Effect of in-furrow application of Ninuet biogesticide for control of common scal in PEI



Minuet for Common Scab Reduction

- Minuet New formulation of Serenade Soil
- In-furrow biological fungicide
- Bacillus subtilis strain QST 713
- Protection against Rhizoctonia, activity against Pythium, pink rot, and Fusarium root rot
- Tested as part of National Potato Cluster project on Common Scab in Manitoba in 2020 along with other product, showed some potential for control.



Minuet for Common Scab Reduction

CROPS, DISEASES, APPLICATION RATES AND METHODS

Crop Group 1: Root and Tuber Vegetables

Arrowroot, artichoke (Chinese and Jerusalem), garden beet, sugar beet, edible burdock, edible canna, carrot, celeriac (celery root), turnip-rooted chervil, chicory, chufa, dasheen (taro), ginger, ginseng, horseradish, turnip-rooted parsley, parsnip, potato, radish, oriental radish (daikon), rutabaga, salsify, skirret, sweet potato, turnip, and true yam.

Disease Suppressed	Rate (litre/	Soil Application Methods
	hectare)	and Instructions*
Rhizoctonia root rot, black scurf and stem canker	0.5 – 2.8	1. Surface applications
(Rhizoctonia solani)		2. Transplant drench
		3. In-Furrow Applications
Phytophthora root rot and pink rot (Phytophthora		4. Shanked-In and Injected
erythroseptica)		Applications
		5. Post planting applications
Pythium root rot and cavity spot (<i>Pythium</i> spp.)		at any crop stage
Fusarium root rot (Fusarium spp.)		



Minuet for Common Scab Reduction

- 3 field trials through AIM in 2023
- 5 field trials through AIM in 2024
 - 3 fields with Prospect
 - 1 field with Ranger Russet, 1 field with Alverstone Russet
- Split field trial 10 acres with Minuet, 10 or more acres without
- No other changes to fungicide program
- 379 mL/ac applied in-furrow at planting
- Harvest samples, graded for yield and tuber skin blemishes

Hilltop Produce:

Grading:

Treatment	Smalls cwt/ac	Canada #1 cwt/ac	> 10 oz cwt/ac	Off-Type/Culls cwt/ac	Total Yield cwt/ac	Market. Yield cwt/ac
Check	18.3	209.8	81.5	5.7	315.3	291.3
Minuet	15.2	169.7	108.4	7.6	300.9	278.1
Difference	-3.1	-40.1	26.9	1.9	-14.4	-13.2
p value	0.55	0.17	0.29	0.71	0.41	0.48

Tuber Blemishes:

Treatment	% Scab	Scab Severity	% Rhizoctonia	% Silver Scurf
Check	3.6	0.7	0	5.8
Minuet	1.4	0.5	0.5	6.6
Difference	-2.2	-0.2	0.5	0.8
p value	<0.001	0.002	0.178	0.382



Kennebec - 2023

Results for MacSull Farms:

Grading:

Treatment	Smalls cwt/ac	Canada #1 cwt/ac	> 10 oz cwt/ac	Off-Type/Culls cwt/ac	Total Yield cwt/ac	Market. Yield cwt/ac
Check	8.5	208.1	35.7	24.3	276.5	243.7
Minuet	10.6	205.8	50.4	27.9	294.6	256.2
Difference	2.1	-2.3	14.7	3.6	18.1	12.5
p value	0.55	0.88	0.31	0.72	0.19	0.44

Tuber Blemishes:

Treatment	% Scab	Scab Severity	% Rhizoctonia	% Silver Scurf
Check	6.6	1.2	1.5	21.1
Minuet	2.4	0.8	2.3	19.4
Difference	-4.2	-0.4	0.8	-1.7
p value	<0.001	<0.001	0.003	0.395

Kennebec 2023



Minuet: Observations from 1st year

- Similar level of scab reduction at two farms (approx. 60% reduction)
- No difference in yield
- Not the same response at 3rd farm, but lowest average level of scab

Field E: Ranger Russet - Yield and Size Profile:

Treatment	Total	Smalls	>10 oz.	Off	Unmarketable	Marketable	
	Yield			Type/Culls	Scab	Yield	
	cwt/ac.		%				
Minuet	306.3	4.8	10.4	2.8	11.5	248.5	
Control	298.9	2.7	2.9	2.0	53.1	120.6	
Difference	7.4	2.1	7.5	0.8	-41.6	127.9	
p value	0.72	0.16	0.08	0.62	0.08	0.05	

Field E: Ranger Russet - Tuber Quality

Treatment	% Scab	Scab	% Rhizoc	% Silver
		Severity		Scurf
Minuet	13.39	1.85	2.81	0.67
Control	48.40	2.06	5. 55	0.03
Difference	-35.01	-0.21	-2.74	0.64
p value	< 0.001	0.049	< 0.001	0.014

Left: Control

Right: Minuet



Treatment	Total	Smalls	>10 oz.	Off	Unmarketable	Marketable	
	Yield			Type/Culls	Scab	Yield	
	cwt/ac.		%				
Minuet	350.7	4.1	15.0	1.1	3.8	320.8	
Control	340.8	4.8	8.1	0.8	17.7	264.8	
Difference	9.9	-0.7	6.9	10.2	-13.9	56.0	
p value	0.681	0.562	0.018	0.650	0.134	0.135	

Combined Yield Analysis – 5 Fields:

Combined Tuber Quality Analysis – 4 Fields:

Treatment	% Scab	Scab	% Rhizoc	% Silver
		Severity		Scurf
Minuet	4.69	0.76	3.31	1.46
Control	16.31	0.81	5.26	1.35
Difference	-11.62	-0.05	-1.95	0.11
p value	< 0.001	0.508	< 0.001	0.654

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Combined Yield Analysis – 5 Fields:

Influence of mostly 1 trial

Combined Tuber Quality Analysis – 4 Fields:

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Minuet: Observations from 2nd year

- Less than 0.5% scab in 4 fields. Statistical reduction in 1 field (Alverstone), increase in 1 field (Prospect) but very low incidence
- Highly significant reduction in one field with lots of scab pressure
- Significant reduction in black scurf (Rhizoc) in 2 fields and overall.
- No difference in Total Yield. Statistical improvement in % 10 oz.
- Based on two years of trials, there appears to be evidence that Minuet can reduce common scab coverage. Additional work on rate and additional methods of application would be warranted.

Straw Mulch to Reduce PVY:

- On AIM Study Tour to UK in 2023, several farms/agronomists noted that straw mulch is sometimes used on high-gen seed to distract aphids, reduced virus transmission
- Difference between green plants and mulch colour versus ground colour less attractive to aphids.
- Could this work in PEI? Any other agronomic benefits or challenges?



Straw Mulch to Reduce PVY:

- One field in 2024 David & Brett Francis
- Mountain Gem planted May 24th
- Straw applied June 24th post-emergence
- Six bales over ~ 2 acres
- Both sides of the field had aphid traps through Aphid Alert. # of aphids was low all season
- PVY was 0.5% in control, 2.0% in mulch, but not statistically different.
- Mulch: 333 cwt/ac
 Check: 294 cwt/ac (p=0.16)



Straw Mulch to Reduce PVY:

- Mulch may have helped retain moisture in dry year, helping yield.
- No issues at harvest.
- Needed more straw for better coverage.
- Labour intensive, easier with dedicated tramlines or breaks between seed lots.
- Would like to look at it again in 2025.



Additional Seed & Tuber Quality WG Projects:

- PVY Robot: Video on Agronomy Site from Potato Conference
- Alternaria testing for fungicide resistance: ongoing
- Surround (kaolin clay) project with Genesis Crop Systems: no reduction in PVY by using project to "whitewash" potatoes.

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CANADA



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Thank You!

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CEU Tracking Number: AP 51655 Approved CEUs: Meeting Title: AIM Winter Workshops - Scab 101 Location: Emerald, PE Meeting Date: 02/25/2025, 09:00 AM to 12:00 PM

No need to sign if scanned!

NM	SW	PM	CM	PD
0.0	0.0	2.5	0.0	0.0





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