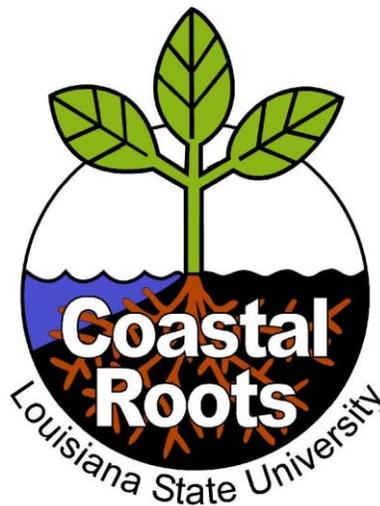


LSU Coastal Roots™ Program

A Year in the Yard



Compiled by

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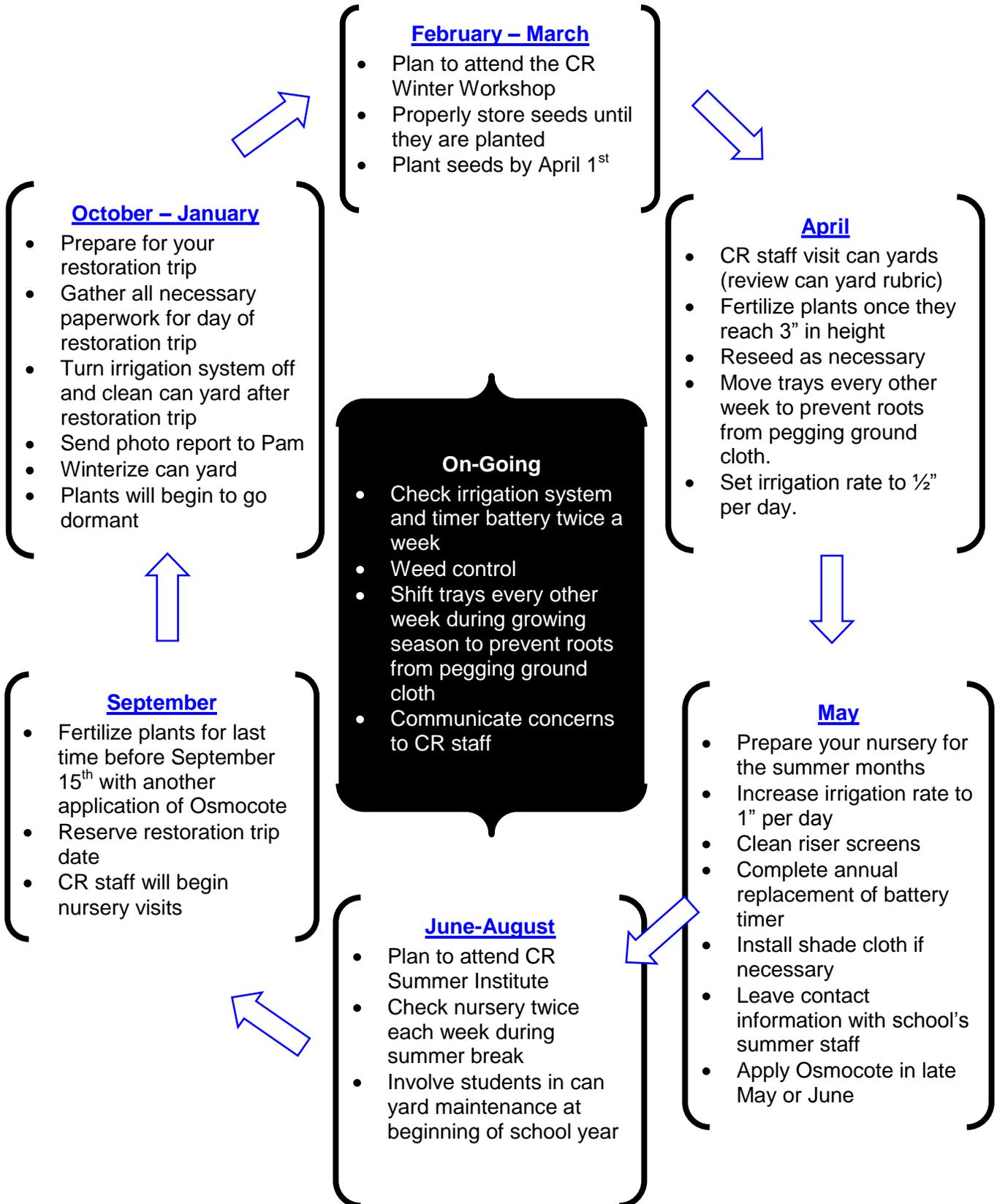
LSU College of Education

Ed Bush

LSU College of Agriculture

Volume 1

Spring 2011



February - March

Coastal Roots Winter Workshop

Mardi Gras season is here, which means it's also time for the Coastal Roots Winter Workshop! Teachers attend the Winter Workshop for professional development, and bring back with soil and seeds for the year's crop of plants with them. Look for an email from Pam regarding registration for the workshop in January. Please return all necessary paperwork by indicated date.

Proper Storage of Soil

You will receive three bags of planting media designed for germinating seeds. Please store the bags of media inside. Leaving them outside will mean that they will get soggy and will be difficult to spread into the yellow cells when you are ready to plant.

Proper Storage of Seeds

Once you've obtained your seeds you may need to store them until the weather is warm enough for planting. How best to store your seeds and to prepare them for planting will depend on the species. Additional information on these native trees can be found at <http://coastalroots.lsu.edu/Nlrestplants.html> on the CR website.

- **Southern Baldcypress** (*Taxodium distichum*): Moisture is the crucial component of stratification (refrigeration). The seeds need to be soaked at least 2 days prior to planting. So place your seeds in a plastic container filled with water, and leave them in your refrigerator before you plant them. For complete instructions on cypress seed pre-treatment, see the document [Stratification of Cypress Seeds](http://coastalroots.lsu.edu/Nlseedprep.html) (<http://coastalroots.lsu.edu/Nlseedprep.html>) on the CR website.
- **Live Oak** (*Quercus virginiana*) and **Water Oak** (*Quercus nigra*): Oak trees are divided into two general groups which determines how we prepare them for planting; the white oaks and the red oaks. Live oaks and water oaks are in the white oak group. This means they can be planted immediately after they have fallen from the tree. When you get your acorns, they can be stored in the refrigerator for a couple of months. They must be dry while in storage or they will germinate! When you are ready to plant, take the acorns out of storage and pour them in to a bucket filled with water. You will notice that some of the acorns will sink to the bottom of the bucket and some will float. THROW AWAY the acorns that float. When they float, it means they have no germplasm or "meat" in the shell. Often, you can see the small hole that was drilled for the worm to enter the nut.
- **Nuttall Oak** (*Quercus nuttalli*) and **Cherrybark Oak** (*Quercus pagoda*): Nuttall oaks and cherrybark oaks are in the red oak group. This means they need a period of stratification (refrigeration) before planting. However, when you receive your acorns from CR, they are ready to plant. It is best that the acorns be stored in a dry plastic bag in the refrigerator until you are ready to plant. Again, "float" your acorns before planting so that you increase your chances that the acorns will germinate.
- **Red Maple** (*Acer rubrum*): These seeds are called "double samara," meaning they have wings on their seeds. They are collected from April to July (which is why many of you receive these seeds later than other types) by shaking the tree or pulling the seeds from the trees. Care must be taken in Red Maple seed storage to prevent them from molding. When you receive the seeds, lay them out on a cookie sheet in a thin layer and store in the refrigerator. Check them often to ensure they are not molding and plant them in a moist soil BEFORE they dry out. No seed treatment required.
- **Loblolly Pine** (*Pinus taeda*) and **Longleaf Pine** (*Pinus palustris*): These seeds are collected from October from November. When the pinecones are wide open and very light, it is easy to shake the seeds from the cone and remove the wings. The seeds should be stored dry in a plastic bag in the refrigerator before planting. They should be planted in a moist media.
- **Water Tupelo Gum** (*Nyssa aquatica*) and **Hackberry** (*Celtis occidentalis*): Seeds should be kept moist in a plastic bag and refrigerated until ready to plant. They can be stored in this manner for up to 30 months without sacrificing viability. Tupelo seeds should be planted from 0.5 to 1.0 inch deep. Hackberry seeds should be planted 0.5 inches deep.
- **Common Persimmon** (*Diospyros virginiana*): These seeds need to be kept moist and refrigerated until ready to plant. They should be planted from 0.5 to 1.0 inch deep.

February – March (continued)

Proper Handling of Grass Cuttings

Cuttings should be made and planted soon after you receive them because cuttings that dry out will not sprout. Use clippers to cut the grass into sections.

- Bitter Panicum:** This grass is propagated by planting stem cuttings from larger plants. The cut sections should consist of a node in the center of the section with approximately 2" of grass stem on either side of the node. The new plant will sprout from the node. Stem sections should be pushed into the soil until the node is covered with about 1/2" of soil. Water thoroughly.

Planting Seeds

Sometime in February or March the weather will be warm enough to plant your seeds and/or grass plugs. These should be planted after the last frost and by April 1st, at the latest. You can expect germination within 1-2 weeks of planting.

- Prepare seeds or grasses for planting according to directions above.
- Fill clean yellow cells to the top with media (soil) provided by Coastal Roots. For instructions on using the green template to make filling yellow cells with media (soil) an easier task, view the video [Using the Green Template](http://coastalroots.lsu.edu/Nlcanyard.html) ( <http://coastalroots.lsu.edu/Nlcanyard.html>) on the CR website.
- Check the chart below to determine how many seeds or grass cuttings to plant in each yellow cell and how deeply to plant the seeds.
- Using the tip of your finger, push a hold the appropriate depth (as indicated in the chart below) into the planting media. Put the proper number of seeds in each hole. Cover with media.
- When all 98 yellow cells are planted, put the tray into the center of your nursery yard. All trays should be placed in the middle of your yard so that they get maximum irrigation.
- Label each tray with seed type and date planted. You can use popsicle sticks or masking tape.
- It is critical that your irrigation system keeps the soil wet during the germination process. Check on the system to make sure everything is working properly.

Seed Type	Seeds Per Cell	Planting Depth
baldcypress, hackberry, longleaf pine, swamp red maple, common persimmon	3 seeds per cell	1/2"
waxmyrtle, red mulberry	3 seeds per cell	1/4"
live oak, water oak, cherrybark oak, tupelo gum, pawpaw	2 seeds per cell	1/2"
nuttal oak	1 seed per cell	1"
black mangrove	1 seed per cell	surface
bitter panicum	2 grass cuttings per cell	push grass cuttings into soil until the node is 1/2" below soil

Your Goal:
To have around 500 very healthy seedlings.
The keys are water, nutrition, and weed prevention.

For complete instructions on how to prepare and plant your seeds and / or grass plugs, see the document [Planting Your Coastal Roots Seeds](http://coastalroots.lsu.edu/Nlseedprep.html) (<http://coastalroots.lsu.edu/Nlseedprep.html>) on the CR website. If germination does not occur, you can re-seed your yellow cells before the end of May for a second try.

April

Can Yard Visits

In late March or early April the Coastal Roots staff will begin periodic inspections of the can yards at all our schools. Each time we visit, the CR staff will use a rubric to score the items that are essential to maintaining the integrity of your nursery and raising healthy plants. A few teachers have laminated a copy of the rubric and mounted it on the inside of their yard so students are reminded of how the yard and plants will be scored. See the back cover for a copy or see [Nursery Rubric](http://coastalroots.lsu.edu/RIforms.html) (<http://coastalroots.lsu.edu/RIforms.html>) on the CR website.

For instructions on keeping up with the regular needs of your can yard, see the document [Nursery Production Checklist](http://coastalroots.lsu.edu/NIseedprep.html) (<http://coastalroots.lsu.edu/NIseedprep.html>) on the CR website.

Fertilizing

You should begin fertilizing your plants once they reach **three inches in height**, which will happen about three - five weeks after germination. Fertilize each yellow cell with 10-15 prills of Osmocote. Then fertilize with Miracle-Gro (or a similar liquid fertilizer) once a month, following directions on the package. For complete instructions on fertilizing plants, view the video [Fertilizing Your Plants](http://coastalroots.lsu.edu/NIcanyard.html) (<http://coastalroots.lsu.edu/NIcanyard.html>) on the CR website.

Reseeding

Take an initial count once your seeds have sprouted. If your total seedling count is less than 500, use extra seeds left over from your initial planting or contact Pam for more seeds if needed. Students can generally plant around 400-500 seedlings during a CR field trip, so it is not necessary to many more than they can plant. When the seeds arrive, plant the additional seeds in your remaining yellow cells, following the instructions above for seed preparation according to species. Reseeding should be complete before the end of May.

Thinning Seedlings

If you have more than one seedling coming up in a yellow cell, pat yourself on the back for giving your seedlings such great growing conditions! After celebrating, however, you will need to thin your seedlings. It is best to use a pair of sharp scissors to snip the weakest of the seedlings in that cell, leaving the strongest seedling to grow. Do not try to pull the extra seedlings out of the cell because this will disturb the root system of the bigger system. We understand that destroying something you've worked hard to grow can be difficult. You can reassure your students that thinning the seedlings will allow the remaining seedling to make the most of the limited water and nutrients that are available to it in the yellow cell. Take courage, and don't be afraid to snip. For further instructions on how to thin seedlings, view the video [Thinning your Seedlings](http://coastalroots.lsu.edu/NIcanyard.html) (<http://coastalroots.lsu.edu/NIcanyard.html>) on the CR website.

Prevent Root "Pegging"

Healthy seedling roots can grow through the bottom of yellow cells and "peg" through the nursery's ground cloth. It is important to prevent this because holes in the ground cloth encourage weed growth. Root pegging can be prevented by shifting the position of the planting trays every other week. Using scissors to trim the roots when they begin extending through the bottom of the yellow cells prevents pegging. Trimming the roots as the plants grow also contributes to the long-term health of the plants by preventing the removal of developed roots right before the plant is planted.

Check Irrigation Output

At this time of year, your plants should be receiving about ½" water per day. One way to measure the water output of your irrigation system is to use your Coastal Roots provided rain gauge. Pick a day where rain is unlikely and completely empty and clean your rain gauge. Place

the rain gauge in the middle of the can yard and check the amount of water in the gauge after both the morning and afternoon watering. Increase or decrease watering time as needed. For directions on how to program your timer see the document [Automatic Irrigation Timer Instructions](http://coastalroots.lsu.edu/Nltimer.html) (<http://coastalroots.lsu.edu/Nltimer.html>) or the video [Programming Your Timer](http://coastalroots.lsu.edu/Nlcanyard.html) (<http://coastalroots.lsu.edu/Nlcanyard.html>) on the CR website.

May

Prepare Nursery for Summer

Prior to the last week of class and before school lets out for summer vacation, you should perform some simple maintenance to prepare your nursery for the summer months. If you cannot periodically check on your school's can yard through the summer, you may want to bring the plants to your house. Communicate with the Pam if there is a problem before the end of school the year so we can fix any problems before the summer break.

Increase Water Output

Increase the water rate to at least 1" for the plants per day in the nursery. One way to measure the water output of your irrigation system is to use your Coastal Roots provided rain gauge. Pick a day where rain is unlikely and completely empty and clean your rain gauge. Place the rain gauge in the middle of the can yard and check the amount of water in the gauge after both the morning and afternoon watering. Increase or decrease watering time as needed. For directions on how to program your timer see the document [Automatic Irrigation Timer Instructions](http://coastalroots.lsu.edu/Nltimer.html) (<http://coastalroots.lsu.edu/Nltimer.html>) or the video [Programming Your Timer](http://coastalroots.lsu.edu/Nlcanyard.html) (<http://coastalroots.lsu.edu/Nlcanyard.html>) on the CR website.

Clean Riser Screens

Clean the screens on all of the emitters. Unscrew the emitter from each of the risers and rinse them out. The small white emitter filters can be scrubbed with a toothbrush. Reassemble and re-screw them to the risers taking care to not over-tighten them as they can crack and then will need to be replaced. For detailed directions on cleaning the riser screens, see the video [Cleaning the Riser Screens](http://coastalroots.lsu.edu/Nlcanyard.html) (<http://coastalroots.lsu.edu/Nlcanyard.html>) on the CR website.

Replace Timer Battery

We suggest that you replace the battery in your timer annually. Please only use **DURACELL** 9-volt batteries. Be sure to wipe the rubber gasket around the battery cover clean before replacing the battery cover securely. See the video [Changing the Timer Battery](http://coastalroots.lsu.edu/Nlcanyard.html) (<http://coastalroots.lsu.edu/Nlcanyard.html>) on the CR website.

Shade Cloth Installation & Check

If you have shade cloth, now would be a good time to put it over your yard. To provide a support base for the shade cloth, begin by stringing two evenly spaced pieces of lightweight clothesline from the top of one side of the can yard to opposite side. Do the same on the other side of the can yard, creating a tic-tac-toe design. Carefully pull the shade cloth across the top of the fence, taking care to not snag the cloth. Attach the shade cloth to the can yard by stringing cable ties through the grommets and securing them to the fence. Ensure the shade cloth is pulled tautly across the top of the yard. This is vital, as a shade cloth that droops in the middle will funnel water toward the center of the yard. Not only will this kill the plants located in the center of the yard, but it will weaken the shade cloth eventually causing it to tear. See the video [Shade Cloth Installation](http://coastalroots.lsu.edu/Nlcanyard.html) (<http://coastalroots.lsu.edu/Nlcanyard.html>) on the CR website for a demonstration and further instructions on how to properly install a shade cloth.

Note: Shade cloths are NOT required for most yards. Remember, these plants grow in their natural habitats in full sun. If you think your plants are stressed from the heat, let Pam know, so we can determine if a shade cloth is necessary.

If you already have a shade cloth installed, use the following list to check its condition.

- Clothesline tic-tac-toe grid is in place and tautly strung to provide support for shade cloth.
- Shade cloth is fitted tautly over the top of the yard and isn't sagging in the center.
- Shade cloth is well secured with cable ties to can yard.

Leave Contact Information with School's Summer Staff

Make sure your principal, office staff, and maintenance personnel know how to contact you in case of an irrigation failure. Someone should physically check the yard/plants two times a week!

June - August

Coastal Roots Summer Institute

Teachers attend the Coastal Roots Summer Institute. This professional development seminar will introduce you to other Coastal Roots teachers and environmental professionals from all throughout the Gulf Coast region. You will be provided information pertaining to best practices in environmental education, creative activities happening in other Coastal Roots classrooms, hot tips on can yard maintenance, and much more! Look for registration information in early May. Please return all necessary paperwork by the deadline.

Summer Nursery Maintenance

During the summer you should check on your can yard at least twice per week to:

- Ensure that the irrigation system is working correctly.
- Move trays frequently in order to prevent plants from pegging down through the ground cloth.
- Clean your rain gauge.
- Perform weed maintenance. Sweep out dead leaves and grass.
- Stay in touch with your school's maintenance crew to coordinate with them as necessary regarding weed control and irrigation system maintenance. Make sure they know not to spray Round-Up or similar weed killers on your plants.
- Continue to monitor growth of plants and fertilize with Miracle-Gro once a month.

Some common issues you should watch for in the summer include:

- Can yard water source inadvertently being turned off
- Grass cuttings and debris in the can yard encouraging weed growth in the yellow cells and through the ground cloth
- Dead timer battery cutting off the irrigation system
- Heat stress causing plants to be burned
- Red ants, wasps, spiders or snakes invading the yard
- Heavy weed growth around yard perimeter
- Application of Roundup weed killer mistakenly getting on the seedlings

We particularly recommend that you check your timer battery (e.g., look at the timer face to see if the "low battery" icon is showing) **at least every Friday**. If the timer battery goes out on a Friday and you don't know it, the plants will receive no water for a minimum of 2 days. In the Louisiana summer the heat stress of a single weekend with no water could be enough to destroy an entire crop. **No one wants to explain to students why there are 980 dead tree seedlings in their nursery when school starts.**

Beginning the School Year

With the start of the new school year your students will be excited to see how their plants are growing. You can involve them in can yard maintenance right away by having them remove weeds or debris from the yellow cells and around the perimeter of the yard. The nursery rubric can be used with students to help them understand how their can yard should be maintained. See the back cover for a copy or see [Nursery Rubric](http://coastalroots.lsu.edu/RIfirms.html) (<http://coastalroots.lsu.edu/RIfirms.html>) on the CR website.

September

Fertilizing

Add another 10-15 prills of Osmocote to each yellow cell before September 15. September is also the last month we recommend you using a liquid fertilizer. After this month, your plants will begin to go dormant for the winter and should not be fertilized.

Restoration Trip Reservation

Look for an email from Pam about planning your restoration trip! Date reservation choices are given on a first-come, first-served basis. All the necessary forms and instructions to request your planting date are also located on the CR website.

Plant Dormancy

Your plants may be turning brown and losing leaves as they go dormant for the winter. You can check to see if your plants are still alive by scratching the plant stem with your fingernail. Healthy plants will show some green tissue between the outer brown of the bark and inner off-white color of the stem tissue. If you think there is a health issue, call or email Pam.

October - January

Reducing Irrigation Output

Once temperatures start to cool (into the 70's during the day), you can reduce the irrigation output to ½" per day.

Prepare for Restoration Trip

The restoration trip is the conclusion of hard work by both the students and teachers involved in the program. Careful planning provides for the most smoothly running trips.

- Continue to maintain your yard and plants right up to your restoration planting date.
- Sort dead plants out of tree/grass crop and consolidate plants to as few trays as possible.
- Give student photo releases (with cover sheet) and completed bus reimbursement documents to Pam on day of restoration trip.
- Establish student planting teams prior to trip. Three to four students per group works well.
- Plan for adult chaperones. At the elementary level, a ratio of 1 parent to 6-8 students is desirable. At the middle/high school level, a ratio of 1 parent to 10-12 students is desirable.
- Please have students dress appropriately. Tell students to wear rubber boots or old tennis shoes on trip. Blue jeans are recommended (because of briars and insects).
- Use your school's field trip permission slips.
- Schedule buses.

For complete instructions on how to prepare for your restoration trip, see the [Preparing for a Restoration Trip](http://coastalroots.lsu.edu/Rltrips.html) (<http://coastalroots.lsu.edu/Rltrips.html>) on the CR website.

After Restoration Trip

- A CD will be mailed to you with all of the photos taken on your restoration trip by CR staff along with a list of students you provided CR that do not have permission. Email Pam back a list of photos that have students who do not have permission to be in a photo. Pam will remove those photos from folders she uses for publications.
- Turn water off to nursery both at the water source and at the irrigation valve in your nursery.
- Count your materials to make sure you have your full complement of 10 black trays and 980 yellow cells. If you are short, request the CR staff to provide what you need.
- Have your students wash out the yellow cells in preparation for planting new seeds. Use bottle brushes to scrub the cells with soapy water, then soak the yellow cells briefly in a mild bleach solution (a short time in the bleach solution is all that is needed).
- Check the integrity of your can yard:

- Are the perimeter, gateway and ground cloth free of weeds?
- Is the ground cloth free of holes?
- Is your irrigation system working properly? Are the valve box and timer positioned and set correctly and fully in working order? Do your risers emit water thoroughly and evenly? For complete instructions on programming your timer, see Automatic Irrigation Timer Instructions (<http://coastalroots.lsu.edu/Nlseedprep.html>). You can also use the troubleshooting guide, <http://coastalroots.lsu.edu/Nltimer.html>, as needed.
- Is the Coastal Roots sign attached and visible?
- Are the gate and lock in good condition?
- If you want to enhance weed suppression around your yard, this would be a good time to do so:
 - Apply Roundup all the way around the perimeter
 - Place extra gravel around the perimeter
 - Place paving stones around the perimeter

Winterizing Your Can Yard

December is the time in Louisiana where we may begin to see freezing temperatures. Before temperatures dip below freezing you will need to shut off your water source and drain the water lines. Please make sure that any exposed PVC pipe is insulated. Water your plants heavily before a freeze, since ice accumulation insulates your plants from cold and drying out. It is a little known secret that many plants dry out during the winter months. We are more attuned to thinking about summer as the dry season, since we (humans) feel the dryness caused by summer heat. However, winter dryness can be just as damaging to plants, so, watch out for freezing temperatures and winterize your yards. The dormant trees in your yards are generally fine as long as they are wet. If temperatures dip into the teens then you should bring in your trees until temperatures go back up above freezing. It is not common, but it happens every five or ten years.

Cautionary Tales of Can Yard Horrors

Much attention and effort goes into raising the trees and grasses grown in the Coastal Roots program. But when growing living plants at a site as busy as a school, many things can and have gone wrong with disastrously outcomes. We hope by sharing other's not-so-happy tales, we can help you to avoid one of your own!

- Water is turned off at the source.
- Weed killer is inadvertently sprayed on plants. There is no fix for this and your plants will die!
- Timer battery dies. Once the battery indicator is displayed on the face of your irrigation timer, the timer is already malfunctioning.
- Can yard is not kept locked and vandalism occurs.
- The seeds you plant in your nursery can provide a tasty snack for squirrels and other critters. Keep an eye on newly planted seeds to make sure that they are not being stolen by animals.
- Not contacting us when you have a problem. Nothing is more demoralizing to students than to have 980 dead plants because no one called when there was a problem.

School Name _____

LSU Coastal Roots Can Yard RUBRIC



Date	CR Teacher	CR Staff
Category	Things to Check	Score Great job! Needs work
Weeds	____ Is the ground cloth free of weeds? ____ Is the perimeter of the yard free of weeds? ____ Are the trays free of weeds? A few black willows... ____ Is the valve box clearly visible and accessible?	4 3 2 1
Plant Health	____ Do the plants look healthy ? ____ Do the plants look sufficiently watered ? ____ Have the plants been fertilized (when appropriate)? ____ Is there a rain gauge present and is it clean? ____ Has the rain gauge been emptied recently? ____ In the spring, have the seedlings been thinned and non-germinated cells been emptied ?	6 5 4 3 2 1
Timer	____ Is the valve in the "auto" position? ____ Is the timer on? ____ Is the battery indicator light off? ____ Is the timer programmed correctly? ____ Is the timer out of standing water?	5 4 3 2 1
Canyard Appearance	____ Is the yard free of litter, leaves, and unnecessary tools ? ____ Are empty yellow cells clean? ____ Are unopened/opened bags of soil removed from yard? ____ Is the door on its hinges and latched properly? ____ Are the latch and lock in good condition (if present)? ____ Is the CR yard sign attached to the fence? ____ Is the shade cloth properly attached to the fence & taut? ____ Are the emitters, risers and pipe in good condition?	8 7 6 5 4 3 2 1
Communication	____ Is the teacher accessible today ? ____ Have problems or concerns been communicated to Dr. Blanchard prior to this visit?	2 1
Total Score:		____ /25

Plant species in yard:	Number in yellow cells (estimate)
•	
•	
•	
Number of Empty Yellow Cells	

Description of action(s) taken by the staff while at can yard and other comments:

Picture taken of the canyard this visit and sent to Pam? Yes No