Native Trees & Shrubs for Ripairan Buffers

Riparian buffers provide an effective means of filtering sediment, nutrients, pesticides and other materials from surface runoff and reducing pollutants in shallow subsurface water flow. They also serve to provide habitat and wildlife corridors in primarily agricultural areas, and are important for stream bank restoration and stabilization. Buffer design is a key element in the effectiveness of the buffer. It is generally recommended that native species be chosen to plant in these zones. A diverse mix of upland and wetland grasses, forbs, trees and shrubs is ideal for these applications. Following are common bioengineering methods for establishing riparian areas with trees and shrubs.

Brief description of common materials:

Brush (branch) layers are living branches placed on a terrace along contours of a stream bank and interspersed between layers of soil. They are placed on terraced benches with two-thirds of the basal material tilted into the slope and covered with soil. Branches should protrude beyond the face of the terrace. Before installing, soil terraces can be additionally protected by putting down geo-fabric. Starting at the bottom of the slope, secondary brush (branch) layers can be added every 3'-4' proceeding up the slope. Straw mulching the finished surface is recommended to provide moisture retention and additional erosion control. Planting should be done during the dormant season.

Brush mattresses are layers of living branches laid in a crisscross pattern, 1-2 branches thick and partially covered with soil, on a stream bank to form a living ground cover. The mattress that is formed protects the bank's surface until the branches can root and native vegetation becomes established. This living system normally roots in the entire bank face, encouraging natural infiltration and immediately acting as a sediment trap.

Live stakes are dormant, live, woody cuttings of a species with the branches trimmed off. Live staking performs an important function in creating a root mat that stabilizes the soil by reinforcing and binding soil particles together. Stake establishment also improves aesthetics and provides a habitat for wildlife. Live stakes can be used on their own to secure other bioengineering materials or as an anchor for erosion control and geo-fabrics. Stakes or poles can also be inserted or driven through openings in rock structures, such as gabions, riprap and other retaining structures.

Live whips are slender, live, woody, shrub material. Whips are well suited for very moist areas of stream edges and commonly used in conjunction with gabion structures, riprap and geo-fabrics.

Wattles, also known as fascines, are living branches bound together in long, tubular bundles. When placed in shallow trenches across the slope of a bank, these structures provide protection from erosion and create a sediment trap. This material provides immediate bank support even prior to root growth. Once established, this live, rooting material grows into a living, fence-like erosion barrier. Within one growing season, roots and shoots grow along the entire length of the structure, quickly stabilizing the bank.

Rooted cuttings, seedlings and containerized plants are used to establish shrubs and trees on restoration projects. These materials should be planted 2'-8' apart and their roots must be covered with soil at least as deep as when grown in a nursery.