

## Drip Irrigation Impacts on Potato Production in SW Idaho

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### Introduction:

Managing soil fertility and irrigation are the most important factors in potato farming for producing high yields and high-quality tubers. Growers require efficiencies in fertilization strategies, irrigation, and resource management in order to run profitable operations.

### Challenge:

As resource conservation becomes more critical in farming, agronomists seek to develop research-based guidelines for drip irrigation and liquid-fertilizer injection. Effective drip irrigation strategies are increasingly important to commercial potato farmers.

### Research:

In 2015 agronomists Terry A. Tindall and Galen Mooso partnered with the University of Idaho's Parma Research Station and Israeli drip-irrigation firm Netafim™ to test drip irrigation on Idaho potato fields.

### Methodology:

The team planted Russet Burbank, Russet Ranger, and Alturas seed pieces on April 17, 2015, in a field near Parma, Idaho, with Greenleaf silt loam soil at a pH of 7.8. Potassium, phosphorus, and other needed nutrients were applied to meet yield goals.

A drip line was laid at planting, four inches above the seed piece, by a modified two-row planter. A filter/pump/injection system was installed to clear sediments from the irrigation canal water. Sensors buried with the seed pieces monitored soil moisture and temperature. Sensors were also placed in a similar sprinkler-irrigated field to give a basis for comparison.

Drip lines were injected with one of three nitrogen sources: grower standard practice (GSP) of liquid UAN (32-0-0), UAN + NutriSphere-N® (NN), or 80% GSP UAN + NN. Daily soil moisture and temperature monitoring led to next-day adjustments of rates and timing for water.

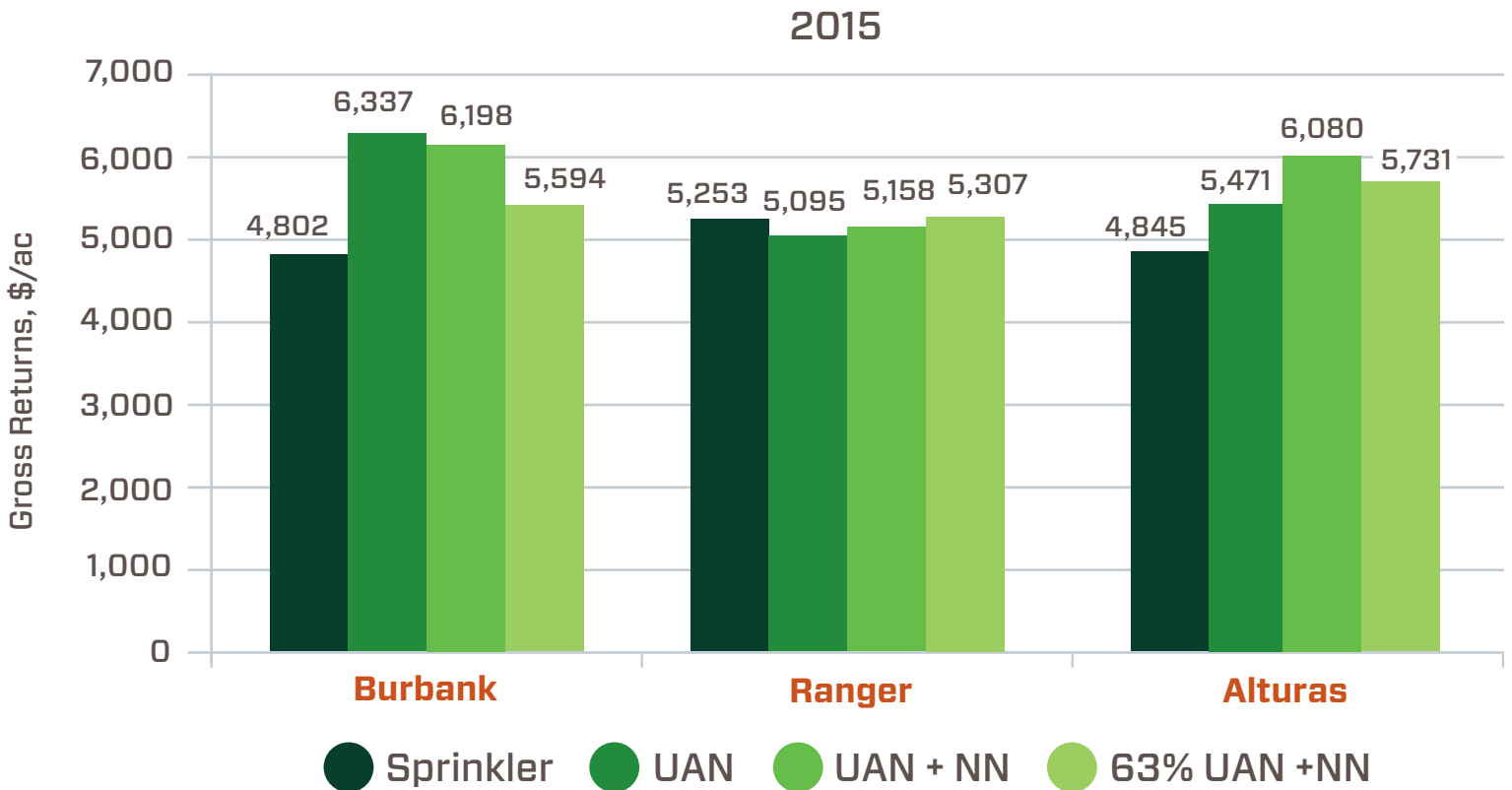
### Results:

Petiole samples were collected every 10 days to monitor N uptake. Tubers were harvested on September 22, then weighed and graded by an Idaho/USDA potato grading facility to determine an estimate of value based on the Simplot contract.

Yield means increased across all varieties for drip lines over the sprinklers. GSP resulted in a 23% increase, GSP + NN had a 28% increase, and the reduced N rate had an increase of 27%. The treatments that included NN produced the highest gravities.

## Practical Applications:

The plots under drip-line irrigation experienced substantial increases in income for two potato varieties. Strategies must be developed to reduce the amount of “dirt” found at grading by adjusting the timing of the final drip irrigation, as well as managing rodent interference with the drip line and foreign material at harvest.



Economic relationships of potatoes being produced under drip irrigation in SW Idaho. (2015)