Regulate Runoff from Farms? Regulation 85 and Agriculture

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Agricultural producers have used conservation practices for decades to increase yields, improve soil health and reduce losses of precious soil, water and nutrients. Recently, the results of a large modeling project confirmed the effectiveness of a few conservation practices commonly used in Colorado. Modeled practices included irrigation upgrades – sprinkler and drip irrigation – as well as reduced tillage and field buffer strips.

The impetus for the study was Regulation 85; a state regulation designed to reduce discharges of total nitrogen and phosphorus from both point sources and nonpoint sources of pollution. Examples of point sources of pollution include public wastewater treatment plants and factories that discharge treated wastewater. Agricultural fields are considered "nonpoint sources of pollution," along with forest land, rangeland and essentially anything else that is not considered to be a "point source."

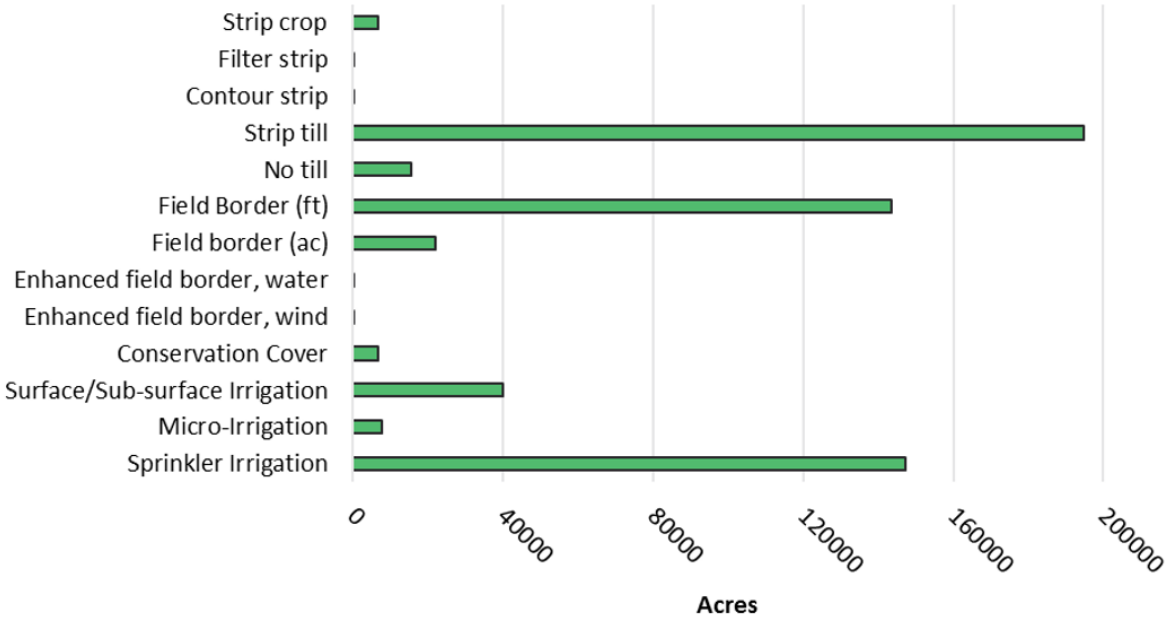
When Regulation 85 was put into place in 2012, it gave nonpoint sources of pollution 10 years to voluntarily implement best management practices that reduce pollutant discharges. If, by May 31, 2022, the Water Quality Control Commission determines that voluntary practices have not been sufficient to reduce nutrient runoff, "the Commission may consider adopting control regulations specific to agricultural practices."

Reduced tillage and sprinkler irrigation, Morgan County, CO. Photo: Phil Brink

On October 13th, 2020, the Commission held a triennial review to hear input from stakeholders representing agriculture and other nonpoint pollution sources about progress on reducing discharges of nutrients to surface waters. A modeler from Colorado State University – Tyler Wible - and I presented the results of a collaborative effort that quantified how certain conservation practices have affected nitrogen and phosphorus losses from the edge of fields. CSU's new Edge of Field Conservation Tool was used to model irrigated fields in the South Platte, Republican, Arkansas and Rio Grande River Basins – about 1.75 million acres total - before and after specific conservation practices were installed.

Existing USDA – NRCS Environmental Quality Incentive Program (EQIP) conservation practice data was used in the model. The data represented selected practices installed from 2008 to 2018. The chart below shows the acreage associated with each of the practices modeled.

Table 1: Conservation Practices Modeled and Associated Acreages



Modeling Results:

Both Total Nitrogen (TN) and Total Phosphorus (TP) were reduced the most through irrigation upgrades (7.1% reduction in TN and 33.5% reduction in TP). Strip tillage and No-till each reduced TN losses by 6.9%. Total Phosphorus was also greatly reduced with vegetative Field Borders (30.1% reduction), followed by strip till and no-till practices (29.6% and 24.4% respectively).

Table 2: Conservation Practice Effects on Total Nitrogen and Phosphorus

EQIP-Funded Conservation Practice	% Reduction of Total Nitrogen	% Reduction of Total Phosphorus
Baseline	-	-
Irrigation (Sprinkler and Drip)	7.1	33.5
Field Border	6.3	30.1
Strip Till	6.9	29.6
No Till	6.9	24.4
Strip and No Tillage Combination	6.4	23.4

Chart by Tyler Wible, CSU CLEAN Center

The modeling study is the result of the ag industry's interest in demonstrating that its use of voluntary BMPs are reducing nutrient discharges from fields. Funding for the study came from Colorado Corn, Colorado Livestock Association, Colorado Pork Producers Council, Colorado Public Health and Environment, and Colorado Water Conservation Board.

The study results are available at:
http://onewatersolutions.com/wp-content/uploads/2020/09/EQIP_Report_Sept_2020_FINAL.pdf

Phil Brink owns Brink, Inc., which provides conservation and environmental compliance services. He is also the consulting coordinator of Colorado Cattlemen's Ag Water NetWORK (www.agwaternetwork.org).