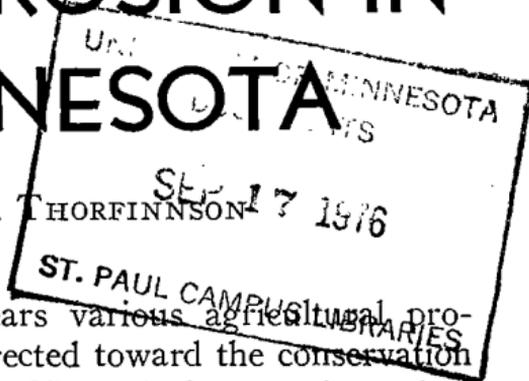


SOIL EROSION IN MINNESOTA

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During recent years various agricultural programs have been directed toward the conservation of our soil resources. Not only farmers, but urban people as well, have come to realize that sound agricultural policy demands that we diminish soil losses, which in some areas threaten the future of farming.

The facts set out here indicate that while Minnesota does have an erosion problem, much of the state can maintain its soil resources by following approved methods of farming. In other sections, where erosion has already robbed farms of productive soil, methods can or are being used to bring erosion under control. On the whole, the erosion problem in the state can be controlled, but in certain areas it will require persistent effort.

One third of our farm land has been damaged either by wind or water erosion to the extent that the problem must be given consideration in any good land-use program. Our cold winters have helped prevent the condition from becoming as serious as in many of the southern states. Our soils and climatic conditions are favorable for diversified farming, and this system of farming has helped protect our soil. This fact makes it possible over much of the state to develop effective control measures by natural vegetative processes. To save our valuable soil, however, at least one third of our farm land requires soil conservation practices that have not as yet come into general use.

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Current information available from University of Minnesota Extension: <http://www.extension.umn.edu>

How Serious Is the Problem?

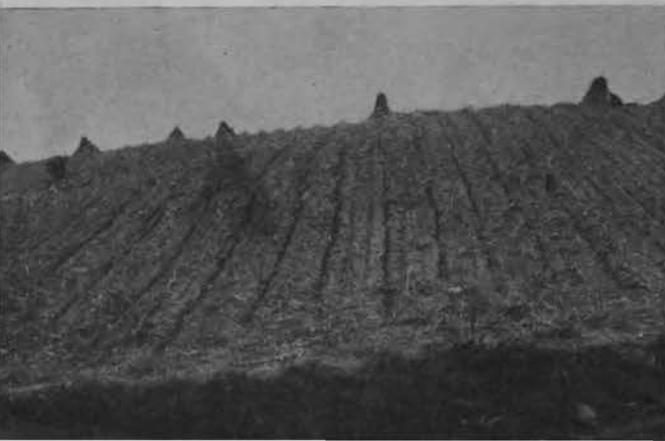
A reconnaissance erosion survey made in 1934 by the Soil Conservation Service shows the extent of the problem in Minnesota. A tabular summary presented by Glen L. Fuller, head of the section of conservation surveys, gives the following data:

	Acres
Total area (exclusive of large cities and water)	51,452,394
Areas with little or no erosion	27,951,147
Total area affected by sheet erosion	10,083,066
Total area affected by wind erosion	12,692,812
Moderate wind erosion	9,256,067
Severe wind erosion	3,436,745
Total area affected by gullying	7,804,518
Occasional gullies	7,293,170
Severe gullying	511,348

One Third of Farm Land Moderately to Severely Eroded

In the farming area our serious problem is with the 7,804,518 acres of land with considerable sheet erosion and gullies and 3,436,745 acres on which wind erosion is severe. It is on these acres that soil conservation practices are needed which in many cases involve rather drastic changes in the farm plan. Many of these practices may also be used to advantage on part of the 3 million acres of additional farm land now affected by sheet ero-

WASHING OF SOIL BETWEEN CORN ROWS MAY BE FOUND ANYWHERE IN THE STATE WHERE THE ROWS RUN UP AND DOWN HILL ON SLOPES OF 5 PER CENT OR MORE. (COURTESY SOIL CONSERVATION SERVICE, U. S. DEPARTMENT OF AGRICULTURE.)



sion. In fact, in some cases the application of these practices may be needed to prevent erosion progressing to the gullying stage.

Gullying Worst in Southeastern Minnesota

The areas of severe gullying lie mainly in the counties bordering the Mississippi and the St. Croix rivers. These include Washington, Ramsey, Dakota, Goodhue, Wabasha, Winona, and Houston. Small areas are also found along the Minnesota River in Hennepin and Carver counties and along the rivers and streams in south central Minnesota. The other counties in the same dairy and livestock farming area with moderate sheet erosion and occasional gullies are Olmsted and Fillmore.

The large areas of little or no erosion in these counties are excellent farming land, likewise the areas with moderate erosion. Even the areas having severe erosion are still productive and with good soil-conserving practices will continue to be so. However, failure to use the best soil conservation practices will eventually result in the ruin of large areas of some of our best farm land in these counties.

Sheet Erosion in Central Minnesota

A large area, extending diagonally through central Minnesota from Rice County to southern Becker County, is affected by moderate sheet erosion. This area lies mainly in southern Becker, Ottertail, Douglas, Pope, Meeker, Rice, Wright, Carver, Scott, and Hennepin counties, with smaller areas in Grant, Stearns, Todd, Benton, Sherburne, Kandiyohi, Morrison, and LeSueur counties.

Part of this area can use contour tillage, contour strip-cropping, and other soil-conserving practices to advantage, and part can probably deal with the problem through proper land-use and good crop rotations. On much of the area the topography makes contour strip cropping difficult or impossible.

Little Erosion in South Central Area

The south central area, lying south of the counties named above and extending from Mower and Dodge counties on the east to Jackson and Cottonwood on the west, has little or no erosion except in a few spots along the rivers. Most of this area can probably be farmed indefinitely with a diversified dairy or livestock system of farming without erosion becoming a problem, providing a good rotation with hay or pasture is used. There are occasional spots where wind erosion is a problem, and in dry years even some of the heavier soils may drift. This applies also to peat lands which drift readily when intensively farmed to potatoes, onions, and sugar beets, as in the Hollandale area near Albert Lea.

The Situation in Southwestern Counties

Lincoln, Pipestone, Rock, Murray, and Nobles counties, in the southwestern part of the state, have areas with slight to moderate sheet erosion with occasional gullies, and slight wind erosion on the more nearly level land. In Murray and Nobles counties there are only small spots where water erosion is a problem. Wind erosion in this part of the state is a problem only in dry years. As compared to the south central area, a little more care must be used in the rotations practiced

SHEET EROSION AND FORMATION OF SMALL GULLIES IN DEAD FURROWS AND DRILL-WHEEL FURROWS CAUSES MUCH LOSS OF VALUABLE TOPSOIL. (COURTESY SOIL CONSERVATION SERVICE, U. S. DEPARTMENT OF AGRICULTURE.)





and in methods of tillage. Where there is moderate sheet erosion, contour tillage and even contour strip-cropping may be needed as supplementary practices.

Western Wind Erosion Area

The entire Red River Valley region from Kittson to Traverse County and also Bigstone, Swift, Lac Qui Parle, Chippewa, Yellow Medicine, Lyon, and the west ends of Redwood and Renville are included in the western wind-erosion area. For the most part, these counties have a heavy soil which is only slightly affected by drifting. However, in dry spells in the spring it may become bad enough to require reseeding, and in drouth years it may result in dust storms, especially if large fields have been left fallow.

On the sandy soils of the Red River Valley, in an area extending from Appleton to Granite Falls, and in other and relatively small spots of sandy soil there is severe wind erosion. Rough tillage, more hay and pasture, and east and west strips 10 to 20 rods wide are among the methods that have proved effective under these conditions.

Wind Erosion North of Twin Cities

A rather large area of severe wind erosion lies to the north of the Twin Cities in Anoka, Sherburne, Isanti, and Benton counties. Owing to the fact that this area is partly wooded and the fields are comparatively small, the problem has not been so serious as in the western area where nearly all the land is under cultivation. However, if this region were ever cleared, the problem would be very serious. Even with the present system of farming, the same practices used in the western area can be applied to advantage.

Little or No Erosion in Northeast Area

The cutover lake and forest area from the Red River Valley on the west to Lake Superior on the east and from Mille Lacs County to Canada has

little or no erosion. This is partly due to the protective cover and to the fact that farms are rather scattered in most of this region. There are a few spots where slight wind and slight to severe water erosion are found. These are often serious as local problems.

Soil Conservation Practices

Soil conservation practices in wind-erosion areas have been briefly outlined. Besides narrow fields, rough tillage, and rotations, it may sometimes be necessary to resort to listing, top-dressing with straw or manure and disking it in, or similar emergency methods until some protective vegetation can be started. The arrangement of crops in rotation on alternate strips so there is always either hay and pasture or winter grain alternating with corn and spring grain is also very important. All crop residues should be saved and tillage operations used that will tend to leave these at or near the surface.

To control water erosion in Minnesota crop rotations, contour tillage, proper land-use, such as woodlot isolation, steeper slopes in hay and pasture, and controlled grazing, are of major importance. Contour strip cropping is applicable to almost every farm in southeastern Minnesota having moderate to severe erosion and also to many in the central area. Terracing can be used to advantage on many farms in the southeastern part of the state, especially on slopes under 12 per cent on the more erosive soils in the loessial area.

For more information on erosion control practices, see Special Bulletin 170 by H. B. Roe and J. H. Neal.

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