Colorado State Forest Service

Kamie Long
Assistant District Forester
970-248-7325
kamie.long@colostate.edu

CSFS Homepage:
- http://csfs.colostate.edu

CSFS Nursery:
- http://csfs.colostate.edu/pages/seedling-tree-nursery.html

Order Seedlings from CSFS Cooperators

Grand Junction District by County (970):

- Delta - CSU Extension – 874-2195
- Garfield - NRCS – 945-5494 ext. 101
- Mesa - CSU Extension – 244-1834
- Pitkin – call Garfield County
- Rio Blanco - NRCS – 878-5628

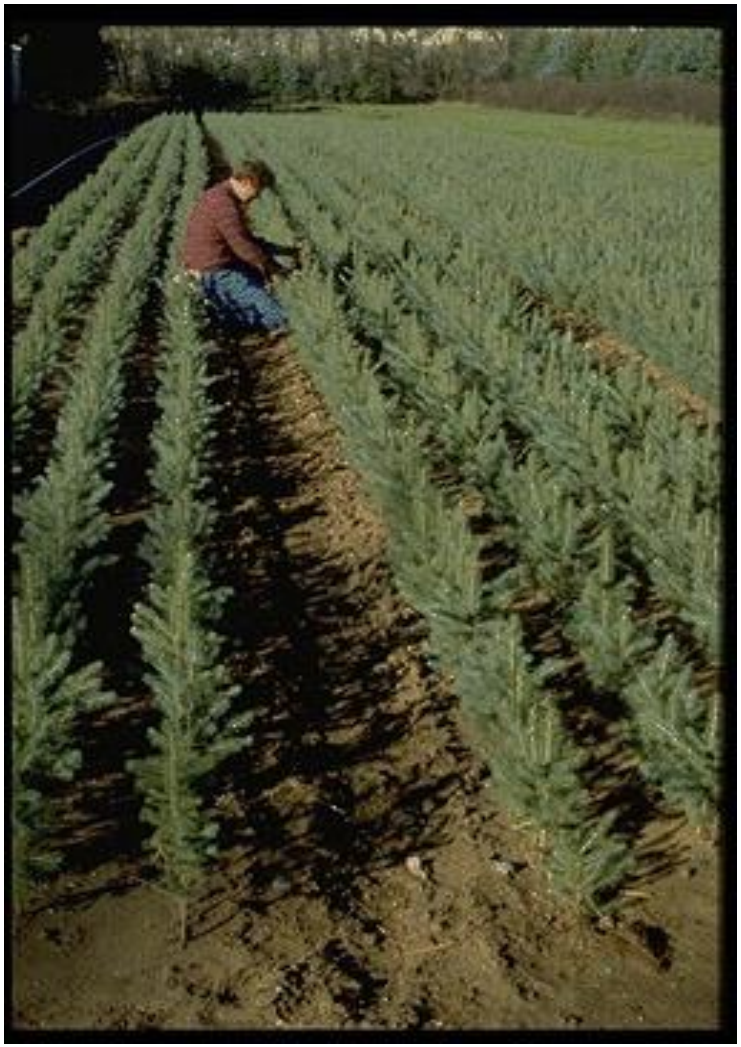
Conditions to Seedling Sale

- Own at least 1 acre of land
- Can not be used for landscaping
  - Used for **Conservational Purposes**
    - Erosion control, Wildlife habitat, Plant diversity
- Can not be re-sold as living plants
- Payment must be included with order and submitted by the first week of April

Seedling Pick-up Dates

- Glenwood Springs – April 24, 2013
  - Glenwood Springs Service Center (NRCS)
  - 258 Center Drive; (970) 945-5494
- Grand Junction – April 24, 2013
  - Mesa County Fairgrounds
  - 2785 Highway 50; (970) 244-1834
  - Pick up beneath stadium bleachers
- Delta – April 25, 2013
  - Hi Quality Packing
  - 215 Silver St (off 2nd Street); (970) 874-2195

The CSFS Nursery Grows Over 50 Species of Trees and Shrubs



Seedlings are available as:

- Bare root (25/species)
- Large Tube (30/species)
- Small Tube (30/species)
- Small Tray (50/species)

Bare root Seedlings – lots of 25

- 1–2 yrs old, depending on species
- Deciduous: 10-30” top height * Conifer: 5-12” top height
- Seedlings are wrapped in plastic, filled with sawdust
- Keep moist by pouring water into the wrapped bundle
- Do not open bundle until ready to plant or heel-in

Large Tube - Potted Seedlings: 5-12” top height; 2”x7” tube

- 30 per species
- 1 year old
- Potted seedlings do well if you can provide adequate water
  - Received plenty of water at the nursery
- These seedlings do well because the roots are not disturbed when planting

Small Tube Potted Seedlings: 3-6” top height; 1.5”x7” tube

- 30 per species
- 1 year old
- Seedlings are smaller due to the smaller container they are grown in
- Have less root volume than regular potted
- Require less water

Small Tray Potted Seedlings: 2” x 6” cell

- 50 per species
- 1 year old
- Seedlings are smaller due to the smaller container they are grown in
- Have less root volume than regular potted
- Require less water

Create a Plan to Increase Seedling Survival

- Objectives for the planting
- Limiting factors of your site
- Species best suited for your project
- Site preparation and seedling handling
- Correct planting procedures
- Amount of water for the seedlings
- Control of competing vegetation and wildlife

Objectives for Planting Trees

Do you need a Windbreak? To create Wildlife Habitat?

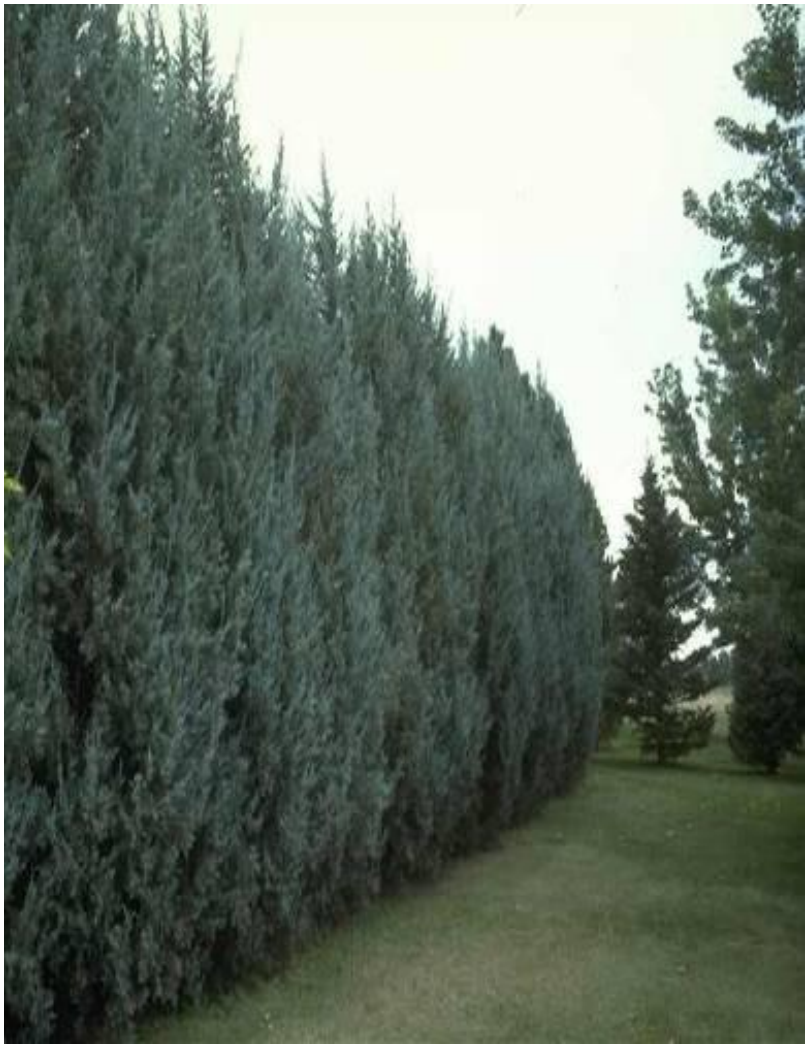
*Plant Diversity *Erosion Control *Reforestation

*Visual Screen *Noise Barriers *Christmas Trees

Objectives and Long-term Expectations

- What do you expect to get or to see from the planting?
- Answer this question prior to seedling species selection
- Choose species whose characteristics meet the expectations
- Choose species that can handle your site limitations
- **Example Characteristics:**
  - Fast growing
  - Dense habit
  - Long living
  - Fruit producing

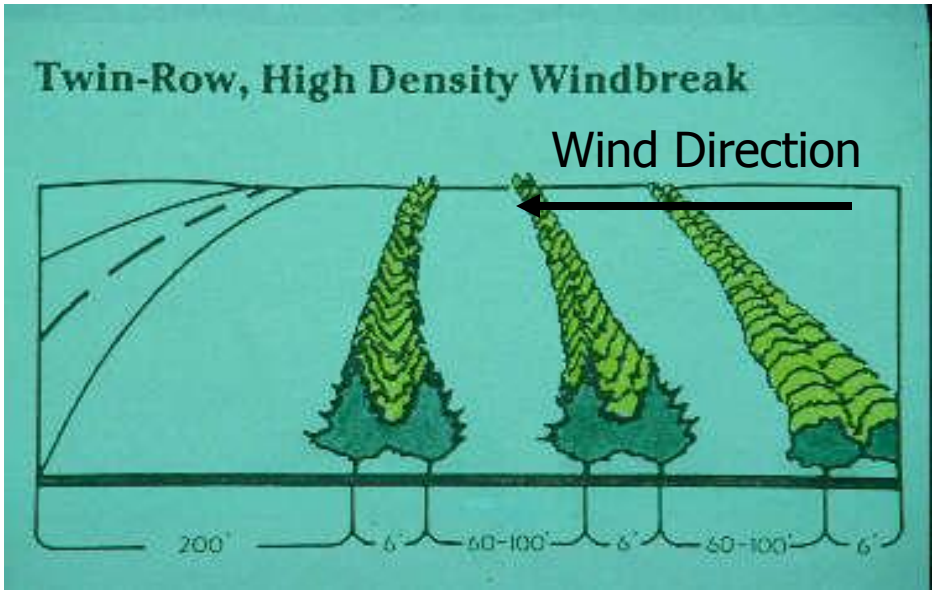
Objective: Windbreak
Expectation: Block wind year round



- Junipers and Redcedars make great windbreaks
- Plant Characteristics
  - Retain foliage all year and all the way to the ground
  - Grow slowly
  - Do not offer much in the way of flowers or fruit

Objective: Snow Fence
Expectation: Protect road from snow

- Type of Windbreak used to capture and control blowing snow
  - What species will meet your expectations and site limits?



Limiting Factors

- Every site has factors that can limit a seedling's potential
  - Soil nutrient levels
  - Soil pH ~soil acidity affects nutrient uptake
  - Light intensity
  - Space availability
- You must determine the limiting factors before species selection
- If any of these factors are not compatible, seedling mortality can occur

Water

Weeds

Wildlife

In Order To Have A Successful Planting You Must Deal With These Three Factors!

Water: How will water be available to the trees?

Weeds: How will competing vegetation be controlled?

Wildlife: How will you prevent / discourage wildlife?

Species Selection

- This is one of the most important investment decisions for the homeowner
- Must consider your Limiting Site Factors
- Match the Limiting Factors with the plant characteristics
- Choosing the right species can make the difference between a successful planting and an unsuccessful one
- The right species may not be your preferred species but is based on the site

- The Buyer's Guide is available on the Internet

  Species Characteristics:
  - **Elevational Range**
  - **Drought Resistance**
  - **Cold Hardiness**
  - Growth Form
  - Size
  - Soil Conditions
  - Insect/Disease issues
  - Wildlife Value
  - Seasonal Color

http://csfs.colostate.edu/pdfs/08byrgd-www.pdf

Plants That Do Well on West Slope

First Step: Site Preparation – Before Seedlings Arrive!

Untilled portion of field. The Before.

- What it does:
  - Enhances soil's ability to catch and store moisture
  - Reduces grass and weed competition
  - Aerates soil by breaking down clumps of soil
  - Warning: If you disturb the soil, something will grow

Amend Poor Soils with Organic Matter

- Roots need nutrients to thrive
- As organic matter breaks down, it provides nutrients
- Till in 3” of organic matter 10” deep
- Composted materials work best

Rows of mulch at Mesa County Landfill – Organic Materials Composting Facility

Site Preparation: Rototiller

Walk behind Rototiller

Rototiller behind ATV

Site Preparation: Aerating the Soil

Plowing or Disking

Old fashion plowing

Site Preparation: Basic Tools

Shovels

Hand Power Auger

Fertilization

- Do not add fertilizer (a chemical mixture) to soil when planting unless fixing a known problem
  - Fertilizer could 'burn' the fine, absorbing roots
- Determine soil nutrient levels
  - Soil tests done by CSU Soils Lab or other private companies
  - Only fertilize with the lacking minerals
- **Best Option**: during site preparation, amend poor soils with organic matter to add nutrients (not with chemicals)

Care Prior to Planting is Critical

- These are key:
  - Cool (under 50 F)
  - Moist
  - Out of direct sun
- Keep roots Moist but not Wet
- Do NOT let the roots dry out

Never Expose the Roots for More than a Few Minutes!

- Fine roots are delicate and very small (hair like)
- They will die and so will the plant if exposed to air for a period of time
- Bare root seedlings need to be planted within one week

Do Not Leave the Roots Immersed in Water

- You can suffocate roots by leaving them immersed in water
- Keep seedling roots moist by carrying them in a bucket of polymer, sawdust, or some kind of soil mixture

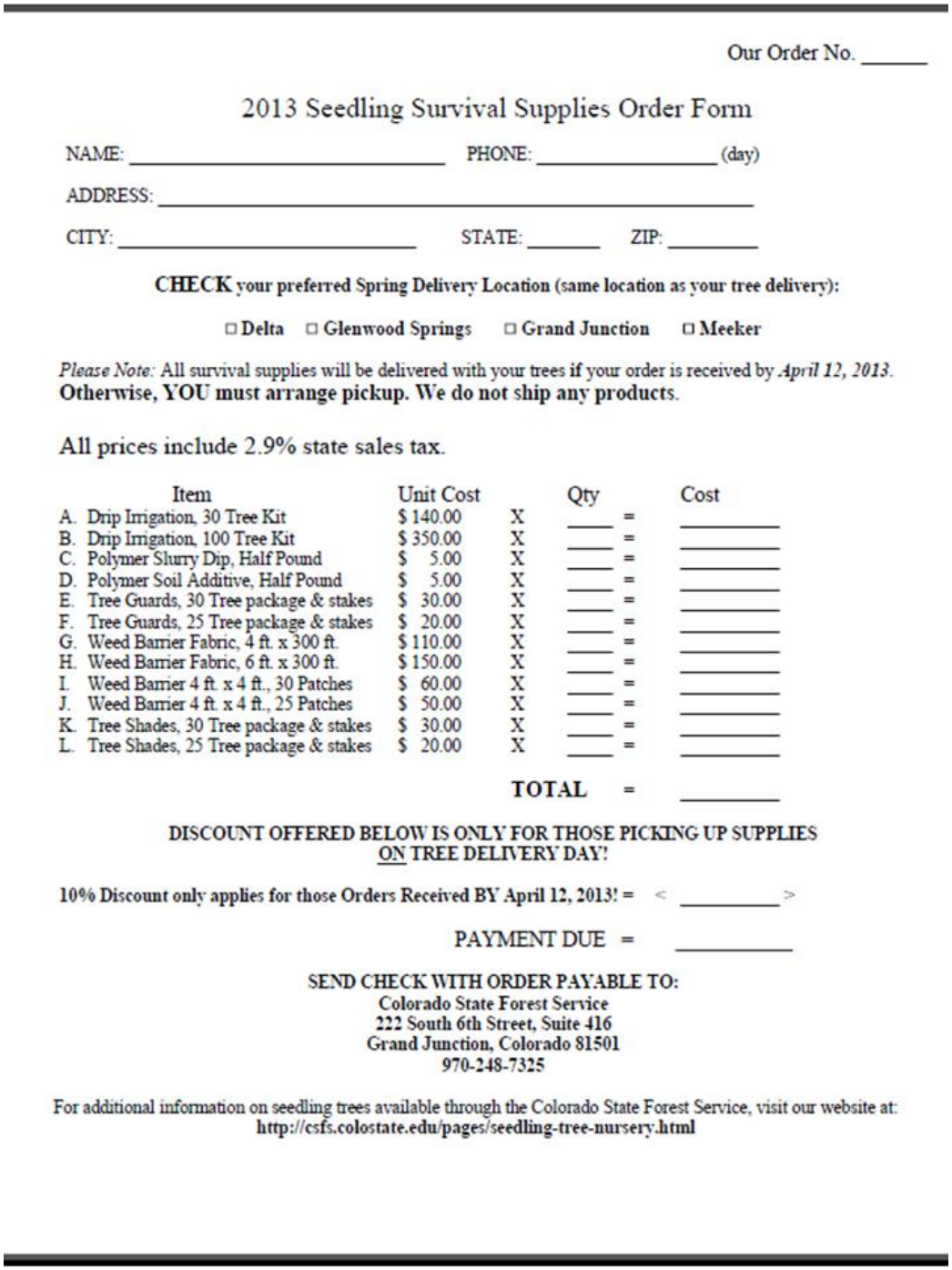
If You Can Not Plant Your Bare roots Within 7-10 Days…

"Heel" them in:

- Dig a hole or trench in the shade, spread the trees and roots out
- Cover roots with dirt and then water. Do not heel in seedlings for more than two weeks
- If left in the soil the roots can get snarled and difficult to separate

Seedling Survival Supplies

- Sold <u>only</u> by the **State Forest Service**
- Not sold by CSU Extension – only Seedlings are
- Pick up supply order when picking up seedlings on delivery day



Our Order No. _____

2013 Seedling Survival Supplies Order Form

NAME: _____ PHONE: _____ (day)

ADDRESS: _____

CITY: _____ STATE: _____ ZIP: _____

CHECK your preferred Spring Delivery Location (same location as your tree delivery):

☐ Delta ☐ Glenwood Springs ☐ Grand Junction ☐ Meeker

Please Note: All survival supplies will be delivered with your trees if your order is received by *April 12, 2013*. **Otherwise, YOU must arrange pickup. We do not ship any products.**

All prices include 2.9% state sales tax.

Item	Unit Cost		Qty		Cost
A. Drip Irrigation, 30 Tree Kit	$ 140.00	X	____	=	_____
B. Drip Irrigation, 100 Tree Kit	$ 350.00	X	____	=	_____
C. Polymer Slurry Dip, Half Pound	$ 5.00	X	____	=	_____
D. Polymer Soil Additive, Half Pound	$ 5.00	X	____	=	_____
E. Tree Guards, 30 Tree package & stakes	$ 30.00	X	____	=	_____
F. Tree Guards, 25 Tree package & stakes	$ 20.00	X	____	=	_____
G. Weed Barrier Fabric, 4 ft. x 300 ft.	$ 110.00	X	____	=	_____
H. Weed Barrier Fabric, 6 ft. x 300 ft.	$ 150.00	X	____	=	_____
I. Weed Barrier 4 ft. x 4 ft., 30 Patches	$ 60.00	X	____	=	_____
J. Weed Barrier 4 ft. x 4 ft., 25 Patches	$ 50.00	X	____	=	_____
K. Tree Shades, 30 Tree package & stakes	$ 30.00	X	____	=	_____
L. Tree Shades, 25 Tree package & stakes	$ 20.00	X	____	=	_____
			TOTAL	=	_____

DISCOUNT OFFERED BELOW IS ONLY FOR THOSE PICKING UP SUPPLIES <u>ON</u> TREE DELIVERY DAY!

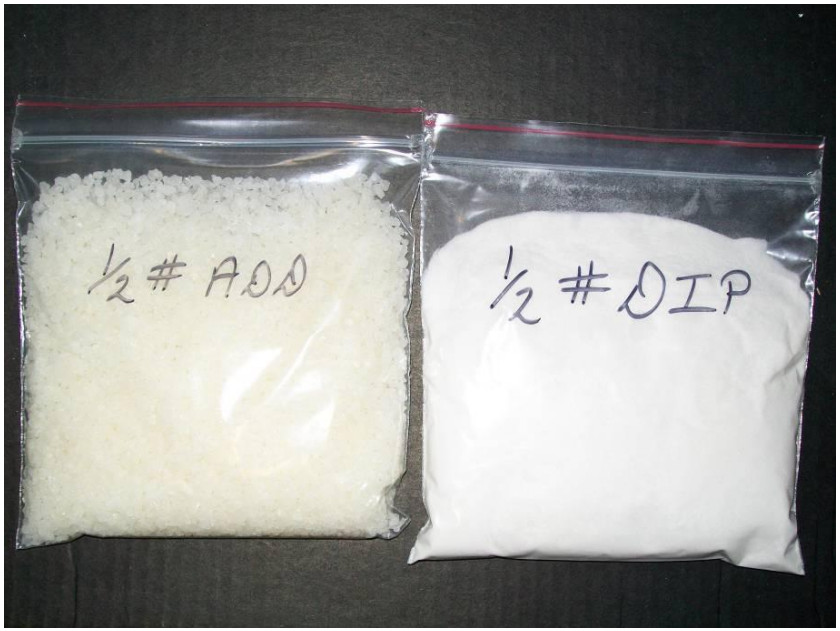
10% Discount only applies for those Orders Received BY April 12, 2013! = < _____ >

PAYMENT DUE = _____

SEND CHECK WITH ORDER PAYABLE TO:
Colorado State Forest Service
222 South 6th Street, Suite 416
Grand Junction, Colorado 81501
970-248-7325

For additional information on seedling trees available through the Colorado State Forest Service, visit our website at:
http://csfs.colostate.edu/pages/seedling-tree-nursery.html

Mulch and Polymer



- Need to consider whether or not you will use Polymer or Mulch when planting your seedlings
- More information to come on Mulch

Polymer

- Absorbs between 200 - 400 times it's weight in water
- Mixed with soil around the roots, retains moisture in the root zone
- 95% of the water in polymer is available to the plant

Tree Guards: Protect from Wildlife

- Effective against deer, rabbits, and rodents
- Chicken wire tubes work, but do not decompose
- Need to be monitored so they do not girdle the trees if the plastic is not decomposing

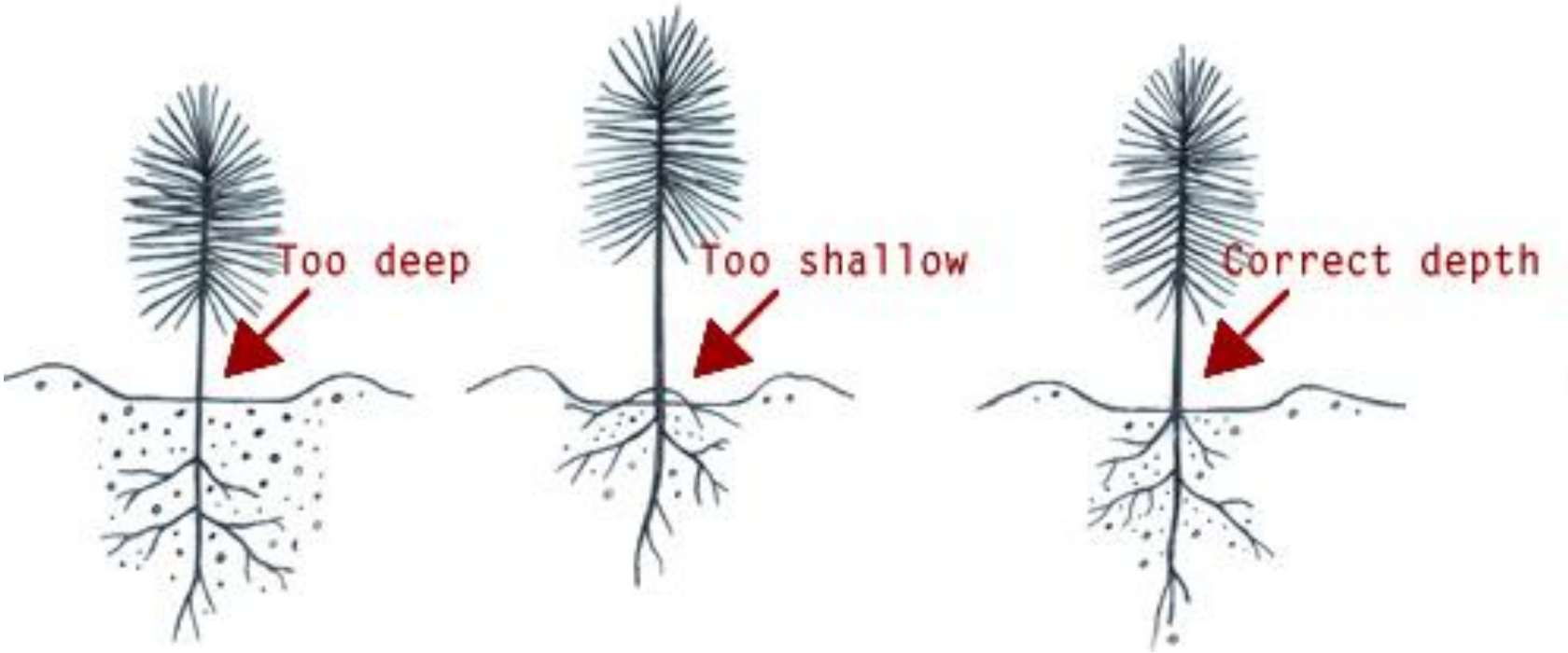
Tree Shades: Protect from Sun

- Important for conifer seedlings
- While all conifer seedlings will benefit from shade - Fir and Spruce must have shade
- Plastic mesh with wire hoop shades. Work well in our rocky ground
- Place shade on the South & West sides of a seedling

When is the Best Time to Plant?

- Ideal time to plant trees and shrubs is during the dormant season
- Plants are dormant after leaf drop (fall) and before bud break (spring)
- Cool weather conditions allow plants to establish roots before rain and heat stimulate new top growth
- Seedlings can begin growing while still in the packaging. Plant as soon as possible.

Proper Depth is Critical!



Rule of thumb: Soil level should be right above the first major root. Ensures roots get oxygen.

Preparing Bare root Seedlings for Planting

- Create a slurry of **soil** in a 5 gallon bucket by mixing a shovelful of soil and water (half of the bucket) or
- Create a slurry of **polymer** in a 5 gal bucket (see directions that come with the polymer)

Preparing Bare root Seedlings for Planting

- Open bundle and place some seedlings in the bucket, submerging roots completely.
  - Keep remaining seedlings in shade/cool
- Plant as quickly as possible
- Seedlings can die if left in this mixture for more than two hours

Preparing Potted Seedlings for Planting

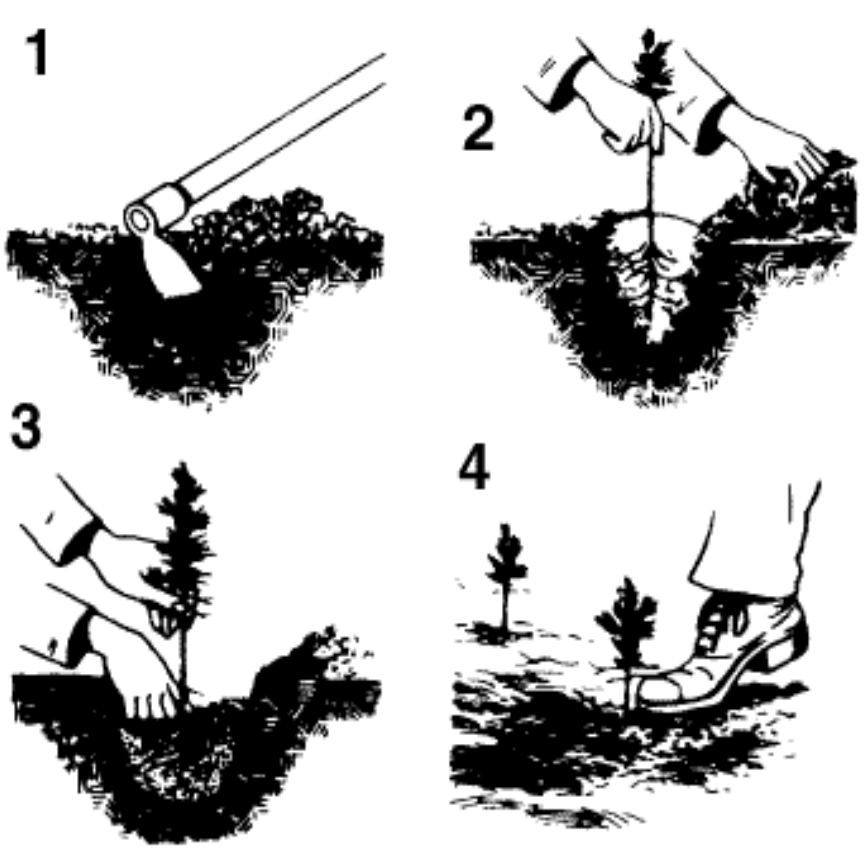
- In styroblock, grasp main stem at soil level, pull gently while pushing up through slot in bottom of block
- Pinyon, Bristlecone, Douglas-fir – Cut away styrofoam block with a knife if soil is breaking apart from roots

Preparing Potted Seedlings for Planting

- Do not break the soil around the root ball
- Do not leave seedlings in sun or wind after removal
- Remove from containers just prior to planting

"Dig a $5 Hole For a $1 Tree!"
Don't Plant too Deep!

- Step 1: Dig a hole large enough for **Entire** root system
- Step 2: Spread seedlings roots outward and downward keeping root collar at soil level
- Potted Seedlings = Do **Not** disturb the soil around the roots, just place in hole

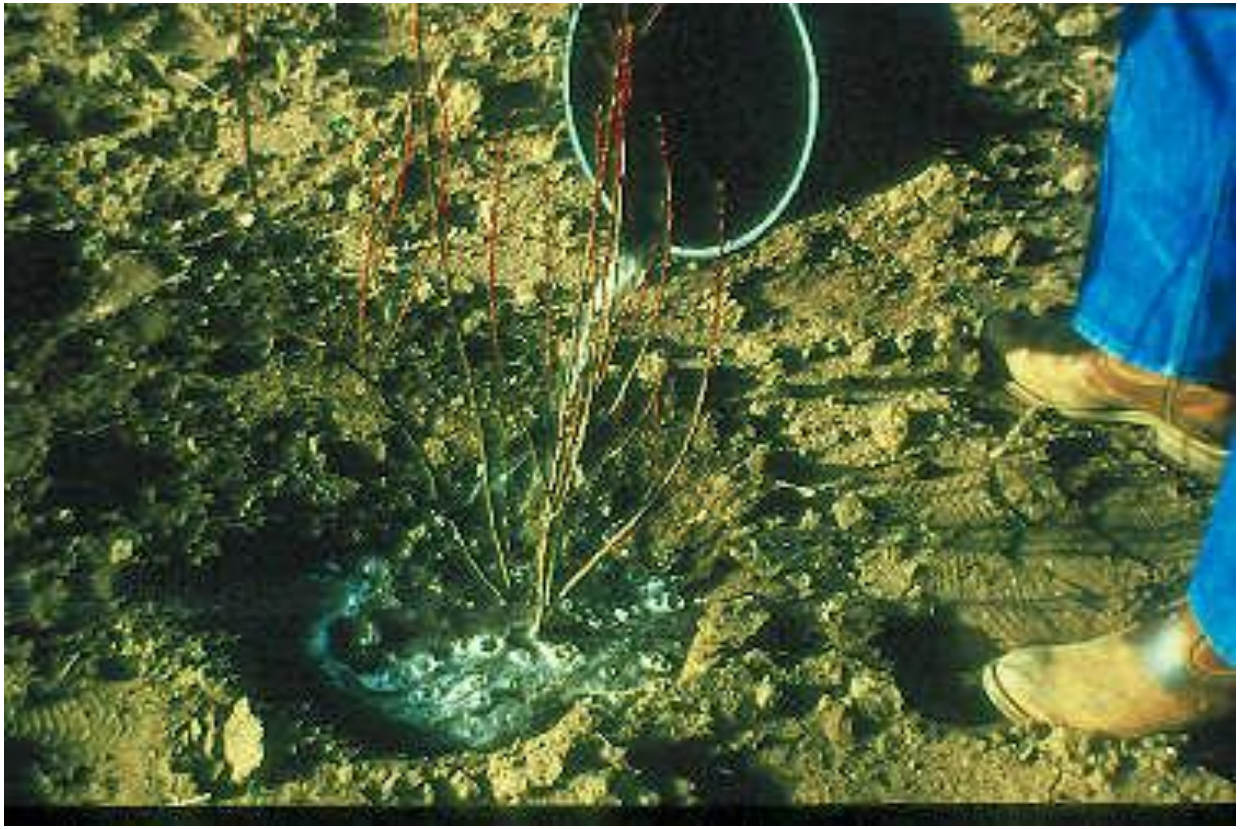


"Dig a $5 Hole For a $1 Tree!"

A well planted seedling should remain in the ground if gently tugged upward, and it should stand upright on its own

- Step 3: Backfill dirt and tamp around edges
  - Form a well around the tree to hold water if not using fabric
- Step 4: Water and mulch

Proper Watering



- Water 1-2 gallons after planting, but don't stomp the soil after watering
- Stomping wet soil will force the air spaces out of the soil. Roots need those air spaces!

Machine Planting - Louther

Can plant 300-500 trees per hour using tree planting plows

CSFS has machines and people for rent

Landowner must provide the tractor

Fabric Machine

- Unrolls the fabric on the machine planted row
- Rider marks tree locations (spray paint) – crew follows, slits fabric, and pulls tree through
- Critical tool when combined with the planting machine in terms of time and labor

Watering is Crucial

- Plant growth is directly dependent upon water
- Trees and shrubs require deeper, less frequent watering than grass
- Some species require more water than others

Watering is a Commitment

- Recommend at least 2 gallons per watering
- Potted seedlings: Water approximately every 10 days
- Bare root seedlings: Water approximately every 20 days
- Need supplemental water for 2-3 growing seasons

Drip Irrigation

- The most efficient way to deliver water to your trees
- Applies water slowly, right to the seedling
- No wasted water and fewer weeds
- Easily automated
- Good when quantity of water or time is a problem

No Supplemental Water

- Reconsider planting if you are not able to provide any water to the seedlings
- Seedlings are accustomed to plenty of water
- If you want to try, plant a native species
- Plant in a natural drainage areas and provide some shade

Competition: Weeds

Mowing is not weed control. The weed's root system is still intact and mowing may damage the seedling.

- Weeds and grass take moisture and sun away from seedlings
- Use Fabric and/or Herbicide to reduce
  - Read Herbicide label
- Annual maintenance for 3 to 4 years after planting

Mulch – Many Options

- Fabric mulch
  - Do not allow fabric to touch seedling stem – may wick moisture away
  - Do not allow large air pockets beneath fabric, hot air will build here
- Wood chips, sawdust, straw, peeler shavings
  - Keep to less than 3 inches deep to avoid problems with rodents and diseases

Benefits of Fabric Mulch

Weed barrier fabric only

Fabric with gravel on top

- Reduce weeds
- Conserves moisture
- Allows oxygen flow between air and soil
- Cost effective over life of fabric
  - If using fabric, Woven Polypropylene is preferred over Spunbond

Fabric Mulch

- CSFS sells Woven Polypropylene fabric
- UV resistant for 5 years
- Black to maximize UV resistance
- Water permeable
- Do not allow air spaces between ground and fabric

Use a Herbicide

- Consider a non-selective herbicide such as Roundup
  - Ensures no seedling competition
- Be certain there is no chemical residue that will damage your seedlings
- Read and follow the label

Competition: Wildlife

- Prevent domestic and wild animal damage
  - Species selection
  - Exclusion
  - Repellants

Picture from: Southern Forest Insect Work Conference Archive

If Deer are a Problem in Your Area

- Plant Austrian pine if you want to attract more deer
- Spruce and Juniper can be more successful in deer areas, but still need protection while they are young

- Deer and Elk can be the biggest wildlife problem for your planting
- They can require a combination of deterrents to be effective:

- Physical exclusion: deer fence, tree guards, electric fence
- Taste & Smell repellents: Ropel, egg solids, soap, hair
- Negative "experiences": baited electric fence, dogs

Things to Consider

- Don't purchase more than you can Plant, Water and Maintain, especially, if this is your first time planting!
- Pick the right tree for your site
- Site preparation is important and can increase your seedling survival rate
- Take your time when planting. Make sure each seedling is properly planted.
- Have a maintenance plan that covers Watering, Weeding and Replacement

A well-planned and maintained tree and shrub planting are a joy for all…

Start Planning for Yours Today!