

## APPENDIX R

# Establishing Shelterbelts for Wildlife

Landowners can increase wildlife habitat value in carefully-selected areas within the High Plains and Rolling Plains by creating shelterbelts, living snow fences, and habitat corridors. Care should be taken to install plantings in association with intensively agricultural areas and/or in conjunction with CRP lands, rather than establishing new, large plantings in areas of extensive shortgrass prairie habitat, so as not to actually degrade habitat quality for other endemic species. Texas Parks & Wildlife Department (TPWD) biologists, in cooperation with Texas Forest Service, have successfully used state-of-the-art techniques, locally-grown and adapted seedlings, and enlisted the support of private landowners in a cooperative effort with conservation organizations and governmental agencies to establish demonstrations of this technique. Habitat improvement for ring-necked pheasants, scaled quail, and bobwhite quail is often the key objective. Texas Parks & Wildlife Department no longer recommends inclusion of evergreen species in shelterbelt plantings.

## SPECIFICATIONS

### Design Recommendations

- Minimum shelterbelt length is 1/4 mile (1320' tree rows) plus 40' borders on each end for a total of 1400' from one fenced end to another.
- Minimum width is 150' (from fence to fence), consisting of a 4-row planting with a native shrub or tree row 20' from the fence, followed by another native shrub or tree row at a 20' interval, followed by a deciduous tree row at a 40' interval, followed by a shrub row at a 40' interval, then a 30' border to the fence.
- 5-row planting width is 170' (fence-20'-native shrub row-20'-native shrub row-40'-deciduous tree row-40'-deciduous tree row-30'-shrub row-20'-fence).
- 6-row planting width is 190' (fence-20'-native shrub row-20'-native shrub row-40'-deciduous tree row-40'-deciduous tree row-30'-shrub row-20'-shrub row-20'-fence).

Customized designs are possible depending on soil type and topography with on-site recommendation by TPWD, Texas Forest Service, or NRCS personnel. Sculpting of multirow plantings along the contour of the land is highly recommended for creation of more edge effect for upland game birds and for aesthetics.

### Species

- Deciduous tree species recommended for planting are Osage orange or Bois d'arc (Maclura pomifera), Honeylocust (Gleditsia triacanthos), Chittamwood or bumelia (Bumelia lanuginosa), and Mulberry\* (Morus rubra).
- Shrub species recommended for planting are Fourwing saltbush (Atriplex canescens), Skunkbush sumac (Rhus aromatica), American Plum (Prunus americana), and Sand (or native) plum\* (Prunus angustifolia).

\*To be used only from Amarillo south on sandy soils

## Spacing

- Within rows, shrubs should be spaced at 15' intervals. Deciduous trees should be spaced at 30-45' intervals.

## Fencing

- Fencing is highly recommended on all shelterbelts with a 4-strand barbed wire fence (NRCS specs). Standard clearance on all plantings is 20' minimum from the sides of outside tree rows, with a 40' border on each end. **Fencing is to be done prior to shelterbelt installation.**
- 24" x 1" poultry netting should be placed around exterior of fence at bottom with 4" draped on the ground (critical for rodent control).

## Placement

- When shelterbelt is installed on the north side of an east-west road, site should be planned so as to have the first row no closer than 200' from the driving edge of the road. (Functionally, this planting may serve as a living snow fence).
- In all cases, shelterbelts should be at least 50' away from road intersections for traffic safety.

## Site Preparation

- On grassland (range or CRP land), an area slightly larger than the area to be fenced should be mowed clean if needed to remove rank vegetation in order to facilitate fencing and planting operation.
- On grassland (range or CRP land), where land is classified as highly erodible (HEL), sod must not be removed from the entire site.
- For site prep of individual tree/shrub row to be planted, a 10' wide strip (seedbed), centered on the "planting line", should be disced, plowed, and/or roto-tilled in the fall or early winter, so as to remove all grass. The goal is to achieve a high-quality seedbed for mechanical tree planting and fabric laying. **This is critical to establishment and success of the planting.**
- **On clay and clay loam sites**, at least the "planting line" on each 10' strip should be chiseled to a depth of 12" or greater during the fall prior to planting. Chiseling greatly facilitates use of the tree planter. **This is critical to establishment and success of the planting.**
- Shelterbelt planting sites on cropland classified as highly erodible (HEL) should be fall sown to a temporary cover crop of wheat or other suitable annual. The cover crop should

be sown at least 60' to the windward side(s) for soil stabilization. During the spring, a permanent native grass-legume cover should be sown between tree rows and for a distance of 60' to the windward side(s).

- On non-erodible cropland, site should remain fallow during the winter months with crop residue in place, except for timely site prep of tree row "seedbeds".

## Planting Stock

### Source

- Seedling source should be from the same region as the planting area. Materials from Texas Forest Service (West Texas Nursery) in Idalou, distributed through local Soil & Water Conservation Districts, are recommended. **The use of locally-grown and adapted planting materials is critical to the establishment and success of the planting.**

### Type of Stock

- Deciduous seedlings (1-0 and 2-0) may be bare-root stock. Minimum stem caliper at the root collar is 3/16" for 1-0 seedlings and 1/2" for 2-0 seedlings. Minimum height is 12" for 1-0 stock and 15 inches for 2-0 stock.

## Planting Method

- Landowner should plan to use 2 tractors (50+ hp, Cat II, 3-pt hitch) **with operators** on planting day, **plus a crew of 6 persons** (minimum) to install planting. If a contract installation crew is available, landowner may opt to use the service with possible cost share assistance (contact Texas Forest Service @ 806/746-5801).
- A tractor-drawn tree planter (Category II, 3-point hitch) is recommended for installation of said plantings. Landowners may rent a tree planter from Texas Forest Service (806/746-5801) in Lubbock.
- Weed barrier fabric (6' width) should be installed by machine (Category II, 3-point hitch) immediately after trees are planted. Texas Forest Service's fabric-laying machine can be available for use by landowners by prior arrangement. Some local Quail Unlimited chapters are beginning to obtain such equipment for use with landowners on cooperative projects. Seedlings will be pulled up through a slit cut in the fabric.
- **On clay sites**, 6" companion pins should be placed offset from the row at 1' intervals on each side of seedlings and midway between each seedling in the row center.
- **On sandy sites**, one shovel of soil should be placed in the row center between each seedling in lieu of companion pins.
- Lastly, individual seedlings should be hand-watered **at planting time** with nurse tank, provided by the landowner.

## Maintenance and Care

### Supplemental Watering

- Supplemental watering **at least twice** during the growing season (depending on moisture conditions) is recommended for the first 3 years. The rates are adjustable because of soil type. Sufficient water should be applied to thoroughly soak the soil below the root zone. (The weed barrier fabric will accept water at the rate of about 9 gallons per square foot per minute).

### Vegetation Shading

- On east-west plantings where vegetation height immediately adjacent to the tree row exceeds 2', a 6' wide strip should be shreaded **on the south side** of the row to prevent shading. Likewise, on north-south plantings, the **west side of the tree row** should be shreaded (6'). **This is important for the the first 2 years.**

### Protection

- All shelterbelt plantings should be protected from any possible livestock grazing/trampling with fencing as previously described. For technical assistance on prairie dog, gopher, or rabbit control measures, contact Texas Parks & Wildlife Department or Texas Wildlife Damage Management Service (in Canyon, 806/651-2880).
- 24" x 1" poultry netting should be installed on the outside of fence with 4" draped (L-shape) and buried at the bottom for rodent control.
- Firebreaks around tree plantings are recommended. They can be established by removing all flammable materials through discing or scraping. The firebreak width should be 2 1/2 times the height of the surrounding vegetation but not less than 4' wide. Firebreaks offer the opportunity for annual wildlife food plots. **Firebreaks on CRP sites should be shreaded annually as needed.**
- Trees should be inspected periodically to detect insect or disease problems. Contact the Texas Forest Service for specific diagnosis and recommended control measures.

### Tree Replacement

- Loss of seedlings less than 3 years from original planting date should be replaced. Replacement of older trees is recommended if the resultant gap in the shelterbelt is larger than the average crown spread of adjacent trees. Replanting should be done with the same species. Refer to various appendices contained herein for a detailed understanding of woody cover requirements for wildlife species occurring throughout the High Plains and Rolling Plains. TPWD biologists in the region are available through the *Private Lands & Public Hunting Program* to show landowners firsthand the validity of this technique for habitat enhancement in our semi-arid environment without drip irrigation. Overall survival on plantings installed since 1993 has been greater than 95% with impressive growth rates.