



Conservation PLANNING

Establishing a windbreak in the Great Plains can be, to say the least, challenging. Poor soil conditions, low annual precipitation, high wind velocities, and short growing seasons combine to challenge those who aspire to plant seedling trees. But can it be done successfully, not from just a survival standpoint but growth rate standpoint as well? The answer is a resounding YES.

Newer tree planting technologies including fabric mulch, anti-transpirants, and tree protection devices of various shapes and sizes have helped make successful seedling tree plantings a reality; however, there exists one important cultural practice, often overlooked, that is an absolute essential first step to planting success – site preparation. Initial soil preparation required for establishing trees is really no different than the steps for establishing agricultural crops or even lawns.

Planting seedlings directly into native sod has largely proven unsuccessful. If the trees survive, one can be reasonably assured that growth rates will be significantly reduced. In addition to direct competition, a phenomenon known as plant allelopathy may restrict seedling tree growth and survival. Allelopathy, in this application, refers to

the harmful effects of one plant on another. Grass plants can release chemicals through their roots and through residue decomposition. Both have a negative influence on trees. Not all grass species exhibit this characteristic; however, certain species, such as smooth brome (*Bromus inermis*), can be very detrimental.

A seedbed must be prepared to address the issues the seedling trees will face during the establishment period. Site preparation will result in numerous benefits including:

- Increased potential for adequate soil moisture at planting time;
- Elimination of existing weeds and grasses that will compete for moisture, nutrients and sunlight, and may exhibit allelopathic characteristics;
- Allowing the soil to “mellow” which will allow for a better planting job and easier application of fabric mulch materials;
- Loosening soil surrounding the seedling thus promoting lateral root development.

The site should be prepared a year prior to planting. Most of the benefits described above will be lost should preparation not be completed until just prior to planting. Soil readiness initially involves

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plowing or ripping to a six- to eight-inch depth. This will leave the soil surface in a roughened condition to capture blowing snow and reduce the potential for soil movement. Final preparation is completed just prior to planting. A disc or rototiller is used to pulverize and level the planting rows. The width of the prepared row should be a minimum of four feet and consistent with the method used to keep the trees competition free. For example, if fabric mulch is to be used, the rows should be prepared to a width of eight feet to accommodate fabric application.

When planting conservation-grade trees in the semiarid Great Plains, site preparation has been shown to be the secret to success. Tree planting contractors have long said, "Give me a poor site preparation job, and I'll give you a poor tree planting." Most landowner cost-share programs available today require 10-year maintenance agreements. Continual need to replant seedlings can be costly, time consuming, and frustrating. Getting the planting off to a good start with proper site preparation will reduce the chances of replanting large numbers of trees. It is not the only answer – the need to control weed and grass competition during the establishment period (generally considered to be five years) will also have a huge impact on the long-term success or failure of your windbreak planting.

while allowing existing vegetation to decay.



Final site preparation in the spring (rototiller or disc) smoothes and levels tree rows



Application of fabric mulch has become a common cultural practice to aid in tree establishment; proper site preparation allows for ease of application of this material.