

COMPARISON OF ROUND vs CUT POTATO SEED PEI AIM TRIALS – 2016-17



**Report to AIM Growers
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March, 2018**

OVERVIEW

- **Use of non-cut seed is the predominant production method outside of North America**
- **Seed cutting – is expensive**
 - spreads disease
 - wastes seed
 - makes it difficult to control stem number frequency within the row
- **Interest in use of non-cut seed has increased among many PEI commercial growers**
- **Scientific principles (PA) must be applied to the use of non-cut seed**



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The goal of any potato enterprise regardless of end use should be to encourage the development of a uniform stand with regards to emergence, stem number distribution, etc.....

Less of this....



And more of this....



Results are random at best when using cut seed!

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OBJECTIVES

Initially.....can we pre-size one or more size fractions out of current commercial seedlots to improve overall yields and crop values

Eventually.....how do seedlots produced under 'small whole seed' management programs compare with conventional PEI seedlots

METHODOLOGY

Replicated Trials

Three participating farms

- **Black Pond Farms**
- **MacLennan Properties**
- **Oyster Cove Farms**

(all assigned random IDs)

in 2016 Russet Burbank only – three distinct seedlots

in 2017 Two varieties – Prospect – 4 distinct seedlots

- Russet Burbank – 5 distinct seedlots

(all assigned random IDs)

Three seed types/sizes per seedlot

- **1.5 – 2.5 oz round (small whole)**
- **2.5 – 4.0 oz round (large whole)**
 - **Machine or hand cut**

- **Prospect spacing intervals were 6 & 9" (sw), 9 & 12"(lw) and 9" cut**
- **Russet Burbank spacing intervals were 12 & 15" (sw),
15 & 18" (lw) and 15" (cut)**

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METHODOLOGY

Replicated Trials

- Site preparation and all crop maintenance was provided by the cooperating grower
- Grower made rows and applied fertilizer as per their individual program
- GCS hand planted seed in to rows at prescribed spacing
- Plots planted mid-late May and harvested early – mid October when vines were senesced or dead



2 reps/treatment

- All plot samples delivered to Cavendish Farms Central Grading for evaluation

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METHODOLOGY -

Field Scale Trial – 2017 only

- **@ Oyster Cove Farms**
- **Seed was sized out during handling operations – size range 1.5 – 4oz**
- **Individual strips were planted in the field – whole seed at 12, 15 or 18”, cut seed at 16.5”**
- **At harvest – approx one acre strip samples were harvested , area measured and trucks weighed.**
- **Ten X 25 lb samples were collected from each treatment**
- **All plot samples delivered to Cavendish Farms Central Grading for evaluation**

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RESULTS

Replicated Trials

Points to consider....

- For the most part, the seed used was not grown for small whole seed use (partial exception D, E Russet Burbank in 2017) – therefore we do not know the reasons why some tubers were smaller than others
- Hand planting would provide the cut seed additional advantage as most planters would plant round seed more accurately than cut seed

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RESULTS

- **All sites experienced at least one moisture stress issue during the season; more severe at sites 1 (Prospect) & 2 (RB)**
- **Very little difference in foliage vigor/color among any Prospect seed sources or seed types**
- **In Russet Burbank...seed lots B, D & E produced more vigorous plants with darker green color than seed lots A & C. Very little difference was observed among any seed types within any particular seed lot**

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Total Yield Seed Source 2016

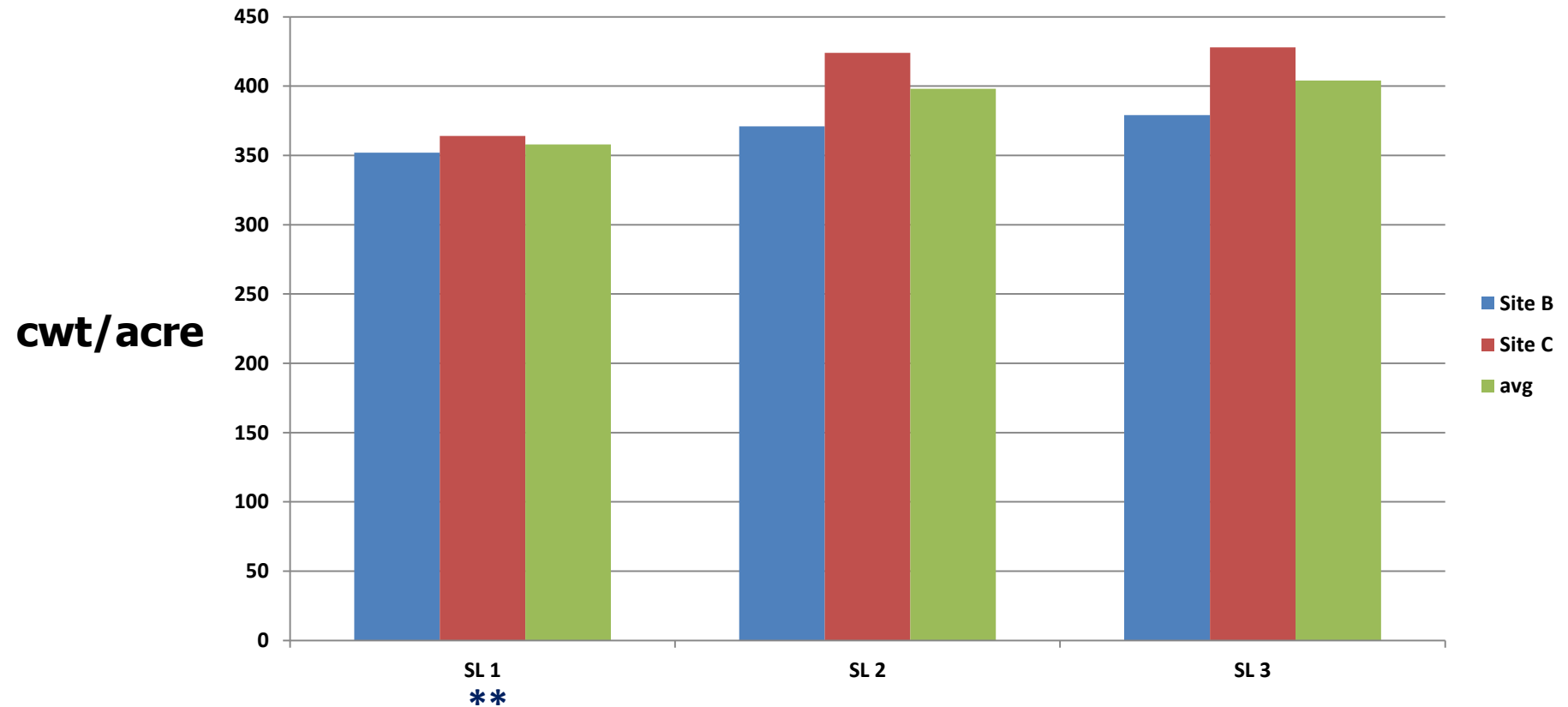


Fig 1: Total yield in cwt/acre of Russet Burbank potatoes grown from three distinct seed lots – 2016 PEI AIM RB Seed Trial

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Total Yield Seed Source 2017

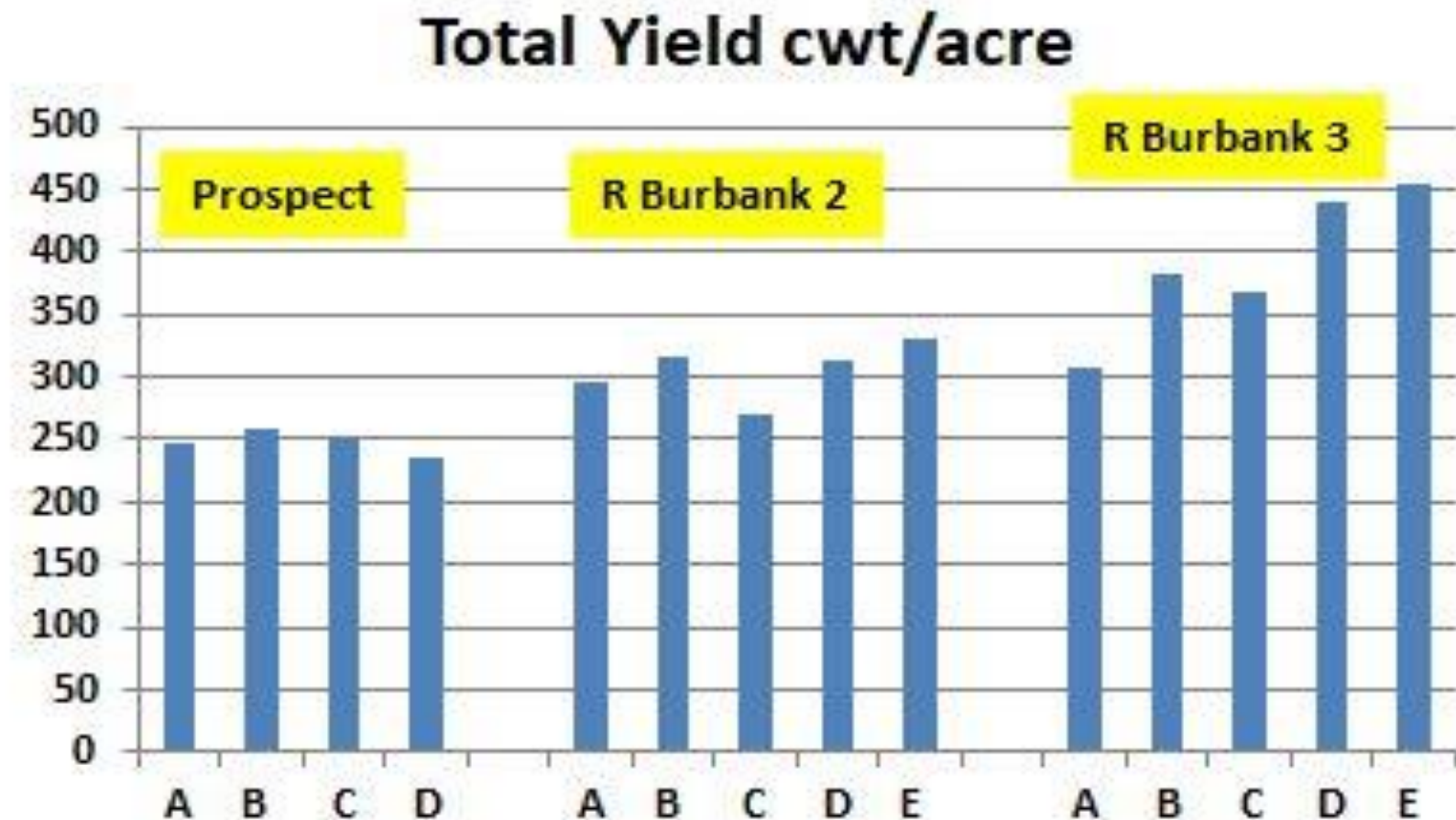


Figure 2: Total yield in cwt/acre – Various seed sources
Prospect & Russet Burbank, 2017 PEI AIMs Trial

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Total Yield Seed Type 2016

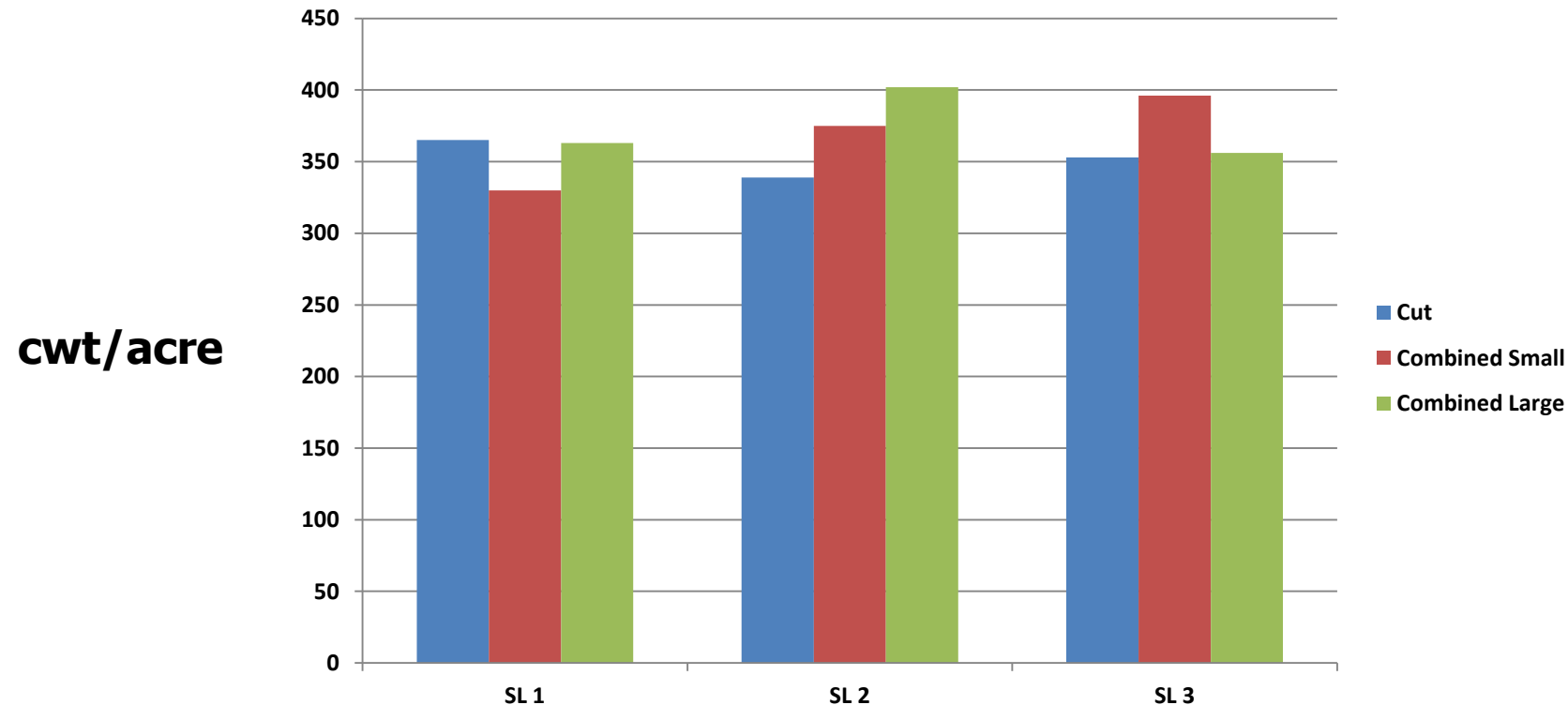


Fig 2: Total yield in cwt/acre of Russet Burbank potatoes grown from round and cut seed from three distinct seed lots – 2016 PEI AIM RB Seed Trial

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Total Yield Seed Type 2017

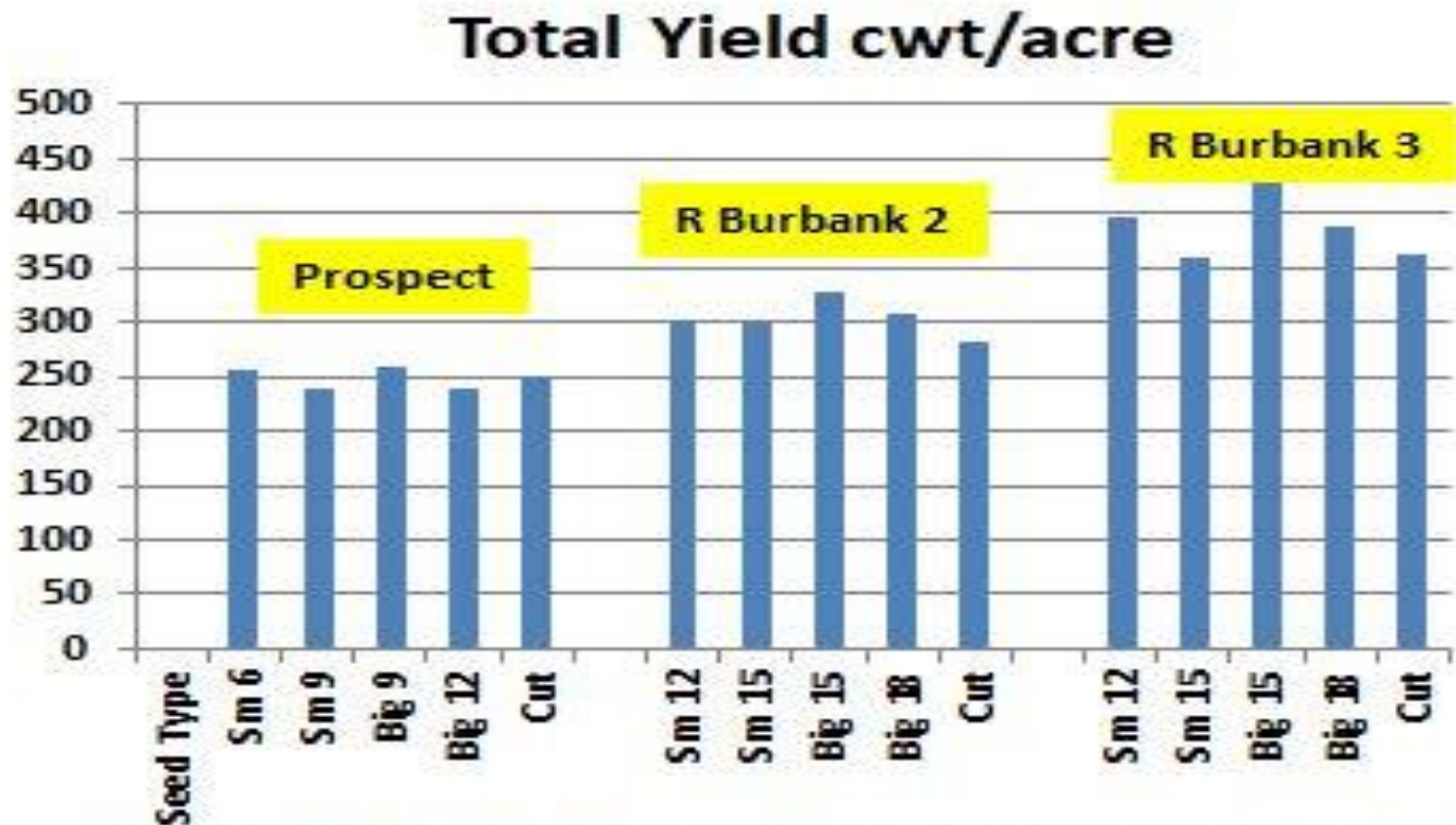


Figure 4: Total yield in cwt/acre – Comparison of small whole, large whole and cut seed types - Prospect & Russet Burbank, 2017 PEI AIMs Trial

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Effect on Major Processing Parameters.....

Generally, use of whole seed resulted in:

- **Higher % of tubers <2" dia**
- **Lower % of tubers > 10 oz**
- **Lower % of URK tubers**

And generally there was no trending differences in

- **Tuber specific gravity**
- **French Fry color**
- **Overall total tuber defects**

Revenue Seed Source 2016

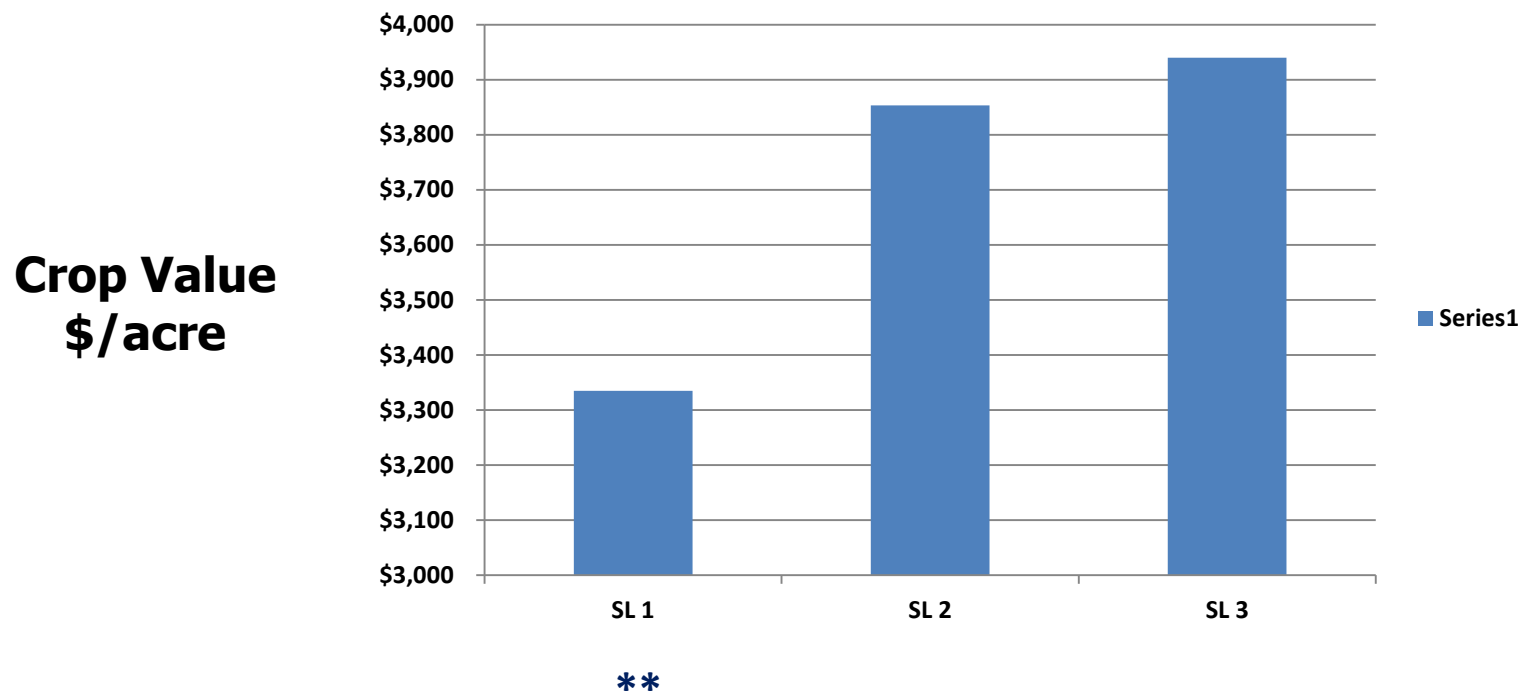


Fig: Effect of seed source on crop value in \$/acre of Russet Burbank potatoes grown from three distinct seed lots – 2016 PEI AIM RB Seed Trial

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Revenue Seed Source 2017



Figure 3: Gross revenue \$/acre – Various seed sources
Prospect & Russet Burbank, 2017 PEI AIMs Trial

Revenue Seed Type 2016

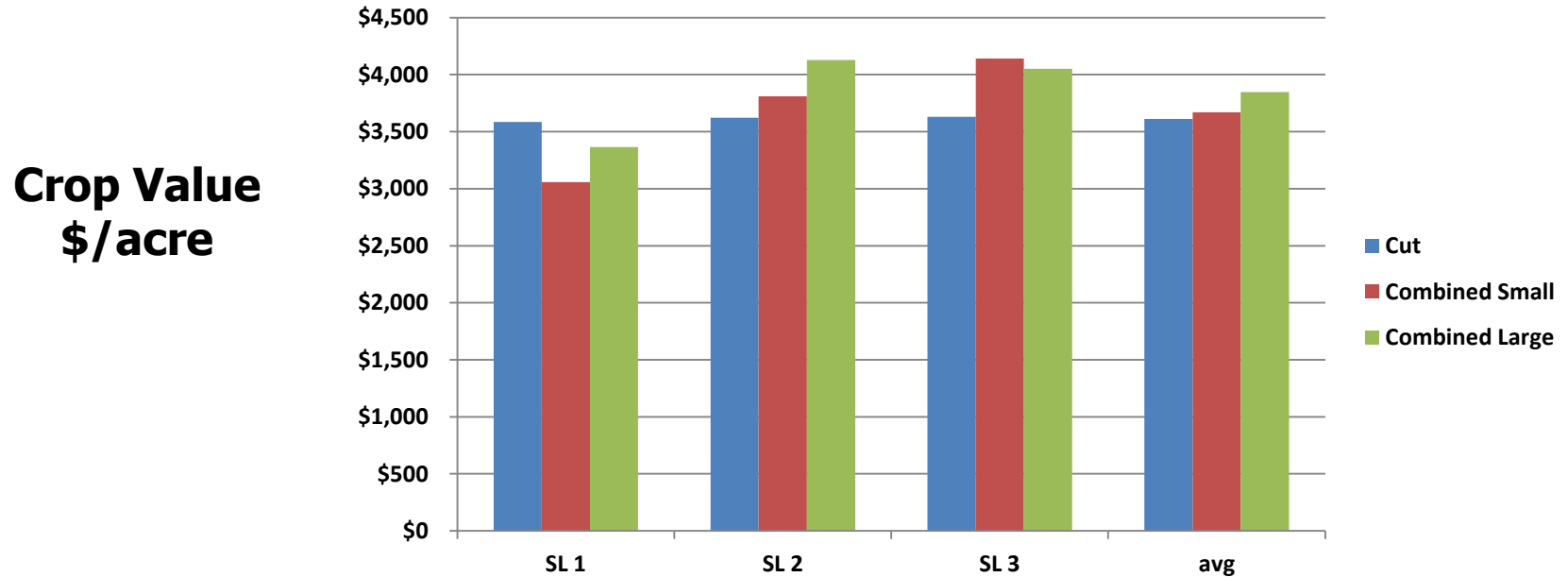


Fig: Effect of seed type and seed lot on crop value in \$/acre of Russet Burbank potatoes grown from round and cut seed from three distinct seed lots – 2016 PEI AIM RB Seed Trial

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Revenue Seed Type 2017

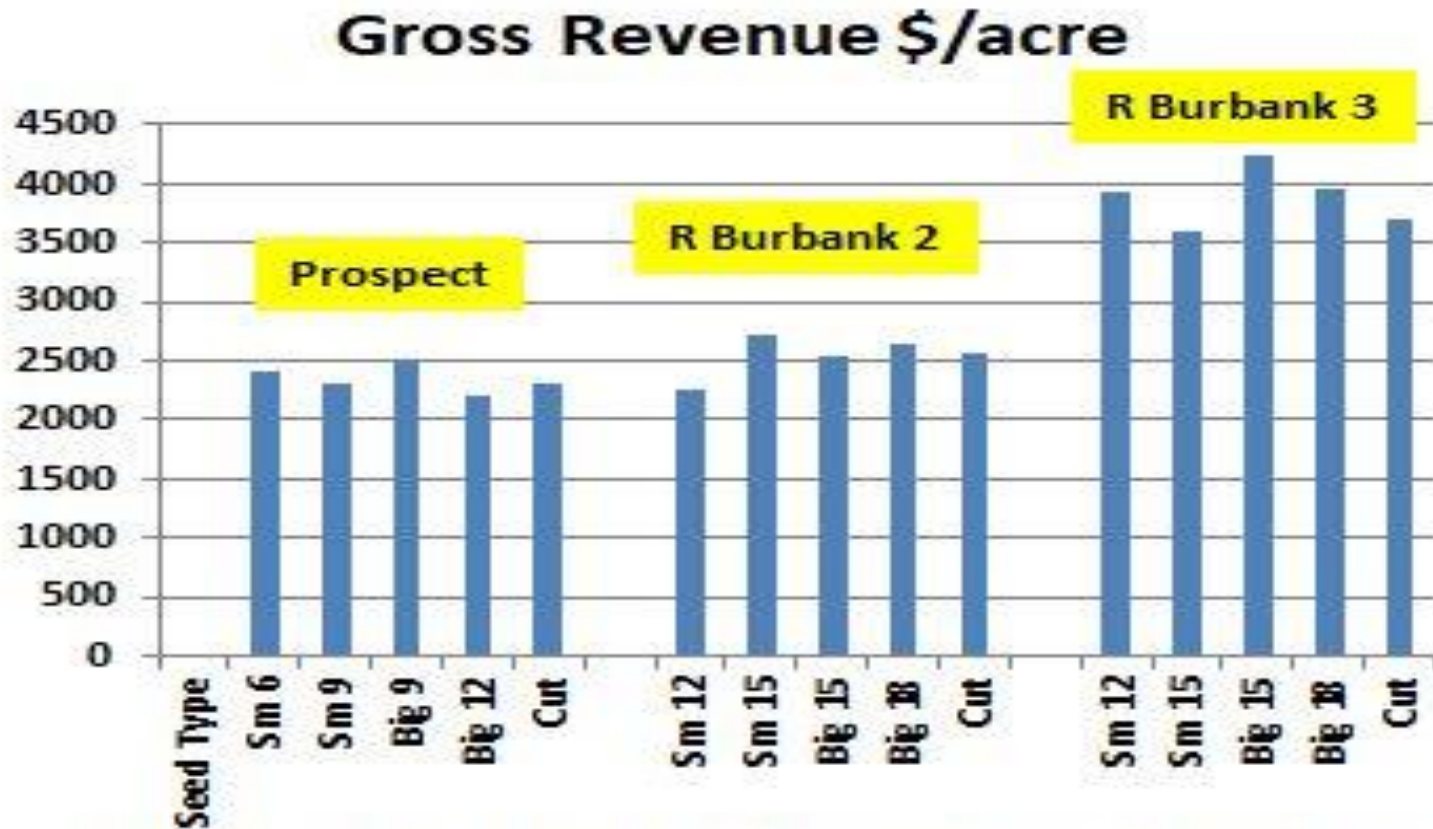


Figure 5: Gross revenue in \$/acre – Comparison of small whole, large whole and cut seed types - Prospect & Russet Burbank, 2017 PEI AIMs Trial

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FIELD SCALE YIELD AND SIZE PROFILE

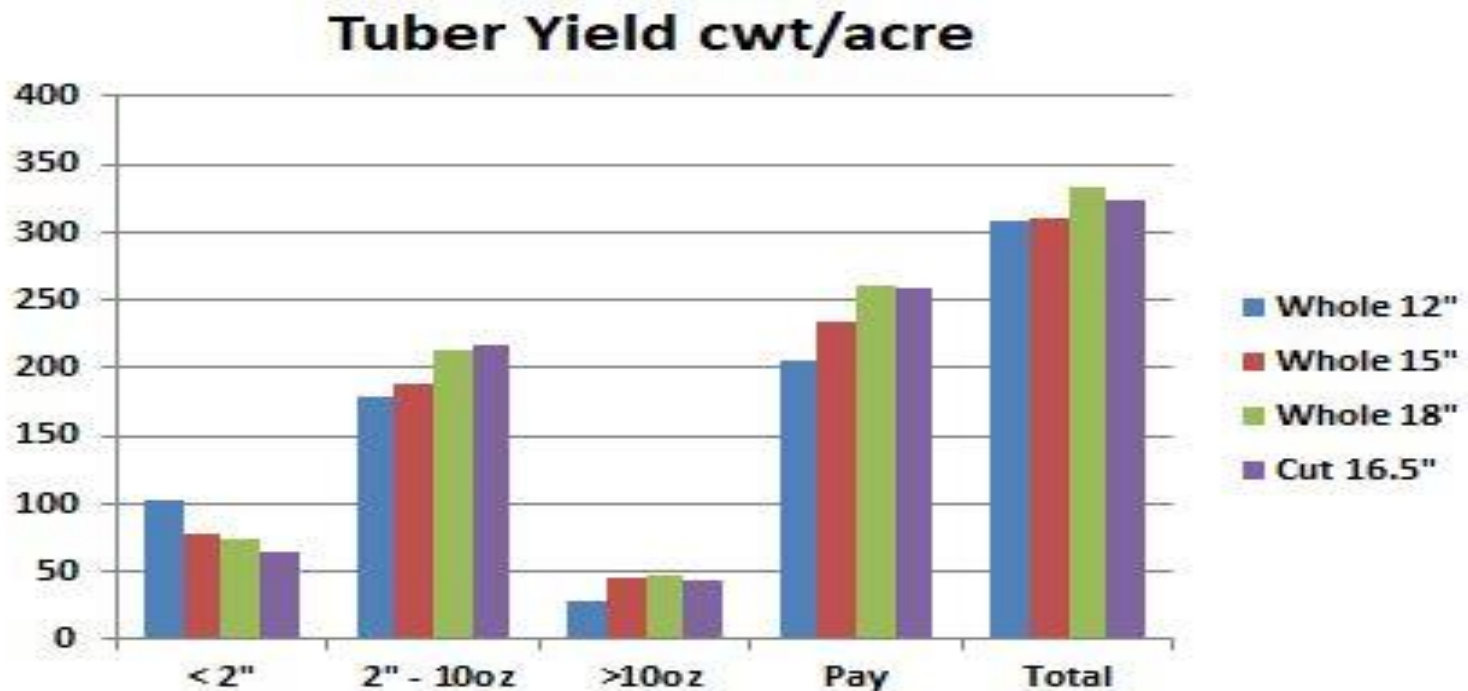


Figure 10: Effect of seed type & in row spacing on various size fractions, pay and total yield of commercial Russet Burbank potatoes, 2017 PEI AIMs Trial

CONCLUSIONS

So....What did we learn?

- **High total yields don't necessarily = increased revenue!**
- **For Prospect....not sure. The extreme dry weather experienced during early bulking stage and beyond may have masked any effects from seed source or seed type???**
- **For Russet Burbank...large differences among seed lots Re yield, size profile and overall crop value**
- **Although the *quasi* whole seed lots had relatively low 10oz and high smalls, overall crop values were at least equal to everything else at site 2 and better than most at site 3**
- **Pre-sizing small whole seed out of existing seed lots will require separation of more than one fraction under 4oz**

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CONCLUSIONS

- **With small exception, small or large whole cut seed plots produced crops with similar or better economic value than those under cut seed management**
- **Other costs associated with seed cutting ie equipment, labor, shrinkage & fungicides would result in additional increase to this revenue spread**

7.8. Innovator seed rate table (standard age seed)

Translated to PEI

Yield (t/ha)	50		60		70	
Mean tuber size (mm)	60		60		60	
Tuber count (per 50 kg)	Plant population (000/ha)	Seed rate (t/ha)	Plant population (000/ha)	Seed rate (t/ha)	Plant population (000/ha)	Seed rate (t/ha)
2400	38.8	0.81	49.9	1.04	64.3	1.34
2000	37.6	0.94	48.4	1.21	62.3	1.56
1600	35.9	1.12	46.3	1.45	59.6	1.86
1200	33.5	1.40	43.1	1.80	55.5	2.31
1000	31.8	1.59	40.9	2.04	52.6	2.63
900	30.7	1.71	39.5	2.20	50.9	2.83
800	29.5	1.84	37.9	2.37	48.8	3.05
700	28.0	2.00	36.1	2.58	46.5	3.32
600	26.3	2.19	33.9	2.82	43.6	3.63
500	24.2	2.42	31.2	3.12	40.2	4.02
400	21.7	2.71	27.9	3.49	35.9	4.49

0.75oz – 7"

1.5oz – 8"

3.0oz – 10.2"

**From BPC – General planting guide for
Innovator for French Fry production**

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**LOOK TWICE FOR
MOTORCYCLES**

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