

Evaluation of FUSN™ (26-0-0-14) on Umatilla Potato Production

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Introduction:

A blend of ammonium sulfate and ammonium nitrate called FUSN™ is a safe replacement for ammonium nitrate, which is highly detonable. FUSN has high potential for commercial potato production in Idaho.

Challenge:

Substantial evaluation must be done to determine if FUSN is effective in the growing conditions that apply to potato production. Researchers must determine FUSN's effects on not only yield but also product quality.

Research:

Drs. Galen Mooso and Terry Tindall, in cooperation with the J.R. Simplot Company, studied the differences between using FUSN and ammonium sulfate on a potato field under linear irrigation in the Arena Valley area of southwestern Idaho.

Methodology:

The team divided a potato field into four equal treatment plots. Two alternating sections received a topdressing of FUSN (26-0-0-14) at 100 lbs of nitrogen (N) per acre. The other two plots received the grower standard practice (GSP) of a topdressing of ammonium sulfate (21-0-0-24) at 100 lbs of N/ac. Topdressings were made two weeks after planting Ranger Russets. Pre-plant and starter applications, as well as irrigation, were identical across all plots.

Petiole samples were taken every two weeks from June 5 through August 5. The field was commercially harvested on October 15, and five hand-harvested samples were collected from each plot and compared to the 2015 Simplot contract.

Results:

In early petiole samples N was higher for FUSN than GSP. Researchers did not detect differences in the field sections by either visual examination or by analysis of satellite flyover imagery. The sections treated with FUSN had an increase of 147 cwt/ac in total yield. Tuber yield for 6–10 oz and greater than 10 oz increased by 52 cwt/ac. Top-dressed FUSN increased the quantity of tubers rated as U.S. No. 1 by 17%.

Practical Applications:

Grower payout on the FUSN sections was \$1,084/ac higher than the GSP sections. No difference was found in fry color or specific gravity.

Effect of FUSN (26-0-0-14) on Umatilla Russet Potato Quality Factors¹

Potato Quality Traits	GSP	GSP + FUSN
US# 1	24%	41%
6 oz. <	73%	73%
Process Undersize	7%	7%
Unusable	15%	13%
Bruise Free	n/a	n/a
Specific Gravity	1.080	1.086
Fry Color 0	100%	98%
Sugar Ends	0%	0%
Simplot Ranger Contact Return, \$/ac	\$2,776	\$3,860

Based on random yield samples taken at harvest and then evaluated by the inspection service,¹ FUSN increased grower returns by \$1,084/ac based on 2015 Simplot contract pricing.

¹State of Idaho Federal/State Inspection Service

Potato quality traits and net returns for Ranger Russet potatoes as affected by top-dress N applications.

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