



ADVANCING THE LEGACY

8833 Ralston Road

Arvada, CO 80002

303.431.6422

info@coloradocattle.org

www.coloradocattle.org



Ag Water NetWORK | www.agwaternetwork.org

WEBINAR Highlights – Water Quality Monitoring Results from Irrigated Mountain Meadows [Recorded February 20, 2025](#)

Webinar Recording URL: <https://youtu.be/QFFcA2mMOQo>

Presenter: AJ Brown, Ag Data Scientist, CSU Agricultural Water Quality Program. Email: Ansley.Brown@colostate.edu and Greg Peterson, Executive Director, Colorado Ag Water Alliance (CAWA). Email: coagwater@gmail.com

Background: For over a century, agricultural producers in Colorado have been flood irrigating meadows to grow forage for livestock grazing and hay production. The application of nutrients in the form of commercial fertilizer and manure from livestock grazing is common. Concerns have been expressed about whether runoff from irrigated meadows contains excessive nitrogen and phosphorus. Working with local ranchers and the Colorado Ag Water Alliance, CSU has been monitoring and testing the inflow and outflow water at irrigated hay meadows located in the Yampa, Colorado and Gunnison river basins. This webinar covers the findings from the three years of monitoring that has been conducted.

Summary:

- Irrigation water is diverted from streams, rivers and lakes to irrigate mountain hay meadows.
- Many mountain hay meadows are irrigated using a practice called "flood irrigation" which spreads water across fields via gravity. Some water typically runs off the end of the field.
- water flow across the field and The monitoring project was initiated to learn how irrigated mountain meadows influence water quality downstream.
- Water entering the fields and runoff leaving the fields has been sampled and tested. Soils have also been sampled and tested annually.
- Sediment (suspended solids) levels in runoff from irrigated mountain meadows were lower than tilled systems and filter strips.
- Irrigated mountain meadows tend to:
 - Absorb suspended solids, organic phosphorus and selenium.
 - Release nitrite (NO₂-N) and total dissolved solids (salts).
 - Have minimal or no effect on Nitrate (NO₃-N), Total Kjeldahl Nitrogen (TKN), Total Phosphorus and pH.
- The irrigated mountain meadows sites have high organic matter and serve as Carbon "sinks" with great environmental benefits outside of water quality.



Irrigated hay meadow.
Photo: Phil Brink

- Monitoring above and below Stagecoach Reservoir in Routt County suggests nutrient releases are coming primarily from the reservoir itself.
- Fertilizer can “spike” nutrients in runoff, but often minimally because these systems are often deprived.
- Some promising best management practices (BMPs) are:
 - Irrigation water management and fertilizer timing.
 - Fertilizer setbacks
 - Controlled / slow – release fertilizers.
- Another edge-of-field water quality monitoring study was initiated in 2024 in the Grand Valley. This study focuses on furrow irrigation on crops such as alfalfa and corn.