SHELTERBELT PLANTING REDUCES WIND EROSION DAMAGE IN WESTERN OKLAHOMA

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SHELTERBELTS of trees and shrubs have long been used in Russia, Italy, Hungary, and Canada and in certain fruit growing sections of our own Pacific Coast to give protection to crops and reduce wind erosion. They have been used to some extent in the subhumid Great Plains area where tree growing is a difficult proposition and success depends on correct choice of planting site, careful ground preparation before planting, proper selection of species, and clean tillage for three to 5 years after planting.

One of the most outstanding areas in the Great Plains in which tree planting has been carried on with considerable success for over 30 years is located in northeastern Greer County, Oklahoma, about 15 miles northeast of the town of Mangum. The writer will endeavor to record here for the benefit of those interested in wind erosion his observations of this planting program and a resume of information obtained by personal interview with a considerable number of farmers in this vicinity.

CLIMATE, SOIL, AND CROPPING PRACTICES

The area under discussion has a mean annual rainfall of about 27 inches of which almost 70% falls between April 1 and September 30. The evaporation from a free water surface for the six summer months is close to 48 inches.

The soils are generally sandy and one of the predominant soils is the Miles series which has a loamy fine sand to sandy loam topsoil from 6 to 15 inches thick, lying over a sandy-clay subsoil. The sandy topsoil is an excellent "sponge" for the rapid absorption of rainfall which is stored in the more impervious subsoil where it is held within easy rooting depth of crops. It has been observed that if wind erosion removes this top layer of sandy soil, crop yields decrease considerably, due, very likely, to lower infiltration rate, higher runoff, and greater evaporation losses.

The principal crops are cotton and several types of grain sorghums, such as kaffir and milo. Soybeans and cowpeas are used occasionally in rotations to build up the soil.

Yields of cotton vary according to season, but generally range between \( \frac{1}{4} \) and \( \frac{1}{2} \) bale per acre. Kaffir and similar feed crops yield from 15 to 30 bushels per acre. Crop yields are good enough so that the land cannot be considered submarginal.

1 Contribution from the Lake States Forest Experiment Station, U. S. Department of Agriculture, University Farm, St. Paul, Minnesota. Maintained in cooperation with the University of Minnesota.
2 Associate Silviculturist.
3 It was suggested by Dr. H. J. Harper, Professor of Soils at the Oklahoma Agricultural Experiment Station, who reviewed this paper that loss of soil fertility, especially nitrogen, would also be a factor in reducing yields.