I. Introduction

A. Background
- The most widely grown fresh pack potato variety, Russet Norkotah was released in 1985 from North Dakota State University.
- Since 1985 several ‘strains’ of R. Norkotah have been released: CO-3, CO-8, TX-278, and TX-296.
- R. Norkotah exhibits a good external appearance, size profile, and yields as well as having low susceptibility to bruising as well as storage rot.
- R. Norkotah has a tendency to develop a brownish-gray color following months of storage.
- An alternative fresh pack variety is needed. Why?
  - R. Norkotah is RSV susceptible making seed certification difficult.
  - R. Norkotah has exhibited, in some cases, undesirable culinary qualities after storage and/or baking.
  - New varieties are showing promise in the form of improved yields, better quality tubers, which lead to increased profit for growers.

B. Objectives
- Increase consumer demand by providing consumers with potatoes that have excellent taste, texture, and overall appearance.
- Increase the profitability and profitability of Washington State potato growers.
- Identify varieties that are most profitable for early and late harvests.
- Identify varieties that exhibit similar bruise resistant traits to R. Norkotah, but varieties that also store well, have resistance to disease, and varieties that have good taste and texture.

C. Approach
- Each variety was planted in both an early and late harvest under management typical for R. Burbank potatoes on 34” rows.
- Value for each variety was determined by generating a mock contract using July to mid August for early harvest value and October prices for late harvest value.

II. Variety Information

The Standard Baking Potatoes

- Russet Burbank
- R. Norkotah CO-3
- R. Norkotah TX-278

The Contenders

- A01010-1
- AO96141-3
- Classic Russet

- Owyhee Russet
- PA00N14-2
- Teton Russet

III. Taste Panel

Figure 1. Russet Norkotah, the industry standard fresh pack variety, exhibits a uniform netting or russet pattern, shallow eyes, and good shape.

IV. Taste Panel Results

R. Norkotah

- Aroma
- Overall Acceptance
- Taste/Flavor
- Texture
- Aftertaste

R. Norkotah TX-278

- Aroma
- Overall Acceptance
- Taste/Flavor
- Texture
- Aftertaste

R. Norkotah CO-3

- Aroma
- Overall Acceptance
- Taste/Flavor
- Texture
- Aftertaste

Teton R.

- Aroma
- Overall Acceptance
- Taste/Flavor
- Texture
- Aftertaste

PA00N14-2

- Aroma
- Overall Acceptance
- Taste/Flavor
- Texture
- Aftertaste

Classic R.

- Aroma
- Overall Acceptance
- Taste/Flavor
- Texture
- Aftertaste

A01010-1

- Aroma
- Overall Acceptance
- Taste/Flavor
- Texture
- Aftertaste

AO96141-3

- Aroma
- Overall Acceptance
- Taste/Flavor
- Texture
- Aftertaste

Owyhee R.

- Aroma
- Overall Acceptance
- Taste/Flavor
- Texture
- Aftertaste

R. Burbank

- Aroma
- Overall Acceptance
- Taste/Flavor
- Texture
- Aftertaste

Figure 2. Six varieties (upper six photos), R. Burbank, R. Norkotah CO-3, R. Norkotah TX-278, R. Norkotah, R. Norkotah CO-8, and R. Norkotah TX-296 are commonly grown in the Columbia Basin as fresh pack varieties. Six new varieties (lower six photos), A01010-1, AO96141-3, Classic Russet, Owyhee Russet, PA00N14-2, and Teton Russet were compared to the standard for yield, economics, and taste in 2011-12.

*As the values for each taste panel category move away from the center of each radar plot, they increase in consumer acceptance. Panelists rated Teton R. as the best overall.

Figure 4. Under the supervision of the WSU Food Lab, taste panelists evaluated ten of the twelve varieties. Two varieties were excluded due to time and space constraints. One hundred panelists sampled 550 samples over the course of two days. All of the potatoes were baked and served plain (no butter, sour cream, bacon, etc.) at room temperature. Each panelist provided a subjective response to the aroma, taste/flavor, texture, smoothness, moistness, and overall acceptance of each variety.

Figure 5. Radar plots showing consumer preference of each variety in the taste panel. Each plot indicates how the panelists rated acceptance. Panelists rated Teton R. as the best overall.

V. Summary and Conclusions

- The issues associated with Russet Norkotah are compromising grower income and consumers are forced to buy a potato with less-than-desirable culinary traits.
- Viable fresh pack alternatives exist. Some of the newly released varieties and varieties in trials showed promise through better yields, culinary qualities, disease resistance, decreased bruise susceptibility and increased tuber quality.
- All varieties produced higher economic return than R. Norkotah at the early- and late-harvest with the exception of R. Burbank and CO-3 of the early trial.
- Classic R. produced a return more than 40% higher than the next closest variety in the early trial. The numbered variety ‘A01010-1’ produced a return 30% higher than the next closest variety (TX278) in the late trial.
- Taste panel responses to R. Norkotah and the Norkotah strains were quite similar.
- Teton R. was rated highest overall by the taste panel. Surprisingly, a few of the newer varieties, Classic R., Owyhee R., AO96141-3, and A01010-1, had poor aroma and taste/flavor when compared to the other varieties.

Economic Results

Figure 3. The difference in fresh market value of each variety in $/acre from R. Norkotah for both early and late harvests during 2011.

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