

Cooperative Extension Service
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Surge Evaluations

Data has been collected from fields comparing side by side irrigation events from conventional and surge irrigations in the Grand Valley for the past three years and in the Lower Gunnison this past year.

These comparisons show about a 50% reduction in deep percolation using surge equipment as compared to conventional irrigation. Most conventional irrigation equipment used a gated pipe irrigation system.

The side by side comparisons are validated by data from the Monitoring and Evaluation group of the Soil Conservation Service.

Deep percolation from five fields in the Grand Valley showed an average of 6.8 acre inches of deep percolation per acre from the conventionally irrigated part of the field. In contrast, deep percolation from the surged parts of the fields was only 1.8 acre inches per acre.

Studies of nitrogen losses with irrigation indicate that each acre inch of deep percolation will wash ten pounds of nitrogen fertilizer past the root zone if the nitrogen is present.

If we multiply five acre inches of deep percolation by 10 pounds of nitrogen at 30 cents per pound, the conventionally irrigated side of the field lost about \$15.00 worth of nitrogen [per acre].

This nitrogen loss is a problem to farmers and others concerned with water quality in the ecosystem. While working with area farmers and their surge units, we worked on the concept of applying liquid nitrogen fertilizer with the irrigation water as suggested by Dave Seymour of Olathe. Information on this concept can be obtained by reading [Fertigation Through Surge Valves](#), available through your local Cooperative Extension office.