Project Report

Alberta Potato Variety Development 2016
CDCS, Brooks, AB

Creamer Potatoes

Prepared for:
Various Sponsors

Prepared by:

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Introduction

In Alberta, potato industry stakeholders are looking for replacement varieties that use less nitrogen, less water, less pesticide, yet yield superior processing or culinary quality and tonnage. An ideal gourmet potato variety would produce a good yield of small sized tubers, be relatively tolerant of environmental fluctuations, have few defects, and have an attractive appearance. Blemish-free tubers with a good skin set that store well are very desirable. Varieties from breeding programs in Canada, Europe and the United States are often being assessed. Many breeding programs target disease resistance, nitrogen use efficiency and excellent storage potential in addition to increased yield. Tuber yield potential and nutritional requirements are impacted by variety characteristics and by environmental characteristics such as the length of the growing season (Westerman, 1993). As noted by Love et al. (2003), the full potential of a new variety may not be realized until proper management is implemented. There is increasing pressure on potato producers to utilize best management practices to reduce the environmental footprint for potatoes. The costs of such shifts in production practices will be borne primarily by producers.

The purpose of this project was to pool resources to evaluate potential varieties from a range of sources, using a cooperative approach. This trial was established to collect local agronomic data on varieties from breeding programs in Canada, the U.S. and elsewhere. The varieties were planted in replicated plots at the Crop Diversification Centre in Brooks, AB and were provided with 168 lbs/ac N and, if requested, 138 lbs/ac N. Alberta data is essential when selecting varieties appropriate for our climate, our customers and industry stakeholders.

Objectives

A. To evaluate potential new varieties for the creamer market;
B. To provide the potato industry an opportunity to assess varieties grown under local conditions;
C. To compare varieties from several breeding programs (including AAFC) under Alberta conditions; and
D. To determine the response of new creamer varieties to nitrogen fertilizer rates.

Materials and Methods

The variety evaluation was conducted in small plots at the Crop Diversification Centre South in Brooks, AB. Fertility for the low N plots (138 lbs/ac) was achieved through a combination of soil fertility (128 lbs/ac N; 499 lbs/ac P) and broadcast fertilizer (90 lbs/ac of 11-52-0) incorporated prior to planting. Moderate N plots received an additional top-dressing (65 lbs/ac of 46-0-0) at hilling, for a total of 168 lbs/ac N. Within each level of fertility, varieties were planted in four replicate rows in a randomized complete block design. Each block was planted adjacent to guard rows to reduce any edge effects (see plot plan, Appendix A).

Sencor 75DF (150 g/ac) and Eptam 8E (1.8 L/ac) were applied prior to planting (May 4) to control weeds. Seed of test cultivars was provided by each participant. Potatoes were planted May 10 (Low N Early) May 12, 2016 (Low N Main) and May 16, 2016 (Moderate N Main) approximately 12 to 15cm deep using a two-row tuber unit planter. Seed was planted at 15cm spacing in 5m rows spaced 90cm apart. The plots were irrigated to maintain soil moisture close to 70%. Foliar fungicides were applied several times during the growing season to prevent early and late blight from developing (Table 1).

Table 1: Foliar fungicides applied to the potato crop in 2016 to prevent early and late blight development.

Date of Application	*Fungicide*	*Rate*
28 June	Bravo	0.64 L/ac
27 July	Ridomil Gold/Bravo	0.83L/ac
5 Aug	Bravo	0.64 L/ac
20 Aug	Dithane DG	0.91 kg/ac

Figure 1: Variety evaluation trial at CDCS in Brooks, AB Aug 05, 2016.

Reglone was applied (1.0 L/ac) July 29 to the early harvest Low N plots. Sample digs August 4 confirmed that tubers of several cultivars exceeded the creamer size. Several cultivars were hand topped prior to desiccation to restrict sizing and increase skin set. AC Hamer, Anouk, Athlete, and Rosa Gold in the main harvest plots were topped by hand August 4 and 5. Reglone (1.0 L/ac) was applied September 6 to desiccate the main harvest plots. The Low N early plots were harvested August 18, 2016; the Low N Main plots were harvested September 22 to 27, 2016 and moderate N plots were harvested September 27 to 29 using a 1-row Grimme harvester.

Creamer sized tubers were stored at 8˚C until graded. Tubers were graded into size categories (less than 25mm, 25 to 41mm, over 41mm and deformed). A sample of twenty-five tubers (25 to 41mm) from each replicate was used to determine specific gravity using the weight in air over weight in water method. These tubers were cut longitudinally to assess internal defects. A composite sample of 32 tubers (8 per rep) was stored at 8˚C until culinary analyses were performed. Samples were evaluated for bake and boil by the Food Science and Technology Centre, Brooks, in December 2016.

The data presented here have been statistically analyzed using ANOVA and Tukey's Multiple Comparison Test; (SPSS; $p \leq 0.05$). Statistical summaries are available upon request. T-tests were used to compare results for varieties grown at different levels of N.

Results and Discussion – Fresh Market

Sample hills of each creamer variety were dug for a field day at CDCS August 16, 2016. Photos of these varieties are shown in Figure 2.

Figure 2. Fresh market creamer sized varieties at CDCS field day August 16, 2016: a) Bellanita, b) RV010, c) Yellow Star, d) AC Hamer, e) Anouk, f) Athlete, g) Gourmandine, h) PR07-55-1, i) Red Snapper, j) Rosa Gold, and k) SM08-83-01R.

Yield data (total yield; ton/ac) and specific gravities of each of the creamer-style cultivars are shown in Table 2. Three cultivars were planted with little additional nitrogen and were harvested in August (Low N Early harvest). Of these early maturing cultivars, Yellow Star produced significantly greater total yield than the other cultivars, an indication that this cultivar is an efficient nitrogen utilizer. Specific gravity of Yellow Star was significantly higher than the other two cultivars in these plots.

Another nine cultivars were planted in low N plots (138 lbs/ac) and were harvested in September (Low N – main harvest). Total yield ranged from 22.4 ton/ac for PR07-55-1 to 47.3 ton/ac for Gourmandine (Table 2). Specific gravities ranged from 1.061 for Anouk to 1.078 for Gourmandine and SM08-83-01R.

Only one creamer style cultivar was planted in the moderate N plots and harvested early. Total yield of RV010 was significantly greater when grown on moderate N than on low N when harvested early (Table 2). RV010 grown on low N and harvested in September yielded significantly more than when harvested in August. Although the greatest total yield of RV010 was observed on moderate N in the September harvest, the yield was not significantly greater than moderate N early harvest or low N, main harvest.

Further addressing the agronomic needs of each variety may well result in improvements to yield and size profiles when compared to the results in this trial.

Table 2: Estimated total yield (ton/acre) and specific gravity for each creamer potato variety grown on approximately 168 lbs/ac nitrogen (Moderate N) and 138 lbs/ac nitrogen (Low N). Data shown is the mean of four replicates. Data followed by the same letter in each column of the table are not significantly different at the $p < 0.05$ level.

CDCS	Yield (ton/ac)	SG
Low N – early harvest		
Bellanita	28.0 b	1.064 b
RV010	28.3 b¥ǂ	1.066 b
Yellow Star	33.9 a	1.071 a
Low N – main harvest		
AC Hamer	24.7 c	1.070 bc
Anouk	27.4 c	1.061 c
Athlete	23.3 c	1.073 bc
Gourmandine	47.3 a	1.078 ab
RV010	39.7 b¥	1.077 b
PR07-55-1	22.4 c	1.063 c
Red Snapper	36.4 b	1.090 a
Rosa Gold	27.6 c	1.063 c
SM08-83-01R	39.2 b	1.078 b
Moderate N – early harvest		
RV010	31.4ǂ	1.068
Moderate N – main harvest		
RV010	37.7	1.071

ǂ Data between the regular and low N plots was statistically different at the $p \leq 0.05$ level.

¥ Data between the early and main harvest plots was statistically different at the $p \leq 0.05$ level.

The mean percentage of total tuber number in each size category for creamer-style cultivars is shown in Table 3. The three cultivars grown on low N and harvested in August produced very different size profiles. Bellanita produced a significantly higher percentage of small (< 25mm) tubers and creamer-sized (25 to 41mm) tubers than RV010 or Yellow Star. Almost 50% of the RV010 tubers were over 41 mm in diameter indicating that an earlier harvest may be required to capitalize on the creamer market. Over 75% of the Yellow Star tubers were greater than 41 mm in diameter suggesting that this cultivar may be better suited for the regular fresh market.

Of the nine creamer-style cultivars grown on low N for the full season, Athlete and Red Snapper yielded the highest percentage of creamer sized tubers (Table 3). Many of the varieties yielded more than 50% of the tubers over 41 mm indicating that desiccation or harvest dates may need to be adjusted for optimal yield of creamer sized potatoes. RV010 tubers grown on moderate N for the full season were graded as regular sized fresh market cultivars, so the creamer size distribution data is not available.

The level of N fertilization did not significantly affect the percentage of tubers in each size class for RV010. A later harvest date did result in a significantly greater percentage of tubers over 41 mm (Table 3). Timing of desiccation and harvest will likely need to be optimized for each creamer-style cultivar to ensure the best return on investment.

Table 3: Percentage of total tuber number in each size category (< 25mm, 25-41mm, > 41mm and deformed) for each creamer potato variety grown on moderate nitrogen (approximately 168 lbs/ac) and 138 lbs/ac nitrogen (Low N). Data shown is the mean of four replicates. Data followed by the same letter in each column of the table are not significantly different at the $p < 0.05$ level.

CDCS	< 25 mm	25– 41mm	> 41mm	Deformed
Low N – early harvest				
Bellanita	25.5 a	63.0 a	9.3 c	1.3 a
RV010	11.5 b¥	38.8 b	49.0 b¥	1.3 a
Yellow Star	3.3 c	20.3 c	75.3 a	2.0 a
Low N – main harvest				
AC Hamer	1.5 b	27.8 cd	68.3 a	2.3 ab
Anouk	3.3 ab	32.8 cd	63.0 ab	1.0 b
Athlete	3.5 ab	48.0 a	47.5 cd	1.0 b
Gourmandine	3.3 ab	22.3 d	71.0 a	3.0 ab
RV010	4.8 ab¥	36.3 bc	56.0 bc¥	3.0 ab
PR07-55-1	2.8 ab	45.3 ab	51.0 cd	0.8 b
Red Snapper	5.5 ab	48.8 a	43.8 d	2.0 ab
Rosa Gold	7.8 a	26.0 cd	64.5 ab	1.8 ab
SM08-83-01R	5.3 ab	26.8 cd	63.0 ab	4.8 a
Moderate N – early harvest				
RV010	13.0	38.0	47.0	1.0
Moderate N – main harvest				
RV010				

ǂ Data between the regular and low N plots was statistically different at the $p \leq 0.05$ level.
¥ Data between the early and main harvest plots was statistically different at the $p \leq 0.05$ level.

The yield of tubers (estimated ton/ac) of each creamer-style variety is shown by size category in Table 4. There were significant differences in yield by size category between the three cultivars grown in the Low N plots and harvested in August. Bellanita yielded significantly more tubers 25 to 41mm in diameter than RV010 or Yellow Star. Yellow Star yielded significantly more tubers over 41mm than the other cultivars.

For varieties grown on low N and harvested in September, Red Snapper yielded significantly more creamer-sized tubers than the other cultivars. In this trial, the yield of tubers over 41mm indicates that an earlier desiccation or harvest date may be required for many of these cultivars.

RV010 was grown at two levels of N and harvested at two different times. The later harvest resulted in significantly greater yield of tubers in the > 41mm category, while higher N fertility did not significantly affect the tuber yield in each size category.

Table 4: Estimated yield (ton/ac) in each size category (< 25mm, 25-41mm, > 41mm, and deformed) for each creamer potato variety grown on moderate nitrogen (approximately 168 lbs/ac) and at a lower rate of N (138 lbs/ac). Data shown is the mean of four replicates. Data followed by the same letter in each column of the table are not significantly different at the $p < 0.05$ level.

CDCS	< 25 mm	25– 41mm	> 41mm	Deformed
Low N – early harvest				
Bellanita	1.8 a	18.8 a	6.6 c	0.7 a
RV010	0.4 b	6.4 b	20.0 b¥	0.5 a
Yellow Star	0.1 b	2.7 c	30.7 a	0.5 a
Low N – main harvest				
AC Hamer	0.0 b	2.7 c	21.3 cd	0.7 abc
Anouk	0.1 b	3.8 c	23.1 c	0.4 abc
Athlete	0.1 b	7.6 b	15.3 d	0.3 bc
Gourmandine	0.1 b	3.9 c	41.0 a	2.3 a
RV010	0.2 ab	6.3 b	31.2 b¥	2.0 abc
PR07-55-1	0.1 b	6.4 b	15.8 d	0.1 c
Red Snapper	0.3 a	11.3 a	24.0 c	0.8 abc
Rosa Gold	0.1 ab	2.7 c	24.1 c	0.6 abc
SM08-83-01R	0.2 ab	3.8 c	33.1 b	2.1 ab
Moderate N – early harvest				
RV010	0.5	7.6	22.4	0.9
Moderate N – main harvest				
RV010				

ǂ Data between the regular and low N plots was statistically different at the $p \leq 0.05$ level.
¥ Data between the early and main harvest plots was statistically different at the $p \leq 0.05$ level.

Tuber samples used to measure specific gravity were evaluated for hollow heart, brown center, stem-end discoloration, other types of internal necrosis, scab and black scurf. For creamer-style cultivars grown on low N and harvested in August, very few tubers exhibited internal defects. Approximately 4% of Bellanita tubers showed some brown centre. Stem-end discoloration was visible in approximately 10% of RV010 tubers. This may be related to the rate of vine kill, N status in the crop at the time of desiccation or the presence of wilt organisms. Tubers were not tested for wilt organisms. For tubers grown on low N and harvested in September, approximately 5% of Gourmandine tubers and occasional tubers of AC Hamer, Red Snapper and Rosa Gold displayed brown center. Gourmandine and SM08-83-01R seemed to display more stem-end discoloration and vascular discoloration than other cultivars, but tubers were not tested for wilt organisms. PR07-55-1 tubers showed cracking on the skin surface. No seed treatment was used in the trial so occasional tubers showed black scurf.

Tuber set parameters are presented in Table 5. The number of tubers per plant is often an indication of the potential for creamer potato production. Bellanita produced the highest number of tubers per plant on low N in the early harvest, but RV010 was not significantly lower. For cultivars planted on low N and harvested in

September, RV010 and Red Snapper set significantly more tubers per plant than other cultivars. A similar set for RV010 grown in all four plots indicates that tuber set for this cultivar is not affected by N fertility or time of harvest.

Table 5: Tuber set parameters for each creamer potato variety: Data shown is the mean of 4 replicates.

	Tubers per stem	Tubers per plant
Low N – early harvest		
Bellanita	4.2 a	23.0 a
RV010	3.2 b	19.9 a
Yellow Star	2.7 b	13.9 b
Low N – main harvest		
AC Hamer	2.6 d	10.2 c
Anouk	4.5 a	14.6 b
Athlete	2.3 de	12.6 bc
Gourmandine	3.5 b	13.0 bc
RV010	2.9 bcd	19.2 a
PR07-55-1	2.4 de	14.8 b
Red Snapper	2.9 cd	18.3 a
Rosa Gold	3.5 bc	12.0 bc
SM08-83-01R	1.8 e	13.7 b
Moderate N – early harvest		
RV010	3.2	20.7
Moderate N – main harvest		
RV010	3.1	20.1

† Data between the regular and low N plots was statistically different at the $p \leq 0.05$ level.

Culinary evaluations were conducted on all cultivars in the trial. Results for the creamer-style cultivars are presented in Table 6. Results of the culinary evaluation of red-skinned cultivars are presented in Table 6. Flesh colour and texture differences were noted after boiling and baking. Moderate sloughing was observed for RV010 and Red Snapper grown on low N and harvested in September. Severe after cooking discolouration was noted for AC Hamer and PR07-55-1 after baking, but not after boiling.

Table 6: Culinary evaluations of each creamer potato variety grown on moderate nitrogen (approx. 168lbs/ac) and low nitrogen (approx. 138lbs/ac) at CDCS. Data shown is the mean of duplicate analyses of a composite sample.

Boiled Potatoes

CDCS	Flesh color	Waxiness†	Sloughing	After Cooking Discoloration*
Low N – early harvest				
Bellanita	Deep yellow	3	3	3
RV010	Yellow	3	3	3
Yellow Star	Yellow	3	3	3
Low N – main harvest				
AC Hamer	Off-white	2	3	3
Anouk	Yellow	3	3	3
Athlete	Yellow	3	3	3
Gourmandine	Yellow	3	3	3
RV010	Yellow	3	2	3
PR07-55-1	White	3	3	3
Red Snapper	Yellow	4	2	3
Rosa Gold	Deep yellow	2	3	3
SM08-83-01R	Yellow	2	3	3
Moderate N – early harvest				
RV010	Deep yellow	3	3	3
Moderate N – main harvest				
RV010	Deep yellow	2	3	3

† Waxiness: 1 = very waxy (very clean cuts); 2 = waxy (clean cuts with some residue); 3 = slightly waxy (more mealy than waxy); 4 = not waxy (fluffy/mealy)

* After Cooking discoloration and sloughing: 1 = severe; 2 = moderate; 3 = none

Baked Potatoes

CDCS	Flesh color	Texture‡	After Cooking Discoloration*
Low N – early harvest			
Bellanita	Deep yellow	3	3
RV010	Deep yellow	3	3
Yellow Star	Deep yellow	3	3
Low N – main harvest			
AC Hamer	White	3	1
Anouk	Yellow	3	3
Athlete	Deep yellow	3	3
Gourmandine	Deep yellow	4	3
RV010	Deep yellow	3	3
PR07-55-1	White	3	1
Red Snapper	Yellow	4	3
Rosa Gold	Deep yellow	2	3
SM08-83-01R	Deep yellow	3	3
Moderate N – early harvest			
RV010	Deep yellow	3	3
Moderate N – main harvest			
RV010	Deep yellow	3	2

‡ Texture: 1 = wet; 2 = slightly wet; 3 = slightly mealy; 4 = mealy

Conclusions

The 2016 variety trial included 11 cultivars being evaluated for the creamer-sized market in southern Alberta. There was no check variety included in the trial as this market is still developing. Although yield of creamer-sized potatoes was good for some cultivars, such as Bellanita and Red Snapper, the high yield of tubers over 41mm indicates that desiccation and harvest dates may need to be optimized for each cultivar in order to increase the yield of desired sizes. Many cultivars had different culinary attributes that will need to be considered when developing a marketing approach. Few cultivars in the trial had issues with sloughing, after-cooking darkening or internal defects.

RV010 was the only cultivar grown in early and full-season plots at both levels of N fertilizer. For that variety, the length of time in the field had a greater impact than fertilizer for most parameters evaluated.

The trial was designed to provide regional data for a wide range of potato cultivars. Addressing the agronomic needs of each variety may well result in improvements to yield and size profiles when compared to the results in this year of the trial.

Recommendations

- Varieties should be grown in southern Alberta for at least 3 years and these results need to be compiled to ensure a reasonable evaluation.
- To establish better estimates of yield potential and size profile for the varieties, each variety should be grown under optimal agronomic conditions (fertility, plant density, etc.).

References

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Alberta Seed Producers Inc.
ConAgra Foods, Lamb Weston Division
Edmonton Potato Growers
Little Potato Company
Old Dutch Foods
New Zealand Institute of Plants and Food Research
Parkland Seed Potatoes
Prairie Gold Produce
Rockyview Seed Potatoes
Solanum International Inc.
Tuberosum Technologies Inc.

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Appendix A Plot Plan

Low N Variety Trial 2016 - August Harv

Planted May 10

20 Seed pieces per row

→ **N**

10 X 63 = 630 m2

Guard = Norland

											Medium N
10	**Guard**		**Guard**	**Guard**	**Guard**	**Guard**		**Guard**	**Guard**		**Guard**
9	1001 Yukon Gold		2001 Arizona	3001 Kennebec	4001 NZ16-3	extra Rosa Gold		1011 Bellanita	3011 Yellow Star		1021 RV010
8	1002 Shepody		2002 Shepody	3002 Citadel	4002 Kennebec	extra Alta Rose		1012 RV010	3012 RV010		
7	1003 Volare		2003 Volare	3003 NZ16-4	4003 Volare	extra Red Sun		1013 Yellow Star	3013 Bellanita		2021 RV010
6	1004 Kennebec		2004 Citadel	3004 Arizona	4004 Arizona	extra Citadel					
5	1005 NZ16-4		2005 NZ16-4	3005 Yukon Gold	4005 Yukon Gold	extra Fransisca		2011 RV010	4011 RV010		3021 RV010
4	1006 Arizona		2006 Kennebec	3006 NZ16-3	4006 NZ16-4	extra Arizona		2012 Yellow Star	4012 Yellow Star		
3	1007 NZ16-3		2007 NZ16-3	3007 Shepody	4007 Shepody	extra Miss Malina		2013 Bellanita	4013 Bellanita		4021 RV010
2	1008 Citadel		2008 Yukon Gold	3008 Volare	4008 Citadel	extra Yellow Star					
1	**Guard**	3 m	**Guard**	**Guard**	**Guard**	**Guard**	**10 m**	**Guard**	**Guard**	3m	**Guard**
	6m							5m	5m		5m

Low N Variety Trial 2016 - Full Season (

20 Seed pieces per row

Planted May 11 →

N

24 X 85 = 2040 m2

Guard = Russet Burbank

24	Guard		Guard		Guard		Guard		Guard		Guard		Guard		Guard		Guard		Guard		
23	1001		1011		1021		2001		2011		2021		5001		1031		2031				
	EPG015		Red Snapper		Yukon Gold		Norland		ASPI010		NZ16-1		ODF007		SM08-83-01R		Rosa Gold				
22	1002		1012		1022		2002		2012		2022		5002		1032		2032				
	Bridget		Guard		EPG018		AC Vigor		Kennebec		ASPI011		Monticello		RV010		Anouk				
21	1003		1013		1023		2003		2013		2023		5003		1033		2033				
	Gourmandine		ASPI010		AC Hamer		EPG015		NZ16-2		Bridget		AC Vigor		AC Hamer		Athlete				
20	1004		1014		1024		2004		2014		2024		5004		1034		2034				
	ODF008		EPG013		Rosa Gold		Roko		Krone		Bridget		ODF008		Athlete		Gourmandine				
19	1005		1015		1025		2005		2015		2025		5005		1035		2035				
	ASPI011		Basin Russet		NZ16-1		RV011		Red Snapper		Birgit		ASPI011		PR07-55-1		AC Hamer				
18	1006		1016		1026		2006		2016		2026		5006		1036		2036				
	Blazer Russet		Russet Burbank		ODF007		EPG018		RV009		Russet Burbank		EPG013		Gourmandine		SM08-83-01R				
17	1007		1017		1027		2007		2017		2027		5007		1037		2037				
	Birgit		Monticello		Roko		EPG013		AC Hamer		ODF007		EPG015		Rosa Gold		RV010				
16	1008		1018		1028		2008		2018		2028		5008		1038		2038				
	RV009		RV011		Kennebec		Guard		Yukon Gold		Monticello		ASPI010		Red Snapper		PR07-55-1				
15	1009		1019				2009		2019				5009		1039		2039				
	AC Vigor		NZ16-2				Gourmandine		Rosa Gold				Guard		Anouk		Red Snapper				
14	1010		1020				2010		2020				5010								
	Krone		Norland				Blazer Russet		ODF008				Atlantic								
13	Guard	3 m	Guard		Guard		Guard		Guard		Guard	3m	Guard	5m	Guard	3m	Guard				
	6m										6m		6m		5m		5m				
12	Guard		Guard		Guard		Guard		Guard		Guard		Guard		Guard		Guard				
11	3001		3011		3021		4001		4011		4021		5011		3031		4031				
	AC Hamer		Norland		Rosa Gold		ASPI011		Krone		ASPI010		EPG018		RV010		Athlete				
10	3002		3012		3022		4002		4012		4022				3032		4032				
	Red Snapper		NZ16-2		Krone		ODF007		RV011		EPG013				SM08-83-01R		Red Snapper				
9	3003		3013		3023		4003		4013		4023				3033		4033				
	Basin Russet		Russet Burbank		NZ16-1		Guard		EPG018		Yukon Gold				Gourmandine		PR07-55-1				
8	3004		3014		3024		4004		4014		4024				3034		4034				
	ODF007		ODF008		EPG015		Gourmandine		Birgit		Kennebec				Rosa Gold		Anouk				
7	3005		3015		3025		4005		4015		4025				3035		4035				
	Yukon Gold		RV009		RV011		NZ16-1		Monticello		Rosa Gold				PR07-55-1		Gourmandine				
6	3006		3016		3026		4006		4016		4026				3036		4036				
	ASPI010		Blazer Russet		EPG013		AC Vigor		Norland		RV009				Red Snapper		SM08-83-01R				
5	3007		3017		3027		4007		4017		4027				3037		4037				
	Bridget		EPG018		Monticello		Basin Russet		AC Hamer		EPG015				Anouk		AC Hamer				
4	3008		3018		3028		4008		4018		4028				3038		4038				
	Gourmandine		Roko		Birgit		ODF008		Russet Burbank		Red Snapper				Athlete		RV010				
3	3009		3019				4009		4019						3039		4039				
	Guard		Kennebec				NZ16-2		Blazer Russet						AC Hamer		Rosa Gold				
2	3010		3020				4010		4020												
	ASPI011		AC Vigor				Roko		Bridget												
1	Guard	3 m	Guard		Guard		Guard		Guard	**10 m**	Guard	3m	Guard		Guard		Guard				
	6m																				

Variety Medium N Brooks - 2016 - Ful

Planted May 16

20 Seed pieces per row

N

24 x 85m = 2040m2

12" spacing

ODF Extra

24	Guard	Guard	Guard	Guard	Guard		Guard	Guard	Guard	
23	1001	1011	1021	1031	2001		2011	2021	2031	5001
	ASPI010	ASPI011	EPG015	Barcelona	ASPI010		TT16-5	TT16-3	TT16-9	AC Vigor
22	1002	1012	1022	1032	2002		2012	2022	2032	5002
	TT16-4	TT16-9	Norland	TT16-1	TT16-4		PGP03	ASPI012	TT16-10	EPG018
21	1003	1013	1023	1033	2003		2013	2023	2033	5003
	Birgit	EPG017	Yukon Gold	ODF007	Birgit		ASPI011	Blazer Russet	ASPI013	EPG013
20	1004	1014	1024	1034	2004		2014	2024	2034	5004
	PGP03	Russet Burbank	TT16-3	California RB	ODF008		ODF007	Kennebec	EPG013	ODF008
19	1005	1015	1025	1035	2005		2015	2025	2035	5005
	TT16-8	EPG018	Blazer Russet	EPG016	EPG017		TT16-8	Norland	RV009	Burbank
18	1006	1016	1026	1036	2006		2016	2026	2036	5006
	Monticello	RV010	Kennebec	RV009	EPG015		Yukon Gold	TT16-7	AC Vigor	ASPI011
17	1007	1017	1027	1037	2007		2017	2027	2037	5007
	ASPI013	ASPI008	TT16-2	ASPI012	Monticello		EPG016	ASPI014	Russet Burbank	ODF007
16	1008	1018	1028	1038	2008		2018	2028	2038	5008
	TT16-5	Atlantic	AC Vigor	ODF008	Queen Anne		EPG018	RV011	RV010	EPG015
15	1009	1019	1029	1039	2009		2019	2029	2039	5009
	ASPI014	RV011	EPG013	TT16-6	Atlantic		ASPI008	California RB	TT16-1	Atlantic
14	1010	1020	1030		2010		2020	2030		5010
	TT16-7	TT16-10	Queen Anne		Barcelona		TT16-6	TT16-2		Monticello
13	Guard	Guard	Guard	Guard	Guard		Guard	Guard	Guard	

3 m | 10m | 6m

12	Guard	Guard	Guard	Guard	Guard		Guard	Guard	Guard	
11	3001	3011	3021	3031	4001		4011	4021	4031	5011
	RV010	Russet Burbank	Yukon Gold	Queen Anne	EPG013		TT16-8	TT16-2	TT16-5	California RB
10	3002	3012	3022	3032	4002		4012	4022	4032	
	Birgit	TT16-9	Norland	Monticello	ASPI012		TT16-10	RV009	AC Vigor	
9	3003	3013	3023	3033	4003		4013	4023	4033	
	ASPI010	TT16-2	TT16-8	EPG015	Queen Anne		California RB	TT16-6	Barcelona	
8	3004	3014	3024	3034	4004		4014	4024	4034	
	Blazer Russet	TT16-5	ASPI008	Kennebec	ASPI013		TT16-9	ODF008	TT16-4	
5	3007	3017	3027	3037	4007		4017	4027	4037	
	ASPI014	TT16-6	TT16-1	PGP03	Kennebec		ASPI010	ODF007	ASPI008	
6	3006	3016	3026	3036	4006		4016	4026	4036	
	ASPI011	TT16-7	EPG013	Barcelona	Norland		RV010	Atlantic	Birgit	
7	3005	3015	3025	3035	4005		4015	4025	4035	
	EPG018	Atlantic	ASPI012	RV009	Yukon Gold		TT16-7	EPG016	Monticello	
4	3008	3018	3028	3038	4008		4018	4028	4038	
	AC Vigor	TT16-3	TT16-4	California RB	EPG018		PGP03	TT16-3	EPG017	
3	3009	3019	3029	3039	4009		4019	4029	4039	
	TT16-10	EPG016	ODF008	ASPI013	TT16-1		Russet Burbank	ASPI011	ASPI014	
2	3010	3020	3030		4010		4020	4030		
	Russet Burbank	ODF007	RV011		Blazer Russet		RV011	EPG015		
1	Guard	Guard	Guard	Guard	Guard		Guard	Guard	Guard	

3 m | 8m | 6m