

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE SPECIFICATION**

422 - HEDGEROW PLANTING

I. SCOPE

The work shall consist of furnishing all materials and placing them in the designated areas to the limits as shown on drawings or staked in the field and performing all the cultural operations to grow and maintain healthy plants.

II. SITE PREPARATION

The land on which trees and shrubs will be planted must be essentially free of sod and perennial weeds before planting. Where grass sod or alfalfa exist, they are to be destroyed. This may be accomplished by mechanical and/or chemical control.

Weed management is critical for successful establishment of habitat plantings. Particularly in cases where forbs are being planted from seed, it is important to eradicate weeds as much as possible prior to planting. It is best to begin weed control as early as possible, with a focus on perennial and persistent annual weeds. This could mean mowing or using herbicides and pre-emergents for a year before planting.

Sites slated for fall planting can be pre-irrigated late in the summer to get an initial flush of weeds, which can then be sprayed or harrowed. Burning off thatch can also be used as a means of clearing plant material.

A. Sites with sod or perennial vegetation:

Where no wind erosion hazard exists, destroy sod or perennial vegetation on the entire site the year prior to planting by mechanical or chemical means.

Where an erosion hazard exists, destroy sod or perennial vegetation by mechanical or chemical means on an area extending a minimum of three (3) feet (6 feet total strip) from where the seedling is to be planted.

B. Sites that have been in row or small grain crops the year prior to planting:

Where no erosion hazard exists, sites may be prepared just prior to planting.

Where an erosion hazard exists, prepare seedbed, leave stubble over the winter, and prepare a six-foot strip prior to planting by mechanical or chemical means on an area extending a minimum of three (3) feet (6 feet total strip) from where the seedling is to be planted.

C. Where wind erosion is a problem, the plants may be planted directly into the site and a 3-foot diameter circle cleared around each plant at the time of planting. Methods of control include chemical and mechanical control.

D. Fallowing will be accomplished in areas having less than 20 inches of annual precipitation.

E. The irrigation system will be planned and installed prior to planting. Set up will be just after planting

III. PLANTING STOCK AND CARE OF SEEDLINGS

Proper care of seedlings at all times, from lifting at the nursery to the actual planting, cannot be over-emphasized. Negligence at any of these stages can cause complete failure regardless of the care taken when planting. Do not obtain seedlings from the nursery until shortly before planting is to begin.

Some natives, particularly *Ceanothus*, manzanita, and flannel bush, have sensitive roots and can suffer from transplant shock if not planted correctly. Use care removing plants from containers, and tamp gently when

placing in the ground. Do not disturb roots of these species prior to planting. Roots balls of other species of native plants can be gently loosened if the plant appears root-bound upon removing it from the container.

Keep seedling roots moist at all times, from the time they are removed from the bale until they are planted. Seedlings may be stored in bales for a short period of time: two or three days. Extreme care must be taken, however, to make sure roots do not dry out, that the seedlings do not heat, and reasonable efforts must be made to keep them from freezing. Seedling bales must be watered at least once every 48 hours and protected against sun and wind, yet well ventilated. Seedling bales should be examined daily and shifted as necessary to avoid heating. Where freezing occurs the bales should not be handled, but left until completely thawed out by warmer weather. Where it is necessary to store seedlings for periods in excess of three days, it is better to heel them out in thin layers and bed them in a sandy or loamy soil and make sure they remain moist.

Extreme care must be taken to keep seedling roots from becoming dried out while planting. Dry soil on the roots is evidence that seedlings are not being cared for properly. Ample water, or a water saturated material, must be kept in all planting containers to make sure the seedling roots remain moist.

Only viable planting stock grown from locally adapted seed or vegetative material should be planted. Planting stock should be maintained in good condition from the time received until planted. This will include, but not limited to, unpacking, storage, heeling in, transport to the planting site, and keeping plants protected and moist until and during planting.

Care of Seedlings.

1. Bareroot stock care before planting:
 - (a) Store plants in enclosed areas from 34 to 40 degrees F. off the floor.
 - (b) If ice is utilized, do not allow contact with the roots.
 - (c) Bales of plants should not be piled higher than 3 feet.
 - (d) Roots will be facing one way for periodic watering and fungicide treatment. Seedling roots will be kept moist.
 - (e) Heel-in beds. Make a trench with one 30 to 45 degree backslope. Line out planting stock against sloped side and backfill. Pack soil firmly around the roots. Keep roots 1 to 2 inches below the ground line. Water as needed. A moderately course-textured soil is preferred. The heel-in bed should be shaded and protected.
2. Bareroot stock care during planting. Keep seedlings covered and moist while planting. Ample water, or a water saturated material (burlap, sawdust moss, etc.) must be kept in all planting containers to insure the seedlings remain moist.
3. Containerized stock care - including all stock in any type of container (tar paper, gallon cans, containers, etc).
 - (a) Seedlings will be stored at 34 to 40 degree F temperatures.
 - (b) The soil medium will be kept damp.
 - (c) The seedlings will be shaded and protected.

IV. PLANT SELECTION

Use the California Vegetation Guide to make preliminary plant selection under the practice of Hedgerow Planting. Select the appropriate sub practice which identifies the objective of implementing the hedgerow planting practice.

1. MLRA: Make sure the plants you select are listed within your MLRA. Although many plants are adaptable, it is better to choose plants that are already growing successfully in your area.

2. Light: Observe planting area to determine the amount of sunlight it receives. Keep in mind factors such as seasonal changes in the sun's path, or nearby deciduous trees. As you design the layout of your hedgerow, it is also important to consider future shading that may occur within the hedgerow as newly planted shrubs begin to grow.

3. Soil: If you are not familiar with your soil type, it may be helpful to have it tested or analyzed. Most native plants are adapted to native soils, but some natives are more tolerant of heavy clay soils than others. Similarly, some natives will do better in saline conditions than others. Most plants also have a preferred pH range.

PLANTING

Regardless of the planting technique utilized or the species selected, fall is definitely the best time for planting natives in a Mediterranean climate such as California. Where frost and frozen ground conditions do not exist woody species and forb or grass seed can be established up until mid winter. Avoid planting on hot, dry, windy days, during freezing weather, or when the ground is frozen.

Machine planting or hand planting with any tool that will accomplish desirable results is acceptable.

The hedgerow will be staked or otherwise marked to assure proper alignment of rows and spacing.

Machine furrows or holes made with hand tools must be free of trash.

If planting cannot be achieved in the fall, then planting will occur after the danger of heavy freezing has past and soil conditions are proper.

Plant in adequately sized, sod-free holes or furrows for proper root development.

Special attention to the actual planting operations is essential to the establishment of hedgerows:

Depth

Plant each seedling at the same depth or slightly deeper (1/2 to 1 inch) than it grew in the nursery.

Condition of Roots

Plant seedling roots straight down, not twisted, balled, or U-shaped. Roots must extend 8 to 12 inches below the ground surface.

Pruning

Do not prune tops or roots. The nursery practice of pruning the roots to about 10 inches when lifting has made further pruning unnecessary and is, therefore, not required.

Straightness

Plant seedlings as near vertical as possible.

Firmness

Pack the soil firmly around the planted seedlings with no air pockets left in machine furrows or dibble holes. Do not overpack on clayey soils.

Seedlings Per Space

Plant only one seedling per planting space.

V. TREE GUARDS

Tree guards are recommended for the protection of small shrubs, and are meant to be removed as plants mature. Some shrubs have substantial girth even when they are young, and need guards with ample diameter, or may require several guards attached together. Guards can be secured to the ground with ground pins.

VI. STAKING AND FLAGGING

It is best to stake young trees until their trunks become sturdy enough to withstand heavy winds and other environmental stresses. The time for this can vary, depending on tree species and specific conditions, but it is generally recommended that trees be staked for 2 – 5 years. Stakes should be placed approximately 6” away from the tree trunk, on opposite sides of the tree.

Tree-ties can be used to cross tie the tree trunk to the stakes. It is important to check regularly to make sure ties are not constricting the tree as the trunk grows, and that stakes are removed once the trunk is sturdy.

VII. IRRIGATION

The amount and application method of irrigation is perhaps the single most important factor to consider in the plant selection process. For ease of management, it is generally recommended that all plants within an area have similar watering requirements.

Hedgerows can be designed to hook into existing farm irrigation practices, or even to survive in some situations without any supplemental irrigation at all. Confer with California electronic Vegetation Guide for allowances to defer supplemental irrigation.

Irrigation needs of plants vary on the timing of planting and existing conditions of drought or excessive precipitation. Assessment of soil moisture shall be made to determine need of first few months of watering. Soil moisture meters or reference to the *Estimating Soil Moisture by Feel and Appearance* (NRCS 2005)

Plants shall be irrigated regularly at the time of planting and for the first 2-3 years as necessary during establishment when soil moisture is insufficient

Plants listed as having low drought tolerance will probably need a minimum of weekly irrigation. Some plants listed as drought tolerant should not be watered more than a few times a month (during the dry season), and should be removed from irrigation after 2 – 3yrs. Signs that plants have been overwatered include dull or drooping leaves and with damp soil at the base of the plant. If that is occurring extend intervals between irrigations.

Assuming that the hedgerow was planted in the fall season, after the first year during the late spring – early fall months, plants should be irrigated at least monthly, or when plants show signs of being water deficient. During dry winters young plants and even mature natives may benefit from infrequent, deep watering.

The irrigation system for each hedgerow planting shall be designed, installed and operational prior to planting. Except in MLRA 4, plantings shall receive supplemental irrigation for the first three years after planting (see applicable IRRIGATION SYSTEM standards and specifications).

VIII. MAINTENANCE

Replace all dead seedlings (annually) for at least three years after the planting is made.

Replant with the same species or one that is suitable to the soil types (determined in section IV Item 3 above) and is compatible with the original purpose of the hedgerow planting, If the original purpose was to establish or enhance pollinator habitat replant with species that flowers, blooms and provides nectar source during same time period.

Maintaining a weed-free environment once plants or seeds are in the ground is equally important. The use of mulch or weed fabric is a viable option but where establishing pollinator is the purpose of the hedgerow consider that use of mulch and weed fabric can interfere with ground nesting opportunities for many native bee species. Flaming would be one alternative in larger gaps between shrubs. In areas composed of forbs and shrubs, selective herbicides can be effective for controlling grassy weed species. In general, herbicides applied in granular form are less likely to be harmful to bees and beneficial insects than spray applications.

Plant competition can be achieved with placement of weed mats or at least 3' deep of mulch. Most successful control of unwanted plant is achieved through 1-2 years of mechanical or chemical treatments prior to planting.

Unwanted plants can be removed by hand, mechanical, or chemical means. Do not disturb or otherwise damage seedlings by the improper use of chemicals, tools or machinery. When mechanical cultivation is used do not cultivate deeper than 3 inches, as the plant roots can be damaged.

Use mechanical and/or herbicides to control weeds, grasses or other competitive vegetation. Control competitive vegetation until the surrounding ground surface is completely or nearly completely shaded by the trees and shrubs during the growing season.

When weed control is done chemically, 1/ the following precautions will be observed:

When applying chemicals, they must be applied with caution to not kill a part or entirety of the hedgerow plants. Use of tree tubes and retention of those for 3-5 years will help protect plants from chemical drift. Remove tree tubes once plant growth is being inhibited.

Plantings will be protected from rodents, rabbits, hares, and deer. Means of animal control may include either chemical repellents or mechanical devices such as fences, screens, traps, rodent guards, general cleanup, etc.

Where net wire fencing is used to control rabbits and hares, it will extend at least 4 inches below ground surface. When individual trees are wrapped with burlap or tar paper, the material will be removed in the spring.

Prune and shape storm damaged trees.

Drip irrigation systems must be maintained weekly during irrigation season to make sure emitters are not plugged and restricting water flow.

IX. OTHER REQUIREMENTS

The owner, operator, contractor, and other persons shall conduct all work and operations in accordance with proper safety code for the type of construction being performed with due regards to the safety of all persons and property.