STEEP Impact Assessment: 30 years of the Solutions To Environmental and Economic Problems

(A USDA-CSREES Special Research Grant Program)

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Introduction

During the last 30 years, the STEEP (Solutions to Environmental and Economic Problems) research and education program has gained national reputation as a landmark in conservation development for the Pacific Northwest. The basic STEEP strategy used a systems approach to address all of the characteristics of conservation farming from planting to harvesting. Its primary goal was to reduce soil erosion on the region's 8 million acres of steep cropland. The objective of this assessment was to document the impact of the STEEP research program toward accomplishing these goals.

Impact Assessment Methodology

In 2007, a comprehensive assessment of the STEEP impacts was conducted. Information used to document the impact of the STEEP program during its first 30 years include:

1. **STEEP accomplishments.**
   Multiple published reports, scientific papers and two major reviews documenting STEEP research results.

2. **Interviews with wheat growers.**
   Changes in farming practices and methods were obtained by individual interviews with nine prominent producers in Washington, Oregon and Idaho, all with 30+ years farming experience during the STEEP impact area.

3. **Erosion estimates by USDA-Natural Resources Conservation Service with the RUSLE2 prediction model.**
   The impacts on soil erosion by applying improved conservation practices were evaluated using the latest versions of the RUSLE2 soil erosion model.

4. **Independent assessments on soil and water conditions and trends in the STEEP impact area.**
   Published information from monitoring studies that compared pre-1970 trends in erosion, climate and water quality with those of recent times.

Products

Complete results of the STEEP Impact Assessment are summarized in the 28-page STEEP Impact Assessment Report and in a 4-page Executive Summary. Both documents are available on the STEEP website at: http://pnwsteep.wsu.edu/

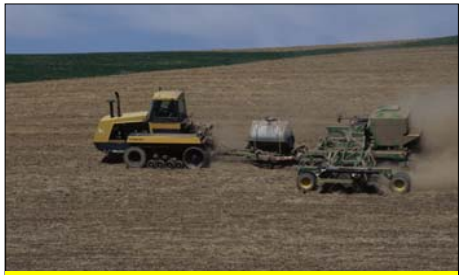
Uncertain Future

Funding for the Special Research Grants like STEEP was interrupted in 2006. Future Funding for STEEP depends on the support and lobbying efforts of stakeholder organizations..

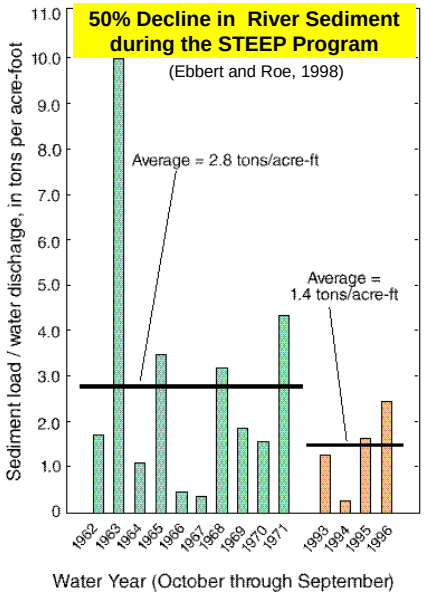
STEEP Improves Pacific Northwest Farming for less than 20¢ per acre per year

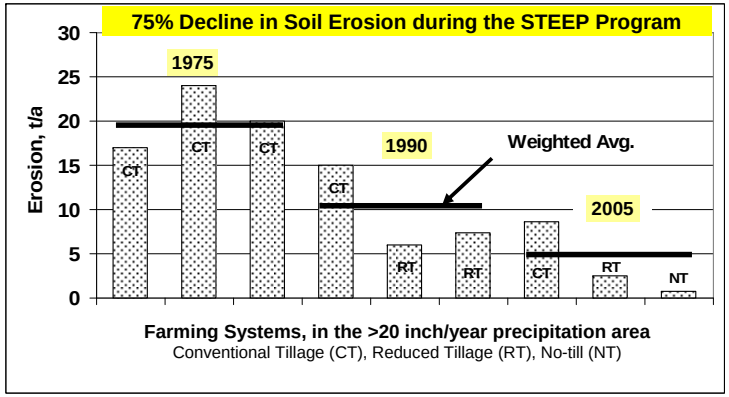
(Kok, Saxton, Papendick, et. al. 2007. STEEP Impact Report, p.18)

Erosion in the 1970's, prior to STEEP Program



Direct Seeding, virtually no Erosion, 2005





Examples of Major STEEP accomplishments

1. **Demonstrated the importance of subsurface banding fertilizer instead of broadcast application.**
   Impact: Less fertilizer used, together with better fertilizer efficiency and crop growth, results in environmental and economic benefits.

2. **Development of the two-pass fertilizer and seed system.**
   Impact: Less tillage is required, leaving more crop residue on the soil surface, resulting in less erosion, less fuel consumption and lower labor requirements.

3. **Improved weed control in conservation tillage systems.**
   Impact: Easier adoption of direct seed systems, improved economics, lower risk to farmers.

4. **Identified the "green bridge" as a host to soil borne diseases.**
   Impact: Improved disease control, easier adoption of conservation tillage, healthier crops.

5. **Developed wheat varieties with greater disease resistance.**
   Impact: Improved disease control, easier adoption of conservation tillage, healthier crops.

6. **Adaptation of the RUSLE2 erosion estimation computer model to the Pacific Northwest.**
   Impact: Influenced NRCS farm bill implementation for the PNW.

7. **Identified absentee landlords as not a conservation tillage deterrent.**
   Impact: Broke social taboos associated with conservation tillage, resulted in increased conservation tillage adoption.

8. **Education of conservation technology by numerous extension efforts.**
   Impact: Award winning technology transfer programs in the region brings research results directly to the farmers.

9. **Development of a minimum tillage fallow system for low precipitation areas.**
   Impact: Allowed conservation tillage adoption in the low rainfall area.

10. **Formation of the non-profit, farmer driven Pacific Northwest Direct Seed Association (PNDSA).**
    Impact: Additional conservation tillage education and promotion by practicing farmers, on-farm demonstrations, field days and a policy voice for farmers.

Acknowledgement: Researchers in Oregon, Idaho and Washington gratefully acknowledge the long term support of many individual growers and grower organizations. Without you, Special Research Grants like STEEP would not exist. Thank you!