



COLORADO AG WATER QUALITY
Nutrient Management Resources For Producers

ColoradoAgNutrients.org



Nutrient Regulation in Colorado and Potential Impacts to Agriculture



Colorado State University
EXTENSION



COLORADO
Department of Public
Health & Environment

Nutrients

Which nutrients are the concern?

- **Nitrogen (N)** and **phosphorus (P)** are two major plant nutrients
- Applied to crops in the form of synthetic fertilizers, manure, and other organic amendments
- May enter surface water from agricultural lands
- May cause water quality issues at elevated levels



Manure Application



What is Colorado Regulation 85?



- 2012 nutrient control regulation for Colorado surface waters
- Sets nutrient standards for **point sources**
- No regulation for most agriculture and other **nonpoint sources**
- Agriculture encouraged to adopt Best Management Practices



What is Colorado Regulation 85?



- Requires more stringent regulation of “point source” nutrient sources - WWTP
- Requires nutrient monitoring to better define the problem
- Sets 2022 timeframe for evaluation of effectiveness of voluntary Best Management Practices
- Future regulation of agriculture possible



Nutrients

Sources: Two Regulatory Categories

1. Point Source

Single, identifiable source, such as a pipe or drain

Examples:

- wastewater treatment
- CAFO: Confined Animal Feeding Operation

2. Nonpoint Source (NPS)

Diffuse, distributed over a wide area, difficult to pinpoint

Examples:

- Urban stormwater runoff
- Most agriculture
- Lawns and landscapes



Nutrients

High nutrient levels may cause:

Eutrophication = nutrient rich → Algal Blooms



The Denver Post 8-4-15

Algae bloom at Denver City Park's Ferril Lake



Nutrients

Algal blooms may result in:

- ➔ Reduced water clarity & dissolved O₂
 - > harm to aquatic animals and plants
- ➔ Cyanotoxins and microcystins
 - > dangerous to animals and humans
- ➔ Reduced recreation & tourism
 - > Visually unappealing, reduces use
- ➔ Impediments to irrigation
 - > Clogged screens and pumps, high pH



Nutrients

Elevated Nutrient Levels in Colorado Surface Waters

- Barr Lake
- Milton Reservoir
- Cherry Creek Reservoir
- Jackson Reservoir
- Fruitgrowers Reservoir
- Prewitt Reservoir
- Deweese Reservoir
- Shadow Mountain Lake
- Grand Lake



Fruitgrowers Reservoir, Orchard City, CO



Nutrients

Regulation for agriculture?

- Regulation 85 does not currently regulate Colorado agriculture
- Regulation 85 does encourage voluntary adoption of best management practices avoid regulation after 2022.
- Agriculture *is* regulated for nutrients in other states.



Bill Cotton, CSU

Can Colorado agriculture maintain its non-regulated status?



Best Management Practices

What are best management practices (BMPs)?

Best management practices are agricultural practices that protect water quality. These practices:

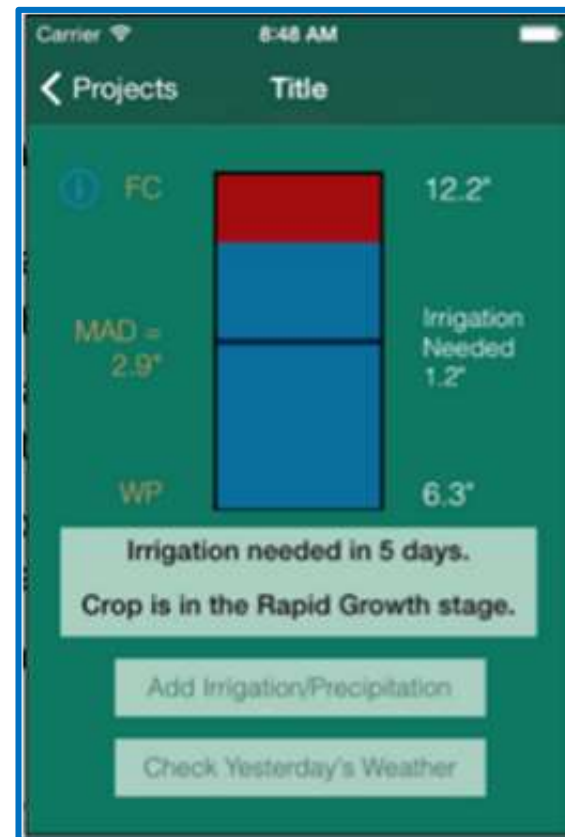
- can provide agronomic and economic benefits
- may include already widely accepted and used practices
- must be considered individually for each unique ag operation to be most effective



Best Management Practices

What are BMPs? Examples:

- Optimizing fertilizer usage through rate, placement, timing and source
- Reducing runoff through improved irrigation systems and scheduling
- Minimizing erosion through conservation tillage
- Managing manure storage and application to avoid runoff
- Installing buffer strips near waterways



CSU Cloud-based Irrigation Scheduling Tool



Best Management Practices

More data required:

- The effectiveness of nutrient BMPs needs supportive research
- Especially for irrigated semi-arid environments
- Lack of data hinders development of statewide nutrient balances
- Models currently lack robust information for agriculture



Water quality monitoring equipment at a BMP demonstration site



What Can Colorado Ag Producers Do?

Become aware and take action:

- ✓ Increase understanding of water quality issues
- ✓ Inventory existing use of BMPs & implement new BMPs
- ✓ Participate in projects to monitor & collect water quality data
- ✓ Communicate with Water Quality Control Division
- ✓ Encourage fellow ag producers to become involved



Summary

Regulation 85 = nutrient control for surface water

Colorado agriculture is currently not regulated.

- Encouraged to use BMPs
- Must act voluntarily to avoid future regulation after 2022
- Data to validate BMPs and accurately represent agriculture's role is critical



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For more Information, please visit ColoradoAgNutrients.org



www.ColoradoAgNutrients.org

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