

# Ontario Cooperative Potato Variety Trials 2020



## Ontario Cooperative Potato Variety Trials 2020

### University of Guelph Trials

Acknowledgements and Introduction	2
Storage Chip tests 2019-2020	5
Maincrop chip lines	9
White/red skin & white flesh	10
Yellow flesh & specialty	11
Culinary tests	12

### On-Farm Trials

Acknowledgements and Introduction	13
Waterdown – Yellow section	17
Waterdown - White section	18
Waterdown - Russets section	19
Waterdown- Specialty section	21
Beeton – Yellow section	22
Beeton – White section	24
Beeton – Russets section	25
Beeton – Reds & Specialty section	26
Common scab trial report	27
Variety lists and seed sources	33

## **Acknowledgments**

**This project was funded through the Canadian Agricultural Partnership (the Partnership), a five-year federal-provincial-territorial initiative.**

Additional support is provided by the Ontario Potato Board, the Stuart Cairns Memorial Fund of the Canadian Snack Food Association, the Canadian Horticultural Council's Canadian AgriScience Cluster for Horticulture 3, the Ontario Ministry of Agriculture and Food through the Ontario Agri-Food Innovation Alliance, Agriculture and Agri-Food Canada Fredericton and Lethbridge Research Stations, and the University of Guelph, Department of Plant Agriculture. All support is greatly appreciated.

We wish to thank the Ontario Potato Board for their generous support, especially Kevin Brubacher, Terry Lippold, Shawn Brenn and Glen Squirrell, Kate Vanderzaag. Thanks to Mark Vanostrum and Patrick Dol at WD Potato and Homer Vanderzaag and Deb Martin for the use of the storage facilities and the YSI analyzer. Thank-you to David Dekoyer, Virginia Dickison and Erica Fava at AAFC Fredericton, and Sue Smienk AAFC Alberta. Thanks to Eugenia Banks for her contributions to this report. Many thanks for the promising selections from Dr. J. Endleman at University of Wisconsin, Dr. D. Douches at Michigan State University. Thanks to Dave Kells and his staff at the Elora Research Station, to Mary McLeod (Department of Plant Agriculture) for help with harvest. Thank-you to Dennis VanDyk for help and support. Thank-you to all our industry cooperators who provided seed for trials. Cover photo credit:Cam Shaw

**-Vanessa Currie with Dr Katerina Jordan and Dr. J. A. Sullivan**

For more information, please contact **Vanessa Currie** at the Department of Plant Agriculture, University of Guelph. Phone (519) 824-4120 extension 56160, [vcurrie@uoguelph.ca](mailto:vcurrie@uoguelph.ca) [twitter.com/GuelphPotato](https://twitter.com/GuelphPotato)

## **University of Guelph Potato Variety Trials 2020**

Like everything in 2020, the potato research program had to work within restrictions caused by the COVID-19 pandemic. We were fortunate to have the support of the partnership through CHC and made the necessary adjustments to the project that would be valuable and still work safely. The overall approach was a reduction in the size of the trials. We were not able to conduct the early maturing chip trial in Leamington, due to the lockdown in March and April. Everybody did their best to keep things running smoothly.

The growing season in 2020 started with a cold, wet spring including 6 inches of snow on May 12, but became oppressively hot in June. July and August brought several drenching rains. Trials included advanced breeding lines and early generation selections from the AAFC breeding programs. We had to omit French fry types this year but were able to focus on chip and fresh market lines. New commercial varieties, and promising selections from U.S. breeding programs in Michigan and Wisconsin were also grown. The early generation program selected 5 promising lines for chip and fresh market potential. These lines will be advanced in 2020.

The trials were grown at the University of Guelph, Elora Research Station, Elora, Ontario on a Conestoga Silt Loam soil type. Planting was done by hand from May 21 and 22. The field had previously been in soybeans. Replicated plots were single row wide, and 5-7 m long at 25cm spacing. Plots were fertilized with 20:10:10 at 800 lbs/ac at planting plus broadcast applications of 300kg/ha 0-20-20. In furrow Actara and Quadris were used. Herbicide application: pre-emergence Sencor + Dual Magnum. Fungicides were applied on schedule. Vines were killed with Reglone September 1. The trials were harvested mechanically from September 24 to October 2.

One of the biggest disappointments of 2020 was the cancellation of our annual field day. There were no tours of the Elora plots this year. We missed seeing our potato community and hearing your feedback on the new varieties. We sincerely hope to host you again soon.

**Temperature and precipitation in Elora 2020.**

<b>Rainfall</b>	<b>May</b>	<b>June</b>	<b>July</b>	<b>August</b>	<b>September</b>	<b>Total Rainfall 2020</b>	<b>10 year average rainfall</b>
<b>Inches</b>	2.2	2.4	2	2.8	3	12.3	15.6
<b>mm</b>	54.7	61.9	50	72.3	74.2	313.1	396.3
<b>Avg Temp C</b>	10.6	17.9	21.5	19.2	14.3		

**Yield:** Marketable yield recorded as 50.8 mm - 88.9mm (2 in to 3½ in). **Specific gravity:** weight-in-air, weight-in-water method.

**Chipping Score:** Agtron E30 FP/III Potato Analyzer <50 unacceptable, >50 acceptable, >55 excellent.

All chipping varieties are being stored at WD Potato Ltd and will be sampled throughout the winter and spring. We are lucky to have this cooperative partnership. Long term chip trial results for 2020-2021 will be available next year. Chip processing results from the 2019-2020 storage season are included in this report. Prior to the lockdown, we were fortunate to purchase an Agtron E30 FP/III Potato Analyzer for use in analyzing potato chip colour. We are still establishing the scale for acceptability of chip colour, but at this time and for this report, <50 unacceptable, >50 acceptable, >55 excellent.

**Table 1. Agtron E30-FP/III Potato Analyzer readings of chipping potato samples stored at a commercial facility 2019-2020.**

<b>Selection</b>	<b>December</b>	<b>January</b>	<b>February</b>	<b>March</b>	<b>June</b>
<b>F14028</b>	51.2	59.8	61	62.6	55.9
<b>F14031</b>	57.6	65	56.9	60.7	56.6
<b>VF14036</b>	NA	60.4	52.1	55.0	46.3
<b>VF14037</b>	48.6	54.8	49.7	51.0	53.5
<b>Vigor</b>	51	59	53.7	55.7	50.3
<b>Atlantic</b>	48.9	50.8	49.2	56.6	53.2
<b>Snowden</b>	53.2	62.8	61.4	57.9	47.0
<b>FV16324-08</b>	59.8	57.1	58.4	NA	51.9
<b>F15030</b>	51.2	57.9	54.2	62.8	57.8
<b>F15032</b>	54.4	54	57.5	57.7	53.5
<b>AAC Hamer</b>	56.6	56.3	58.9	50.9	55.9
<b>Lamoka</b>	60.5	54.2	63.4	59.9	59.7
<b>Mackinaw</b>	53.1	55.6	NA	58.9	52.3
<b>MSX156-1Y</b>	45.9	40.2	34.4	44.2	40.5
<b>MSZ022-07</b>	52.7	63	56.6	61.5	38.4
<b>MSZ120-4</b>	55.1	54.4	51.9	55.6	56.7
<b>MSZ219-01</b>	53.2	55.7	53.2	53.0	52.7
<b>MSZ219-13</b>	52.3	56.1	47.4	57.9	54.7
<b>MSZ219-14</b>	52.7	56	54.7	61.6	51.4
<b>MSZ222-19</b>	58.6	63.6	59.1	64.5	55.8

**Table 2. Specific Gravity scores of chipping potato samples stored at a commercial facility 2019-2020**

<b>Selection</b>	<b>December</b>	<b>January</b>	<b>February</b>	<b>March</b>	<b>June</b>
<b>F14028</b>	1.102	1.097	1.097	1.094	1.097
<b>F14031</b>	1.109	1.100	1.101	1.100	1.103
<b>VF14036</b>	1.102	1.090	1.093	1.094	1.095
<b>VF14037</b>	1.103	1.104	1.099	1.099	1.100
<b>Vigor</b>	1.089	1.089	1.083	1.085	1.086
<b>Atlantic</b>	1.100	1.106	1.095	1.091	1.091
<b>Snowden</b>	1.097	1.090	1.090	1.091	1.088
<b>FV16324-08</b>	1.095	1.091	1.086	1.088	1.083
<b>F15030</b>	1.094	1.101	1.094	1.097	1.089
<b>F15032</b>	1.106	1.097	1.100	1.097	1.097
<b>AAC Hamer</b>	1.096	1.089	1.091	1.089	1.080
<b>Lamoka</b>	1.098	1.088	1.099	1.096	1.086
<b>Mackinaw</b>	1.099	1.095	1.104	1.097	1.081
<b>MSX156-1Y</b>	1.083	1.079	1.078	1.074	1.075
<b>MSZ022-07</b>	1.090	1.083	1.079	NA	1.080
<b>MSZ120-4</b>	1.098	1.082	1.092	1.088	1.089
<b>MSZ219-01</b>	1.095	1.090	1.086	1.087	1.088
<b>MSZ219-13</b>	1.095	1.082	1.088	1.086	1.090
<b>MSZ219-14</b>	1.090	1.086	1.085	1.088	1.080
<b>MSZ222-19</b>	1.099	1.097	1.093	1.098	1.077

**Table 3. Sucrose (mg/g) scores of chipping potato samples stored at a commercial facility using YSI analysis 2019-2020.**

<b>Selection</b>	<b>December</b>	<b>January</b>	<b>February</b>
<b>F14028</b>	0.362	0.360	0.406
<b>F14031</b>	0.614	0.549	0.424
<b>VF14036</b>	0.779	0.878	0.591
<b>VF14037</b>	0.719	0.527	0.426
<b>Vigor</b>	0.703	0.708	0.583
<b>Atlantic</b>	0.516	0.473	0.512
<b>Snowden</b>	0.602	0.331	0.401
<b>FV16324-08</b>	0.440	0.309	0.295
<b>F15030</b>	0.502	0.360	0.325
<b>F15032</b>	0.424	0.316	0.347
<b>AAC Hamer</b>	0.446	0.431	0.344
<b>Lamoka</b>	0.746	0.560	0.494
<b>Mackinaw</b>	0.826	0.982	0.474
<b>MSX156-1Y</b>	0.814	0.552	0.402
<b>MSZ022-07</b>	0.410	0.267	0.299
<b>MSZ120-4</b>	0.605	0.593	0.451
<b>MSZ219-01</b>	0.411	0.366	0.437
<b>MSZ219-13</b>	0.481	0.256	0.406
<b>MSZ219-14</b>	0.396	0.337	0.422
<b>MSZ222-19</b>	0.313	0.241	0.414



**Table 4. Dextrose (mg/g) scores of chipping potato samples stored at a commercial facility using YSI analysis 2019-2020.**

<b>Selection</b>	<b>December</b>	<b>January</b>	<b>February</b>
<b>F14028</b>	0.130	0.093	0.057
<b>F14031</b>	0.047	0.023	0.033
<b>VF14036</b>	0.101	0.068	0.050
<b>VF14037</b>	0.023	0.009	0.005
<b>Vigor</b>	0.070	0.018	0.023
<b>Atlantic</b>	0.149	0.075	0.060
<b>Snowden</b>	0.061	0.018	0.022
<b>FV16324-08</b>	0.009	0.003	0.003
<b>F15030</b>	0.039	0.025	0.047
<b>F15032</b>	0.038	0.021	0.013
<b>AAC Hamer</b>	0.024	0.009	0.004
<b>Lamoka</b>	0.006	0.004	0.004
<b>Mackinaw</b>	0.024	0.149	0.007
<b>MSX156-1Y</b>	0.630	0.672	0.912
<b>MSZ022-07</b>	0.037	0.032	0.027
<b>MSZ120-4</b>	0.125	0.374	0.223
<b>MSZ219-01</b>	0.024	0.060	0.012
<b>MSZ219-13</b>	0.059	0.196	0.042
<b>MSZ219-14</b>	0.030	0.007	0.027
<b>MSZ222-19</b>	0.006	0.016	0.035

**Table 5. Performance of chipping selections at Elora Research Station 2020.**

Entry	Maturity	2-2 <sup>1/4</sup>	Yield cwt/ac		Specific Gravity	Agron E30 FP/III	Sucrose mg/g	Dextrose mg/g
			2 <sup>1/4</sup> to 3 <sup>1/2</sup>	> 3 <sup>1/2</sup>				
<b>Atlantic</b>	Mid	52	191	40	1.095	54.6	0.490	0.111
<b>CV10028-1</b>	Full-late	52	110	8	1.099	61.7	0.401	0.008
<b>F150985-04</b>	Early-mid	96	84	0	1.090	51.2	0.923	0.015
<b>F150992-06</b>	Mid	70	102	13	1.089	59.5	0.503	0.007
<b>F160032-06</b>	Mid	19	229	21	1.086	53.1	0.685	0.056
<b>F160032-16</b>	Mid-full	39	80	15	1.090	54.6	NA	NA
<b>FV16324-08</b>	Mid	88	146	14	1.089	50.0	0.690	0.129
<b>FV16475-16</b>	Mid	64	165	11	1.109	51.1	0.615	0.079
<b>FV16661-01</b>	Mid-full	90	181	10	1.093	57.6	0.331	0.250
<b>Lady Liberty</b>	Full	144	121	2	1.084	62.3	0.697	0.001
<b>Lamoka</b>	Full	133	181	13	1.088	60.7	0.756	0.008
<b>MSAA076-6</b>	Mid-full	89	181	15	1.094	54.3	0.543	0.006
<b>MSX225-2</b>	Full	99	132	6	1.094	53.4	0.609	0.005
<b>MSZ120-4</b>	Late	79	207	16	1.085	53.9	0.567	0.043
<b>MSZ219-13</b>	Late	44	227	19	1.088	50.4	0.584	0.019
<b>MSZ242-13</b>	Full	48	130	19	1.098	56.9	0.637	0.007
<b>Snowden</b>	Full	70	122	3	1.085	52.5	0.534	0.202
<b>Valley Crisp</b>	Mid-full	97	168	6	1.089	56.8	0.677	0.012
<b>Vigor</b>	Mid	51	178	0	1.086	55.7	0.569	0.078
<b>W12078-76</b>	late	73	176	20	1.094	54.3	0.543	0.006
<b>WV10655-1</b>	Full-late	14	157	93	1.082	52.6	0.345	0.250
<b>WV12099-1</b>	Mid	80	197	19	1.079	44.9	0.521	0.179

**Table 6. Performance of fresh market lines at Elora Research Station 2020.**

White skin/white flesh

Entry	Maturity	Yield cwt/ac			Specific gravity	Comments
		2-2 <sup>1/4</sup>	2 <sup>1/4</sup> to 3 <sup>1/2</sup>	> 3 <sup>1/2</sup>		
<b>MSV179-1</b>	Mid	34	163	48	1.091	very large, attractive, round, light flake skin, uniform run
<b>W9433-1Rus</b>	Mid-full	101	224	10	1.085	very large, good looks, oval-blocky, light flake tan skin, cream flesh
Red skin/white flesh						
<b>F16004-7</b>	Mid-full	50	80	25	1.082	large, oval, pink-red skin, very white flesh.
<b>CV15129-1</b>	Mid-full	123	48	0	1.078	very small, round, red creamers, attractive lot
<b>CV15129-2</b>	Mid-full	31	258	14	NA	very large, round, good deep red skin, very white skin, nice prospect
<b>CV15226-3</b>	Mid-full	73	101	0	1.068	small, very round, keep red skin, smooth, very attractive
<b>F160025-03</b>	Full	58	242	49	1.078	large, rough lot, mixed round-oval shapes, good smooth red skin
<b>F160035-02</b>	full	27	203	23	1.088	large, rough lot, mixed round-oval shapes, good smooth red skin
<b>FV16765-06</b>	Full	105	107	9	1.087	med-large, oval-long, dark red, smooth, good looks
<b>VF160099-01</b>	Mid-full	53	288	102	1.084	very large round red, good uniformity, white flesh
<b>VF160099-02</b>	Full	48	257	0	1.084	large, round-oval, some roughness, smooth good red skin,
<b>MSBB238-1RY</b>	Mid-full	123	154	10	1.077	mixed sizes, round-oval, pink-red skin, deep yellow flesh
<b>Red Prairie</b>	Mid	115	172	5	1.077	mixed sizes and shapes, pink-red skin, average lot
<b>Norland</b>	mid	64	253	32	1.078	large, average red, some roughness in large tubers.

**Table 6 continued . Performance of fresh market lines at Elora Research Station 2020.**

	White skin/yellow flesh	Yield cwt/ac			Specific gravity	Comments
		Maturity	2-2 <sup>1/4</sup>	2 <sup>1/4</sup> to 3 <sup>1/2</sup>		
<b>F150128-01</b>	Mid	32	4	0	1.087	small, oval, tan skin, yellow flesh, average run
<b>F150130-04</b>	Mid	110	110	0	1.084	large, attractive, oval, tan skin, yellow flesh, good uniformity
<b>F150919-03</b>	Full	75	166	3	1.078	small, oval, smooth, yellow flesh, average appearance
<b>MST252-1Y</b>	Full	54	124	12	1.085	small, round, smooth, yellow flesh, a few lumps and roughness
<b>MSV093-1Y</b>	Full	67	225	34	1.077	med-very large, smooth tan skin, yellow flesh, attractive
<b>MSX156-1Y</b>	Full	37	201	97	1.071	very large, excellent, round-oval, smooth white skin, yellow flesh.
<b>MSZ615-2</b>	Full	58	189	25	1.070	small-med, round-oval, smooth tan skin, light yellow flesh
<b>Yukon Gold</b>	Mid	22	192	72	1.093	large for Yukon, some roughness
Specialty colour skin/flesh						
<b>VF160109-01</b>	Full-late	86	84	0	1.068	small, round, deep red creamers, pinkish flesh in star shape
<b>Blackberry</b>	Late	127	65	0	1.074	small, round-oval, deep purple skin and dark solid purple flesh
<b>Huckleberry Gold</b>	Very late	93	187	0	1.072	small-medium, good uniformity, purple skin, deep yellow flesh

**Table 7. Culinary evaluation of fresh market lines grown at Elora Research Station 2020**

Entry	Boil	Bake	Comments
MSV179-1	70	60	Dry, mealy flesh, slight sloughing and discolouration
W9433-1Rus	70	85	Excellent baker
F16004-7	83	90	Excellent flavour, texture and appearance
CV15129-1	90	80	Excellent texture, no discolouration or sloughing
CV15226-3	55	68	Poor appearance, after cooking discolouration
F160025-03	85	80	Good red colour after boiling, firm waxy texture
F160035-02	68	63	Some sloughing, after cooking discolouration
FV16765-06	83	75	Good appearance & texture, slight discolouration boil
VF160099-01	78	90	Keeps dark red skin after baking. Soft creamy texture.
VF160099-02	85	75	Good appearance, flavour and texture
MSBB238-1RY	85	90	Excellent in both. Softy creamy texture
Red Prairie	45	68	Grey colour, watery texture
Norland	85	90	Soft, creamy texture. Excellent in both
F150128-01	90	85	Deep yellow, excellent soft texture
F150130-04	83	80	Soft creamy texture, good in both
F150919-03	78	85	Soft creamy texture, good in both
MST252-1Y	80	80	Good in both
MSV093-1Y	75	80	Good in both
MSX156-1Y	85	75	Good yellow colour, soft creamy texture
MSZ615-2	45	70	Off flavour and brown spot in boil. Good texture baked
Yukon Gold	73	85	Excellent flavour, colour, texture
VF160109-01	70	75	Pink flesh splashed, soft creamy texture
Blackberry	75	80	Very dark purple, consistent throughout. Cooks well
Huckleberry Gold	90	90	Excellent soft creamy texture and bright yellow flesh

**Boil** scores combine evaluations of sloughing, appearance, texture, off-flavour and discolouration; **bake** scores combine evaluations of appearance, texture, off-flavour and discolouration. Scores have a maximum value of 100 and are interpreted according to the scale:

Boil	Bake	Quality
<50	<55	Unacceptable
50-60	55-65	Fair
60-70	65-75	Good, relatively moist texture
>70	>75	Good, relatively dry texture

\*Potatoes suitable for the creamer market are often described as having soft, creamy texture. They score highly in the texture observation and a note is made, distinguishing this from dry texture commonly found in baking potatoes.

## 2020 ONTARIO ON-FARM POTATO VARIETY TRIALS

### ACKNOWLEDGEMENTS

I would like to thank Kevin Brubacher, the General Manager of the Ontario Potato Board, and provincial growers for their interest and support of the variety trials. A special thanks is due to the two co-operators who provided space in their commercial fields to conduct embedded variety trials:

- Brenn-B Farms (Waterdown)
- W.H. Dorsey Farms, (Beeton)

Dorsey Farms (Beeton) provided storage space to receive potatoes, to cut seed and to store harvested samples.

Special thanks to Vanessa Currie. Vanessa works diligently to produce the Annual Report of the Ontario Cooperative Potato Variety Trials, a task that requires many hours of reviewing and editing.

Thanks again to everyone!

Eugenia Banks PhD  
Potato Specialist  
eugeniabanks@onpotato.ca  
519-766-8073

## Introduction

Selecting suitable varieties is the first step in any successful potato operation. Not only must varieties suit the intended market, but they must also be well adapted to local growing conditions. Potato breeders release new varieties every year, but varieties that perform well in one area may not do well in neighbouring areas. Thus, new varieties must be evaluated in different regions to determine local adaptation. On-farm variety trials replicated at different locations help to enhance economic security and expand market potential by identifying varieties that:

- meet local climatic challenges
- fit different production windows, to improve availability and extend the season
- fill market niches
- require less nitrogen, which benefits the environment and reduces costs
- have good market qualities like flavor or an attractive appearance
- reduce chemical use with improved resistance to insects, diseases and physiological disorders.

Climate change has an impact on the performance of potato varieties. European varieties, usually developed under cool and wet summers, develop second growth problems in Ontario such as heat runners, dumbbell tubers, tuber chaining, pointed end and pear shaped tubers to name a few. Due to this climate change factor it is important to evaluate new varieties at different locations in Ontario for at least 3 years.

Common scab continues to be a problem for fresh market growers in Ontario. Many varieties reported to be resistant to scab in other jurisdictions, show high scab susceptibility in Ontario. This is probably due to different species of *Streptomyces* in Ontario.

In these 2020 variety trials most of the varieties evaluated for agronomic characteristics were also evaluated for scab susceptibility.

Hopefully, the data obtained from the 2020 variety trials should help growers decide what new varieties are worth trying on their own farms.

## **The Impact of the 2020 Growing Season on the Variety Trial Plots**

Mother Nature did not cooperate this year. Planting started later than usual due to cool, rainy weather early in the spring. Summer was hot and dry, and non-irrigated fields were under constant stress. Where available, irrigation was the order of the day for most of the growing season. However, growers could not keep up with irrigation due to the extremely high evapo-transpiration rates. In the Waterdown area there was a rainfall deficit all summer long, while other areas benefited from occasional rainfall.

### **BRENN-B FARMS SITE, WATERDOWN.**

The variety trial was planted by hand on May 12 using whole seed for most of the entries. The soil is a healthy sandy loam with a pH of 6.8. The seed spacing was 1ft within the rows. Each variety was planted in twin rows of 10 ft each. The soil is free of common scab. Soil conditions at planting were very good. Frost was in the forecast for the entire week the trial was planted.

Plot maintenance was done by Brenn-B Farms.

The Waterdown area received almost no rain compared to other potato growing areas in the province. The trial was irrigated but it was difficult to keep with crop demand because of the high evapo-transpiration rate. The intense heat resulted in second growth on some European varieties which are more susceptible to this problem.

No serious fungal or bacterial diseases were detected.

### **Post Emergence Application of Sencor (metribuzin)**

Sencor applied pre-emergence is a pillar herbicide in potato production. Most varieties tolerate pre-emergence applications well. Sencor is also used post-emergence, but varieties differ considerably in their sensitivity. Injury appears first as a yellowing of the leaf margins and tips, especially of older leaves. Yellowing then moves between the veins towards the mid-vein. Leaves turn brown and die as injury progresses. Younger leaves are more affected as they enlarge. Plant death is not common, but yield loss is. Symptoms are more pronounced in alkaline soils, with pH above 7.2.

The variety trial at Brenn-B was planted in two-row plots. On July 14, Bayer CropScience staff sprayed one of the rows with Sencor at the rate of 150 g/acre. The row sprayed was selected at random, the other row was left as a control. The two rows were compared several times after spraying, but there were no visible differences during the rest of the season. There were no obvious differences in yield either, but the lack of replication made statistical analysis not possible.

The trial was dug by hand on September 16. Specific gravity was taken using the weight-in-air, weight-in-water method.



**The Brenn-B plot was free of scab. The susceptibility rating in the report was based on a trial planted this year in a scabby field and on scab evaluations from previous years.**

The scab susceptibility ratings are as follows:

- 1: R= Resistant (Superior, Gold Rush).....Less than 5% of the tuber surface covered with superficial lesions.
- 2: T= Tolerant (Dakota Pearl, Colomba).....Up to 5% of the tuber surface covered with superficial lesions.
- 3: S= Susceptible (Sifra).....Up to 50% of the tuber surface covered with superficial lesions.
- 4: VS= Very Susceptible (Agata)..... 50% to 75% of the tuber surface covered with superficial / pitted lesions.
- 5: ES= Extremely Susceptible (Yukon Gold).....75% or more of the tuber surface covered with lesions. Most of the lesions are pitted. Tuber cracking due to large pitted lesions is common

Shawn, Chris, and Dave Brenn were very helpful, as they have always been. They are innovative and proactive growers with a keen interest in the evaluation of new varieties for their area. They know that a variety that looks promising in other areas may not perform well in Waterdown.

**W.H. DORSEY FARMS SITE, BEETON, ON**

The variety trial was planted by hand on May 22 using whole seed for most of the entries. Seed spacing within the rows was 1 ft.

The soil is sandy loam with a pH of 6.0

Plot maintenance was done by W.W. Dorsey Farms

Despite the drought, timely irrigation avoided crop stress. Irrigation plus rainfall resulted in the plot receiving 1.0 inch of water per week. The crop was never under drought stress.

Common scab pressure was high. No other fungal or bacterial diseases were detected.

The plot was harvested on September 26.

**SUMMARY OF 2020 ON-FARM VARIETY TRIAL AT BRENN-B FARMS. WATERDOWN, ONTARIO**  
**YELLOW FLESH**

VARIETY	MATURITY	YIELD cwt/acre	SPECIFIC GRAVITY	TUBER SHAPE - SKIN	COMMON SCAB	COMMENTS
<b>Colomba</b>	Mid-season	391	1.058	Round tubers. Bright, smooth yellow skin.	T	High yield. Plant well suberized seed pieces or use a dust seed treatment. Whole seed is preferable. Short dormancy. No second growth observed.
<b>Constance</b>	Medium late	298	1.077	Round, medium sized tubers. Smooth yellow skin	T	Very attractive tubers. Suitable for the carton market. High set. Needs irrigation.
<b>Montreal</b>	Medium early	332	1.068	Round to round-oval tubers. Smooth yellow skin.	VS	Attractive tubers. Should be grown in scab-free soil. No second growth observed.
<b>Barcelona</b>	Medium late	344	1.067	Oval tubers Light yellow, smooth skin	S	High yield. Should be grown in scab free soil. Some internal orange discoloration detected.
<b>Ballerina</b>	Medium early	330	1.062	Oval tubers with light yellow skin and flesh	T	First year evaluated in ON. Sizes well, even set. No second growth. Tasty.
<b>Arizona</b>	Mid-season	300	1.065	Oval tubers, yellow skin, light yellow flesh	S	Sizes well. Low set. No second growth observed
<b>Salinero</b>	Very late	—	1.063	Round oval tubers. Smooth, dark yellow skin and flesh.	VS	Seed issue caused poor emergence and very poor yield.

**SUMMARY OF 2020 ON-FARM VARIETY TRIAL AT BRENN-B FARMS. WATERDOWN, ONTARIO**  
**WHITE FLESH**

VARIETY	MATURITY	YIELD cwt/acre	SPECIFIC GRAVITY	TUBER SHAPE - SKIN	COMMON SCAB	COMMENTS
<b>Anivia</b>	Medium late	301	1.077	Oval to long-oval tubers. Light yellow skin.	VS	Creamy-white flesh. Fresh market and fresh cut fries. Some pear-shaped tubers.
<b>Althea</b>	Medium late	275	1.079	Oval to long-oval tubers. Scurfy skin.	S	French fry market. Cream colored flesh Second growth: pear-shaped tubers (Planted late)
<b>Noya</b>	Medium late	226	1.076	Round, smooth tubers, white skin.	S	Uneven emergence. Stolons attached to stem end. 1 <sup>st</sup> year of evaluation. <b>(Planted late at this plot)</b>
<b>Allison</b>	Medium late	300	1.079	Oval to long-oval tubers. Light yellow skin	T	Cream-colored flesh. Second growth: pear shaped tubers and some sprouting at harvest
<b>Volare</b>	Late	367	1.058	Round tubers, smooth white skin	VS	High yield. High scab susceptibility. Should be grown in a non- scabby field. Some stem end discoloration.

**SUMMARY OF 2020 ON-FARM VARIETY TRIAL AT BRENN-B FARMS. WATERDOWN, ONTARIO**  
**RUSSETS**

VARIETY	MATURITY	YIELD cwt/acre	SPECIFIC GRAVITY	TUBER SHAPE - SKIN	COMMON SCAB	COMMENTS
<b>Dakota Russet</b>	Medium late	342	1.082	Long, blocky tubers. Flaky russet skin. White flesh.	S	Suitable for fresh consumption, frozen processing and fresh processing as well. More susceptible to soft rot than other russets.
<b>Caribou Russet</b>	Mid-season	319	1.070	Oblong tubers with light russet skin. White flesh.	Not determined	Dual purpose (fresh market and processing). Medium to large tubers. No second growth observed.
<b>La Belle Russet</b>	Medium early	282	1.080	Oblong-long medium size russeted tubers. White flesh.	S	Needs to be grown under irrigation. Plants fold the leaves under drought stress. Medium tuber set. A few off-shaped tubers.
<b>Pomerelle Russet</b>	Medium late	290	1.078	Long tubers with attractive russet skin	T	Slow emergence. Low set. Medium to large sized tubers. Hollow heart not detected. Performs very well in the Shelburne area.
<b>Reveille Russet</b>	Late	304	1.070	Oblong tubers with medium russeted skin. Medium to large sized tubers	Not determined	White flesh. Fresh market No hollow heart or second growth detected. First year of evaluation.

**SUMMARY OF 2020 ON-FARM VARIETY TRIAL AT BRENN-B FARMS. WATERDOWN, ONTARIO**  
**RUSSETS CONTINUED**

VARIETY	MATURITY	YIELD cwt/acre	SPECIFIC GRAVITY	TUBER SHAPE - SKIN	COMMON SCAB	COMMENTS
<b>Libero</b>	Late	283	1.074	Long oval with medium russet skin. Yellow flesh.	VS	Susceptible to scab, both superficial and pitted scab Fresh market and fresh cut fries.
<b>Campagna</b>	Medium early	298	1.077	Long oval tubers. Slightly russeted, tan skin. Medium to large tubers.	S	Sizes well. Cream-colored flesh. Medium set. Fresh market Developed dark skin lesions of unknown cause in a few storages last winter.
<b>River Russet</b>	Medium late	246	1.081	Long oval tubers. Shape variability is a problem. Medium sized tubers	S.	Dual purpose: fresh market and processing. Uneven set. Some hollow heart
<b>Silverton Russet</b>	Late	Poor yield due to seed rot	1.073	Oblong tubers, brown russeted skin with a fine net-like appearance	—	Fresh market and processing. Grown in this trial as a standard russet but had a poor emergence due to seed rot.

**SUMMARY OF 2020 ON-FARM VARIETY TRIAL AT BRENN-B FARMS, WATERDOWN ONTARIO  
SPECIALTY VARIETIES**

VARIETY	MATURITY	YIELD cwt/acre	SPECIFIC GRAVITY	TUBER SHAPE - SKIN	COMMON SCAB	COMMENTS
<b>Rosi</b>	Medium late	363	1.079	Oval, attractive tubers Ruby red skin. Even set. Medium sized tubers.	R	Cream-colored flesh. High yield. Resistant to scab. Looks promising.
<b>Sally</b>	Late	338	1.080	Round, small tubers Light red, scurfy skin	T	Dark yellow flesh. Some second growth: sprouting at harvest
<b>Vicky</b>	Late	275	1.067	Round tubers Light red scurfy skin	R	White flesh Second growth: sprouting & dumbbell tuber defects.
<b>Huckleberry Gold</b>	Very Late	200	1.075	Round to oval tubers Purple skin. Yellow flesh. Medium to large sized tubers.	VS	Needs to be grown in a scab-free field. Low yield due to poor emergence at this site. Very good culinary traits.

**SUMMARY OF 2020 ON-FARM VARIETY TRIAL AT W.H. DORSEY FARMS. BEETON, ONTARIO**  
**YELLOW FLESH**

<b>VARIETY</b>	<b>MATURITY</b>	<b>YIELD cwt/acre</b>	<b>SPECIFIC GRAVITY</b>	<b>TUBER SHAPE – SKIN</b>	<b>COMMON SCAB</b>	<b>COMMENTS</b>
<b>Colomba</b>	Mid-season	445	1.062	Round tubers. Very smooth bright yellow skin	T	High yield. Plant well suberized seed pieces or use a dust seed treatment. Whole seed is preferable. Short dormancy No second growth observed.
<b>Constance</b>	Medium late	344	1.075	Round tubers. Smooth yellow skin	T	Very attractive tubers. Suitable for the carton market. Needs to be grown under irrigation. Has shown heat stress in Simcoe area.
<b>Bonnata</b>	Medium early	348	1.067	Oval to long-oval tubers. Light yellow skin Light yellow flesh	VS	Pitted scab. Should be grown in scab free soil.
<b>Lady Amarilla</b>	Late	339	1.082	Long oval tubers Yellow skin	VS	Fresh-cut fry market. High set Very susceptible to scab
<b>Laperla</b>	Medium late	345	1.053	Round to oblong tubers with smooth yellow skin.	VS	Nice but its high scab susceptibility is a serious problem.
<b>Queen Anne</b>	Mid-season	357	1.066	Long oval, small to medium- sized tubers Yellow smooth skin	T	Very uniform set, no culls. Good culinary traits. No second growth observed.

**SUMMARY OF 2020 ON-FARM VARIETY TRIAL AT W.H. DORSEY FARMS. BEETON, ONTARIO**  
**YELLOW FLESH**

VARIETY	MATURITY	YIELD cwt/acre	SPECIFIC GRAVITY	TUBER SHAPE – SKIN	COMMON SCAB	COMMENTS
<b>Ballerina</b>	Medium early	375	1.060	Oval tubers, light yellow skin and flesh. Medium to large sized tubers	T	First year of evaluation in ON. Sizes well. High yield. No second growth observed.
<b>Erika</b>	Mid-season	342	1,071	Long oval, small to medium sized tubers Smooth yellow skin	T	Scab tolerance makes it a good variety for organic growers. Good culinary traits
<b>Salinero</b>	Late	_____	1.066	Round tubers. Smooth dark yellow skin and flesh. Medium sized tubers	VS	Poor yield due to seed issues. Has grown well in previous years. High susceptibility to scab is a serious problem.
<b>Arizona</b>	Mid-season	347	1.062	Oval shape. Large tubers. Light yellow skin	S	Low set, Sizes well Some jumbos
<b>Alaska Bloom</b>	Medium late	375	1.065	Round tubers. Smooth yellow skin and pink eyes. Even set.	S	Attractive tubers. High yield. Slightly yellow to cream-colored flesh. Some internal discoloration



**SUMMARY OF 2019 ON-FARM VARIETY TRIAL AT W.H. DORSEY FARMS. BEETON, ONTARIO**  
**WHITE FLESH**

VARIETY	MATURITY	YIELD cwt/acre	SPECIFIC GRAVITY	TUBER SHAPE – SKIN	COMMON SCAB	COMMENTS
<b>Anivia</b>	Medium late	277	1.079	Oval to long-oval tubers. Yellow skin	VS	Medium uniformity of tuber set Some growth cracks & pear- shaped tubers. High grade out.
<b>Noya</b>	Medium late	235	1.078	Round, small to medium sized tubers. Smooth white skin.	T	First year of evaluation. Stolons firmly attached to tubers
<b>Allison</b>	Medium late	362	1.077	Oval to long-oval tubers. White skin	T	High yield. Cream-colored flesh. No second growth at this site.
<b>Abbot</b>	Mid-season	347	1.077	Round-oval, medium sized tubers. White, skin	VS	Fast emergence Some second growth (knobs)
<b>Volare</b>	Late	423	1.055	Round, attractive tubers, smooth white skin.	VS	High yield. Some stem end discoloration. Should be grown in scab free soil
<b>Superior</b>	Early	321	1.078	Round to round oval tubers Scurfy skin when tubers mature	R	Standard white variety. Resistance to scab is its best trait. Susceptible to early dying
<b>Atlantic</b>	Mid-season	434	1.080	Round, large tubers Scurfy skin	T	Fries out of the field. Sizes well. 50% hollow heart incidence at this location.

**SUMMARY OF 2020 ON-FARM VARIETY TRIAL W.H. DORSEY FARMS, BEETON ONTARIO**  
**RUSSETS**

<b>VARIETY</b>	<b>MATURITY</b>	<b>YIELD cwt/acre</b>	<b>SPECIFIC GRAVITY</b>	<b>TUBER SHAPE – SKIN</b>	<b>COMMON SCAB</b>	<b>COMMENTS</b>
<b>La Belle Russet</b>	Medium early	323	1.083	Oblong-long, medium russeted tubers. Average tuber size is medium Tuber set is low to medium	T	Dual purpose: French fries and fresh market. White flesh. Eyes are predominantly apically distributed. Performed very well in a commercial field this season
<b>River Russet</b>	Medium late	272	1.079	Long oval tubers. Medium to large size Medium russeted skin	S	Uneven set White flesh. Some hollow heart.
<b>Pomerelle Russet</b>	Medium late	315	1.075	Oblong-long tubers with brown-russeted skin. Medium to large size.	T	Slow emergence White flesh. Sizes well Hollow heart not detected Fresh market variety
<b>Libero</b>	Late	296	1.072	Long oval tubers Light russeted skin	VS	Yellow flesh. Fresh market and processing Some pitted scab at this site

**SUMMARY OF 2020 ON-FARM VARIETY TRIAL W.H. DORSEY FARMS. BEETON, ONTARIO  
RED SKINNED & SPECIALTY VARIETIES**

VARIETY	MATURITY	YIELD cwt/acre	SPECIFIC GRAVITY	TUBER SHAPE – SKIN	COMMON SCAB	COMMENTS
<b>Cerata</b>	Medium late	358	1.067	Round tubers. Red, smooth skin. Even set.	S	White flesh. High yield, sizes well. Good culinary traits.
<b>Merlot</b>	Late	235	1.077	Small to medium sized oval tubers. Bright red skin.	S	Dark yellow flesh, very tasty. Its profile indicates: <i>Harvest early for small potatoes for microwave packs</i>
<b>Sally</b>	Late	347	1.078	Small round tubers Red skin	T	Dark yellow flesh. Second growth: elongated stem ends.
<b>Vicky</b>	Late	328	1.065	Short-oval shaped tubers. Small size Red, scurfy skin	R	White flesh. Best trait: resistance to scab Second growth: sprouting at harvest.
<b>Rosi</b>	Medium late	372	1.076	Oval tubers, ruby red skin. Medium to large tubers Even set	R	Very attractive tubers. High yield. Cream colored flesh. Resistance to scab is a plus. Second growth not detected.
<b>Huckleberry Gold</b>	Late	278	1.073	Round to oval tubers, purple skin and yellow flesh. Medium to large tubers	VS	Some growth cracks. Scab susceptibility is a problem. Good culinary traits.

## COMMON SCAB REPORT FOR VARIETIES GROWN IN 2020 UNDER HEAVY SCAB PRESSURE

### I. Introduction.

Common scab caused by the bacterium *Streptomyces scabies* occurs in most potato growing areas of the world. However, there are several other *Streptomyces* species that can also cause common scab. This variability of pathogenic *Streptomyces* spp present in soils may explain why the agronomic practices recommended to control scab are so inconsistent; they may work for some species but not for others.

The common scab bacteria survive in the soil indefinitely even in the absence of potatoes

The bacteria produce spores that are spread on seed potatoes, in the soil, and in soil water.

The spores enter newly forming tubers through immature lenticels. Once in the tuber, the pathogen produces a phytotoxin called thaxtomin that breaks down cell walls and penetrates rapidly growing cells. As cells die, they produce cork cells that push outward and form a scab lesion. As these cork cells continue to develop, the lesions grow larger.

Scab symptoms vary greatly from netting on the skin to raised areas of rough, corky tissue. Pitted scab has cavities that may be as deep as a cm. Lesions also vary in size and shape. They may be few and scattered or may cover most of the tuber surface. The type of scab (raised, superficial or pitted) depends on the potato cultivar, time of infection, growing conditions, and soil pH and microbial community.

Tubers are most susceptible to infection of *Streptomyces* species during the first three to four weeks after tuber initiation, Early infection can lead to deeper scab lesions on the tuber

Scab bacteria are introduced into healthy fields by:

- planting infected seed
- spreading contaminated cattle manure

- spreading infected graded-out tubers in clean fields
- carrying infested soil on farm equipment.
- windblown soil

Common scab does not reduce yield, but the lesions affect tuber quality rendering the potatoes unmarketable.

**II. Scab dissemination:** The pathogen sporulates in the lesions, and some of these spores are shed into the soil or reinfest soil when cull potatoes are left in the field.

In storage, the bacterium survives in lesions on tubers, but the disease does not spread or increase in severity. Inoculum from infected seed tubers can produce disease on progeny tubers the next season.

**III. Important soil factors that impact the incidence of scab are:**

●**Soil pH:** A soil pH ranging from 5.5 and 8.0 is more favorable for the scab bacterium. However, *S. acidiscabies* is an acid tolerant species that can infect tubers in soils with pH below 5.

●**Organic matter content:** Research has shown that the higher the organic matter, the lower disease incidence. In soils high in organic matter, the soil microbial populations compete with pathogenic *Sptreptomyces spp* reducing disease levels.

●**Soil moisture:** Less than 65-70% soil moisture during tuber initiation favours scab. Maintaining soil moisture at 80-85% from tuber initiation until the tubers are 1 to 1.5 inches in size usually reduces common scab.

●**Soil texture:** There is usually more scab in sandy soils rather than in heavier soils. Sandy soils usually have less organic matter than heavier soils

●**Soil temperature:** Warm, dry soils favor scab development. The optimum temperature for scab development is 22C

The incidence and severity of scab varies from year to year and from field to field.

No method - except for the use of resistant varieties - has proven to be reliable and effective. It seems that control methods should be custom tailored for individual fields.

All researchers agree that genetic resistance is the most reliable, cost effective control strategy for common scab.

Susceptible varieties such as Yukon Gold, Sifra, Agata to name just a few, should be grown in scab-free soil.

In scab infested fields, only varieties that are tolerant/resistant to scab should be grown.

## COMMON SCAB REPORT

### YELLOW FLESH VARIETIES GROWN IN 2020 UNDER HIGH SCAB PRESSURE

Variety	Scab Incidence % Tubers Infected	Scab Severity	Rating 1 to 5	Scab Susceptibility
<b>Colomba</b>	5	Light: Superficial scab	2	T
<b>Constance</b>	10	Light: Superficial scab	2.5	T
<b>Bonnata</b>	40	Medium: Superficial scab	3	S
<b>Lady Amarilla</b>	70	Very severe, some pitted scab	5	VS
<b>La Perla</b>	80	Very severe, pitted and superficial	5	VS
<b>Queen Anne</b>	10	Light: Superficial scab only	2.5	T
<b>Ballerina</b>	20	Light: Superficial scab	2.5	T
<b>Erika</b>	5	Few minor scab lesions	1.5	T
<b>Salinero</b>	40	Severe: Pitted and superficial lesions	5.0	VS
<b>Alaska Bloom</b>	5	Very clean	2.0	T
<b>Arizona</b>	30	Superficial scab	3.0	S

## COMMON SCAB REPORT

### WHITE FLESH VARIETIES GROWN IN 2020 UNDER HIGH SCAB PRESSURE

Variety	Scab Incidence % Tubers Infected	Scab Severity	Rating	Scab Susceptibility
<b>Superior</b>	None	-	1	R
<b>Anivia</b>	40	Severe superficial, some pitted scab	4	VS
<b>Noya</b>	35	Superficial scab	3	S
<b>Allison</b>	20	Superficial scab	2.5	T
<b>Abbot</b>	40	Medium, some pitted scab	4	VS
<b>Volare</b>	40	Severe Superficial & pitted scab	5	VS
<b>Atlantic</b>	25	Superficial scab	2.5	T

## COMMON SCAB REPORT

### REDS & SPECIALTY VARIETIES GROWN IN 2020 UNDER HEAVY SCAB PRESSURE

Variety	Scab Incidence % Tubers Infected	Scab Severity	Rating 1 to 5	Scab Susceptibility
<b>Cerata</b>	40	Superficial, some pitted scab	4	VS
<b>Rosi</b>	0	_____	1.	R
<b>Sally</b>	5	Light superficial scab	2	T
<b>Vicky</b>	0	_____	1	R
<b>Merlot</b>	40	Heavy superficial scab	3	S
<b>Huckleberry Gold</b>	40	Severe superficial scab some pitted.	4	4



## COMMON SCAB REPORT

### RUSSET VARIETIES GROWN UNDER HEAVY SCAB PRESSURE

Variety	Scab Incidence % Tubers Infected	Scab Severity	Rating 1 to 5	Scab Susceptibility
<b>Dakota Russet</b>	15	Superficial scab	2.5	T
<b>Pomerelle Russet</b>	15	Superficial scab	2.5	T
<b>Libero</b>	<b>40</b>	Superficial & pitted scab	4.0	VS
<b>La Belle</b>	20	Superficial scab	2.0	T
<b>River Russet</b>	25	Superficial scab, a few pitted lesions	3.0	S

**Varieties for On-farm Trials 2020. Please contact eugeniabanks@onpotato.ca 519-766-8073 for more information**

- Abbot
- Alaska Bloom,
- Allison
- Althea,
- Anivia
- Arizona
- Atlantic
- Ballerina
- Barcelona
- Bonnata,
- Campagna
- Caribou Russet,
- Cerata,
- Colomba,
- Constance
- Dakota Russet
- Erika,
- Huckleberry Gold
- LaBelle Russet
- Lady Amarilla
- Laperla
- Libero
- Merlot,
- Montreal
- Noya
- Pomerelle Russet
- Queen Anne
- Reveille Russet
- River Russet
- Rosi
- Salinero
- Sally,
- Silverton Russet
- Superior
- Vicky
- Volare

**Breeding selections and new varieties evaluated at University of Guelph Elora Research Station,2020**

**AAFC – Erica Fava**, Acting Potato Breeding National Variety Trial Coordinator & Industry Liason, Agriculture and Agri-Food Canada / Government of Canada erica.fava2@canada.ca / Tel. : 506-460-4485 / cell : 506-451-5198

CV10028-1, F150985-04, F150992-06, FV16324-08, FV16475-16, WV10655-1, F150128-01, F150130-04, F150919-03, FV16004-7, F160032-06, F160032-16, FV16661-01, FV16962-6, WV12099-1, CV15129-1, CV15129-2, CV15226-3, F160025-03, F160035-02, FV16765-06, VF160099-01, VF160099-02, VF160109-01, F14028, F14031, VF14036, VF14037, FV16324-08, F15030, F15032

**Michigan State University Potato Breeding Program - Dr David Douches** - douchesd@msu.edu

Blackberry, MSAA076-6, MSX225-2, MSZ120-4, MSZ219-13, MSZ242-13, MST252-1Y, MSV093-1Y, MSV179-1, MSX156-1Y, MSZ615-2, MSBB238-1RY, Mackinaw, MSZ022-07, MSZ219-01, MSZ219-13, MSZ219-14, MSZ222-19

**University of Wisconsin Potato Breeding Program – Dr. Jeffrey Endleman** endleman@wisc.edu

W12078-76, W9433-1rus, Red Prairie

**Local suppliers and cooperators**

Huckleberry Gold – **Glen Squirrell** pmsquirrell@yahoo.ca

Lamoka, Valley Crisp, Lady Liberty – **WD Potato Ltd.**