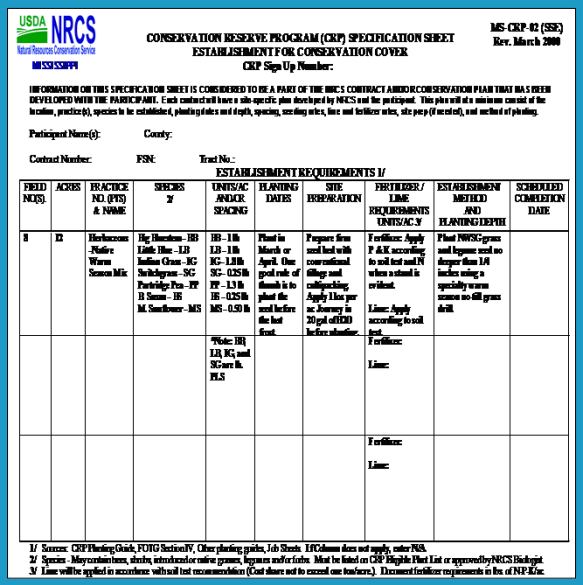
Planting Plan: To Plant or Not To Plant

What to Plant
When to Plant
How to Plant

Refer to Planting Plans in Notebook

- **Herbaceous Planting Plan**
- **Woody Planting Plan**

Included Items
- Location & Acres
- Species & Amounts
- Site Prep & Plant Dates
- Special Instructions



USDA NRCS Natural Resources Conservation Service
MISSISSIPPI

CONSERVATION RESERVE PROGRAM (CRP) SPECIFICATION SHEET
ESTABLISHMENT FOR CONSERVATION COVER
CRP Sign Up Number:

MS-CRP-02 (SSE)
Rev. March 2000

INFORMATION ON THIS SPECIFICATION SHEET IS CONSIDERED TO BE A PART OF THE NRCS CONTRACT AND/OR CONSERVATION PLAN THAT HAS BEEN DEVELOPED WITH THE PARTICIPANT. Each contract will have a site-specific plan developed by NRCS and the participant. This plan will at a minimum consist of the location, practice(s), species to be established, planting dates and depth, spacing, seeding rates, lime and fertilizer rates, site prep (if needed), and method of planting.

Participant Name(s): County:

Contract Number: FSN: Tract No.:

ESTABLISHMENT REQUIREMENTS 1/

FIELD NO(S).	ACRES	PRACTICE NO. (PTS) & NAME	SPECIES 2/	UNITS/AC AND/OR SPACING	PLANTING DATES	SITE PREPARATION	FERTILIZER / LIME REQUIREMENTS UNITS/AC 3/	ESTABLISHMENT METHOD AND PLANTING DEPTH	SCHEDULED COMPLETION DATE
8	12	Herbaceous -Native Warm Season Mix	Big Bluestem - BB Little Blue - LB Indian Grass - IG Switchgrass - SG Partridge Pea - PP B Sasm - BS M. Sunflower - MS	BB - 1 lb LB - 1 lb IG - 1.0 lb SG - 0.25 lb PP - 1.3 lb BS - 0.25 lb MS - 0.50 lb *Note: BB, LB, IG, and SG are lb. PLS	Plant in March or April. One good rule of thumb is to plant the seed before the last frost.	Prepare firm seed bed with conventional tillage and cultipacking. Apply 1 ton per ac. Journey in 20 gal of H2O before planting.	Fertilizer: Apply P & K according to soil test and N when a stand is evident. Lime: Apply according to soil test.	Plant NWSG grass and legume seed no deeper than 1/4 inches using a specialty warm season no-till grass drill.	
							Fertilizer: Lime:		
							Fertilizer: Lime:		

1/ Sources: CRP Planting Guide, FOTG Section IV, Other planting guides, Job Sheets. If Column does not apply, enter N/A.
2/ Species - May contain trees, shrubs, introduced or native grasses, legumes and/or forbs. Must be listed on CRP Eligible Plant List or approved by NRCS Biologist.
3/ Lime will be applied in accordance with soil test recommendation (Cost shares not to exceed one ton/acre.). Document fertilizer requirements in lbs. of N-P-K/ac.

Revegetation Strategies

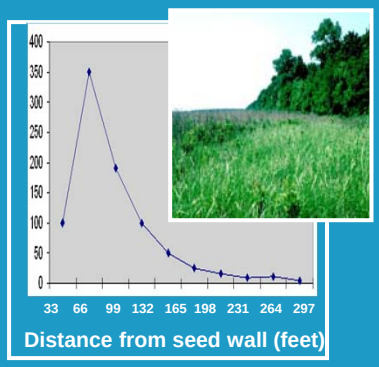
- **Natural Regeneration** – Allowing the site to revegetate naturally by propagules in the soil, stockpiled and spread soil, and/or dispersal from surrounding landscapes.
- **Revegetation by Planting** – Planting seed, plants, cuttings, and/or other propagules on site.
- **Augmented Revegetation** – Allowing the site to revegetate naturally with additional materials planted over all, or part of the site; usually for specific purposes.

Begin at the Beginning!

Site Inventory

- Walk the entire site and inventory
  - Species list – identify to species
  - Hydrology zones and what species are in each
  - Collect soil for soil test
  - Note invasive species and locations
  - Note contaminants – tires, batteries, trash sites, pesticide mixing areas, dead zones
- Other
  - Identify cropping history or other land use
  - Time left fallow
  - Herbicide and other pesticide use that may interfere with planting success

Seed Dispersal



- Related to distance from natural wetlands
- Woody species – within 200 feet of seed wall
- Herbaceous – within ½ mile of restoration site
- Targeted community within dispersal distance

Forested Wetland Type Key

1. Hydrology and soils marginally altered	Go to 2
1. Hydrology and soils significantly altered	Go to A
2. Propagules already on site	Go to 3
2. Propagules not on site	Go to 5
3. Desirable species on site	Go to 4
3. Desirable species not on site	Go to 5
4. Cover of plants adequate	Go to B
4. Cover of plants inadequate	Go to 5
5. Site adjacent to seed wall	Go to 6
5. Site not adjacent to seed wall	Go to A
6. Contains desirable species	Go to C
6. Does not contain desirable species	Go to A

A = Natural regeneration not recommended
B = Natural regeneration possible for the entire site
C = Natural regeneration ≤ 200 feet from seed wall

Emergent Marsh Wetland Type Key

1. Desirable species on site	Go to 2
1. Desirable species not on site	Go to 3
2. Diversity and cover adequate	Go to A
2. Diversity and cover inadequate	Go to 3
3. Site near an existing wetland	Go to 4
3. Site not near an existing wetland	Go to 5
4. Contains desirable species	Go to C
4. Does not contains desirable species	Go to 5
5. Wetland effectively drained < 20 years	Go to 6
5. Wetland effectively drained > 20 years	Go to B
6. Seed bank contains desirable species	Go to A
6. Seed bank does not contain desirable species	Go to B

A = Natural regeneration possible for the site
B = Natural regeneration not recommended
C = Natural regeneration if ≤ 1/2 mile of emergent wetlands

Natural Regeneration Exercise 1

Is natural regeneration a viable alternative?

Why or why not?

Natural Regeneration Exercise 2

Is natural regeneration a viable alternative?

Why or why not?

Natural Regeneration Exercise 3

Is natural regeneration a viable alternative?

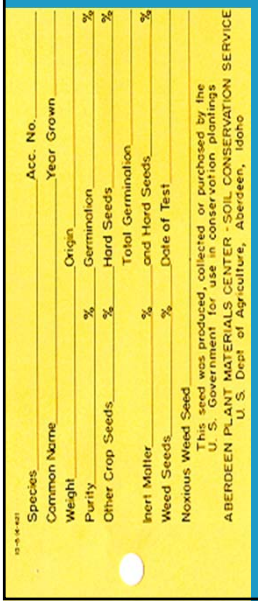
Why or why not?

Selecting Species for Planting

Considerations

- #1 Intended use & # 1 Hydrology zones
- Soils
- Historical habitat records, Species on-site
- Reference wetlands/Intended purpose
- Species availability / Biotypes
- Financial
  - Material costs
  - Planting costs
  - Short & Long term maintenance

SEEDING –Using Seed to Establish Herbaceous Vegetation



Information On A Seed Tag

1) Variety and kind (Species and Common name)
2) Lot number
3) Origin
4) Net weight
5) Percent pure seed
6) Percent germination (and date of test)
7) Percent inert matter
8) Percent other crop seed
9) Percent weed seeds
10) Name of restricted noxious seed
11) **Prohibited noxious seeds are not allowed.**
12) Name and address of company responsible for analysis (seller)

Example Seed Label

30.24% (species 1)
19.57% (species 2)
17.79% (species 3)
14.69% (species 4)
14.32% (species 5)
0.05% (other crop)
3.31% (inert/dirt)
+ 0.03% (weed)
100.00% (total)

Seeding Rate:
New Lawns:
Overseeding Existing Lawns:

Net Wt. 48 Oz. (3 Lbs.)
1 Lb. Per 350 Sq. Ft.
1 Lb. Per 700 Sq. Ft.

HARDY LAWN Lawn Seed Mixture

Pure Seed	Variety/Kind	Germination	Origin
30.24%	Program Perennial Ryegrass	90%	OR
19.57%	Kelly Kentucky Bluegrass	83%	OR
17.79%	Kenblue Kentucky Bluegrass	80%	WA
14.69%	Boreal Creeping Red Fescue	85%	CAN
14.32%	Gulf Annual Ryegrass	90%	OR
0.05%	Other Crop Seed		
3.31%	Inert Matter		
0.03%	Weed Seed		

Noxious Weed Seeds: None Found

Lot No. 99101234
TESTED: 01-2009 SELL BY: 10-2009
In FL, & LA SELL BY: 08-2009
In IL,MT,NE,SD,WI, & WY SELL BY: 01-2010
In AK,AZ,CA,CO,ID,MN,ND,NH,NV,NY, OH,OR,PA,UT,VT,WA and DC SELL BY: 04-2010

NOTICE TO CONSUMER:
The seed laws of several states including Arkansas, California, Florida, Georgia, Idaho, Indiana, Mississippi, North Dakota, South Dakota, South Carolina, Texas, and Washington require arbitration or conciliation of disputes involving the quality or performance of seed before litigation. A sworn complaint must be filed with the Commissioner/Director/Secretary of agriculture, or chief agriculture agent within such time as to permit inspection of the seeds, crops, or plants by the designated agency and the seller of the seed. A copy of the complaint must be sent to the manufacturer by certified mail.

Calculating PLS (Pure Live Seed)

- **Commercial seed**
  - **PLS (Pure Live Seed)**
  - **PLS = (% pure seed x germination) ÷ 100 =**
- **Seed analysis report example**
  - **95% pure seed**
  - **89% germination**
  - **(95 x 89) ÷ 100 = 84% PLS**
  - **84% of seed lot contains viable seeds**

Designing a Seed Mix: Determine what species and planting density

- Seeding rate
  - Square foot basis / 10 plants total
  - PLS per pound
- Seedling establishment rate
  - Variable among species
  - General rule – 20% PLS
- Forb-to-Grass ratio
  - 80-90% grass = mostly grass
  - 50-60% forbs = diversity

Planting Herbaceous Material

Material Types:

- Donor Wetlands
- Mulching & Inocul
- Sod-mats
- Wild Hay
- Plugs & Sprigs
- Rhizomes, Corms,

Donor Wetlands

- Sometimes wetlands will be destroyed
- Existing wetlands or areas with wetland plants
- Source of wetland propagules?

Mulching and Inoculating

- Remove 8-10 inches of topsoil
- Collect by hydrologic zone
- Spread no more than 6 in thick
- Place in same hydrologic zone
- Late fall/early spring (dormant)

Sodmats

- Cut from donor wetlands
- Piece back together
- Place – same hydrologic zone

2.5 months after establishment

Wild Hay

- Mature vegetative material from natural wetlands
- Most seeds ripe late summer to fall
- Sedges require mid-summer collection
- Spread in same hydrologic zone

Plugs and Sprigs



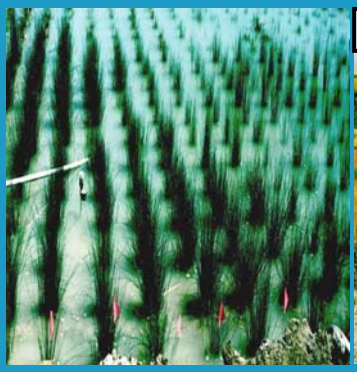
- Hydrology: tops must be above standing water
- Chop or cut into smaller pieces for planting
- Plugs: cut tops down to about 10 to 12 inches
- Use shovel / coring device to dig planting holes

Rhizomes Corms and Tubers



- Cut rhizomes into pieces with at least one node; plant just below soil surface and tamp in
- Broadcast small tubers and rake into the soil; plant large tubers in hole twice the size of tuber

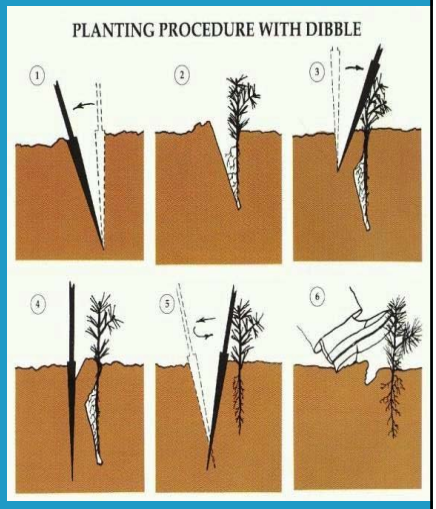
Plant Spacing



- Plant on 1.5 to 2.0 foot centers (1 per 4 sq. foot)
- Stock shortage: 15 to 20 ft. alternating patches
- Plants will spread out naturally

Woody Plant Establishment

- Material Types
  - Bare rooted seedlings
  - Potted material
  - B & B (balled and burlap)
  - Cuttings
  - Seed/Acorns
  - Miscellaneous
    - Spacing
    - Tree Protection



Bare Root Seedlings

- Minimum Attributes
- - 18 inches in length
- - 3/8 inch collar
- Larger seedlings better
- - less predation
- - less competition loss
- from grasses / weeds
- Roots
- - large fibrous
- - root = shoot

Storing Seedlings

- Cold storage 34 – 40°F
- Cold storage not possible
  - cool, shaded place
  - protect from freezing
- Seedling care
  - tape packaging holes
  - keep roots moist
  - stack bundles loosely
- On-Site: Stored more than 2 weeks
  - heel-in seedlings
  - shaded, protected area

Planting

- Do not do like this picture! – exposing roots
- Carry out small amounts at a time –desiccation problems
- Dig hole first, then pull plant from bag

Containerized and B&B

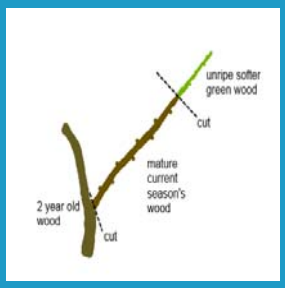
Cutting pattern for root bound plant

- Can jump start a system
- Longer planting window; don't plant in frozen soil
- Higher survival rate; use in harsh environments
- Deformed roots
  - roots circle around
  - gently pull and feather
  - severe: cut vertical slits

Planting Considerations

- Planting hole: 1-2 feet wider than root system
- Roughen sides: roots less likely to spiral
- Carefully place plant in the hole
- Fill hole 1/3 full; tamp; saturate soil with water
- Finish backfilling with soil and than water

Hardwood Cuttings

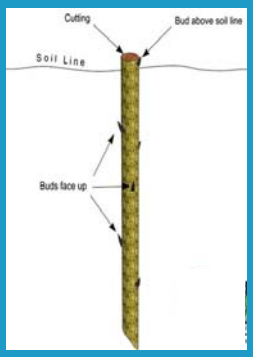


- Collect – dormant season
- Current season's wood
  - best potential for roots
  - 3/8 – 3 in diam, ≥ 4 buds
  - cut at an angle
- Cold storage 34 – 40°F
- Store DRY in a cooler, basement or root cellar
- Do not cover in damp or wet materials – water roots

Treatment Before Planting

- Soak cutting in cold water to swell root primordia
- Min 24 hrs, 7 – 14 days best
- Roots will emerge after 17 days (longer for some species)

Planting Cuttings



- Use probe to make hole
  - steel rod – good probe
  - avoids damaging the buds
  - at least ¾ length of cutting
- Insert cutting into hole
  - 75% below the surface
  - 1 or more buds above
  - muddy in (water/mud slurry)
- Use longer cuttings if conditions are unfavorable

Acorns

- 1/3 cheaper than seedlings
- Native oaks close to planting site
  - match source to planting site
  - collect from number of trees
- Survey crop potential in spring
- Collect as soon as seeds fall
  - first 5 – 10% unviable
- Check for maturity
  - pericarp (dark - mottled yellow)
  - easily separate from the cup

Tree Planting Spacing & Density

- Most common is bare rooted seedlings
- 10’ x 10’ spacing is preferred = 435 seedlings/ac.
- 12’ x 12’ spacing optional = 302 seedlings/ac.
- Other spacing options to consider based on material and site layout.*
  *Always plan for weed control access.
- Avoid straight rows if possible; curvilinear rows best.

Seedling Protection

- Herbivore damage is a major concern
- Tree shelters
  - provide protection
  - lower mortality
- Tree shelter concerns
  - expense and labor
  - requires maintenance
- Other alternatives
  - fencing
  - chemical repellents

Questions?