**Soil, crop, and weed communities as affected by soil erosion and topsoil replacement in a Mollisol landform (a six-year soil-landscape rehabilitation study)**

**Basic information**

Details about the experiment and most data collection can be found in the published articles Papiernik et al., 2009 (<https://doi.org/10.1016/j.still.2008.07.018>); Schneider et al., 2021 (<https://doi.org/10.1002/agj2.20635>); and Schneider et al., 2023 (https://doi.org/10.1002/agj2.21428). These publications are available at *Soil and Tillage Research* and *Agronomy Journal*. Please refer to the several other articles published in various journals for other data collection that were not included in these published articles. A list of all published articles has been provided in User & Publication Information.xlsx attachment.

**Resources in this dataset:**

Resource Title: Related publications

File Name: User & Publication Information.xlsx

Description:

The file contains a list of articles that have been published to date with corresponding author information, their contact information, publication year, digital object identifier, and full citation.

Resource Title: Metadata (This document)

File Name: Landscape Restoration Study Metadata.docx

Description:

Meta information describing experimental design, location information, data collection procedure, and laboratory methods used to analyze plant and soil samples.

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| --- | --- |
| Field | Value |
| Keywords | Crop production  Crop productivity  Soil erosion  Tillage erosion  Water erosion  Soil health  Spatial variation  Soil restoration  Landscape restoration  Productivity  Soil carbon  Nutrient  Soil profile  Soil fertility  Weed  Corn  Soybean |
| Spatial/geographical coverage area | Stevens County, Minnesota  Roberts County, South Dakota |
| Temporal coverage | Stevens County, Minnesota: Fall, 2005 to Fall 2011  Roberts County, South Dakota: Fall 2008 to Fall 2011 |
| Publisher | U.S. Department of Agriculture |
| License | CC Zero |
| Contact Name | Schneider, Sharon |
| Contact Email | [sharon.schneider@usda.gov](mailto:sharon.schneider@usda.gov) |
| Public Access Level | Public |
| Program Code | 005:040 – National Research |
| Bureau Code | 005:18 – USDA - Agricultural Research Service (ARS) |
| Author | Sharon K. Schneider, Apurba K. Sutradhar, Thomas E. Schumacher, David A. Lobb |
| Peer Reviewed | No |
| Intended Use | These data provide field measurements at two geographical sites of plant and soil as affected by (a) tillage and water erosion and (b) replacement of translocated topsoil through soil-landscape rehabilitation. Data include pre-restoration soil properties, a digital elevation model, and tillage and water erosion estimates. Data reported after restoration include annual assessments of crop emergence, biomass and grain yield; soil physical, chemical, and biological properties; weed communities; and weather information. The Stevens County, Minnesota site was a heavily eroded site while the Roberts County, South Dakota site was moderately eroded. The data can be used to develop agronomic best management practices to improve crop production and to protect environmental and soil health. The data also could contribute to meta-analyses describing effects of erosion and soil-landscape rehabilitation (translocating soil from areas of net deposition to areas of net soil loss by erosion) on crop performance and changes in soil properties. |
| Use Limitations | Not all parameters were measured every year. |
| Funding Sources | Agricultural Research Service  USDA-ARS: 3645-11000-003-00D  USDA-ARS: 3645-12610-001-00D  USDA-ARS: 5447-12620-002-00D  USDA-ARS: 3080-12620-003-00D  USDA-ARS: 3080-12620-005-00D |
| Related Articles | User & Publication Information.xlsx |
| ARIS Log Number | 412888 |
| ISO Topic(s) | Farming  Environment |
| State or Territory | Minnesota  South Dakota |
| Ag Data Commons Keywords | Crop production  Crop productivity  Soil erosion  Tillage erosion  Water erosion  Soil health  Spatial variation  Soil restoration  Landscape restoration  Productivity  Soil carbon  Nutrient  Soil profile  Soil fertility  Weed  Corn  Soybean |
| ARS National Program Number | NP 212, Soil and Air |

Resource Title: Location weather information

File Name: Stevens County MN Weather Information.xlsx

Roberts County SD Weather Information.xlsx

Description:

Daily precipitation and temperature data were collected from nearby weather stations and used to calculate growing degree days (GDD) in each growing season. The weather stations were also used to calculate long-term average precipitation and temperature.

These two files contain links to the weather stations, time-period of data collection, units used to present precipitation and temperature, and how the GDD were calculated. Stevens County, Minnesota weather data were summarized daily, and monthly for Roberts County, South Dakota.

Resource Title: Information of plant and soil monitoring

File Name: Stevens County MN Plant & Soil Data.xlsx

Roberts County SD Plant & Soil Data.xlsx

Description:

Files contain plant and soil data collected from two sites. Except for weed density and diversity, soil volumetric water content, soil temperature, and information on soil properties at Roberts County, all other data included in this dataset have been published in various journals. A list of published articles has been provided in User & Publication Information.xlsx.