the uppermost bud on the rootstock. I read that on an internet site. Seems to make sense that you are lining up the cambium activity at each bud to help ensure success with the graft.



Cleft cut showing the v shaped cut.



Cut a wedge on the scion to fit the cleft cut on the rootstock. Ideally, the scion is the same diameter as the rootstock.



Scion inserted into rootstock. If the diameters are not the same, make sure that one side lines up so the cambiums match. If the cambiums do not come in contact with each other, the graft will probably fail. Do not allow cut surfaces to dry.



Note that the bud on the scion is lined up with the bud on the rootstock.



This scion is approximately 3 weeks old and appears to be successful.



This scion died. Practice makes perfect. The physiological condition of the scion and rootstock is very important. Healthy plants are superior for propagation. This scion was collected late in the fall, and may have been too dormant. A chip bud might do better at this time of year.



Note the wedge shape of the scion overgrowing the rootstock.

There is a need to support the scion with a stake so it does not break off if it is too top heavy.





Note that part of the scion tissue died. It appears that this will heal.



Successful graft in the garden.