



The Fight against Soil Erosion in Minnesota-the Conservation Reserve Program at the Front Line

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Within the U.S., the federal government's biggest weapon against soil erosion is the Conservation Reserve Program (CRP). It is based on voluntary partnerships between individuals and the government. Nationwide, almost 32 million acres of farmland are under contract with the CRP. Instead of planting crops, farmers can choose to implement a variety of pre-approved erosion-reducing practices on the land. What are these methods and on what lands are they utilized? More importantly, is the program effective? The purpose of this paper is to explain the characteristics of the CRP and to evaluate its success based on tangible data. Since the CRP is an expansive program, emphasis will be placed on Minnesota's involvement. Minnesota currently has two million acres enrolled in the program (Minnesota Extension Service, 1993). Overall, the CRP has been very good at reducing short-term erosion, but the farmers who own the land heavily determine the long-term benefits.

HISTORY

The CRP was established in response to farmers' distress when Congress passed the Food Security Act of 1985. Farmers were experiencing financial hardships due to low crop prices which resulted from large surpluses of the crops they grew. In addition, the land and water were suffering from harsh agricultural practices. Valuable topsoil eroded from bare fields and was deposited in bodies of water or along roads.

The CRP helped solve these problems in several ways. Financial difficulties were overcome because the CRP curbed the production of surplus commodities by removing some land from crop production. In other words, by keeping the supply low, crop prices would remain high. Farmers felt instant relief in the form of cash payments for rent. The federal government spends 105 million a year on Minnesota farmers (Minnesota Extension Service, 1993). Most importantly, by using a variety of vegetative covers, erosion was reduced. This improved the farmer's future by protecting long-term agricultural productivity.

Under the 1985 Food Security Act, the CRP expired after ten years. However, the 1995 Farm Bill included a continuation of the program until 2002 with some key differences (Keyes 1998, personal communication). The main objective with the new CRP is an environmental one, whereas in the old it was more financial. Now, land needs to meet strict criteria to be accepted into the program and emphasis is placed on USDA-designated priority areas.

CHARACTERISTICS

Conserving and improving soil and water resources are the two main objectives of the CRP. These objectives serve the interest of both the farmer and the environment. In accordance with

new CRP rules, the USDA will enroll a maximum of 36.4 million acres with payments rates not to exceed local land rates (Keyes 1998, personal communication).

Many agencies take an active role in the administration and execution of the CRP. The Farm Service Agency (FSA) establishes contracts and makes rental payments to farmers. The Natural Resource Conservation Service (NRCS) provides technical and educational support. In addition, the Forest Service, Extension Service, state forestry agencies, and local soil and water conservation districts provide assistance.

Sign-ups are held periodically by the USDA (approximately one per year), but a continuous sign-up exists for bids that contain certain conservation practices (See Table 1). Farmers need to formulate bids to be considered for acceptance. The bids discuss characteristics of the land they want accepted, and what steps the farmer elects to improve the soil and water quality on it. The USDA accepts many practices that accomplish these objectives (See Table 1). Most of the practices involve vegetative cover, with some in the form of buffer strips. These buffers improve and protect ground and surface water quality, reduce erosion, and provide protection and cover for livestock, wildlife, and fish by acting as a barrier or a filter to wind, sediment, and chemicals. To acquire definitions of the listed conservation practices, visit the NRCS website at <http://www.nhq.nrcs.usda.gov/OPA/BufrsPub.html>.

Table 1: Some accepted conservation practices (CP) that reduce soil erosion (USDA, 1997)

(Those marked ‘*’ are suitable for continuous sign-up)

Establishment of permanent introduced grass and legumes
Establishment of permanent native grasses
Tree planting
Hardwood tree planting
Field-windbreak establishment
Diversions (diverts runoff)
Erosion control structure
Vegetative cover- grass -already established
Vegetative cover- trees- already established
*Establishment of permanent contour grass strips

*Shelterbelt establishment
*Living snow fences
*Riparian buffers
*Grassed waterways
*Shallow water areas for wildlife
*Cross-wind trap strips
*Salt-tolerant vegetation
*Filterstrips
*Designated wellhead protection area

Once the bids are in, the NRCS evaluates the land. Due to the large number of bids (approximately 26,000 in the U.S. for the last sign-up period), it is unfeasible for the NRCS to visually inspect the land (Paul Flynn 1998, personal communication). Instead, they rely on historical records such as soil maps and aerial photos that are filed by county (Paul Flynn 1998, personal communication). These references provide default values for land slope and slope length by which the bid land is compared against. Using this information, along with information contained in the bid (lot size, the CP farmer will use, etc.), the NRCS scores each bid according to the Environmental Benefits Index (EBI). Basically, the EBI consists of six environmental factors and one cost factor that are assigned point values (USDA, 1997). Each factor has subfactors. For example, factor one is titled "wildlife habitat cover benefits". It contains subfactors that include endangered species, adjacent protected area, proximity to water, etc. (Don Keyes 1998, personal communication).

There are components of a bid that help it achieve a higher score on the EBI. Under the new rules, lands that contribute greatly to erosion (steep slopes) score higher on the EBI (Center for Rural Affairs 1998). When a farmer chooses less expensive CPs, that bid achieves a higher score (Center for Rural Affairs 1998). Keeping the cost low is desirable because the government will pay for 50% of the cost for establishing a permanent cover (USDA, 1997).

After bids are scored, they are sent to the county who in turn sends them to the FSA management office in Kansas City (Don Keyes 1998, personal communication). They are compared with other bids from across the nation. Those bids with the highest score are accepted into the program. A contract is made that specifies how much the FSA will pay, what CPs will be used, and for how long (10-15 years). Each contract is unique.

Evaluation

Once accepted, farmers are ultimately responsible for executing their CRP plan. The NRCS is responsible for monitoring compliance only until the vegetative cover is considered successful (Paul Flynn 1998, personal communication). In most cases, success is determined within one growing season. The FSA is required to do "spot checks" on 15% of the land under contract (Paul Flynn 1998, personal communication). Failure to comply results in termination of the contract and the FSA demands a refund of any rent paid.

The CRP has had profound effects on both the environmental and the economic aspects of US agriculture. The program has drastically diminished soil erosion on enrolled land. On Minnesota farmland that is currently being used to grow crops, the average soil erosion level expressed in tons per acre per year is seventeen (USDA, 1997). Erosion reduction was evaluated on CRP lands during the thirteenth sign-up (~1996) and was found to be 7 tons per acre per year (USDA, 1997). Nationally, by the end of 1994, the USDA's Soil Conservation Service had determined that CRP enrollments contributed a 66% reduction of soil erosion on the most highly erodible land. CRP land was found to have a lower erodibility index than land currently used for farming (Wu et al. 1997). Grass residues produced during the CRP period, along with the better soil structure and higher organic matter content gained, proved very effective in reducing erosion (Gilley et al. 1997).

The program also has had positive effects on farm economy. USDA economists have estimated economic benefit ranges for the life of the initial 36.4 million acre enrollment (nationwide). By preserving soil productivity, U.S. farmers have earned between 600 million and 1.7 billion dollars (USDA, 1997). Between 300 million and 900 million dollars have been saved by reducing damage from wind-blown dust (USDA, 1997).

The Future of CRP lands

Beginning in 1996, 10-year contracts expired. What is done with the land after contract expiration is under the discretion of the farmer. The farmer may choose to bid again, but the new rules make it harder for land to be accepted. A survey done by the Soil and Water Conservation Society (Nowak et al., 1991) indicated that half of the respondents had plans for using their CRP lands once the contracts had expired. Forty percent wanted to resume crop production while 30 % would keep acres in grass or hay for livestock. Heimlick and Kula (1990) used economic analysis to predict that no more than 20% of CRP lands would remain in perennial grass.

There has been concern regarding the future of the lands that are not reaccepted. Will all benefits be lost once land is returned to crop production? What makes the government and researchers uncomfortable is the fact that any improvements gained in those 10-15 years can be lost in one growing season. Research on a former CRP site has shown that soil loss after tilling nine months previously was similar to values before the site entered the program (Gilley et al., 1997). The FSA has published literature explaining field techniques that can be used to preserve improvements gained.

No-till has been identified as one method to prolong enhancements. Maintaining vegetative cover improves the tilth (water filtration qualities) of the soil. Plowing, or tilling, is a major disturbance that can disrupt the tilth. If this happens, water cannot infiltrate the soil as easily and

instead carries soil away as it travels along the surface. No significant differences in erosion rates were found between undisturbed CRP and no-till management (Gilley et al., 1997). As an alternative, postponing a till until after March or April can reduce erosion considerably (University of Nebraska Cooperative Extension, 1996). Another way to keep soil in place is with a cover crop (UN Cooperative Extension, 1996). The farmer may be reimbursed up to 75% for implementing practices such as these by enrolling in the Agricultural Conservation Program. The FSA also oversees this program which stresses long-term effort to solve soil, water, and pollution problems on agricultural land (<<http://www.state.ks.us/public/kwo/redbook/redksfs.html>>).

The CRP has provided a unique opportunity for farmers because the farmers do the choosing and get paid for it. They choose the land and which practices will be implemented on it. However, the farmer also chooses what will be done with the land once the contracts expire. Any benefits gained might be lost if the wrong decisions are made. If Congress makes the wrong decision in 2002, the CRP might no longer exist. It seems the long-term success of this program and many others is based on the strength of the economy. If there are no budget constraints, Congress will have the money to fund the CRP for another 10 years. If farmers are not financially constrained, they might not have to place highly erodible land under crop production. Another problem will arise in 2002 if the CRP is taken out of existence. Legally, contracts can be made until 2002 (Don Keyes 1998, personal communication). If a ten-year contract is made in 2001, will the FSA still be responsible for spot checks in 2010? The future of the CRP and the realization of long-term benefits are both unpredictable. The only thing that will answer these questions is time.

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