
Using Transplants to Establish Native Grasses, Sedges, and Rushes (Plug Planting)

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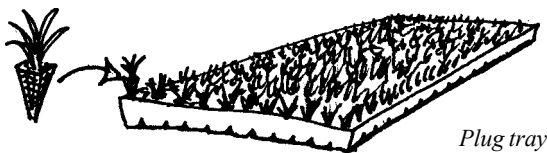
illustrations by Paul Robins

Reasons for Using Transplants

There are several benefits to using transplants to establish native grasses, sedges or rushes. One of these is rapid establishment, which could be an important consideration in some restoration projects. For some species, sufficient seed of locally adapted biotypes may not be available in large enough quantities to broadcast. In this case, greenhouse grown transplants provide a much more efficient use of available seed and weed control can be optimized during the first season. Mechanical or chemical means can be used in advance of planting to provide a “clean slate” for young plugs and minimize weed competition. Another advantage is that with advanced maturity of transplants, many will produce seed the first season and begin the process of filling in non-vegetated areas.

Transplant Types

Thanks to the vegetable transplant industry, techniques to economically reproduce large quantities of high quality transplants have been developed. Small transplants grown in flats of 200 plants (1-1/4 in. x 1-1/4 in. x 2-1/2 in. cells) are easy to grow and plant. If planting is done correctly, survivorship is excellent. Transplants grown in larger stubby cells are excellent, but the plants are more costly and planting them requires more labor. In most cases where there is adequate soil moisture at the time of planting, the larger size transplants are not necessary.



Ordering Transplants

Most cool season grass transplants require 6-10 weeks of growing time before they are ready to plant. Once plants are ready, they can be stored in a cool

environment for 4-8 weeks before planting. Order in September or early October to be ready for a December or January planting.

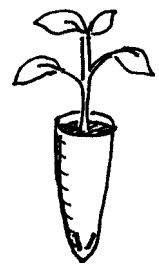
Site Preparation

GROUND TREATMENT

Plug transplants can be put in almost any type of soil as long as it is moist. The roots of healthy transplants penetrate the surrounding soil in just a few days. In weedy areas where there can be a heavy layer of thatch that contains weed seed, fire is recommended to remove the thatch. Fall burns just after the first germination usually kill all early germinating weeds. Mowing and raking may be an option for smaller areas.

WEED CONTROL PRIOR TO PLANTING

In weedy sites, it is ideal to practice one year of vigorous weed control to reduce the weed seed bank. If that is not possible, weeds should be controlled just prior to planting in the fall or winter. The most effective controls are broad-spectrum herbicide applications, two days to two weeks prior to planting. If weed growth begins early in the fall and scheduled planting is in January, an additional earlier application may be required. Propane weed flammers can be used in place of herbicides, but weeds must be small at the time of flaming.



Individual plug tube

Planting Time

In the Sacramento/San Joaquin Valley and adjacent foothills, assuming there is no irrigation available, planting should be done in December, January, or early February. In very wet springs as in the El Niño year of 1998, planting could be as late as March. If there is reliable irrigation available, planting can begin earlier and go into mid-April, depending on the plant species being used. There must be good

ground moisture at the time of planting and in weeds sites, maximum weed germination is desirable before planting. The more weeds have germinated and killed early on, the fewer the weeds to control later.

Planting Techniques

A hole is made with a dibble stick that easily penetrates the ground and makes a hole similar to the size and shape of the plug. A plant is placed in the hole and the top is sealed by pinching it with fingers or compacting it with a blunt stick. The most effective method for planting is to work in teams of three: a hole-puncher, a planter who also carries the plants, and a follow-up sealer. Depending on the site, a good team of three can plant 300-500 plants per hour.

Transplants respond well to nitrogen fertilizers that are applied just prior to planting or while plugs are still in the containers.

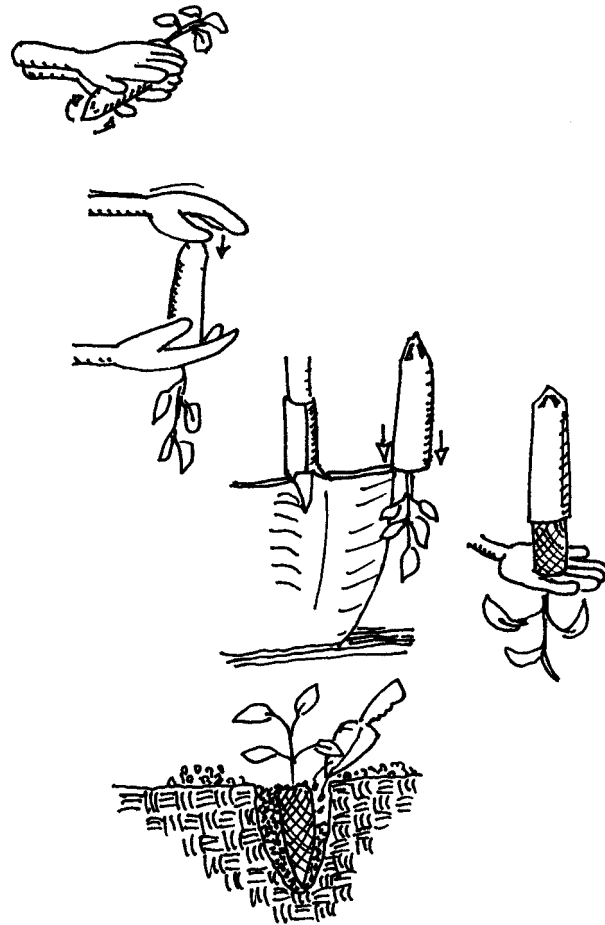
Planting Density

Low density plantings would include 1-3 plants per square yard (4,840-14,520 plants per acre). This density may not be the desired end result density, but it provides seed-producing plants rapidly. Under proper management (fire, grazing, mowing), those species that are best adapted to the site will reseed and have good seedling survival. As additional plants are added to the population, a self-evolution of the local ecosystem can theoretically occur.

High density plantings would include 9-27 plants per square yard (43,560-130,684) plants per acre. High density planting should be used where rapid and complete cover is desired by the end of the first year. These are generally small or highly visible projects.

Follow-up Management

Post planting management bascially involves the control of weeds. Some pre-emergent herbicides can be used immediately following planting. Be sure to follow label recommendations. In low density plantings, management strategies should encourage reseeding from the established plugs. Along with weed control, this might include some soil disturbanace to provide a seed bed for the newly-dropped seed.



Planting technique