

Propagating WITH Nature: Simpler Is Better

By Mike Creel Written for July 21, 2005 workshop at The 22nd Annual Cullowhee Conference "Native Plants in the Landscape"

CONTENTS

Page ---- Topics

- 1 -- Why You Came Here - To Learn Simple Propagation
 - What Is Different About Creel-Way Propagation?
 - Low-Tech, Simple, Outdoors, Cheap
 - A Few "Technical Terms
 - Why Learn to Propagate Native Plants
- 2 -- How to Get Started in Creel-Way Propagation
 - Principles of Creel-Way Propagation
 - When Sticking Cuttings
 - When Planting Seed Pots
 - Identification Tags
 - Woody Cutting Theory
- 3 -- Selecting & Mixing Your Media
 - One All-Purpose Media Mix
 - Shade Cloth Cools Cuttings
 - Just Local Humus, No Rooting Hormones,
 - Repotting Cuttings
 - Varmint Caps for Seed Pots
- 4 -- Drilling Pots To Improve Drainage
 - Drilling Thin-Walled Plastic
 - Rescuing Pots In Peril
 - Hold-Down Wires
- 5 -- Selection And Use Of Propagation Domes
- 6 -- Cuttings by the Calendar - Winter, Spring, Summer, Fall
- 7 -- Cutting Selection for Native Azaleas and Other Plants
 - Unusual Cutting Types - InstantPlant, SuperPlant
 - Unorthodox Propagation Pots - High-Rise, Collander, Dome-Pot Potpourri
- 8 -- Propagator's Review
 - Propagation With Motivation, Advantages of Creel-Way
 - My Latest Experiments, Several Rules
 - Nature Is My Greenhouse, Sharing Your Fruits
- 9 -- American Native Azalea Species in Bloom Order for Southeast
 - Photos and Illustrations
- 10 -- Creel-Way Dome-Pot one gallon
- 11 -- Recommended Pots & Domes
- 12 -- -Drilling & Filling Pots for Good Drainage
- 13-- Menagerie of Dome-Pots
- 14 -- Collander Dome-Pot
- 15 -- Dormant Cuttings Are Really Pruning

Mike Creel
155 Cannon Trail Road
Lexington, South Carolina 29073
mikeacreel@yahoo.com

1 -- Propagating WITH Nature: Simpler Is Better by Mike Creel

Why You Came - You have probably come to this workshop wanting to learn new, simpler ways to propagate native plants on a small scale, and you will! I do not use rooting hormones other than what is contained in the plant cutting and in local soil bacteria. I use no greenhouse by the normal definition, but I do make miniature, portable mini-greenhouses from clear domes and pots, both usually recycled from earlier uses. I have come here to share what I have learned new about propagation with all who will listen and apply it. My remarks will refer to native woody plants and perennials in general, but I will always drift back to native azaleas, my favorite group of plants.

What is different about Creel-Way propagation from usual practices?

- * It needs no expensive greenhouse, and can be done very small scale
- * It uses inexpensive materials, such as recycled containers and pots
- * It is done entirely outdoors and works any time of year in many areas
- * It works for all plant species with little variation, woody and perennial
- * It requires no rooting hormone, fertilizer, pesticide or fungicide
- * It duplicates natural, thorough drainage by adapting pots and media
- * It is easy to begin and requires minimal cost, time and upkeep
- * It can be adapted to any region by changes in timing and local materials

Low-Tech, Outdoors, Simple, Cheap - I propagate all sorts of native plants from cuttings and seeds outdoors in the midlands of South Carolina all 12 months of the year without a greenhouse and using simple, inexpensive materials, often things considered trash. I use no rooting hormone other than nature's own soil bacteria, no fertilizer, no pesticides, no fungicides, no contrivances typical of plant propagation. I have developed and use at least 25 different propagation devices. For cuttings my dome-pots function like a miniature greenhouse, but low tech. Among those devices will show you how to build and use my collander dome-pot for cuttings and a simple fast-draining seed pot with a squirrel-proof cap.

A Few "Technical" Terms: I have coined a some unfamiliar terms to my "inventions."

Creel-Way - all my low-tech propagation methods, coined by my friend Jonny Larson in Norway.

Prop-Pot - any pot that I adapt for improved drainage or container that I convert into a pot.

Varmint Caps - seed pot covers made from 1/4 -or 1/8 inch wire mesh (hardware cloth) and attached to the pot with a length of electric fence wire. The mesh allows rain and sprinkler water to pass through and keeps varmints out.

Domes, Propagation Domes, Humidity Domes - clear domes to cover cuttings in shade while rooting, made from bottles and food storage containers. Domes always have a vent hole that can be closed for rooting and opened for venting and allowing faster growth of rooted cuttings.

Collander Pot - a pot for cuttings or seeds made from a plastic colander, hanging or ground use

Two-Brr Pot - a pot made from a plastic box drilled for drainage, fitted with 2 domes for cuttings.

High-Rise Pot - a pot for cuttings or seeds made from used or new hanging baskets drilled for proper drainage and fitted with a clear dome made from a one gallon spring water bottle.

Hold-Down - bendable wire to secure clear domes to prop-pots by two holes made in the pot rim.

Pedestal: a support made from anything to keep a pot off the ground, to aid drainage.

Why should we be interested in propagating native plants?

Because local forms are seldom copied and used in gardens.

So you can share extra plants and clones with gardeners.

So we can select and provide cultivars for nurseries and friends.

So we can to propagate better and teach others how to.

So we can copy rare forms and species for restoration.

So we can restore missing species to our homesteads.

2 -- HOW TO GET STARTED IN CREEL-WAY PROPAGATION

Start off by propagating from seeds, then by cuttings of immediately local natives, area natives, state natives and regional natives. You will need a defined sunny outdoor area for seed pots and a reliable shade area (use shade cloth) for cutting pots, both that can be easily watered with a small sprinkler. Collect used sturdy plastic pots one gallons to 5 gallons and some clear soft drink bottles in one liter and three liter, also some clear thick-walled gallon spring water bottles. You need a drill, a 3/4 and 7/8 inch holesaw bits, a 1/8-inch bit, some flexible wire, tin snips and hardware cloth. Gather fresh, dry natural humus from local plants related to what you are trying to propagate.

Principles Of Creel-Way Propagation By selection of Pots, Media, Humidity Dome and Location the propagator must strive create an ideal microenvironment for plant cuttings that is stable and protected, moist but not soggy, warm but not hot, fast-draining but not dry and shaded from too much exposure to sunlight and overheating. Think small and choose media and containers that drains quickly and do not become compacted. One major goal is to duplicate natural drainage like soil in a healthy garden bed, but do it in a pot. If you could see it the drainage pattern below and around a healthy plant in a garden bed would look like a sieve or colander, draining from MANY different points. Natural drainage often differs greatly from a pot with 4 or five small holes.

When sticking cuttings of woody plants like the reputedly difficult native azaleas, you start with fresh woody cuttings collected from the field or garden. Woody cuttings collected any time of year must be kept in a cool humid condition such as an inflated plastic bag (without added moisture) in the refrigerator or a cooler from moment of collection to time of sticking in a pot. Well-kept refrigerated cuttings can remain viable for weeks, perhaps months (dormant cuttings in particular) before sticking. I stick only woody cuttings, 12 months of the year, using clear humidity domes attached to fast-draining pots protected by a shade cloth outdoors. I sprinkle humus fines from like or related species on the media surface before sticking.

Cutting pot preparation: Set up shade area, drill pot, prepare dome, mix media, fill pot halfway, sprinkle humus, trim/stick cuttings, move pot to bed, put on pedestal, water en situ after moving pot to long term location, install dome & hold-down, water once weekly if no rain. I often stick community pots containing several different species of cuttings with good success.

When Planting seed pots you will need fresh seeds or seeds that have been properly maintained during the storage period. I plant seeds in every season outdoors in fast-draining pots protected by a wire mesh (hardware cloth) cap in a sunny location that can be watered. Small seeds like azaleas and rhododendrons are surface sown, while larger ones like dogwood and Stewartia are planted shallow. I sprinkle humus fines from like or related species on the media surface before planting.

Seed pot preparation: Find a sunny spot, drill pot, prepare wire mesh varmint cap, mix media, fill pot halfway, sprinkle humus, sprinkle seeds, install varmint cap, move pot to bed, put on pedestal, water en situ after moving pot to long term location, water once weekly if no rain.

Identification Tags that remain readable and are long-lasting are essential. Label each pot of cuttings, plants or seeds with "pencil-writable" metal or plastic ID tags stating what is planted, who provided it and date planted. I press tags into the media along pot sidewall. Two labels are better than one. I also keep a pocket notebook. Used or new metal offset printing plates are what I use. Never use vinyl mini-blinds for plant tags. Old aluminum blinds work. Seek similar materials in your area.

Woody Cutting Theory I think that a woody cutting from previous season's growth or older has advantages over a green stem cutting. The internal hormones to root and sprout seem stronger in a woody stem than in an immature green stem. The woody cutting is covered (in azaleas) with hidden adventitious buds under the bark. I have never seen soft green cuttings sprout from adventitious buds. A woody cutting (unless damaged, and bark softened by storage with added moisture) is much stronger in handling. I never add moisture to woody cuttings I mail (regardless of season).

3 -- SELECTING & MIXING YOUR MEDIA

I use one all-purpose media mix for all my pots - cuttings, seeds and plants - I use a combination of 5 parts of pine bark soil conditioner (composted and finely milled) and one part of a soil-less media that is pre-moistened (such as Fafard 3 Professional and Baccto Pro). Pots need to be drilled for extra drainage, half-filled with media if a standard tall (not a low, wide pot) pot, set on a pedestal (made from anything that drains) off the ground or hung from a tree or support, shaded if a dome-pot with cuttings. Find locally available equivalents to the materials I use. Develop your own media from local supplies, but it must drain well in a container and break down slowly.

The soil conditioner in my media mix is from P and L Bark in Pageland, SC, and sold by Lowes as Garden Plus soil conditioner, Lowes product number 97675. P and L Bark is on bag label. Ground pine bark used for mulch will not work. The Gro-Bark company in McCormick, SC, also produces a good pine bark soil conditioner. Many commercial azalea nurseries use similar bark media. Take care NOT to let your bags of soil conditioner or soil-free media to become saturated by the rain. Store it temporarily with some protection from rain. Do not mix or use media that is already saturated.

Shade Cloth Cools Cuttings In Dome-Pot - The use of a shade cloth on a frame is essential when rooting cuttings in clear humidity domes, regardless of location or season. I use a Coolaroo brand mesh shade cloth (medium density, blue margin thread) that limits sun reaching the dome-pots by 64 to 70 percent. I use a green one (for luck) supported an old dog pen fence with 2 inch PVC cross beams. It ain't pretty, but it works. Without secure, consistent shade, not just trees, the cuttings in a dome pot will "cook" within an hour or so even in winter. I found some simple plans online for a PVC-frame lawn tractor shed that would work great as a shade enclosure. It seems that the overhead water-porous shade cloth also protects dome-pots from becoming saturated during heavy rains.

Just Local Humus, No Rooting Hormones - It surprises most people when they learn that I use no rooting hormones to root cuttings, but just sprinkle humus fines on the media. Before sowing seeds or sticking cuttings into media I sprinkle about a teaspoon of humus fines (sifted through a mesh pot) onto the media surface. I collect fresh humus as a combination of rotted leaves with some soil from nearby plants of the same or a closely related species from beneath unrotted leaves in the root zone. It is rich in natural soil bacteria, such as mycorrhizae. I try to select mature plants not heavily fertilized or sprayed regularly with fungicides. The humus must be from the new area where the plants will be growing, not from the original site where the mother plant was growing. In pots of cuttings or seeds I avoid fertilizer, fungicides and pesticides and overwatering .

Repotting Cuttings - I leave the vent cap or plug sealed on shaded dome-pots for as long as it takes cuttings to root, anywhere from two months to a year. Once cuttings are rooted I just remove the vent cap or plug, but not the dome, and keep the pot in shade for about 4 weeks. Then vented dome-pot (dome in place) can moved out from the shade into a sunnier area. It will not hurt to leave a vented dome on the pot in the sun as long as the open vent is large enough to prevent overheating. The vented dome over rooted cuttings in sun outdoors hastens cutting growth, even during cooler seasons. Once cuttings are fully adjusted to outdoor conditions and do not wilt after a day with dome removed, they can be repotted.

Varmint Caps for Seed Pots- I always protect seedling pots from squirrels, birds and other varmints with a wire mesh cap. For one gallon pots I cut a 6 inch square of 1/4 inch mesh hardware cloth (from 2 to 4 foot wide wire fabric) using tin snips and bend the edges down for fastening to the pot . Varmint caps can also protect small cuttings planted low in the pot. For 3 gallon or larger pots I cut a 12 inch square, snipping 3 to 4 inch long 45 degree cuts into each corner and 90 degree slots midway each side, which aids in bending edges to fit various pots. Secure the varmint cap to pot with a single wire attached to a Hole On Each Side. As long as seedlings seem "happy" in the original pot and are not overly crowded I just let them grow and delay repotting some times for a year or more.

4 -- DRILLING POTS TO IMPROVE DRAINAGE

Very few off-the-shelf “flower pots” today are designed for effective long-term good drainage that most plants need. Most just have too few drainage holes or have holes that are too small or wrongly shaped. I can recommend a few fast-draining pots that are ready to use “as-is”. These include the mesh-walled containers used for garden pond plants and some inexpensive kitchen colanders. Open any drain spaces that may still be sealed with plastic.

Many of my propagation pots look like they have been targets in a shooting gallery, filled with holes like Swiss cheese. While I have drilled extra drainage holes in plastic pots with a variety of spur-bladed wood bits and several sizes of plastic-capable holesaws, I prefer the 3/4-inch diameter holesaw bit attached to a 18 volt rechargeable drill. Smaller holes can be made with a 5/8-inch holesaw and 1/2-inch spur-blade wood bit. Drilling stiff, thick-walled plastic pots is pretty easy, but the thin-walled ones are tricky to work with.

In a new or recycled plastic pot I drill new holes midway between each of the existing drain holes around the bottom side and make two more rows up the pot in an alternating pattern about 1/3 way up the pot. Drainage hole size should be as large as possible such that media does not run out of hole when watered. Holesaws tend to fill up on the inside with plastic from holes cut. I just let the space fill up until there is space for one cut hole layer, which I peel away after drilling each hole.

For planting seeds, cuttings and plants I fill drilled pots about halfway with media to form a final surface about 2 inches above the upper drain holes. I always seat pots on a pedestal or stand or hanging them in a tree. The media level in low, wide pots can be 2/3 the height of the pot, but I do advise adding drain holes between each of the bottom side holes and perching the pot off the ground.

For drilling plastic pots and domes the sharper the drill bit and the fresher the drill battery the better. I use a two 18-volt rechargeable battery packs. You need plastic-capable hole saws in a 5/8, 3/4 and 7/8 sizes. The 7/8 bit makes the vent hole in containers and bottles used for propagation domes (particularly the bottom half of 3-liter soft drink bottles) . Plug the 7/8-inch hole with a white or black rubber 5/8 OD chair foot. When making the holesaw holes in thick Rubbermaid containers used for pots or domes, it is wise to drill a small pilot hole first using a 1/8- inch drill bit.

Drilling extra drain holes (or a vent hole) in thin-walled or brittle plastic pots and containers can often be done if you take special care. Wear protective glasses and don't get into a hurry. Fill the pot first with firmly packed dense media to provide resistance against the spinning holesaw drill bit. Drill slowly using a fresh, sharp holesaw while applying light pressure (to prevent cracking and tearing). Drilling a 1/8- inch pilot hole (prior to holesaw drilling) helps particularly well when converting plastic food containers to pots or domes. I often use this technique when I “rescue” too-wet plants by adding extra draining holes to the pot or making small drain holes larger.

Rescuing Pots in Peril with rooted cuttings and small seedlings is a daily effort. Most of them are suffering from saturated media which is noticeable by plants dying or losing leaves in a pot, a pot feeling too heavy, earthworm castings plugging drain holes, weeds such as violets outgrowing the intended plants, and stunted plants with little vigor. Such pots can be often rescued by repotting the plants in proper media and pot, by drilling extra drain holes in the pot or by removing the bottom half or third of media from the pot to speed drainage.

Hold-Down Wires - I use all kinds of flexible wire for making hold-downs for propagation domes and varmint caps on seed pots. Electric fence wire is perfect. Hanger wire" from the hardware store works great too for creating hanging baskets from plastic kitchen bowls and colanders. To attach a hold-down wire to pot I make a same in both sides near the top edge using a 1/8 inch drill or the awl on my pocket knife. Always use hold-down wires to attach clear domes to pots of cuttings and wire mesh (hardware cloth) caps to seed pots.

5 -- SELECTION AND USE OF PROPAGATION DOMES

Propagation Domes must be made of clear or transparent plastic that does not break down outdoors. Domes must fit inside your pots with a minimum 1/2 inch clearance for water entry between dome edge and pot rim. I make domes from clear 4.5 liter (1 gallon) PET spring water bottles for use in 3-gallon pots (also larger pots) AND from 3 liter (0.66 gallon) clear soft drink bottles for use in 1 gallon black plastic pots. Each dome be smaller in diameter than the pot allowing at 1/2 inch or more space between pot side wall and dome so that water from overhead - rain, hose nozzle or sprinkler - can flow down into that space and into the media.

Three Liter Propagation Domes for gallon pots, mum pots and low azalea pots can easily be made from three liter soft drink bottles, cut in half. The top half already has a sealable vent hole, the cap. A vent hole in the dome made from the bottom half of the bottle can be made by careful drilling with a 7/8 inch hole saw. I invert bottle half over a 2-foot 4 by 4 post section in the ground (with the bottom of a one-liter bottle snugly fitted over the post, which stabilizes the 3-liter bottle section slid over it. I drill a center hole and plug it with a 5/8 inch (I.D.) rubber chair foot. Three-liter soft drink bottles can be found only as chain grocery store brands.

Gallon Propagation Domes of clear, weather durable plastic will fit inside 3 gallon and larger pots and allow for water to enter media in margin between dome and pot wall. Be careful which bottles you use because one blue tinted type degrades quickly outdoors. I recommend using the durable clear one-gallon bottles (square shaped) sold by Nestlé Waters North America brands: Arrowhead® Brand Mountain Spring Water (in CA, AZ and NV), Deer Park® Brand natural Spring Water (in Northeast and Atlantic states), Ice Mountain® Brand Natural Spring Water (in Midwest and near-South states), Ozarka® Brand Natural Spring Water (in TX), Poland Spring® Brand Natural Spring Water (in Northeast and Mid-Atlantic states) and Zephyrhills® Brand Natural Spring Water (in FL). Round bottomed one gallon Dannon bottles of similar material also work very well.

Securing the Propagation Dome to the pot is required to maintain a seal between the propagation dome and media in the pot (half-filled with media). I make two small holes with awl or drill into the top edge of the pot, fit a length of flexible wire (electric fence wire) through the holes, looping the wire around the bottle spout and securing the wire to both sides. The walls of a half-filled pot also make the dome more stable. Never fill a standard depth pot more than halfway and regularly check for saturated media. Never fill pots with wet media, or work with media during a rain or shortly after. Do not water seed or cutting pots and then overly handle them as this compacts the media and retards drainage. It is best to water pots after moving to long term site.

Good Drainage a priority - Prompt, thorough drainage is key to rooting cuttings and growing seedlings . Container drainage can be improved by: Selecting pots that drain well such as low wide pots and mesh garden pond pots; Limiting media level to half full or 2/3 full; Drilling extra drain holes; Changing media recipe to drain faster; and Elevating pots off the ground on a pedestal or hanging the pot in the air. Never use pots with only drain holes in the bottom.

Earthworms Clog Pot Drainage - Earthworms are drainage demons of the flower pot and will invade a propagation pot via drain holes in the pot bottom and quickly convert a pot of well-draining media into saturated media which destroys the air spaces needed for roots on cuttings, seedlings and plants. Avoid putting pots into direct ground contact but elevate them on draining material.

I encourage people to ask questions because I usually learn as much or more from answering questions than the folks asking. Apparently I do a lot of things in propagation instinctively without thinking too deeply about why I do them, so questions are required to reveal the details and my rationale.

6 -- CUTTINGS BY THE CALENDAR - WINTER, SPRING, SUMMER, FALL

Propagation Calendar For Azaleas In Midlands Of South Carolina

From late October to December I collect fully expanded seed pods, allow them to fully dry in a paper envelope, crack pods open, separate seed from pod pieces and plant outside in a fast draining pot with varmint cap. I always sprinkle on the media surface a little local humus a nearby azalea seedlings come up on Nature's schedule with no need for hardening off needed. Durable labeling of cuttings, plants, seeds and containers is essential, along with keeping a separate list. Note date and place of seed collection, date planted, species and other information. Keep a separate written record.

From late October through winter until just before leaf emergence in Spring, I collect and stick leafless dormant woody cuttings (1/8 to 1/16 inch diameter) from last year's growth or older wood, preferably with no bloom buds. When possible break off flower buds forming from cutting stems while on the plant as this encourage terminal leaf bud formation. Before sticking cuttings I sprinkle on the media surface some humus fines from a nearby azaleas. In the coldest regions dormant cuttings should be taken just before the end of dormancy for outdoor shade beds, unless domed propagation pots are protected by a cool shaded greenhouse or something similar.

In Spring when most native azaleas are bloom and have emerging new growth and soft leaves, the rooting of cuttings can be difficult. Many people stick green leafy cuttings at this time, but I prefer woody, leafless cuttings taken from thinner stems low on the plant. I make woody spring cuttings removing all soft leaves and most new green stem. I treat the "spring woody cutting" as if it were a dormant leafless winter cutting forcing it to create an entirely new set of leaves,. I don't stick leafy cuttings until after the leaves are mature. only a few native azaleas have leaves mature enough for leafy cuttings at bloom time - such as later blooming eastmanii viscosum, cumberlandense, arborescens and prunifolium. Eastmani has mature leaves at bloom in mid-May and roots well then from woody leafy cuttings.

From mid-Summer through Fall after leaves and stems have matured I have some of the greatest success in sticking leafy hardwood azalea cuttings with terminal buds removed. Cut the leaves in half at an angle, removing lower leaves, any green growth and all wilted leaves. I allow the dome-pots with cuttings overwinter outdoors in a shaded bed. Overwintering these pots in colder areas will have to be done in a ground pit or unheated greenhouse, both shaded. If cuttings are rooted before frost, the dome cap can be removed but the dome kept in place.

Rooting Cuttings of Other Plants - Remember that I only do woody cuttings, all 12 months of the year, with azaleas, dogwoods, Stewartia, Gordonia, Kalmia, Franklinia and other plants. I never fool with softwood cuttings (they die too easily and too often). I root other species just like I do native azaleas and rhododendrons in fast-draining dome-pots with well-aerated media and a sprinkle of humus from a related species. I have repeatedly rooted both native Stewartia species (Silky Camellia) and Kalmia (mountain laurel) at bloom, in mid-winter and just before leaf emergence in Spring.

When should rooted cuttings be repotted? As long as the cuttings are happy in the original "sticking" pot, the media continues draining well and cuttings are not overly crowded, I often leave them in the same pot for an extended period, sometimes a year or more. My first repotting is usually just moving cuttings to one larger pot (half filled with media and drilled) spacing them better. When a pot of cuttings seems rooted sufficiently to deal with some outdoors air I remove the bottle cap or vent plug from the dome-pot (still under shade) and check the pot later in the day for any wilting. Leave the open, vented dome in place on the pot. If cuttings are wilting with just the vent cap removed, I replace the cap and keep the pot in shade. If no cuttings wilted when the caps were removed and left for a day, I leave the pot in shade for a week and then move it out into more sun with the dome still in place. The vented dome in sun seems to encourage plant growth.

7 -- CUTTING SELECTION FOR NATIVE AZALEAS AND OTHER PLANTS

For both dormant and leafy woody cuttings I usually select stems not larger than 1/8 to 1/16 inch in diameter collected usually from the lower branches on a plant, where stems are smaller and less likely to form flower buds. Cuttings may contain the immediate past season's woody growth or wood up to 3 years old on jointed stems. Use fresh cuttings immediately or refrigerate until a better time. I trim cuttings immediately before sticking to 3 to 4 inches. Fresh cuttings with mature leaves can be kept (before sticking) with NO added moisture up to 3 weeks in a refrigerator at about 39 F. Dormant leafless cuttings can be kept longer. I remove the terminal bud or buds and any soft green shoots, cut the base at an angle and wound the base by making a scrape in the bark about one inch, just enough to expose the cambium layer on one side of the cutting base.

UNUSUAL CUTTING TYPES

InstantPlant Cuttings: A cutting doesn't have to be a single straight stem, it can contain a joint and two or more small branches (usually Y-shaped) if the source plant is large enough. I dub this cutting my InstantPlant, which I think roots better than a straight-stem cutting. The Instant Plant cutting puts the propagator a season or so ahead with branch development. I wound the lower stem bark from just above the joint on the strongest branch to the base and plant it to cover the wound.

SuperPlant Cuttings - For the past few seasons outdoors I have been sticking and rooting small InstantPlant cuttings of native azaleas and other plants. In 2004 I conducted a serious and successful test of larger well-branched cuttings using several native azalea species which I now call the SuperPlant cutting. It is too early to tell but I thin such cuttings could set bloom buds one season after rooting. This could be value to the hybridizer, if not a commercial specialty grower.

Unorthodox Propagation Pots

High-Rise Propagation Pots - From used and new hanging baskets, thick-walled ones the best, I create aerial propagation dome-pot called the High-Rise that can be either perched on a pedestal in shade just off the ground or hung in a shady tree. Cuttings seems to root faster than ground pots, possibly due to the greatly improved drainage, better aerated root zone and the lighting from the sides. In Summer 2004 One pot of white Rh. minus cuttings with terminal buds clipped off put on new branch shoots in less than four weeks and was rooted well enough to open the dome vent in two months. Several High-Rise pots could be hung in a small area using with a sturdy frame and rain-porous shade cloth.

Collander Pots - This pot requires the gardener to visit a dollar store and purchase a \$1 plastic food colanders. Use a 1/8 inch drill or pocketknife awl to make two holes for installing a wire "hold-down" for the clear propagation dome. If you want the collander into a hanging basket propagator just drill the three equi-distant holes for the hanging basket wire and use old electric fence wire. The "Collander Pot" can be used either hung like a hanging basket or sitting on a pedestal or a bench. If you use the collander pot, you can use a heavier media than what I normally use and water it more often, check the collander pot every other day. In normal dome-pots I just water once a week if no rain. This pot may be the most effective propagation tool I have "invented."

Dome-Pot Potpourri - Propagation pots and domes can be made from all sorts of common household items if we use our imagination. Last winter I stuck dormant cuttings rectangular pot made from a "Rubbermaid Latchable" in the 6.5 quart/ 6.1 liter size. I drilled a pattern of good drainage holes in the box and used its lid for a perch. I attached two clear propagation domes made from half a 3-liter soft drink bottle The domes fit perfectly side by side in the clear box with sufficient space between pot sidewall and dome sidewall for water to enter the media. I made three clear propagation pots from a used candy container (resembling a plastic goldfish bowl, but with a plastic lid) that I cut exactly in half and drilled carefully for drainage. I used a tall Rubbermaid food storage container from Bed, Bath and Beyond also for a dome pot.

8 -- PROPAGATOR'S REVIEW & CONCLUDING REMARKS

Propagation With Motivation I have several motives for my native plant propagation: to encourage more people to conserve locally native plants and rely on them for landscaping, to create copies of special plants to share with friends and nurseries, to show interested people how to easily propagate plants considered difficult, to trade plant materials with other gardeners, to landscape my homestead for maximum diversity, to discover new methods and share them, and most of all - to make friends.

Advantages of Creel-Way Propagation:

- # Ethical home propagation of native plants IS an important conservation tool and educational incentive.
- # Gardeners who share natives they have propagated prevent others from digging wild plants.
- # Cuttings and seeds outdoors will root and grow better than those grown indoors or in a greenhouse.
- # Seeds planted outdoors in a well-draining pot will germinate by nature's schedule and grow.
- # Cuttings outdoors need only native soil inoculation, constant humidity and excellent drainage.
- # Use of fertilizers, fungicides and pesticides kills native soil bacteria and weakens plants.
- # Disturb and handle pots in progress as little as possible, UNLESS a rescue or correction is needed.
- # Cuttings and seedlings grown by my methods create stronger plants, that thrive with little care.
- # Much remains to be learned in native plant propagation, and it is fun. Refinements continue almost daily.

My Latest Experiments include: Adding one part of vermiculite to my all-purpose media mix of 5 parts pine bark soil conditioner to one part soil-less mix to improve drainage and media aeration; Seeing how long I can refrigerate dormant native azalea cuttings until I stick them; Trying to root green juvenile stems from native azaleas in spring-summer using dome-pots; Trying a media mix of one-half perlite to one-half vermiculite to root cuttings in dome-pots. Trying Creel-Way propagation on new species I have not rooted before. I am experimenting with natural pine tree compost as media.

SEVERAL RULES SHOULD NOT BE VIOLATED

- # Use only materials that do not degrade outdoors from handling, cold, sun, moisture or heat.
- # Drill extra drainage holes in pots for seeds, cuttings and plants.
- # Humidity domes for cuttings can be clear or transparent and must have a sealable upper vent hole.
- # Protect sealed dome-pots with shade cloth or structure limiting sunlight by 64 to 70 percent.
- # Use only fast-draining media, and fill pots just half full. Surface must drain in ne eye blink.
- # Allow at least 1/2-inch clearance around any humidity dome for cuttings to permit water entry from above. The dome must be centered and secured to the pot and media with a strand of wire.
- # The dome-pot must permit easy entrance and drainage of water. Never enclose a pot inside a dome.
- # Take only woody cuttings, remove terminal buds, immature leaves and shoots.
- # Remove terminal stem buds for dormant, leafless cuttings of deciduous woody species.
- # Protect seed pots outdoors using a wire mesh cap secured to the pot.
- # Keep outdoor propagation pots off the ground by perching or by hanging.
- # Water pots once a week, either by rain or sprinkler with about one ne inch of water
- # Adapt various containers for use as propagation pots and humidity domes.
- # Tag all propagation pots with a durable ID label showing date, species, cultivar, etc.,

Nature is my greenhouse, patience my rooting hormone and the four seasons my climate controls. I think if you can keep a healthy cutting alive long enough inside a suitable environment it will root. Even a leaf will root and grow an azalea. Everything I have learned and stated about native plant propagation can be improved upon by an interested gardening willing to experiment. My propagation methods can also be localized by varying timing and cold protection..

Sharing what you propagate is important. Someone asked once what I was going to do with all the azaleas and native plants I was propagating and developing. I replied that I give away a lot but mostly small plants, seeds and cuttings, nothing in the instant landscaping dimensions that people seek in chain store. When I leave this earth I hope that my plants will continue to brighten others' gardens and that I have given away all I know that is worth telling and examples of all plants unique to me. The personal plant treasures you give away to others will always come back to you manifold in your life and survive past your existence.

Page 9 -- AMERICAN NATIVE AZALEA SPECIES IN BLOOM ORDER FOR SOUTHEAST

Updated July 28, 2005 - Adapted by Mike Creel from list by Bob Stelloh and John Brown, ARS, ASA

Species / Common Name / Habit / Flower Color & Period / Habitat / Elevation / Hardiness / Natural Range

Rhododendron canescens (Catesby 1730) Sweet * **Hoary Azalea** * upright to 15' * blooms pink to white before or with leaves * April * fragrant * stream banks, moist to dry open woods, 0 to 1700' * Hardy Zones 6b-10a * Native to AR, TX, LA, MS, GA, TN, NC, SC, FL

Rhododendron austrinum [Chapman 1815] (Small 1865) Rehder * **Florida azalea** * to 15' * blooms yellow to orange before leaves * April * fragrant * woods, streambanks, swamps, 0 to 350' * Hardy Zones 6b-10a * Native to FL, GA, AL, MS

Rhododendron canadense (Linneaus 1762) Torrey * **Rhodora** * 2 to 4' stoloniferous * blooms purplish pink, rarely white, before leaves * April to May * stream banks, swamps, moist woods, 0 to 6000' * Hardy Zones 3b-7a * Native to eastern Canada, ME, south to PA, NJ

Rhododendron flammeum [syn. speciosum] (Michaux) Sargent 1787 * **Oconee azalea** * 3 to 8' * blooms yellowish orange to red before or with leaves * mid-April to early-May * dry open woods and hillsides, 0 to 1700' * Hardy Zones 6b-9a * Native to GA, SC

Rhododendron periclymenoides [syn. nudiflorum (L.) Torrey] (Michaux) Shinnery 1734 * **Pinxterbloom Azalea** * upright 3 to 12' * blooms deep pink to reddish pink to white before or with leaves * late-April to mid-May * moist to dry open woods, 300 to 3500' * Hardy Zones 4b-9a * Native to VT, MA, NY, south and west to KY, WV, SC, NC, TN, AL, GA

Rhododendron occidentale (Torr. & Gray ex Torrey) Gray 1827 * **Western Azalea** * to 20' * blooms white to pink to orange with or after leaves, mid-April to mid-August * fragrant * moist hillsides, ocean bluffs, streams with high humidity, cool temperatures, 0 to 8000' * Hardy Zones 7a-9b * Native to CA, OR

Rhododendron alabamense Rehder 1883 * **Alabama Azalea** * 2 to 6' * blooms white with yellow blotch before or with leaves * late-April to mid-May * fragrant * dry upland woods, hillsides, 0 to 1700' * Hardy Zones 6b-9a * Native to AL, GA, TN, FL, MS

Rhododendron vaseyi Gray 1878 * **Pinkshell Azalea** * upright to 10' * blooms pale to deep purplish pink, rarely white, before leaves * late-April to June * open woods, 3000 to 6000' * Hardy Zones 5a-9a * Native to NC, one report in GA

Rhododendron atlanticum (Ashe) Rehder 1743 * **Coast Azalea** * 1 to 5' very stoloniferous * blooms white to pink before or with leaves * late-April to mid-May * fragrant * stream banks, swamps, bogs, moist pine forest edges, 0 to 500' * Hardy Zones 6a-9a * Native to PA, DE, VA, NC, SC, GA

Rhododendron prinophyllum [syn. roseum Rehder] (Small) Millais 1787 * **Roseshell Azalea** * to 12' * blooms pink to purplish pink, rarely white, before or with leaves * May * fragrant * hillsides, open woods, stream banks, acid bogs, 500 to 5000' * Hardy Zones 4b-9a * Native to eastern Canada south to OH, IN, WV, VA, NC, also AR, MO, OK

Rhododendron eastmanii Kron & Creel 1999 * **May White Azalea** * to 15' * blooms white with yellow blotch after leaves * May * fragrant * north slopes of well-drained open woods, also south and west slopes, stream banks * Native to SC, possibly NC, GA, AL

Rhododendron calendulaceum (Michaux) Torrey 1795 * **Flame azalea** * 6 to 20' * blooms yellow to orange to red before or with leaves * late May to July * open dry woods on south and west hillsides, 600 to 3500' * Hardy Zones 5b-8b * Native to WV, VA, KY, NC, TN, SC, GA

Rhododendron arborescens (Pursh) Torrey 1795 * **Sweet or Smooth Azalea** * to 15' * blooms white with or after leaves * late May to mid August * fragrant * stream banks, open moist woods, 1000 to 5000' * Hardy Zones 5a-9a * Native to NC, WV, AL, TN, SC, GA, PA (An early form, blooming mid-April, noted in Aiken County, SC. One late flowering form called Georgiana)

Rhododendron cumberlandense [syn. bakeri] E.L. Braun 1941 * **Cumberland Azalea** * 2 to 8' * blooms yellow to orange to red after leaves * June to July * open woods, 2000 to 5000' * Hardy Zones 5b-8b * Native to VA, KY, TN, GA, AL, NC

Rhododendron viscosum (L.) Torrey 1680 * **Swamp Azalea** * 3 to 18' stoloniferous * blooms white, rarely pink, after leaves, rarely with leaves * mid-May to mid-July * fragrant * marshy areas, stream banks to high mixed forests, 0 to 5000' * Hardy Zones 4b-9a * Native to VT, MN, south to FL, NC, TN, also AR, OK, LA, TX, AL, GA. Includes former species serrulatum, oblongifolium, coryii

Rhododendron prunifolium [Harper 1903] (Small) Millais 1913 * **Plumleaf Azalea** * to 15' * blooms reddish orange to red after leaves * July to early September * shady ravines and stream banks, 300 to 700' * Hardy Zones 7a-9b * Native to central GA, AL line

NINE SWEET - Nine of the 16 species are usually fragrant - alabamense, arborescens, atlanticum, austrinum, canescens, eastmanii, occidentale, prinophyllum and viscosum - while flammeum, calendulaceum, cumberlandense, vaseyi, prunifolium, periclymenoides and canadense are rarely scented.

SIX RUNNERS - Several species, and their hybrids, are naturally stoloniferous and easy to divide, which includes atlanticum, periclymenoides, canadense, alabamense, and some viscosum and occidentale forms. Running varieties have been discovered of additional species, like flammeum and arborescens.

10 -- AMERICAN NATIVE AZALEA SPECIES IN BLOOM ORDER FOR SOUTHEAST

Updated July 5, 2005 - Adapted by Mike Creel from list by Bob Stelloh and John Brown, ARS, ASA

Species / Common Name / Habit / Flower Color & Period / Habitat / Elevation / Hardiness / Natural Range

Rhododendron canescens (Catesby 1730) Sweet * **Hoary Azalea** * upright to 15' * blooms pink to white before or with leaves * April * fragrant * stream banks, moist to dry open woods, 0 to 1700' * Hardy Zones 6b-10a * Native to AR, TX, LA, MS, GA, TN, NC, SC, FL

Rhododendron austrinum disc/Chapman1815 (Small 1865) Rehder * **Florida azalea** * to 15' * blooms yellow to orange before leaves * April * fragrant * woods, streambanks, swamps, 0 to 350' * Hardy Zones 6b-10a * Native to FL, GA, AL, MS

Rhododendron canadense (Linneaus 1762) Torrey * **Rhodora** * 2 to 4' stoloniferous * blooms purplish pink, rarely white, before leaves * April to May * stream banks, swamps, moist woods, 0 to 6000' * Hardy Zones 3b-7a * Native to eastern Canada, ME, south to PA, NJ

Rhododendron flammeum (speciosum) (Michaux 1787) Sargent * **Oconee azalea** * 3 to 8' * blooms yellowish orange to red before or with leaves * mid-April to early-May * dry open woods and hillsides, 0 to 1700' * Hardy Zones 6b-9a * Native to GA, SC

Rhododendron periclymenoides (nudiflorum) (Michaux 1734) Shinnars * **Pinxterbloom Azalea** * upright 3 to 12' * blooms deep pink to reddish pink to white before or with leaves * late-April to mid-May * moist to dry open woods, 300 to 3500' * Hardy Zones 4b-9a * Native to VT, MA, NY, south and west to KY, WV, SC, NC, TN, AL, GA

Rhododendron occidentale (Torr. & Gray ex Torrey 1827) Gray * **Western Azalea** * to 20' * blooms white to pink to orange with or after leaves, mid-April to mid-August * fragrant * moist hillsides, ocean bluffs, streams with high humidity, cool temperatures, 0 to 8000' * Hardy Zones 7a-9b * Native to CA, OR

Rhododendron alabamense Rehder 1883 * **Alabama Azalea** * 2 to 6' * blooms white with yellow blotch before or with leaves * late-April to mid-May * fragrant * dry upland woods, hillsides, 0 to 1700' * Hardy Zones 6b-9a * Native to AL, GA, TN, FL

Rhododendron vaseyi Gray 1878 * **Pinkshell Azalea** * upright to 10' * blooms pale to deep purplish pink, rarely white, before leaves * late-April to June * open woods, 3000 to 6000' * Hardy Zones 5a-9a * Native to NC, one report in GA

Rhododendron atlanticum (Ashe 1743) Rehder * **Coast Azalea** * 1 to 5' very stoloniferous * blooms white to pink before or with leaves * late-April to mid-May * fragrant * stream banks, swamps, bogs, moist pine forest edges, 0 to 500' * Hardy Zones 6a-9a * Native to PA, DE, VA, NC, SC, GA

Rhododendron prinophyllum (roseum) (Small) Millais 1787 * **Pinkshell Azalea** * upright to 10' * blooms pale to deep purplish pink, rarely white, before leaves * late-April to June * open woods, 3000 to 6000' * Hardy Zones 5a-9a * Native to NC, one report in GA

Rhododendron eastmanii Kron & Creel 1999 * **May White Azalea** * to 15' * blooms white with yellow blotch after leaves * mid- to late-May * fragrant * north slopes of well-drained open woods, also south and west slopes, stream banks * Native to SC, possibly NC, GA, AL

Rhododendron calendulaceum (Michaux 1795) Torrey * **Flame azalea** * 6 to 20' * blooms yellow to orange to red before or with leaves * late May to July * open dry woods on south and west hillsides, 600 to 3500' * Hardy Zones 5b-8b * Native to WV, VA, KY, NC, TN, SC, GA

Rhododendron arborescens (Pursh 1795) Torrey * **Sweet or Smooth Azalea** * to 15' * blooms white with or after leaves * late May to mid August * fragrant * stream banks, open moist woods, 1000 to 5000' * Hardy Zones 5a-9a * Native to NC, WV, AL, TN, SC, GA, PA (An early form in Aiken County, SC, blooms mid-April. A late flowering form is called Georgiana)

Rhododendron cumberlandense (bakeri) E.L. Braun 1941 * **Cumberland Azalea** * 2 to 8' * blooms yellow to orange to red after leaves * June to July * open woods, 2000 to 5000' * Hardy Zones 5b-8b * Native to VA, KY, TN, GA, AL, NC

Rhododendron viscosum (includes former species serrulatum, oblongifolium, coryi) (L.) Torrey 1680 * **Swamp Azalea** * 3 to 18' stoloniferous * blooms white, rarely pink, after leaves, rarely with leaves * mid-May to mid-July * fragrant * marshy areas, stream banks to high mixed forests, 0 to 5000' * Hardy Zones 4b-9a * Native to VT, MN, south to FL, NC, TN, also AR, OK, LA, TX, AL, GA

Rhododendron prunifolium disc/Harper1903 (Small 1913) Millais * **Plumleaf azalea** * to 15' * blooms reddish orange to red after leaves * July to early September * shady ravines and stream banks, 300 to 700' * Hardy Zones 7a-9b * Native to central GA, AL line

NINE SWEET - Nine of the 16 species are usually fragrant - alabamense, arborescens, atlanticum, austrinum, canescens, eastmanii, occidentale, prinophyllum and viscosum - while flammeum, calendulaceum, cumberlandense, vaseyi, prunifolium, periclymenoides and canadense are rarely scented.

SIX RUNNERS - Several species, and their hybrids, are naturally stoloniferous and easy to divide, which includes atlanticum, periclymenoides, canadense, alabamense, and some viscosum and occidentale forms. Running varieties have been discovered of additional species, like flammeum and arborescens.

CREEL-WAY DOME POT

one gallon
updated 04-20-05

Leave cap on while rooting.
Leave dome in place 6 weeks after rooting

Hold-down wire

Water entry

Water entry

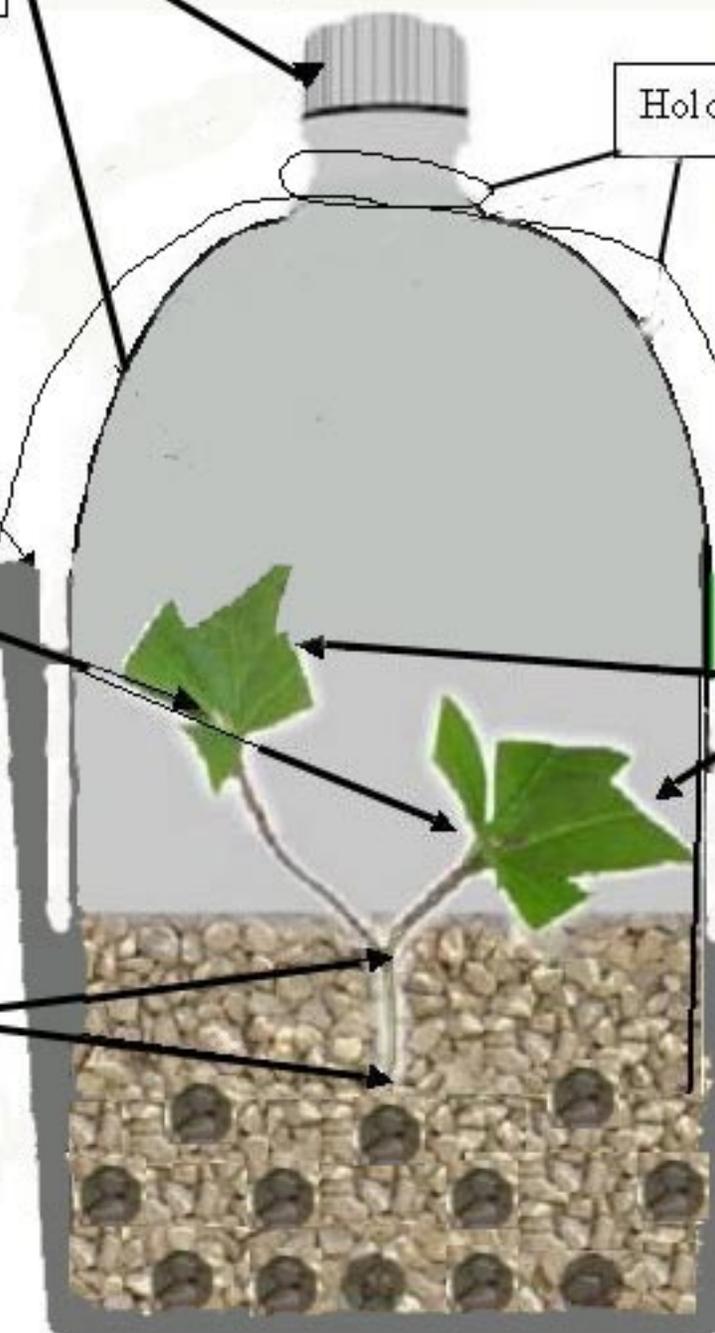
Pinch buds

Crop leaves

Wound bark

Use a 5/8 inch holesaw to drill new drain holes between each existing hole in the lower row of a one gallon pot. Two upper rows of new drain holes are drilled with a 1/2 inch spurred blade wood bit. Larger pots should have all new holes drilled with a 5/8 inch holesaw. Media level should be about 1.5 to 2 inches above the top row of holes. Thicker wall molded pots drill better than thin ones. Thinner plastic pots drill better if full of media/sand.

Preferred media is not gravel as shown. Also more drainage holes are needed in one or two rows above.

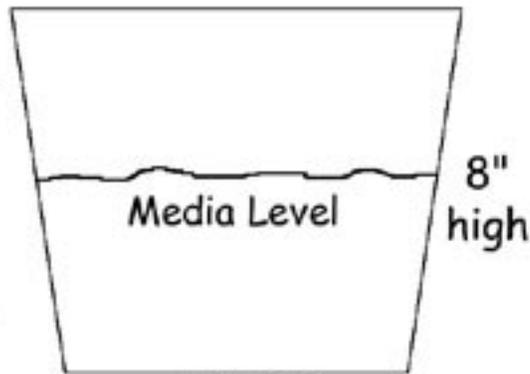


Creel-Way Propagation

Recommended Pots & domes

*Alternate pots, domes, etc. may be used but clear plastic must be nondegradable

wire
hold-down
32"
10 gauge



7" O.D.

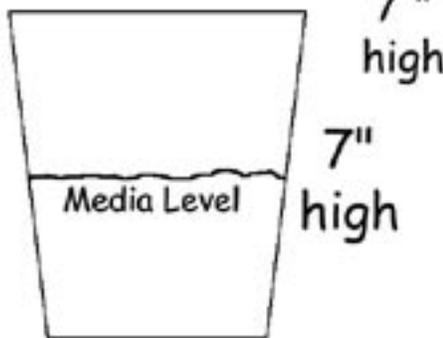
Lerio C850 E1

3 gallon

*LerioMDB-139 vacc (6 1/2 6 1/2 /5)

*mum pot (8 1/2w, 5 h, 6 1/2 bottom)

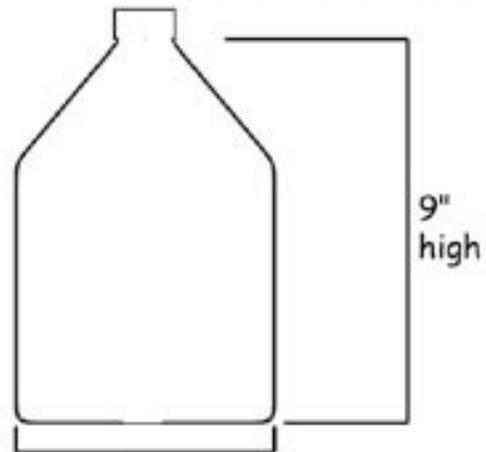
wire
hold-down
27"
10 gauge



5 1/2" O.D.

Lerio C850 E-1 (1 gallon)

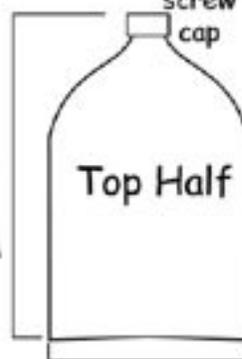
SCREW CAP (1 5/8th" O.D.)



6 1/4th" X 5 3/4th"
rectangular base

Nester Perrier 1 gallon PET

screw
cap



5" O.D.

3 Liter clear soft drink bottle

5/8" rubber chair foot
in 7/8" drillsaw hole



5" O.D.

Mike Creel
Lexington, SC
mikeacreel@yahoo.com
7/5/2004



3 GALLON POT with 1 gallon dome, wire hold-down stuck into media & cutting ID labels. Varying size wire can also be used to stabilize dome through hole made in the pot side wall.

DRILLING & FILLING POTS FOR DRAINAGE

Mike Creel

07/05/05



Pots made from cookie jar cut in half, food storage canister & frozen cookie dough whats-it. Creel-Way

These pots were drilled not by Bonnie and Clyde during target practice but by a creative propagator seeking to improve the drainage qualities of the varied containers. Most holes were made with the 3/4 inch diameter holesaw attached to the drill in the photo. Smaller holes were made with a 5/8 inch holesaw and 1/2 inch spur-blade wood bit. I fill most pots just half full of my media to about 2 inches above the upper holes. Such pots ideal for cuttings, seeds and plants, always seated on a pedestal or hanging in a tree. Mike Creel 07/05/05



Dormant cuttings of Davidia tree fill this dome (too many) but the pot, media depth and hold-down are correct. Too many cuttings under one dome caused failure.



This 5-gallon pot is well drilled for extra drainage But all holes should be 3/4 inch holesaw ones. Media level should be about 2" above top holes.



This used hanging basket converted to High-Rise prop-pot has the proper dome, more than well attached but not enough holes. 3 rows of 3/4" holesaw holes needed plus 3 or four 3/4 holes in the bottom.

MENAGERIE OF DOME-POTS for plant propagation

Creel-Way Propagation

Mike Creel 07/05/05



The three dome-pots here came from a trash pile and a dollar store. Each worked great!



This container from a chain store worked with two domes using dormant cuttings. The 2-Brr Pot.



A sturdy plastic kitchen bowl makes a fine hanging plant propagator. It is one of my High-Rise models.



Even the bottom section of a standard plastic gallon milk carton can be drilled to create an effective dome-pot for cutting propagation. Call it a Milk-Prop.

COLLANDER DOME-POT mike creel 04/20/05

My Materials include:

- * plastic Sterilite collander from Family Dollar store about 11 inches O.D. PN 7314909650

- * Dannon 1 gallon spring water bottle with small bottom section cut off

- * Hanging basket harness, try electric fence wire

- * A piece of wire used to secure humidity dome to pot and against media

- * Fast draining media or natural pine humus, my media is 4-5 parts soil conditioner sold as GardenPlusPN 97675

- by Lowes stores mixed with 1 part of a soilless mix like Fafard B

Fabrication includes:

- Drilling or awling 4 holes

- Attaching hanging wire

- Attaching hold-down wire

- Filling pot with media

- ETC.

Dome-pot MUST be protected by shade, reducing sun 64-70% until cuttings are well rooted and vent cap is removed. Works with herbaceous & woody cuttings, 1 inch of rain or water needed once weekly. Pot may be hung or placed near ground on a pedestal. Use your imagination!



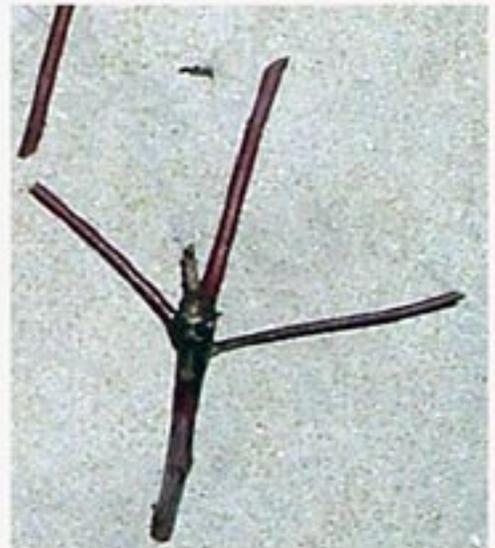
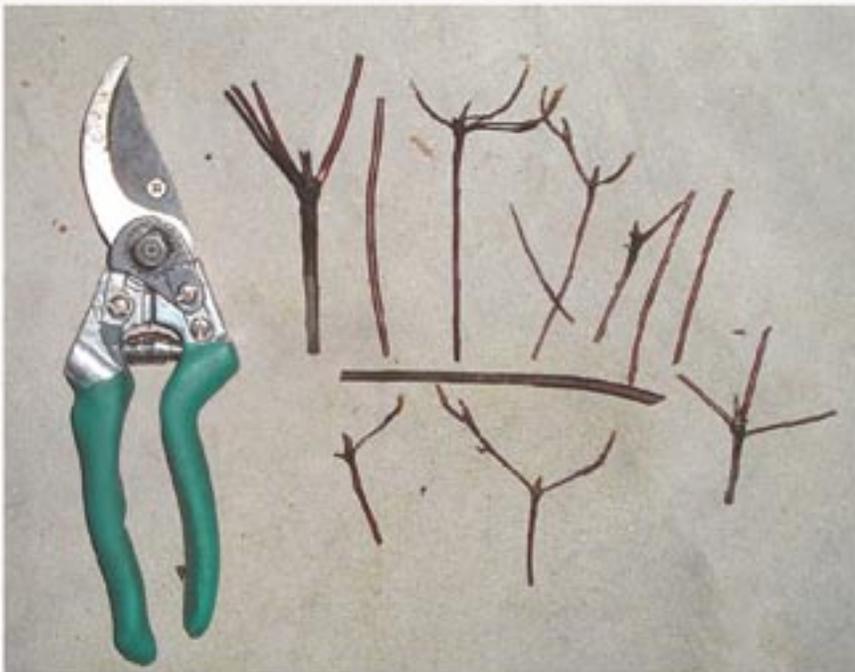
THIS POT is in too much sun. Any direct sun will boil, kill cuttings inside the dome.

DORMANT CUTTINGS ARE REALLY PRUNING



REMOVE ALL
TERMINAL
BUDS FROM
CUTTINGS
AT TIME OF
FINAL TRIM

STRAIGHT
STEMS MAKE
CUTTINGS
TOO; ORIENT
STEM WITH
ANGLED CUT
AT BOTTOM
LEVEL CUT
AT TOP



Dormant cuttings of native azaleas and other woody plants are really just the throwaway byproducts of judicious winter pruning. Here is a medium-sized branch of a white canescens azalea that was probably one season at most from dying as a shaded unproductive branch. I harvested it in winter and converted it into a pot full of viable dormant cuttings. One cutting is trimmed to sticking proportions. Each final cutting needs scarification of the bark from just above the joint to base, a fresh angled cut at the base, a pot of media with a sprinkle of fresh azalea humus on the surface, watering, a dome, a wire hold-down, a pot pedestal and a shade cloth. The rest is nature.