Sandusky River Headwaters Runoff Reduction Project

LEPF SG 408-11

ABSTRACT

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The goal of the Sandusky River Headwaters Runoff Reduction Project was to reduce the amount of sediment and phosphorous runoff from agricultural cropland into the headwater streams of the Sandusky River watershed. Through the project, various field days, meetings, workshops, and news releases were sent to producers in the watershed explaining the project requirements and providing information on the establishment and the benefits of planting cover crops to improve water quality in these headwater streams. These efforts resulted in 792 acres of cover crops established in the watershed along with 1,642 acres of conservation planning on 17 farms. A variety of cover crop species were planted and included radishes, cereal rye, crimson clover, rapeseed, wheat and winter peas. To evaluate the effectiveness of these practices to water quality, runoff reductions and soil savings were calculated using existing USDA NRCS and ODNR programs. Total storm runoff was reduced by 113,535 gal/min, sedimentation was reduced by a total of 598 tons of soil saved, nitrogen reductions totaled 1,441 lbs and phosphorous reductions totaled 721 lbs. Overall the program was an overwhelming success and influenced producers outside of the watershed as well as within the headwaters of the Sandusky River.

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TECHNICAL REPORT

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Introduction

The Sandusky Headwaters Runoff Reduction Project included the headwater streams of the Sandusky River in Crawford and Richland counties. The headwater streams included the Loss Creek Watershed HUC 041000110402 and Paramour Creek Watershed HUC 041000110401 Together these two watersheds encompass approximately 33,000 acres and form the headwaters of the Sandusky River. Approximately 80% of the land use in the project area is non residential, agricultural land. Predominate agricultural use is corn and soybean row crop production with minimal livestock production. The village of Crestline resides in the center of the watershed.

The goal of the project was to reduce the amount of sediment and phosphorous runoff from agricultural fields into these headwater streams as well as to educate agricultural producers and landowners on the importance of improving the water quality in their respective watersheds.

Objectives

The objectives of the grant were as follows:

1) To educate landowners and producers in the watersheds and increase awareness of water quality improvements associated with incorporating cover crops in their crop rotation;

2) And to establish 500 acres of conservation cover crops as a targeted management practice.

Methods

Project activities were promoted through multiple news releases to local media outlets as well as in the SWCD newsletter. The SWCD also advertised the project on its yellow daisy sign in front of the office and on its website. A flyer was developed and distributed at various points of interest across the county. Post cards were developed and mailed directly to 90 producers in the watershed announcing the project opportunities. A cover crop workshop was held to discuss the grant guidelines and general cover crop information. A field day was held with cover crop demonstration plots on site for producers to look at and ask questions about.

Producers who signed up for the incentive program were required to adopt and follow a conservation plan for cropland and woodlands on the farm tracts that were accepted into the program. These conservation plans contained guidelines and requirements on crop rotation, tillage and residue management, nutrient management, crop pest management and timber/woodland management. Current soil tests and manure tests were a required component of

these plans. The plans further encouraged adoption of a host of Conservation BMP's, like grassed waterways and filter strips on cropland and invasive species control for woodlands, all targeted to further improve conservation efforts on these farms.

Producers were paid a per acre incentive for establishing cover crops on their farms. Payments were made to producers once the cover crops were established and visually inspected by SWCD staff. The producers were given the flexibility of choosing the type of cover crop to be planted, method and time of planting, as well as the number of acres to be planted. Producers were also given the flexibility of using the cover crops in other aspects of their operation, like haying or grazing, in an effort to maximize profitability and sustained use. Through maximizing profitability and realizing the full potential of cover crops in their operations, the producers were more likely to adopt cover crops as a routine practice in their operation.

Data on load reductions was determined by SWCD staff using the USDA/NRCS RUSLE for soil savings, USDA/NRCS Runoff & Peak Discharge program for runoff savings and ODNR's Cover Crop Reduction program for Phosphorous savings. The data for each farm was reviewed with each producer to further educate them on the benefits of cover crops to water quality. It is also worth noting that this data is already being planned for use in future SWCD meetings in 2013.

Results

A total of 792.29 acres of cover crops were established on 17 different farms in watershed. Cover crops species planted consisted of radishes, cereal rye, crimson clover, rapeseed, wheat and winter peas. Combinations or mixes of these species were also used. Rapeseed was the most popular species of cover crop planted with 387 acres being planted on 8 farms.

Participating farms also accounted for 1,642 acres of conservation planning on cropland and woodlands. The conservation plans included the whole farm approach including crop rotation, tillage management, nutrient management, pest management and woodland management.

The addition of cover crops and conservation planning on participating farms accounted for an average reduction in field runoff of 143 gal/min/acre during storm events. This reduction in runoff led to increased reductions in sediment and nutrient loads, particularly of Phosphorous, into our surface waters. Total sediment load was reduced by 598 tons of soil, an average of 0.75 tons per acre of cover crop. Total Nitrogen loading was reduced by 1,441 lbs, an average of 1.81 lbs per acre of cover crop. Total Phosphorous loading was reduced by 721 lbs, an average of 0.91 lbs per acre of cover crop.

Overall acceptance of the cover cropping practice by producers in the watershed was tremendous, with many producers outside of the project watershed implementing the practice too. This was a direct result of the flexibility of the project allowing participation of producers outside the watershed at workshops and events aimed at educating and informing them of options and methods to complete cover cropping practices.

Lessons Learned

Timing with cover crops is critical due to specific establishment dates for the various types of cover crops. This window of opportunity is short and with varying weather conditions proved to be a challenge in the first year of the program, therefore a 1 year extension for the project was necessary. This extension proved to be very productive as the producers had more time to think about and research different types of cover crops to determine which ones they thought would best fit their operation.

The small watershed approach also proved to be a challenge. While the producers who were eligible thought highly of the project, there were several producers interested in the program only to find out that their farm was not in the watershed and therefore ineligible to participate. This did create some issues with those producers who were ineligible. A larger watershed approach with a ranking criteria used to target establishment to predetermined areas would have achieved the same "on the ground effect" with the load reductions and soil savings. This approach would have had a broader acceptance from the producers instead of relying on the small targeted watershed approach that left some producers feeling "left out" simply based on the location of their farm.

The flexibility of the project was critical to its success. Producers were very appreciative and supportive of being able to make some key management decisions for the practice that allowed them to fully realize all of the benefits of incorporating cover crops into their rotation. Many producers felt the idea of maximizing the benefits of the practice to their operational bottom line, while at the same time maintaining the benefit to water quality was a positive mark for both the watershed and the producer.