Stewardship Notes

Indiana Division of Forestry

Erosion Control

Soil erosion has been a problem in Indiana since the early pioneers first cleared forest land. Deep, eroded gullies were commonplace as recently as 30 to 40 years ago. Lesser forms of erosion are still prevalent today.

The areas most easily eroded by water are rolling to steeply sloping areas found mostly in southern Indiana. The northern part of the state is more prone to wind erosion due to the nature of the organic and sandy soils and the gently rolling to level land.

Most of the worst erosion problems existed on farms that were abandoned due to lost soil fertility. The fertile topsoil was washed away leaving subsoil or even the parent material such as shale, sandstone or limestone.

The planting of pine on such areas was found to be most effective in stopping the erosion problem. Black locust was used widely in these areas years ago, but it was found to decline in vigor after a few years of growth due to insect and disease problems. Black locust did, however, help increase the nitrogen content in these soils.

In the past, the most common species of trees used to heal severe erosion problems in Indiana were Virginia pine (southern Indiana), jack pine (northern Indiana), shortleaf pine (southern Indiana) and bristly locust. All of these species are adapted to survive and grow well on hot, dry, severely eroded areas that will not regenerate into native hardwoods.

Today, Virginia pine is used on the poorest sites throughout Indiana with red and white pine on the somewhat better sites. Black locust is planted to improve the nitrogen content of the soil (black locust is a legume with nodules on the roots that fix nitrogen). Eastern red cedar can be used, particularly in limestone soils, to slow erosion and attract wildlife. It is generally a good idea to plant a mix of species on a site.

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In planting old fields with gullies or pockets of erosion, the above mentioned species can be planted. Also, other species of pine, such as white pine or red pine, can be planted in the better portions of these fields where there is some form of low cover (grass, broomsedge, sumac, etc.) Speckled alder is another hardwood species which could be planted on the better portions of old fields. This hardwood also produces nitrogen in the soil, which will help stimulate more valuable hardwood species to "seed in" naturally.

In the northern part of Indiana, where sandy and organic soils are present, wind erosion is a big problem. Planting windbreaks will usually help control wind erosion. Where wind erosion is a severe problem, such as when sand is shifting like a dune, solid plantings are advised. Tree species such as black locust or bristly locust will help stabilize moving sand and should be planted as close as four feet by four feet. This close spacing is needed for quick cover and root establishment and also in anticipation of some mortality. In severe erosion situations, quick cover of the site is the primary objective. Future crops of timber or pulpwood are usually not anticipated in these cases. The best use that can be expected for these areas is watershed protection, wildlife habitat and possibly some recreation.

Since many eroded areas are also deficient in wildlife cover and food, it may be desirable to plant wildlife plants and shrubs.

Bicolor lespedeza, Eastern chinkapin, Eastern red cedar, flowering crabapple, Northern bayberry, Washington hawthorn, persimmon, scarlet oak and black gum are some of the plants that could be used to improve wildlife habitat. A border of wildlife shrubs can also be planted on the outside of any windbreak planting.

The general guideline for spacing when planting eroded areas is 6 x 6 feet. If there are severely eroded places (deep gullies), it may be desirable to plant at 4 x 4 feet. Wildlife plants should be planted along the edges of plantations, along access roads, or in small clumps, all at a general spacing of 6 x 6 feet. Pine species and hardwoods which demand better site conditions should be planted on an 8 x 8 foot spacing or a 10 x 10 foot spacing. The number of trees required per acre for some spacing guides are:

Usually weed control on erosion control plantings is not much of a problem. Most weeds do not survive well on the dry, poor soil conditions found on eroded sites. As the soil improves over the years, increased moisture content and organic matter will help weeds and other plants become established. These invading weeds will be welcome to help slow down soil erosion.

When the time comes to plant erosion control trees, the earlier the better. Conditions may be right to plant as early as the last two weeks in February (southern Indiana) to the

first week or two in March. The sooner the trees can be planted the better chance for good tree survival and growth. Later plantings may become weakened or succumb to dry conditions which usually come in late spring.

For more information and advice on erosion control plantings, contact your district forester or the Division of Forestry office at:

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