



Potato Variety Evaluation in Quebec

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WORK TEAM

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1. OBJECTIVES

- Gather information on the agronomic performance of new potato genotypes.
- Collect information on external and internal tuber quality of new potato genotypes.
- Collect information on cooking quality of new potato genotypes.

2. METHODOLOGY

2.1. Sites and plant material description

The trials took place in Ste-Croix near Quebec City and L'Assomption, near Montreal. The plots were established in a sandy loam soil for both sites.

The trial included eight (8) potato clones and varieties from the Accelerated Release Program (AR) from Fredericton and Lethbridge research stations of Agriculture and Agri-Food Canada (AAFC), sixteen (16) from the Quebec Potato Research Consortium program, nine (9) genotypes from the Progest 2001 breeding program and nine (9) clones and varieties from various additional national and international programs. The varieties and clones were divided in five (5) sub-trials. The five categories were: white round, yellow flesh, long, red skin and specialties. Known varieties (12), chosen for their special characteristics, were used as controls for each category (identified as (C) in Table I).

Clones and varieties included in this trial were chosen for various reasons. Most of QP clones were chosen for their multiple resistances (nematodes, PVY and late blight), while the majority of AG clones were selected to meet the growing consumer's demand for specialties potatoes. We also found a good selection of yellow flesh and red potatoes, also a market trend.

With the control varieties, a total of 54 genotypes were tested in this trial. A list of all the genotypes evaluated is presented at Table I.



Table I. List of genotypes evaluated in each category

Round white	Yellow flesh	Long	Red	Specialities
Alliston	401-1	AG1424.11	AG1404.09	AG1405.01
Envol (C)	Belmonda	AR2018-01	AG1423.12	AG1405.15
Mystère (C)	Confederation	AR2018-02	AR2018-08	AG1425.05
Nougat	Connect	AR2018-03	AR2018-09	AG1425.11
QP12056.16	Keuka Gold (C)	Campagna	AR2018-4	QP12145.02
QP12058.23	Noblesse	Clearwater	Chieftain (C)	Roselys (C)
QP13031.01	Obama	Goldrush (C)	DR Chieftain (C)	
QP13099.04	QP12081.11	QP12115.03	Elmo	
QP13127.14	Vivaldi (C)	QP13094.03	Norland (C)	
Superior (C)	Yukon Gold (C)	QP13116.15	QP12058.36	
		Rickey	QP12058.45	
		River Russet	QP12058.48	
			QP12058.62	
			QP13071.28	
			QP13116.15	
			Viking (C)	

2.2. Experimental design

The experiment was conducted in a randomized complete block design with three replications. Plots with an area of 4.12 m² consisted of one row of 4.5 m spaced at 0.915 m.

2.3. Cultural operations

Plantation in Ste-Croix was done on May 18th and in L'Assomption on May 8th. Rows were open and fertilizer was applied using agricultural equipment. In Ste-Croix, 160 units of nitrogen, 160 units of phosphorus and 133 units of potassium was applied and in L'Assomption 204 N, 75 P and 245 K was incorporated. Potato tubers were hand planted at every 30 cm with a ruler (Figure 1). Rows were closed mechanically with disks after a simultaneous spraying of an insecticide and a fungicide on the tubers. The harvesting of experimental plots was done using a tractor and a one row harvester (Checchi & Magli SP 50V) on September 21st in L'Assomption and September 25th in Ste-Croix (Figure 2).



In L'Assomption, the plots were irrigated according to this schedule:

June 16 2020: 25 mm

June 19 2020: 25 mm

July 1 2020: 12 mm

July 6 2020: 30 mm

July 15 2020: 25 mm

July 22 2020: 30 mm

July 27 2020: 25 mm

August 6 2020: 19 mm

August 11 2020: 25 mm

All agricultural operations performed on experimental plots were conducted similarly to what is done by commercial growers.





Figure 1. Plantation in Ste-Croix





Figure 2. Harvest in Ste-Croix



2.4. Measured parameters

Throughout the season, plant development was monitored. This included emergence, plant growth, flowering and senescence.

In the post-harvest evaluation, tubers were sized, using a potato-grading machine, into five size categories (Figure 3):

- Creamer: less than 1 ½ in. (38 mm)
- Small: 1 ½ in. to 2 ¼ in. (57 mm)
- Canada No. 1: 2 ¼ in. to 2 ¾ in. (70 mm)
- Chef: 2 ¾ in. to 4 ½ in. (114 mm)
- Jumbo: greater than 4 ½ in

Tubers normally rejected by the industry (green, misshapen, cracked and rotten) were removed manually. The quantity and weight of the rejected tubers were recorded.

For external quality, the index of rhizoctonia and scab was determined using the same evaluation key used by the Canadian Food Inspection Agency (CFIA) (Figure 4). This key includes five categories based on the percentage of disease coverage, 0 (0%) 1 (1%), 2 (1-5%), 3 (5-10%) and 4 (> 10%). For each plot, ten medium-sized tubers were randomly selected and used to determine the index of rhizoctonia and scab. Internal quality, including hollow heart, brown center, as well as vascular ring discoloration, was examined by cutting open a sample of 10 randomly selected tubers.

The appearance and uniformity of the tubers were scored according predefined scales. For appearance, a rating from 1 to 9 was given, 1 corresponding to very unattractive potatoes and 9 to very attractive potatoes. As for uniformity, it was evaluated using a scale of 1 to 5, with 1 for tubers showing very little uniformity and 5 very uniform.

The specific gravity of all potato plots was measured (Figure 5). To do this, a sample of potatoes was weighed in air and noted. Then, the same sample was weighed in water and noted. The specific gravity was then calculated according to the following formula: weight in air / (weight in air – weight in water).



The genotypes in the Ste-Croix trial were evaluated for their chip and french fry aptitude (Figures 6 and 7). For potato chip testing (color), a composite sample of three replications was tested at the Progest 2001 laboratory on November 19th. For potato chip color, a chart from the Snack Food Association (Snack Food Association Standards Reference Color Chart for Potato Chips) was used. Value 1 means that the chips are white, while 6 indicates that they are dark brown. Each score, from 1 to 6, has an equivalent value obtained with an Agtron:

- 1 : >88
- 2 : 75-88
- 3 : 56-75
- 4 : 45-56
- 5 : 30-45
- 6 : <30

French fry color was measured using the *Color Standards for Frozen French Fried Potatoes* from the USDA. This chart illustrates values ranging from 000 to 4, 000 being very white fries and 4 for dark brown fries.

Statistic analysis, using Statistix 10.0 program, was used for the yield, as well as the internal and external quality for the two sites.



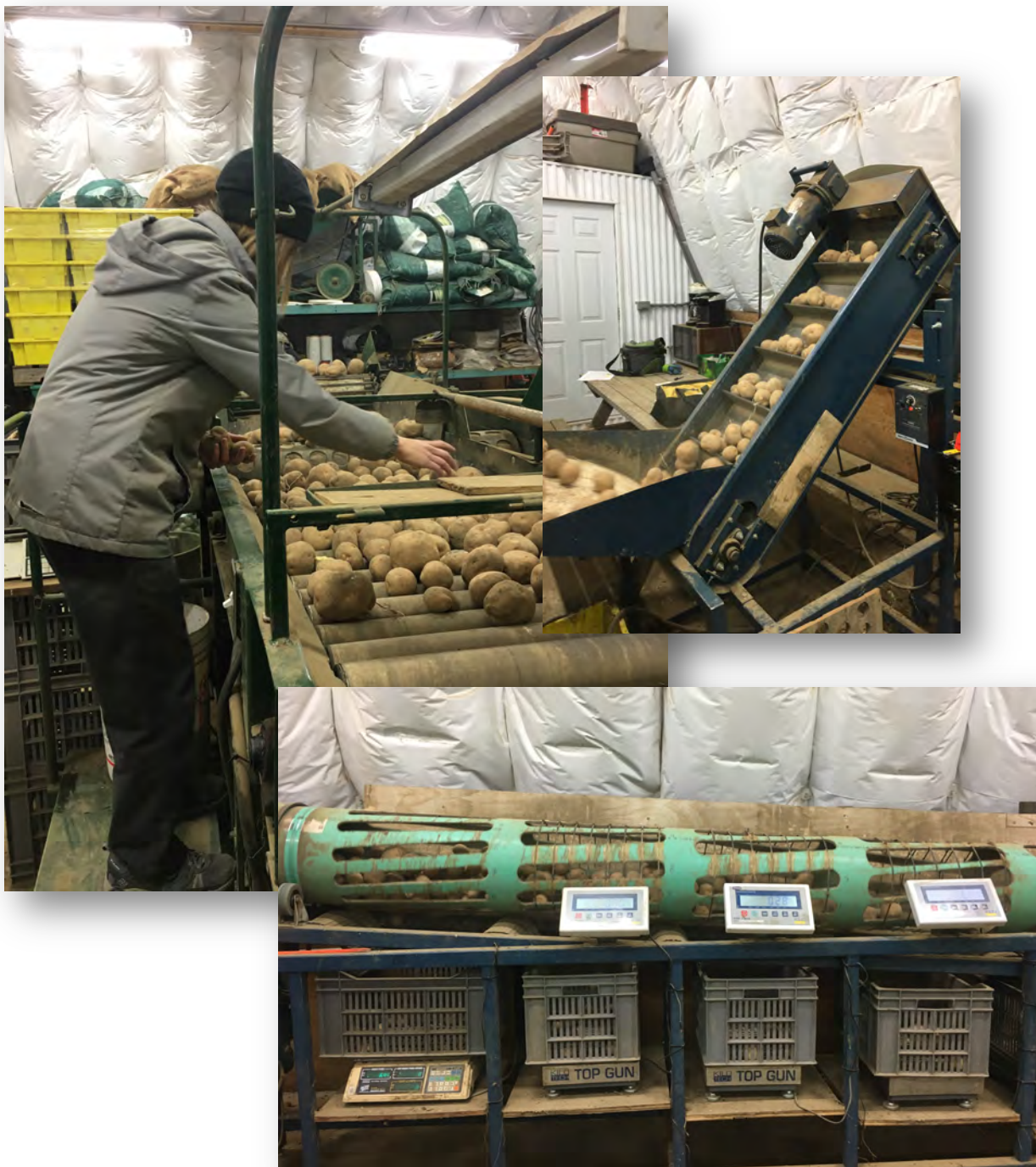


Figure 3. Potato grading





Figure 4. External and internal quality evaluation





Figure 5. Specific gravity evaluation





Figure 6. Tuber slicing





Figure 7. Chips cooking



3. RESULTS

3.1. White round potatoes

3.1.1. Ste-Croix

- Two QP clones (QP13127.14 and QP12056.16) gave a total yield higher than the 3 control varieties (Table II).
- Only the variety Nougat generated a total yield significantly lower ($P < 0.05$) than the other round and white potato genotypes.
- The clone QP13099.04 generated an important amount of downgraded tubers (12 % of its total yield), mostly because of growth cracks.
- The 2 clones with the highest total yield, QP13127.14 and QP12056.16, show an important internal defect with respectively 33 % and 47 % of their tubers affected by the hollow heart (Table III). This internal disorder is often associated with a period of stress, especially water and heat stress.
- Except for the clones mentioned at the previous point, external and internal quality was exceptional for all the other genotypes.
- Specific gravity was high for half of the genotypes, with a value greater than 1.086. For the processing market (chips and fries), the combination of a high specific gravity and a low concentration of reducing sugars in potato tubers helps give chips and fries a desired texture and a pale color considered attractive. Also, a high specific gravity avoids high oil consumption during cooking.

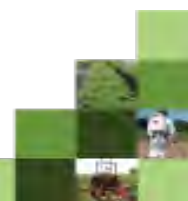


Table II. Yield of genotypes in the “white round potatoes” category in Ste-Croix

Genotype	Total (cwt/a)	Creamer <1½ " (cwt/a)	Small 1½-2¼ " (cwt/a)	Canada No 1 2¼-2¾ " (cwt/a)	Chef 2¾-4½ " (cwt/a)	Downgraded (cwt/a)
QP13127.14	437.7 a	2.1 b	85.9 ab	190.74 a	155.37 abcd	3.5 a
QP12056.16	413.6 a	6.2 b	75.8 ab	149.88 abc	179.19 ab	2.5 a
Envol (C)	400.7 a	4.7 b	26.7 b	109.45 bc	254.42 a	5.5 a
Superior (C)	398.2 a	3.9 b	43.8 b	125.34 abc	206.63 ab	18.6 a
Mystère (C)	389.4 a	5.1 b	86.4 ab	171.97 abc	124.03 abcd	1.9 a
QP13099.04	364.9 a	6.5 b	52.9 b	105.26 c	158.26 abc	42.2 a
QP13031.01	348.4 a	5.1 b	40.0 b	114.5 bc	183.52 ab	5.3 a
QP12058.23	343.8 a	18.9 a	126.2 a	175.87 ab	22.81 d	0 a
Alliston	308.9 ab	2.9 b	40.1 b	149.88 abc	101.8 bcd	14.3 a
Nougat	212.7 b	3.3 b	47.9 b	111.9 bc	44.47 cd	5.1 a

Data are the means of three replications (one row/replication)

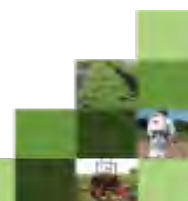
Data followed by a different letter in the same column are significantly different ($P < 0.05$) according to the Tukey test

Table III. Quality of the genotypes in the “white round potatoes” category in Ste-Croix

Genotype	Hollow Heart (%)	Brown Center (%)	Vascular Ring (%)	Scab (index) 0-15	Rhizoctonia (index) 0-15	Appearance (1-9)	Uniformity (1-5)	Specific gravity
QP13127.14	33.3 a	0.0 a	0.0 a	0.03 a	0.00 a	7.1 a	4.0 a	1.085 bc
QP12056.16	46.7 a	0.0 a	0.0 a	0.00 a	0.00 a	6.9 ab	3.5 ab	1.098 a
Envol (C)	0.0 b	0.0 a	0.0 a	0.03 a	0.03 a	6.4 ab	3.1 ab	1.087 bc
Superior (C)	3.3 b	0.0 a	0.0 a	0.00 a	0.00 a	6.4 ab	3.0 ab	1.086 bc
Mystère (C)	0.0 b	0.0 a	3.3 a	0.00 a	0.00 a	6.2 b	2.8 b	1.090 ab
QP13099.04	0.0 b	0.0 a	0.0 a	0.07 a	0.00 a	6.0 b	2.8 b	1.074 d
QP13031.01	3.3 b	0.0 a	0.0 a	0.17 a	0.00 a	6.8 ab	3.6 ab	1.087 bc
QP12058.23	0.0 b	0.0 a	0.0 a	0.00 a	0.00 a	7.2 a	3.9 a	1.083 bcd
Alliston	0.0 b	0.0 a	0.0 a	0.13 a	0.50 a	6.3 ab	2.8 b	1.084 bc
Nougat	0.0 b	0.0 a	0.0 a	0.17 a	0.00 a	7.2 a	3.8 ab	1.079 cd

Data are the means of three replications (one row/replication)

Data followed by a different letter in the same column are significantly different ($P < 0.05$) according to the Tukey test



3.1.2. L'Assomption

- Yields are considerably lower in L'Assomption compared to the same genotypes evaluated in Ste-Croix (Table IV). It should be noted that we observed leaf yellowing followed by browning and necrosis on plants of several plots in August. After analysis, those symptoms were attributed to *Verticillium* fungus and root lesion nematodes, causing the early dying complex.
- As observed in Ste-Croix, clones QP12056.16 and QP13127.14 generated the highest total yield. Also observed in Ste-Croix, those clones showed a susceptibility to hollow heart (Table V).
- Some varieties showed a high percentage of vascular ring discoloration. This internal disorder is often observed on tubers affected with *verticillium* wilt.
- Compared to what was observed in Ste-Croix, specific gravity was lower in L'Assomption for every genotype.

Table IV. Yield of genotypes in the “white round potatoes” category in L'Assomption

Genotype	Total (cwt/a)	Creamer <1½ " (cwt/a)	Small 1½-2¼ " (cwt/a)	Canada No 1 2¼-2¾ " (cwt/a)	Chef 2¾-4½ " (cwt/a)	Downgraded (cwt/a)
QP12056.16	379.9 a	24.6 ab	119.4 a	155.4 ab	67.1 a	13.4 a
QP13127.14	323.1 ab	15.0 ab	90.5 abc	177.8 a	36.5 a	3.3 a
QP13099.04	246.2 bc	11.6 ab	64.8 bcd	99.5 cd	54.6 a	15.7 a
QP12058.23	242.4 bcd	29.0 a	101.4 ab	102.8 bcd	3.9 a	5.4 a
Mystère (C)	229.7 bcd	9.5 b	71.2 bcd	128.8 abc	12.3 a	8.0 a
QP13031.01	166.9 cd	22.3 ab	58.9 cd	56.2 d	18.2 a	11.3 a
Nougat	164.9 cd	13.9 ab	76.0 bcd	73.8 d	0.0 a	1.3 a
Alliston	158.6 cd	8.3 b	55.3 cd	71.3 d	20.6 a	3.0 a
Envol (C)	149.1 cd	25.7 ab	61.1 cd	51.0 d	0.0 a	11.3 a
Superior (C)	138.8 d	8.4 b	38.6 d	64.8 d	19.5 a	7.5 a

Data are the means of three replications (one row/replication)

Data followed by a different letter in the same column are significantly different ($P < 0.05$) according to the Tukey test



Table V. Quality of the genotypes in the “white round potatoes” category in L’Assomption

Genotype	Hollow Heart (%)	Brown Center (%)	Vascular Ring (%)	Scab (index) 0-15	Rhizoctonia (index) 0-15	Appearance (1-9)	Uniformity (1-5)	Specific gravity
QP12056.16	3.3 a	0.0 a	0.0 a	0.03 a	0.00 a	7.0 a	3.8 a	1.075 a
QP13127.14	6.7 a	0.0 a	0.0 a	0.07 a	0.03 a	6.7 ab	3.9 a	1.066 ab
QP13099.04	0.0 a	0.0 a	6.7 a	1.20 a	0.00 a	6.4 ab	3.3 a	1.058 b
QP12058.23	0.0 a	0.0 a	0.0 a	0.07 a	0.03 a	7.0 a	3.8 a	1.063 ab
Mystère (C)	0.0 a	3.3 a	23.3 a	0.17 a	0.00 a	5.8 b	2.9 a	1.066 ab
QP13031.01	0.0 a	0.0 a	0.0 a	0.60 a	0.00 a	6.3 ab	3.5 a	1.059 b
Nougat	0.0 a	0.0 a	0.0 a	0.10 a	0.00 a	6.8 ab	3.8 a	1.053 b
Alliston	0.0 a	3.3 a	0.0 a	0.23 a	0.00 a	6.8 ab	3.8 a	1.059 b
Envol (C)	0.0 a	0.0 a	6.7 a	0.33 a	0.00 a	6.5 ab	3.2 a	1.054 b
Supérieure (C)	0.0 a	10.0 a	13.3 a	0.00 a	0.00 a	6.5 ab	3.5 a	1.053 b

Data are the means of three replications (one row/replication)

Data followed by a different letter in the same column are significantly different ($P < 0.05$) according to the Tukey test

3.2. Yellow flesh potatoes

3.2.1. Ste-Croix

- Most of the yellow flesh clones and varieties obtained more than 400 cwt/a (Table VI).
- Belmonda generated a total yield significantly higher (558 cwt/a) than 2 control varieties, namely Keuka Gold and Yukon Gold.
- The variety Yukon Gold generated an important amount of downgraded tubers (12 %), mostly because of misshapen and growth cracked tubers.
- Yukon Gold and QP12081.11 generated respectively 43 % and 17 % of hollow heart (Table VII).
- Belmonda is the only variety with a high specific gravity with a value of 1.092.

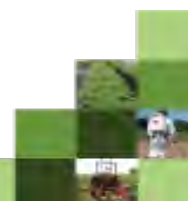


Table VI. Yield of genotypes in the “yellow flesh potatoes” category in Ste-Croix

Genotype	Total (cwt/a)	Creamer <1½ " (cwt/a)	Small 1½-2¼ " (cwt/a)	Canada No 1 2¼-2¾ " (cwt/a)	Chef 2¾-4½ " (cwt/a)	Downgraded (cwt/a)
Belmonda	557.9 a	10.1 ab	96.9 b	234.6 ab	205.2 ab	11.1 ab
Obama	477.2 ab	12.7 ab	55.6 cd	256.7 a	133.1 bc	19.1 ab
Vivaldi (C)	465.7 abc	12.8 ab	30.8 d	271.0 a	149.7 abc	1.4 b
Confederation	460.2 abc	18.6 ab	82.5 bc	198.1 abc	141.4 abc	19.7 ab
Noblesse	446.0 abc	28.9 a	138.2 a	241.1 a	22.5 d	15.2 ab
Connect	421.7 abc	18.4 ab	93.1 bc	176.3 abc	105.8 cd	28.0 ab
QP12081.11	402.0 bc	31.5 a	63.5 bcd	254.3 a	31.9 d	20.8 ab
401-1	396.3 bc	4.4 b	24.0 d	257.7 a	94.4 cd	15.7 ab
Keuka Gold (C)	387.1 bc	5.3 b	40.6 d	113.8 bc	221.6 a	5.8 ab
Yukon Gold (C)	329.6 c	3.8 b	26.0 d	93.7 c	168.1 abc	38.0 a

Data are the means of three replications (one row/replication)

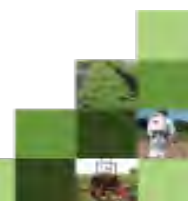
Data followed by a different letter in the same column are significantly different ($P < 0.05$) according to the Tukey test

Table VII. Quality of the genotypes in the “yellow flesh potatoes” category in Ste-Croix

Genotype	Hollow Heart (%)	Brown Center (%)	Vascular Ring (%)	Scab (index) 0-15	Rhizoctonia (index) 0-15	Appearance (1-9)	Uniformity (1-5)	Specific gravity
Belmonda	3.3 c	0.0 a	0.0 a	0.07 a	0.0 a	7.1 a	3.8 a	1.092 a
Obama	0.0 c	0.0 a	0.0 a	0.03 a	0.0 a	6.2 a	3.3 ab	1.075 cde
Vivaldi (C)	0.0 c	0.0 a	6.7 a	0.67 a	0.0 a	6.5 a	3.3 ab	1.074 de
Confederation	0.0 c	0.0 a	6.7 a	0.33 a	0.0 a	6.8 a	3.8 a	1.079 bcde
Noblesse	0.0 c	0.0 a	3.3 a	0.00 a	0.0 a	7.0 a	3.8 a	1.081 bcd
Connect	0.0 c	0.0 a	0.0 a	0.07 a	0.0 a	6.8 a	3.5 a	1.085 ab
QP12081.11	16.7 b	0.0 a	3.3 a	0.33 a	0.0 a	6.3 a	3.7 a	1.079 bcde
401-1	0.0 c	0.0 a	0.0 a	1.00 a	0.0 a	6.2 a	3.0 ab	1.071 e
Keuka Gold (C)	0.0 c	0.0 a	0.0 a	0.07 a	0.0 a	6.9 a	3.8 a	1.083 abc
Yukon Gold (C)	43.3 a	3.3 a	3.3 a	0.10 a	0.0 a	6.2 a	2.5 b	1.081 bcd

Data are the means of three replications (one row/replication)

Data followed by a different letter in the same column are significantly different ($P < 0.05$) according to the Tukey test



3.2.2. L'Assomption

- The variety Belmonda gave the highest total yield with approximately 350 cwt/a (Table VIII). This yellow flesh variety was also number one in terms of yield in Ste-Croix.
- As observed in the “white round” potatoes, some genotypes presented a higher percentage of vascular ring discoloration (Table IX).
- External quality was good for all genotype with very low scab indexes and no apparent rhizoctonia.
- No genotype reaches a specific gravity high enough for a processing purpose.

Table VIII. Yield of genotypes in the “yellow flesh potatoes” category in L'Assomption

Genotype	Total (cwt/a)	Creamer <1½ " (cwt/a)	Small 1½-2¼ " (cwt/a)	Canada No 1 2¼-2¾ " (cwt/a)	Chef 2¾-4½ " (cwt/a)	Downgraded (cwt/a)
Belmonda	353.6 a	23.4 ab	108.0 a	148.9 a	53.9 ab	19.5 ab
Connect	303.5 ab	54.4 a	95.3 ab	92.7 a	29.0 b	32.1 a
Confederation	276.4 abc	36.0 ab	106.9 a	114.1 a	7.8 b	11.7 ab
Obama	271.8 abc	15.7 b	75.2 abc	129.5 a	39.6 b	11.8 ab
QP12081.11	268.6 abc	31.3 ab	96.7 ab	111.5 a	0.0 b	29.1 ab
Keuka Gold (C)	259.1 abc	7.6 b	41.4 c	95.7 a	111.0 a	3.3 ab
Vivaldi (C)	251.0 abc	37.0 ab	74.8 abc	116.2 a	10.4 b	12.6 ab
Noblesse	227.9 bc	28.3 ab	100.6 ab	97.2 a	0.0 b	1.8 b
Yukon Gold (C)	182.4 c	4.7 b	35.4 c	72.6 a	58.5 ab	11.3 ab
401-1	162.2 c	32.3 ab	54.4 bc	66.1 a	0.0 b	9.3 ab

Data are the means of three replications (one row/replication)

Data followed by a different letter in the same column are significantly different ($P < 0.05$) according to the Tukey test



Table IX. Quality of the genotypes in the “yellow flesh potatoes” category in L’Assomption

Genotype	Hollow Heart (%)	Brown Center (%)	Vascular Ring (%)	Scab (index) 0-15	Rhizoctonia (index) 0-15	Appearance (1-9)	Uniformity (1-5)	Specific gravity
Belmonda	0.0 a	0.0 a	0.0 a	0.20 a	0.00 a	6.7 a	3.3 a	1.076 a
Connect	0.0 a	0.0 a	3.3 a	0.00 a	0.00 a	6.8 a	3.8 a	1.066 abc
Confederation	0.0 a	0.0 a	20.0 a	0.37 a	0.00 a	6.8 a	3.8 a	1.063 bc
Obama	0.0 a	0.0 a	3.3 a	0.10 a	0.00 a	6.3 a	3.3 a	1.065 bc
QP12081.11	0.0 a	0.0 a	3.3 a	0.50 a	0.00 a	6.2 a	3.8 a	1.066 abc
Keuka Gold (C)	3.3 a	3.3 a	0.0 a	0.03 a	0.00 a	7.0 a	4.0 a	1.062 bc
Vivaldi (C)	0.0 a	0.0 a	0.0 a	0.90 a	0.00 a	6.6 a	3.7 a	1.061 bc
Noblesse	0.0 a	0.0 a	23.3 a	0.17 a	0.00 a	6.8 a	3.7 a	1.063 bc
Yukon Gold (C)	0.0 a	3.3 a	0.0 a	0.00 a	0.00 a	6.3 a	3.5 a	1.070 ab
401-1	0.0 a	0.0 a	3.3 a	0.43 a	0.00 a	6.5 a	3.7 a	1.057 c

Data are the means of three replications (one row/replication)

Data followed by a different letter in the same column are significantly different ($P < 0.05$) according to the Tukey test

3.3. Long potatoes

3.3.1. Ste-Croix

- Except for Clearwater, all clones and varieties gave a total yield higher than the control variety Goldrush (Table X).
- Most of the genotypes generated a total yield higher than 400 cwt/a.
- Both River Russet and Goldrush produced high amounts of misshapen tubers.
- Several varieties (7 out of 13) showed signs of susceptibility to hollow heart (Table XI).
- Mostly intended for the processing market, the long shaped potatoes should present a high specific gravity. Results show that 9 genotypes generated a high specific gravity (≥ 1.086).

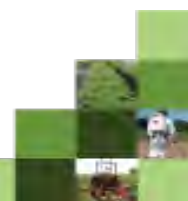


Table X. Yield of genotypes in the “long potatoes” category in Ste-Croix

Genotype	Total (cwt/a)	Creamer <1½ " (cwt/a)	Small 1½-2 " (cwt/a)	Canada No 1 2-2¾ " (cwt/a)	Chef 2¾-4½ " (cwt/a)	Downgraded (cwt/a)
AR2018-02	570.6 a	10.8 abcd	36.0 ab	292.0 a	211.0 ab	21.7 bc
Campagna	558.2 a	8.5 bcd	32.5 ab	274.0 a	229.9 a	14.3 bc
QP12115.03	496.9 ab	20.3 ab	57.6 ab	252.8 a	136.9 abc	29.3 bc
QP13116.15	493.8 ab	18.4 abc	43.2 ab	302.4 a	117.4 abc	12.5 bc
AR2018-03	490.8 ab	5.7 d	59.1 ab	290.8 a	118.1 abc	17.0 bc
AR2018-4	487.2 ab	20.3 ab	57.5 ab	237.7 a	140.4 abc	31.4 bc
Rickey	463.2 ab	7.3 cd	26.7 b	238.0 a	182.1 abc	9.2 bc
River Russet	429.4 ab	8.8 bcd	49.0 ab	211.4 a	122.3 abc	37.9 ab
AR2018-01	421.5 ab	22.2 a	79.1 a	267.6 a	48.4 bc	4.2 c
QP13094.03	405.3 ab	5.1 d	24.8 b	189.4 a	152.8 abc	33.2 abc
AG1424.11	404.7 ab	10.2 abcd	44.3 ab	271.0 a	66.1 abc	13.0 bc
Goldrush (C)	384.6 ab	15.0 abcd	37.3 ab	175.9 a	91.6 abc	64.9 a
Clearwater	322.8 b	15.2 abcd	69.7 a	204.5 a	32.8 c	0.7 c

Data are the means of three replications (one row/replication)

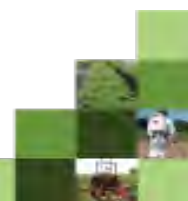
Data followed by a different letter in the same column are significantly different ($P < 0.05$) according to the Tukey test

Table XI. Quality of the genotypes in the “long potatoes” category in Ste-Croix

Genotype	Hollow Heart (%)	Brown Center (%)	Vascular Ring (%)	Scab (index) 0-15	Rhizoctonia (index) 0-15	Appearance (1-9)	Uniformity (1-5)	Specific gravity
AR2018-02	0.0 b	0.0 a	0.0 a	0.00 a	0.00 a	6.5 abc	3.3 ab	1.084 abcd
Campagna	23.3 ab	0.0 a	0.0 a	0.33 a	0.00 a	7.2 a	4.0 a	1.079 cd
QP12115.03	0.0 b	0.0 a	0.0 a	0.23 a	0.00 a	6.8 ab	3.5 ab	1.086 abcd
QP13116.15	6.7 b	0.0 a	0.0 a	0.00 a	0.00 a	6.3 abc	3.0 b	1.087 abcd
AR2018-03	40.0 a	0.0 a	0.0 a	0.00 a	0.00 a	6.8 ab	3.5 ab	1.088 abc
AR2018-4	6.7 b	0.0 a	0.0 a	0.00 a	0.00 a	6.5 abc	3.0 b	1.090 ab
Rickey	0.0 b	0.0 a	0.0 a	0.00 a	0.00 a	6.7 abc	3.2 ab	1.086 abcd
River Russet	26.7 ab	0.0 a	0.0 a	0.00 a	0.00 a	6.5 abc	3.2 ab	1.076 d
AR2018-01	16.7 ab	0.0 a	0.0 a	0.17 a	0.03 a	6.2 bc	3.7 ab	1.091 ab
QP13094.03	26.7 ab	3.3 a	0.0 a	0.20 a	0.00 a	5.8 c	2.8 b	1.086 abcd
AG1424.11	0.0 b	0.0 a	0.0 a	0.03 a	0.16 a	6.8 ab	3.3 ab	1.095 a
Goldrush (C)	0.0 b	0.0 a	0.0 a	0.00 a	0.23 a	6.4 abc	3.0 b	1.083 bcd
Clearwater	0.0 b	0.0 a	0.0 a	0.00 a	0.00 a	6.3 abc	3.3 ab	1.090 ab

Data are the means of three replications (one row/replication)

Data followed by a different letter in the same column are significantly different ($P < 0.05$) according to the Tukey test



3.3.2. L'Assomption

- The AR genotype AR2018-02 obtained the greatest total yield (373 cwt/a) as observed in Ste-Croix (Table XII).
- As mentioned for the previous category, total yields and yields for the different sizes were lower than what we observed in Ste-Croix. At only 170 cwt/a, the control variety Goldrush obtained the lowest yields in the trial.
- Campagna generated a great proportion of misshapen tubers (15 %).
- Except for the vascular ring discoloration in the control variety Goldrush and in QP13116.15, external and internal quality was excellent for all genotypes (Table XIII).
- As observed for the other categories of genotypes tested in L'Assomption, specific gravity is low.

Table XII. Yield of genotypes in the “long potatoes” category in L'Assomption

Genotype	Total (cwt/a)	Creamer <1½ " (cwt/a)	Small 1½-2 " (cwt/a)	Canada No 1 2-2¾ " (cwt/a)	Chef 2¾-4½ " (cwt/a)	Downgraded (cwt/a)
AR2018-02	372.9 a	11.5 b	39.3 b	199.7 a	97.5 a	25.0 ab
Rickey	327.1 ab	11.6 b	33.4 b	186.3 ab	82.7 ab	13.1 b
Campagna	317.5 abc	16.9 ab	67.1 ab	166.6 abc	20.4 bc	46.5 a
AR2018-03	312.8 abcd	19.3 ab	58.9 ab	198.1 a	21.8 bc	14.7 ab
QP12115.03	300.7 abcd	45.6 a	83.3 ab	153.6 abcd	0.0 c	18.1 ab
QP13116.15	276.8 abcde	20.4 ab	56.7 ab	178.9 ab	7.4 c	13.5 b
AG1424.11	257.7 abcde	21.6 ab	82.2 ab	125.9 abcd	4.2 c	23.9 ab
AR2018-01	251.2 abcde	46.0 a	98.9 a	100.9 abcd	0.0 c	5.4 b
Clearwater	197.2 bcde	34.2 ab	84.3 ab	72.5 cd	3.2 c	3.0 b
AR2018-4	196.2 cde	35.3 ab	58.6 ab	95.4 abcd	0.0 c	6.9 b
QP13094.03	194.7 cde	11.9 b	51.6 ab	123.2 abcd	2.2 c	5.9 b
River Russet	183.5 de	16.4 ab	42.0 b	81.0 bcd	17.0 c	27.1 ab
Goldrush (C)	170.5 e	37.7 ab	60.6 ab	58.2 d	2.2 c	11.8 b

Data are the means of three replications (one row/replication)

Data followed by a different letter in the same column are significantly different ($P < 0.05$) according to the Tukey test



Table XIII. Quality of the genotypes in the “long potatoes” category in L’Assomption

Genotype	Hollow Heart (%)	Brown Center (%)	Vascular Ring (%)	Scab (index) 0-15	Rhizoctonia (index) 0-15	Appearance (1-9)	Uniformity (1-5)	Specific gravity
AR2018-02	0.0 a	0.0 a	0.0 b	0.00 a	0.00 a	6.9 a	3.5 a	1.068 abc
Rickey	0.0 a	0.0 a	0.0 b	0.00 a	0.00 a	6.3 a	3.3 a	1.063 c
Campagna	0.0 a	3.3 a	0.0 b	0.00 a	0.00 a	6.5 a	3.5 a	1.065 bc
AR2018-03	0.0 a	0.0 a	0.0 b	0.00 a	0.03 a	6.9 a	3.7 a	1.073 ab
QP12115.03	0.0 a	0.0 a	0.0 b	0.03 a	0.03 a	6.3 a	3.5 a	1.074 ab
QP13116.15	0.0 a	0.0 a	20.0 ab	0.00 a	0.17 a	6.8 a	3.7 a	1.065 bc
AG1424.11	0.0 a	0.0 a	0.0 b	0.00 a	0.00 a	6.3 a	3.4 a	1.075 a
AR2018-01	0.0 a	0.0 a	0.0 b	0.00 a	0.00 a	6.2 a	3.8 a	1.068 abc
Clearwater	0.0 a	3.3 a	3.3 b	0.00 a	0.00 a	6.7 a	3.4 a	1.073 ab
AR2018-4	0.0 a	0.0 a	3.3 b	0.10 a	0.10 a	6.5 a	3.5 a	1.068 abc
QP13094.03	0.0 a	3.3 a	0.0 b	0.00 a	0.03 a	6.0 a	3.3 a	1.065 bc
River Russet	0.0 a	0.0 a	0.0 b	0.00 a	0.00 a	6.0 a	2.7 a	1.062 c
Goldrush (C)	0.0 a	3.3 a	30.0 a	0.00 a	0.00 a	6.3 a	3.3 a	1.060 c

Data are the means of three replications (one row/replication)

Data followed by a different letter in the same column are significantly different ($P < 0.05$) according to the Tukey test

3.4. Red skin potatoes

3.4.1. Ste-Croix

- The control variety Chieftain gave the higher total yield with almost 600 cwt/a (Table XIV). The variety Elmo follow with a yield of 533 cwt/a.
- Viking generated an impressive amount of downgraded tubers (29 % of its total yield), mostly because of growth cracks. The clone QP13071.28 also gave several downgraded tubers because of misshapen tubers and growth cracks.
- Internal defects (hollow heart and brown center) have been detected in the clones QP13116.15, QP12058.62, AG1404.09 and AG1423.12 (Table XV).



Table XIV. Yield of genotypes in the “red skin potatoes” category in Ste-Croix

Genotype	Total (cwt/a)	Creamer <1½ " (cwt/a)	Small 1½-2¼ " (cwt/a)	Canada No 1 2¼-2¾ " (cwt/a)	Chef 2¾-4½ " (cwt/a)	Downgraded (cwt/a)
Chieftain (C)	593.4 a	15.8 bc	79.7 abcd	224.1 ab	253.8 a	20.0 bc
Elmo	533.1 a	10.0 c	68.9 bcd	214.3 ab	217.9 a	22.1 bc
Norland (C)	512.8 ab	6.1 c	70.8 abcd	159.0 abc	230.7 a	46.2 bc
QP13116.15	508.5 ab	14.5 bc	47.5 cd	268.4 a	139.6 abc	38.4 bc
AR2018-09	506.1 ab	18.1 bc	114.9 ab	198.4 abc	169.2 abc	5.5 bc
QP13071.28	499.3 ab	8.3 c	65.1 bcd	120.3 bc	250.1 a	55.5 b
AG1423.12	492.7 ab	36.2 a	117.3 ab	159.1 abc	158.8 abc	21.3 bc
QP12058.36	487.5 ab	15.5 bc	97.8 abc	180.1 abc	193.2 ab	1.0 c
AG1404.09	457.7 ab	7.6 c	52.3 bcd	167.1 abc	207.4 a	23.5 bc
DR Chieftain	454.5 ab	6.6 c	83.2 abcd	197.2 abc	162.7 abc	4.8 bc
QP12058.45	434.0 ab	4.7 c	64.4 bcd	172.0 abc	188.6 ab	4.3 bc
QP12058.62	386.9 ab	29.9 ab	135.4 a	196.1 abc	25.1 bc	0.4 c
Viking (C)	377.1 ab	5.5 c	27.1 d	63.2 c	170.0 abc	111.2 a
QP12058.48	371.1 ab	10.7 c	82.9 abcd	160.7 abc	116.4 abc	0.4 c
AR2018-08	265.9 b	16.1 bc	101.8 abc	101.7 bc	8.5 c	37.8 bc

Data are the means of three replications (one row/replication)

Data followed by a different letter in the same column are significantly different ($P < 0.05$) according to the Tukey test



Table XV. Quality of the genotypes in the “red skin potatoes” category in Ste-Croix

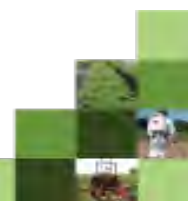
Genotype	Hollow Heart (%)	Brown Center (%)	Vascular Ring (%)	Scab (index) 0-15	Rhizoctonia (index) 0-15	Appearance (1-9)	Uniformity (1-5)	Specific gravity
Chieftain (C)	0.0 a	0.0 a	0.0 a	0.00 a	0.00 a	6.7 abc	3.3 abc	1.081 cdefg
Elmo	0.0 a	0.0 a	0.0 a	0.00 a	0.03 a	5.8 c	2.8 cd	1.074 fg
Norland (C)	0.0 a	0.0 a	0.0 a	0.00 a	0.00 a	6.0 bc	3.0 bcd	1.073 g
QP13116.15	10.0 a	0.0 a	3.3 a	0.00 a	0.00 a	6.0 bc	2.9 cd	1.085 bcdef
AR2018-09	0.0 a	0.0 a	0.0 a	0.00 a	0.00 a	6.8 abc	4.0 ab	1.088 abcd
QP13071.28	0.0 a	0.0 a	0.0 a	0.00 a	0.00 a	6.4 abc	3.4 abc	1.080 cdefg
AG1423.12	6.7 a	0.0 a	0.0 a	0.00 a	0.20 a	6.5 abc	3.6 abc	1.086 bcde
QP12058.36	0.0 a	0.0 a	0.0 a	0.00 a	0.00 a	6.5 abc	3.5 abc	1.089 abc
AG1404.09	3.3 a	13.3 a	0.0 a	0.00 a	0.00 a	7.0 ab	4.0 ab	1.077 efg
DR Chieftain	0.0 a	0.0 a	0.0 a	0.00 a	0.00 a	7.2 a	4.0 ab	1.080 cdefg
QP12058.45	0.0 a	3.3 a	0.0 a	0.00 a	0.07 a	7.0 abc	4.0 ab	1.098 a
QP12058.62	10.0 a	0.0 a	0.0 a	0.00 a	0.00 a	7.0 ab	4.2 a	1.089 abc
Viking (C)	3.3 a	0.0 a	0.0 a	0.00 a	0.00 a	4.7 d	2.2 d	1.077 defg
QP12058.48	0.0 a	0.0 a	0.0 a	0.00 a	0.00 a	7.0 ab	4.0 ab	1.096 ab
AR2018-08	0.0 a	0.0 a	0.0 a	0.00 a	0.17 a	6.3 abc	3.3 abc	1.073 g

Data are the means of three replications (one row/replication)

Data followed by a different letter in the same column are significantly different ($P < 0.05$) according to the Tukey test

3.4.2. L'Assomption

- Two clones, AG1404.09 and QP12058.36, obtained a greater total yield than the control variety Chieftain with respectively 305 cwt/a and 302 cwt/a (Table XVI).
- As shown in Ste-Croix, the variety Viking generated a high amount of downgraded potatoes mostly due to growth cracks on tubers.
- More than 13 % of brown center was noted for the clone QP12058.62 (Table XVII).
- Vascular ring discoloration was observed for several clones and varieties.
- Scab and rhizoctonia indexes were quite low for all genotypes.



- Low specific gravity was noted for all genotypes.

Table XVI. Yield of genotypes in the “red skin potatoes” category in L’Assomption

Genotype	Total (cwt/a)	Creamer <1½ " (cwt/a)	Small 1½-2¼ " (cwt/a)	Canada No 1	Chef	Downgraded (cwt/a)
				2¼-2¾ " (cwt/a)	2¾-4½ " (cwt/a)	
AG1404.09	305.0 a	8.7 c	95.6 ab	146.0 a	38.7 a	16.0 b
QP12058.36	301.5 a	17.8 bc	99.1 ab	135.6 a	42.9 a	6.2 b
Chieftain (C)	292.8 a	10.2 c	71.8 bc	140.5 a	59.8 a	10.5 b
QP12058.45	274.8 a	15.6 bc	72.1 bc	129.7 a	53.1 a	4.4 b
Elmo	271.9 a	27.7 abc	74.8 bc	110.9 ab	39.0 a	19.6 b
AR2018-09	271.8 a	15.3 bc	102.7 ab	124.2 a	17.9 a	11.8 b
Viking (C)	260.9 a	9.1 c	42.0 c	88.2 ab	33.9 a	87.5 a
QP13116.15	257.7 a	32.9 ab	64.1 bc	144.1 a	0.0 a	16.6 b
QP12058.48	253.9 a	13.8 bc	83.5 bc	113.2 ab	42.3 a	1.1 b
QP12058.62	243.1 ab	41.7 a	134.4 a	64.0 ab	0.0 a	3.0 b
DR Chieftain	229.8 ab	15.3 bc	85.9 bc	116.8 ab	6.1 a	5.7 b
QP13071.28	226.8 ab	18.4 bc	100.8 ab	69.6 ab	29.7 a	8.2 b
Norland (C)	178.8 ab	17.8 bc	74.9 bc	70.5 ab	2.2 a	13.4 b
AG1423.12	173.4 ab	33.1 ab	68.6 bc	68.9 ab	0.0 a	2.9 b
AR2018-08	119.7 b	17.6 bc	70.5 bc	27.7 b	0.0 a	3.9 b

Data are the means of three replications (one row/replication)

Data followed by a different letter in the same column are significantly different ($P < 0.05$) according to the Tukey test



Table XVII. Quality of the genotypes in the “red skin potatoes” category in L’Assomption

Genotype	Hollow Heart (%)	Brown Center (%)	Vascular Ring (%)	Scab (index) 0-15	Rhizoctonia (index) 0-15	Appearance (1-9)	Uniformity (1-5)	Specific gravity
AG1404.09	0.0 a	0.0 b	0.0 b	0.30 a	0.00 a	6.5 ab	3.5 ab	1.060 def
QP12058.36	0.0 a	0.0 b	3.3 b	0.57 a	0.00 a	6.4 abc	3.5 ab	1.073 abc
Chieftain (C)	0.0 a	0.0 b	0.0 b	0.37 a	0.00 a	6.7 ab	3.7 ab	1.057 ef
QP12058.45	0.0 a	0.0 b	0.0 b	0.27 a	0.00 a	6.6 ab	3.6 ab	1.078 a
Elmo	0.0 a	0.0 b	10.0 b	1.03 a	0.00 a	5.7 cd	3.1 bc	1.055 f
AR2018-09	0.0 a	0.0 b	10.0 b	0.30 a	0.00 a	6.5 ab	3.5 ab	1.063 de
Viking (C)	0.0 a	0.0 b	3.3 b	0.87 a	0.00 a	5.2 d	2.7 c	1.065 de
QP13116.15	0.0 a	0.0 b	33.3 a	0.43 a	0.00 a	6.0 bc	3.2 bc	1.068 bcd
QP12058.48	0.0 a	0.0 b	0.0 b	0.23 a	0.00 a	7.0 a	4.0 a	1.076 ab
QP12058.62	0.0 a	13.3 a	3.3 b	0.13 a	0.10 a	6.6 ab	3.7 ab	1.064 de
DR Chieftain	0.0 a	0.0 b	20.0 ab	0.70 a	0.00 a	7.0 a	4.0 a	1.059 ef
QP13071.28	0.0 a	0.0 b	0.0 b	0.23 a	0.00 a	6.3 abc	3.3 abc	1.064 de
Norland (C)	0.0 a	0.0 b	13.3 ab	0.40 a	0.00 a	6.0 bc	3.3 abc	1.058 ef
AG1423.12	0.0 a	0.0 b	3.3 b	0.20 a	0.07 a	6.0 bc	3.5 ab	1.062 def
AR2018-08	0.0 a	0.0 b	0.0 b	0.17 a	0.00 a	6.8 ab	3.8 ab	1.065 cde

Data are the means of three replications (one row/replication)

Data followed by a different letter in the same column are significantly different ($P < 0.05$) according to the Tukey test

3.5. Specialities potatoes

3.5.1. Ste-Croix

- The control variety Roselys gave the highest total yield with approximately 500 cwt/a (Table XVIII). However, several tubers with growth cracks were observed for this variety.
- With most of its tubers under 2¼ " and its red-purple colour, clone AG1405.15 can be described as a specialty creamer.
- As observed in the other categories, multiple genotypes generated a high amount of hollow heart (Table XIX).



Table XVIII. Yield of genotypes in the “specialties potatoes” category in Ste-Croix

Genotype	Total (cwt/a)	Creamer <1½ " (cwt/a)	Small 1½-2¼ " (cwt/a)	Canada No 1 2¼-2¾ " (cwt/a)	Chef 2¾-4½ " (cwt/a)	Downgraded (cwt/a)
Roselys (C)	492.4 a	12.3 b	27.4 c	103.2 b	294.7 a	54.7 a
AG1425.05	460.0 a	15.2 b	59.5 bc	331.7 a	47.5 c	6.1 c
AG1405.01	440.4 a	4.1 b	23.0 c	114.2 b	259.0 ab	40.0 ab
QP12145.02	429.6 ab	10.4 b	75.5 bc	188.6 b	131.7 bc	23.4 bc
AG1405.15	410.9 ab	138.8 a	141.1 a	116.2 b	0.6 c	14.3 bc
AG1425.11	313.4 b	21.4 b	89.4 ab	155.1 b	43.5 c	4.1 c

Data are the means of three replications (one row/replication)

Data followed by a different letter in the same column are significantly different ($P < 0.05$) according to the Tukey test

Table XIX. Quality of the genotypes in the “specialties potatoes” category in Ste-Croix

Genotype	Hollow Heart (%)	Brown Center (%)	Vascular Ring (%)	Scab (index) 0-15	Rhizoctonia (index) 0-15	Appearance (1-9)	Uniformity (1-5)	Specific gravity
Roselys (C)	20.0 a	0.0 a	0.0 a	0.23 a	0.0 a	6.7 a	3.3 a	1.082 b
AG1425.05	20.0 a	0.0 a	6.7 a	0.00 a	0.0 a	6.9 a	3.5 a	1.078 b
AG1405.01	16.7 a	0.0 a	0.0 a	0.07 a	0.0 a	6.5 a	3.3 a	1.092 a
QP12145.02	0.0 b	0.0 a	0.0 a	0.03 a	0.0 a	6.3 a	3.5 a	1.079 b
AG1405.15	0.0 b	0.0 a	0.0 a	0.03 a	0.0 a	7.0 a	4.0 a	1.092 a
AG1425.11	0.0 b	0.0 a	3.3 a	0.00 a	0.0 a	6.3 a	3.3 a	1.079 b

Data are the means of three replications (one row/replication)

Data followed by a different letter in the same column are significantly different ($P < 0.05$) according to the Tukey test

3.5.2. L'Assomption

- The control variety Roselys generated the utmost total yield (as observed in Ste-Croix) with 310 cwt/a (Table XX).
- Exceptional internal and external quality was observed for all genotypes in this category in L'Assomption (Table XXI).



Table XX. Yield of genotypes in the “specialties potatoes” category in L’Assomption

Genotype	Total (cwt/a)	Creamer <1½ " (cwt/a)	Small 1½-2¼ " (cwt/a)	Canada No 1 2¼-2¾ " (cwt/a)	Chef 2¾-4½ " (cwt/a)	Downgraded (cwt/a)
Roselys (C)	309.9 a	10.3 b	38.0 b	118.7 a	132.0 a	10.9 a
AG1425.05	221.9 b	40.1 ab	61.7 ab	108.9 ab	1.9 b	9.4 a
AG1405.01	209.5 b	9.1 b	42.5 b	91.1 ab	50.5 ab	16.4 a
AG1405.15	203.4 b	74.7 a	112.8 a	14.2 b	0.0 b	1.8 a
AG1425.11	202.0 b	39.9 ab	70.5 ab	90.1 ab	0.0 b	1.5 a
QP12145.02	201.5 b	30.1 b	77.0 ab	87.9 ab	0.0 b	6.5 a

Data are the means of three replications (one row/replication)

Data followed by a different letter in the same column are significantly different ($P < 0.05$) according to the Tukey test

Table XXI. Quality of the genotypes in the “specialties potatoes” category in L’Assomption

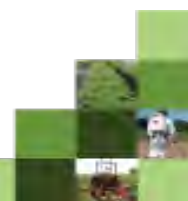
Genotype	Hollow Heart (%)	Brown Center (%)	Vascular Ring (%)	Scab (index) 0-15	Rhizoctonia (index) 0-15	Appearance (1-9)	Uniformity (1-5)	Specific gravity
Roselys (C)	0.0 a	0.0 a	0.0 a	0.07 a	0.00 a	6.2 b	3.7 a	1.068 bc
AG1425.05	0.0 a	0.0 a	0.0 a	0.03 a	0.00 a	7.0 a	4.0 a	1.061 c
AG1405.01	3.3 a	0.0 a	0.0 a	0.00 a	0.00 a	6.9 a	3.8 a	1.066 bc
AG1405.15	0.0 a	0.0 a	0.0 a	0.00 a	0.00 a	7.0 a	3.8 a	1.078 a
AG1425.11	0.0 a	0.0 a	0.0 a	0.00 a	0.00 a	7.0 a	4.0 a	1.070 ab
QP12145.02	0.0 a	0.0 a	0.0 a	0.03 a	0.00 a	6.8 a	3.8 a	1.061 bc

Data are the means of three replications (one row/replication)

Data followed by a different letter in the same column are significantly different ($P < 0.05$) according to the Tukey test

3.6. Culinary tests

- For chips evaluation, Mystère acted as the control variety since it is used commercially for this market. Results show that Mystère received the highest note in terms of color with a value of 1 (Table XXII). No other genotype received a note close to Mystère.



- For the fries, the clone AR2018-1 and the variety Clearwater obtained the highest value (00) for the color.

Table XXII. Evaluation of chips and fries color on November 19th 2020

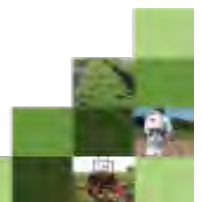
Genotype	Chips*	Fries**
	1 - 6	000 - 4
401-1		1
AG1404.09	6	
AG1405.01	4	
AG1405.15		1
AG1423.12	3	
AG1424.11		1
AG1425.05		0
AG1425.11	3	
Alliston	4	
AR2018-01		00
AR2018-02		3
AR2018-03		1
AR2018-08	4	
AR2018-09	4	
AR2018-4		1
Nougat	4	
Belmonda	5	
Campagna		2
Chieftain (C)	5	
Clearwater		00
Confederation	4.5	
Connect	6	
DR Chieftain (C)	5	
Elmo	6	
Envol (C)	3.5	
Goldrush (C)		0
Keuka Gold (C)	4	
Mystère (C)	1	
Noblesse	4.5	
Norland (C)	4	
Obama		1
QP12056.16	3	



QP12058.23	3
QP12058.36	4
QP12058.45	4
QP12058.48	3
QP12058.62	4
QP12081.11	3
QP12115.03	2
QP12145.02	3
QP13031.01	3
QP13071.28	3
QP13094.03	1
QP13099.04	5
QP13116.15	2
QP13116.15	2
QP13127.14	3.5
Rickey	1
River Russet	1
Roselys (C)	3.5
Superior (C)	4
Viking (C)	4.5
Vivaldi (C)	3
Yukon Gold (C)	4

* Snack Food Association charter (1=white; 6=brown)

**USDA charter (000=white; 4=brown)



4. RESULTS INTERPRETATION

- Total yields generated in Ste-Croix were high for the majority of the genotypes, regardless of the category.
- Total yields for the genotypes evaluated in L'Assomption were lower than Ste-Croix, probably due to Verticillium wilt and lesions nematodes.
- Several clones and varieties showed signs of susceptibility to hollow heart in Ste-Croix. This internal disorder is often associated with a period of stress, especially water and heat stress. It should be noted that low precipitations and multiple days with high temperature occurred during the 2020 season.
- Specific gravity was low for the majority of the clones in L'Assomption.
- Several genotypes presented a good potential regarding the yield and the quality, in both category and each site. Pictures of the potential genotypes along with the control varieties are shown in the next pages.
 - White round potatoes
 - QP13031.01 (Figure 8)
 - QP12058.23 (Figure 9)
 - Envol (C) (Figure 10)
 - Mystère (C) (Figure 11)
 - Superior (C) (Figure 12)
 - Yellow flesh potatoes
 - Belmonda (Figure 13)
 - Obama (Figure 14)
 - Confederation (Figure 15)
 - Noblesse (Figure 16)
 - Connect (Figure 17)
 - Keuka Gold (C) (Figure 18)
 - Vivaldi (C) (Figure 19)
 - Yukon Gold (C) (Figure 20)



- Long potatoes
 - QP12115.03 (Figure 21)
 - Rickey (Figure 22)
 - Goldrush (C) (Figure 23)

- Red skin potatoes
 - AR2018-9 (Figure 24)
 - QP12058.36 (Figure 25)
 - QP12058.45 (Figure 26)
 - Chieftain (C) (Figure 27)
 - Dark Red Chieftain (C) (Figure 28)
 - Norland (C) (Figure 29)
 - Viking (C) (Figure 30)

- Specialties potatoes
 - AG1405.15 (Figure 31)
 - QP12145.02 (Figure 32)
 - Roselys (C) (Figure 33)

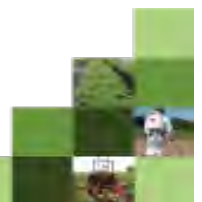




Figure 8. QP13031.01





Figure 9. QP12058.23





Figure 10. Envol (C)





Figure 11. Mystère (C)





Figure 12. Superior (C)





Figure 13. Belmonda





Figure 14. Obama





Figure 15. Confederation





Figure 16. Noblesse





Figure 17. Connect





Figure 18. Keuka Gold





Figure 19. Vivaldi (C)





Figure 20. Yukon Gold (C)





Figure 21. QP12115.03





Figure 22. Rickey





Figure 23. Goldrush (C)





Figure 24. AR2018-09





Figure 25. QP12058.36





Figure 26. QP12058.45





Figure 27. Chieftain (C)





Figure 28. Dark Red Chieftain (C)





Figure 29. Norland (C)





Figure 30. Viking (C)





Figure 31. AG1405.15





Figure 32. QP12145.02





Figure 33. Roselys (C)

