

Non-traditional Additives: Adding Value or Expense to Potato Production?



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I. Introduction

A. Background

- At least 700 non-traditional additives available (Kelling et. al 2004)
- Only 1/3 come with peer-reviewed research data and results
- Include:
 - Bio-stimulants
 - Microbial inoculants
 - Specialty fertilizers
 - Surfactants/Soil conditioners
 - Humic Acids

B. Objectives

- Provide unbiased data and results on non-traditional additives being marketed to potato growers
- Determine how non-traditional additives impact potato yield and economic return when applied in addition to grower standard practice

C. Approach

- Test 27 treatments consisting of 32 products
- Othello, WA research farm, R. Burbank subject variety
- Apply according to manufacturer instructions
- Conducted 2016-2019

II. Non-traditional Additive Treatments



III. Materials & Methods



A. Application Methods and Timing

- In-furrow 6-inch spray band in 25 gal/A
- Foliar broadcast in 25 gal/A
- Injection chemigation (simulated) with 0.1 inches of water
- Treatments applied:
 - In addition to standard grower practices
 - Throughout growing season per manufacturer instruction

B. Economic Analysis

- Calculated gross economic return using a mock processing contract
- Gross returns adjusted for treatment cost
- Treatment cost \$6-360/A

C. Statistical Analysis

- SAS statistical software
- ANOVA
- Dunnett's procedure ($p < 0.10$)

IV. Economic Return & Yield Results

Figure 1.

Non-traditional Additive Effects on Total Yield

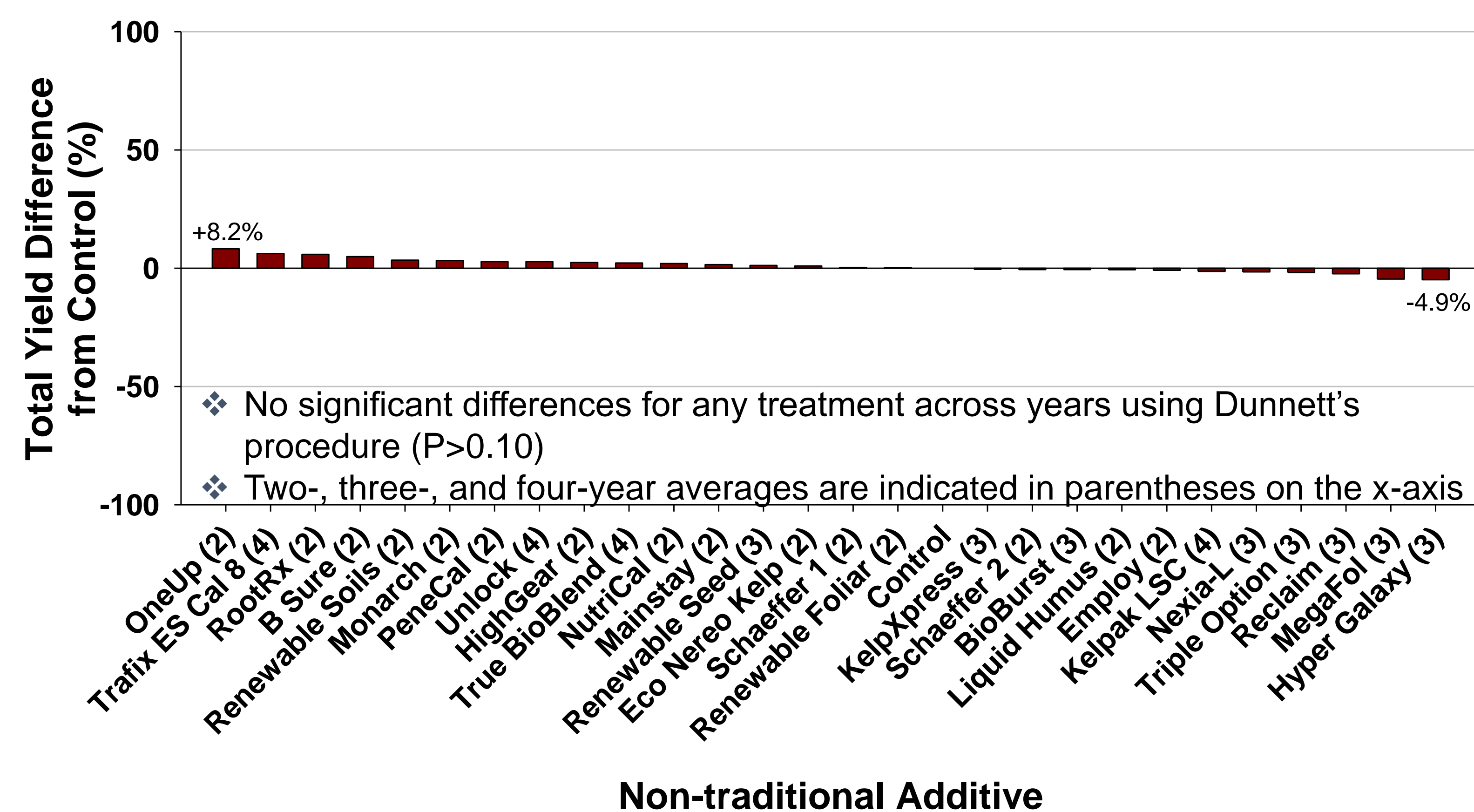
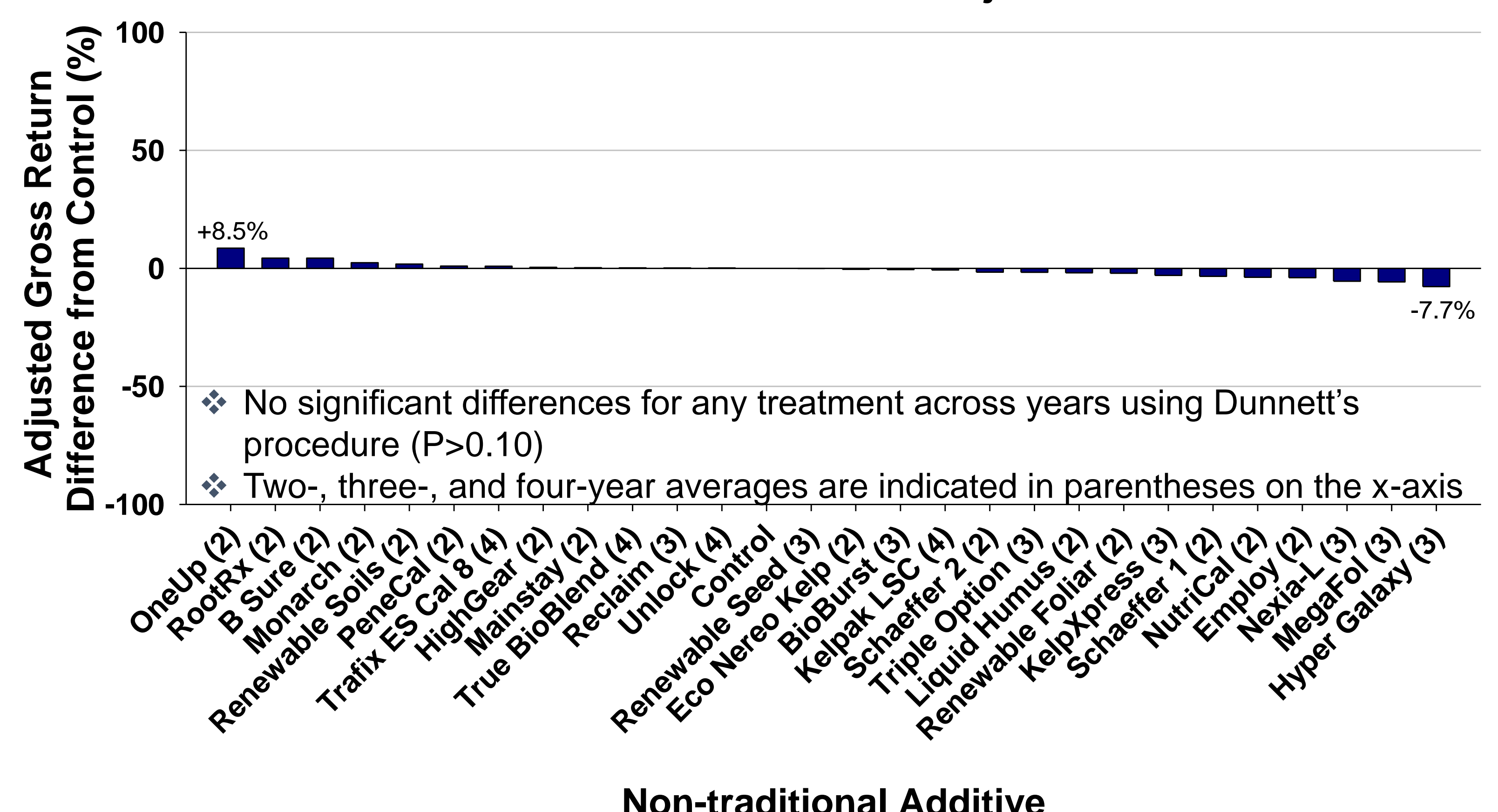


Figure 2.

Non-traditional Additive Effects on Adjusted Gross Returns



V. Summary & Conclusions

- 27 out of 27 non-traditional additive treatments failed to significantly improve potato yields (Figure 1.) or economic returns (Figure 2.) when applied in addition to grower standard practices
- No obvious reasons were found for growers to include non-traditional additives in production and management plans with the exceptions of:
 - Trafix ES Cal 8 increased specific gravity by 0.003 points ($P = 0.0219$)
 - OneUp increased average tuber weight by 1.3 oz ($P = 0.0054$)
- Additional research may be warranted on the better performing products (e.g. OneUp, RootRx, B Sure, Trafix ES Cal 8)

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