Table 1

MICHIGAN STATE UNIVERSITY
POTATO BREEDING and GENETICS

ADVANCED CHIP-PROCESSING TRIAL
MONTCALM RESEARCH CENTER
May 5 to September 27, 2021 (145 days)
DD Base 40°F 3402[9]

					PERCENT OF TOTAL[1]								PERCENT (%) TUBER QUALITY[4]							LB[8]	3-YR AVG
	PVY		CWT/A								CHIP	OTF								RAUDPC	US#1
LINE	Resistant	N	US#1	TOTAL	US#1	Bs	As	OV	PO	SP GR	SCORE[2]	SED[3]	HH	VD	IBS	BC	SCAB[5]	MAT[6]	BRUISE[7]	x100	CWT/A
MSBB630-2	PVYR	2	598	642	93	6	93	0	1	1.078	-	-	0	0	10	0	1.3	3.5	4.0	0.1	-
MSAA252-7	PVYR	2	551	565	98	2	87	11	0	1.081	1.0	3	0	5	45	0	1.5	4.0	3.3	1.5	470*
MSY022-2		2	495	529	93	5	93	0	2	1.079	1.0	0	35	0	0	0	0.5	3.0	1.8	-	-
MSCC725-232	PVYR	2	463	490	94	5	94	0	1	1.075	1.0	1	50	5	0	5	1.8	3.0	2.1	-	-
MSAA076-6		2	429	498	86	14	86	0	0	1.083	1.0	1	0	0	0	0	0.8	2.5	2.8	-	366
MSBB613-7	PVYR	2	426	438	97	2	97	0	1	1.077	-	-	45	10	0	5	0.3	3.0	-	0.9	-
MSBB626-11	PVYR	2	418	435	96	4	95	1	0	1.084	1.0	1	0	5	0	5	1.4	3.5	2.8	4.3	398*
MSAA217-3		2	417	440	95	5	94	1	0	1.094	1.0	3	70	0	0	0	2.3	3.0	3.0	-	332*
Mackinaw	PVYR	2	415	448	93	7	93	0	0	1.081	1.0	0	0	0	0	0	1.8	3.0	2.2	2.1	294
Huron Chipper		2	414	453	91	9	91	0	0	1.082	1.0	2	5	15	0	10	1.8	3.0	1.2	0.5	327
MSAA091-1		2	413	451	91	9	91	0	0	1.084	1.0	0	5	5	0	0	2.3	3.0	1.2	28.4	-
MSDD247-11	PVYR	2	400	429	93	6	93	0	1	1.091	1.0	0	10	0	0	0	1.0	2.0	3.0	11.4	-
MSBB075-1Y		2	400	436	92	6	91	1	2	1.078	1.0	0	0	5	0	0	2.1	2.0	2.0	-	-
MSBB058-3	PVYR	2	390	406	96	4	96	0	0	1.080	1.0	0	0	0	0	0	1.4	4.0	3.8	0.2	-
MSBB635-14	PVYR	2	379	418	90	10	90	0	1	1.070	-	-	0	10	0	0	1.3	2.5	-	1.4	349*
MSZ242-13		2	374	395	95	4	95	0	1	1.093	1.0	0	0	0	0	0	1.4	3.0	2.2	-	284
MSBB614-15	PVYR	2	364	377	97	3	96	1	0	1.078	1.0	0	15	0	0	5	0.7	2.5	1.6	1.1	-
MSAA328-4		2	363	379	96	4	96	0	0	1.079	-	-	0	0	0	0	1.2	2.5	-	-	355*
MSCC058-1		2	362	376	96	4	96	0	0	1.083	1.0	0	5	35	0	0	1.2	2.5	4.0	-	326*
MSBB230-1		2	360	423	85	15	85	0	0	1.088	1.0	0	0	0	5	0	2.3	2.5	2.3	-	-
MSBB058-4	PVYR	2	359	402	89	11	89	0	0	1.079	1.0	0	0	0	0	0	1.8	4.0	1.6	7.7	-
Petoskey		2	352	414	85	13	85	0	2	1.090	1.0	0	15	0	0	0	1.3	3.0	2.6	-	250
Petoskey (POP)		2	340	402	85	15	85	0	0	1.089	-	-	0	0	0	5	2.3	3.0	2.6	-	-
Atlantic		**2**	**330**	**358**	**92**	**8**	**92**	**0**	**0**	**1.089**	**1.0**	**2**	**25**	**10**	**0**	**0**	**2.8**	**2.0**	**2.7**	**39.7**	**233**
MSZ242-07		2	330	356	92	7	92	0	1	1.092	1.0	0	0	0	0	0	1.3	3.0	3.1	-	285*
Snowden		**2**	**321**	**372**	**86**	**14**	**86**	**0**	**0**	**1.084**	-	-	**0**	**25**	**0**	**0**	**3.0**	**2.0**	**2.8**	**10.1**	239
MSDD247-07	PVYR	2	308	339	91	9	91	0	0	1.095	1.0	2	0	0	20	5	0.8	3.0	3.2	-	-
MSBB611-3	PVYR	2	307	382	80	18	79	1	2	1.083	-	-	0	0	0	25	1.5	3.0	3.6	0.4	314*
Lamoka		**2**	**306**	**352**	**87**	**12**	**87**	**0**	**0**	**1.080**	**1.0**	**0**	**0**	**20**	**0**	**0**	**1.5**	**2.0**	**1.6**	**28.6**	258

													PERCENT (%)							LB[8]	3-YR AVG
	PVY		CWT/A		PERCENT OF TOTAL[1]						CHIP	OTF	TUBER QUALITY[4]							RAUDPC	US#1
LINE	Resistant	N	US#1	TOTAL	US#1	Bs	As	OV	PO	SP GR	SCORE[2]	SED[3]	HH	VD	IBS	BC	SCAB[5]	MAT[6]	BRUISE[7]	x100	CWT/A
MSBB017-1		2	287	341	84	15	84	0	1	1.080	1.5	1	20	15	0	0	1.8	2.0	2.6	-	-
MSAA498-18		2	277	288	96	4	96	0	0	1.081	1.0	0	0	0	5	5	0.8	2.5	1.5	10.8	290*
MSAA260-3		2	275	319	86	12	85	1	3	1.083	1.0	1	0	0	10	35	1.3	3.0	3.6	-	263*
MSW474-1		2	274	350	78	22	78	0	0	1.078	-	-	0	0	0	0	0.7	2.0	2.5	-	-
MSAA311-1		2	274	308	89	11	89	0	0	1.076	1.0	0	0	5	0	5	1.3	2.0	2.1	-	-
MSDD040-01		2	273	290	93	6	92	1	1	1.074	-	-	10	0	0	0	1.1	2.0	-	-	-
MSDD244-15	PVYR	2	238	265	90	9	90	0	1	1.073	-	-	0	0	15	0	1.0	3.0	-	-	-
Manistee		2	229	265	87	13	87	0	1	1.080	1.0	0	0	5	0	0	2.8	1.5	1.1	-	229
MSDD085-13	PVYR	2	206	284	72	28	72	0	0	1.082	-	-	0	5	0	5	0.7	1.0	2.0	-	-
MEAN			361	398						1.082							1.5	2.7	2.5		276
$HSD_{0.05}$			241	232						0.011											

[1]SIZE: B: < 2 in.; A: 2-3.25 in.; OV: > 3.25 in.; PO: Pickouts.

[2]CHIP SCORE: SNAC Scale (Out of the field); Ratings: 1-5; 1: Excellent, 5: Poor.

[3]SED: Stem End Defect, Based on Paul Bethke's (USDA/UWisconsin - Madison) 0 - 5 scale. 0 = no SED; 3 = significant SED; 5 = severe SED

[4]QUALITY: HH: Hollow Heart; BC: Brown Center; VD: Vascular Discoloration; IBS: Internal Brown Spot. Percent of 40 Oversize and/or A-size tubers cut.

[5]SCAB DISEASE RATING: MSU Scab Nursery; 0: No Infection; 1: Low Infection <5%; 3: Intermediate; 5: Highly Susceptible.

[6]MATURITY RATING: August 24, 2021; Ratings 1-5; 1: Early (vines completely dead); 5: Late (vigorous vine, some flowering).

[7]BRUISE: Simulated blackspot bruise test, average number of spots per tuber.

[8]LB RAUDPC: Late blight (*P. infestans* US-23) foliar disease reaction.

Plant Date:	5/5/2021
Vine Kill:	9/8/2021
Days from planting to vine kill:	126

[9]Enviroweather: Entrican Station. Planting to vine kill

Table 2

MICHIGAN STATE UNIVERSITY
POTATO BREEDING and GENETICS

NORTH CENTRAL REGIONAL TRIAL
MONTCALM RESEARCH CENTER
May 5 to September 7, 2021 (125 days)
DD Base 40°F 3072[6]

			CWT/A		PERCENT OF TOTAL[1]								PERCENT (%) TUBER QUALITY[4]				
LINE	PVY Resistant	N	US#1	TOTAL	US#1	Bs	As	OV	PO	SP GR	CHIP SCORE[2]	OTF SED[3]	HH	VD	IBS	BC	MAT[5]
Chip																	
MSFF007-2		1	563	606	93	7	93	0	0	1.079	1.0	1.0	0	10	0	0	4.0
MSFF036-1	PVYR	1	551	592	93	7	91	3	0	1.072	1.0	1.0	0	10	0	0	3.0
W17039-31		1	533	622	86	14	86	0	0	1.093	1.0	1.0	0	10	0	0	4.0
ND14251B-5		1	527	553	95	4	95	0	1	1.074	-	-	0	0	0	0	4.0
W17AF6685-2		1	508	601	84	14	84	0	1	1.080	1.0	1.0	0	0	0	0	3.0
ND14247CAB-2		1	506	545	93	7	93	0	0	1.080	1.0	1.0	10	10	0	0	2.0
MSFF037-17	PVYR	1	498	567	88	11	88	0	1	1.082	1.5	1.0	0	20	0	0	4.0
W17039-7		1	479	592	81	19	81	0	0	1.085	1.5	1.0	0	0	0	0	3.0
W17AF6670-1		1	476	520	91	9	91	0	0	1.082	1.0	0.0	0	0	0	0	3.0
MN18AF6730-6		1	459	527	87	8	87	0	5	1.068	2.5	3.0	20	20	0	0	3.0
MSFF038-3	PVYR	1	446	487	92	8	92	0	0	1.078	1.0	1.0	0	10	0	0	3.0
MN18AF6675-2		1	436	539	81	9	81	0	11	1.074	1.0	2.0	0	0	0	0	3.0
MN18W17043-17		1	432	472	92	8	92	0	0	1.084	-	-	30	0	10	0	3.0
MN18W17039-5		1	427	475	90	10	90	0	0	1.080	-	-	0	0	10	0	3.0
Atlantic		**2**	**424**	**461**	**92**	**6**	**92**	**0**	**2**	**1.088**	**1.0**	**1.0**	**35**	**0**	**0**	**0**	**2.5**
MSFF017-1		1	423	466	91	7	91	0	2	1.083	1.0	1.0	0	10	0	0	3.0
W17066-11		1	418	487	86	13	86	0	1	1.084	1.0	0.0	10	10	0	0	3.0
MSFF050-1		1	410	477	86	11	83	3	3	1.071	1.0	1.0	10	0	0	10	3.0
W17043-37		1	406	496	82	18	82	0	0	1.089	1.0	1.0	0	0	0	0	3.0
W17060-9		1	399	551	73	27	73	0	0	1.089	1.0	1.0	0	10	0	0	4.0
MSFF206-2	PVYR	1	397	446	89	8	89	0	3	1.076	1.5	2.0	0	10	0	0	4.0
W17065-21		1	396	469	84	8	84	0	8	1.079	1.0	0.0	30	0	10	0	3.0
W17067-1		1	396	501	79	21	79	0	1	1.087	1.0	1.0	0	0	0	0	3.0
MSFF097-6	PVYR	1	395	476	83	17	83	0	0	1.084	1.0	1.0	0	0	0	0	3.0
MSFF217-1	PVYR	1	383	463	83	16	83	0	1	1.076	1.0	1.0	20	0	0	0	3.0
MN18AF6730-5		1	382	444	86	11	86	0	3	1.079	1.5	2.0	0	10	0	0	2.0
W17037-3		1	362	439	82	15	82	0	3	1.080	1.0	1.0	0	0	0	0	3.0
MN18W17037-34		1	358	394	91	9	91	0	0	1.081	1.0	1.0	0	10	0	0	3.0
Lamoka		**2**	**355**	**399**	**89**	**10**	**89**	**0**	**2**	**1.081**	**1.0**	**2.0**	**0**	**10**	**5**	**0**	**2.0**
MN18W17052-6		1	349	389	90	10	90	0	0	1.082	1.5	1.0	0	0	0	0	3.0

														PERCENT (%)			
	PVY		CWT/A		PERCENT OF TOTAL[1]						CHIP	OTF	TUBER QUALITY[4]				
LINE	Resistant	N	US#1	TOTAL	US#1	Bs	As	OV	PO	SP GR	SCORE[2]	SED[3]	HH	VD	IBS	BC	MAT[5]
Snowden		**2**	**347**	**406**	**85**	**15**	**85**	**0**	**0**	**1.086**	**1.0**	**1.0**	**0**	**20**	**0**	**0**	**3.0**
ND14247CAB-4		1	345	458	75	12	75	0	13	1.073	-	-	40	0	0	0	3.0
MSFF077-4	PVYR	1	344	371	93	7	93	0	0	1.073	1.0	1.0	0	10	0	0	2.0
MSFF022-2		1	342	392	87	13	87	0	0	1.076	1.5	2.0	0	0	0	0	3.0
MN18W17037-26		1	322	356	91	7	91	0	2	1.079	1.5	2.0	0	10	0	0	3.0
MSFF303-3	PVYR	1	319	429	74	26	74	0	0	1.074	1.0	1.0	0	10	0	0	3.0
MN18AF6658-5		1	314	349	90	7	90	0	3	1.080	1.0	1.0	20	10	0	0	3.0
MSFF058-1		1	314	353	89	10	89	0	1	1.077	1.0	1.0	0	0	0	0	2.0
MN18W17057-5		1	312	337	93	7	93	0	0	1.072	1.0	1.0	0	20	30	0	2.0
MN18AF6717-6		1	310	377	82	6	82	0	11	1.072	1.0	1.0	10	0	0	10	4.0
W17060-22		1	308	343	90	10	90	0	0	1.082	1.0	1.0	0	0	10	0	2.0
ND14138AB-9		1	307	368	83	17	83	0	0	1.081	1.0	1.0	0	10	0	0	3.0
W17066-34		1	301	395	76	24	76	0	0	1.083	1.0	1.0	0	0	0	0	2.0
MSFF292-1		1	296	354	84	15	84	0	1	1.090	1.0	1.0	0	0	0	0	3.0
MN18W17037-11		1	295	325	91	9	91	0	0	1.081	1.0	1.0	10	10	0	10	2.0
MSFF206-1	PVYR	1	295	375	79	20	79	0	2	1.077	1.0	1.0	0	10	0	0	2.0
W17067-13		1	294	477	62	38	62	0	1	1.088	1.0	1.0	0	10	0	0	2.0
W17049-10		1	288	387	74	26	74	0	0	1.093	1.0	1.0	0	10	0	0	2.0
MN18W17039-25		1	285	349	82	18	82	0	0	1.088	1.5	1.0	10	0	10	0	3.0
MN18W17043-6		1	275	328	84	7	84	0	9	1.085	1.0	1.0	0	0	0	0	2.0
ND14246CAB-4		1	268	364	74	26	74	0	0	1.070	1.0	1.0	0	10	0	0	1.0
MSFF061-1		1	265	306	87	12	87	0	2	1.081	1.0	2.0	0	0	10	0	3.0
MN18W17037-38		1	258	290	89	11	89	0	0	1.070	1.0	1.0	0	0	80	0	2.0
MN18AF6717-2		1	258	338	76	22	76	0	1	1.092	1.0	1.0	10	10	0	0	3.0
MN18W17052-4		1	247	334	74	26	74	0	0	1.098	1.0	1.0	0	0	0	0	4.0
ND14163AB-4		1	245	320	76	23	76	0	0	1.073	1.5	1.0	0	20	0	0	2.0
ND14192B-1		1	238	330	72	26	72	0	2	1.076	1.5	1.0	0	10	0	0	1.0
MN18W17037-21		1	218	267	81	19	81	0	0	1.083	1.0	1.0	20	10	10	0	2.0
ND14165AB-2		1	194	258	75	22	75	0	3	1.073	1.5	1.0	10	0	0	0	2.0
MN18AF6643-13		1	133	220	61	28	61	0	11	1.072	1.0	0.0	0	20	0	0	3.0
ND14199CAB-5		1	118	454	26	74	26	0	0	1.085	1.0	0.0	10	0	0	0	2.0
ND14193ABC-4		1	53	257	21	79	21	0	0	1.071	1.0	1.0	0	0	0	0	1.0
MEAN			352	425						1.080					3.0	0.5	2.7

														PERCENT (%)				
	PVY		CWT/A		PERCENT OF TOTAL[1]						CHIP	OTF	TUBER QUALITY[4]				
LINE	Resistant	N	US#1	TOTAL	US#1	Bs	As	OV	PO	SP GR	SCORE[2]	SED[3]	HH	VD	IBS	BC	MAT[5]
Russet																	
W17091-5rus		1	593	661	90	9	90	0	1	1.076	-	-	0	0	0	0	4.0
ND14172B-2Russ		1	524	620	84	14	84	0	2	1.090	-	-	30	0	0	0	3.0
W17098-43rus		1	477	591	81	17	81	0	2	1.080	-	-	0	0	0	0	2.0
W17079-4rus		1	456	655	70	28	70	0	3	1.081	-	-	0	0	0	0	4.0
W17069-53rus		1	436	502	87	10	87	0	3	1.083	-	-	10	0	0	0	4.0
W17099-6rus		1	393	504	78	14	78	0	8	1.076	-	-	0	0	0	0	2.0
W17096-14rus		1	373	488	76	16	76	0	7	1.083	-	-	0	0	0	0	2.0
ND14172B-1Russ		1	353	487	72	23	72	0	5	1.083	-	-	0	0	0	0	3.0
MN18W17079-11		1	350	391	90	10	90	0	0	1.079	-	-	0	10	0	0	4.0
W17086-10rus		1	335	453	74	26	74	0	0	1.080	-	-	0	0	0	0	2.0
W17073-3rus		1	327	446	73	26	73	0	1	1.087	-	-	0	0	0	0	2.0
ND14172B-4Russ		1	309	361	86	13	86	0	2	1.081	-	-	0	20	0	0	2.0
W17098-19rus		1	305	408	75	20	75	0	5	1.091	-	-	0	0	0	0	2.0
W17081-2rus		1	299	436	69	26	69	0	5	1.084	-	-	0	20	0	0	2.0
W17092-2rus		1	296	361	82	12	82	0	6	1.072	-	-	0	0	0	0	2.0
ND14173-2Russ		1	295	421	70	25	70	0	5	1.076	-	-	0	10	0	0	1.0
Russet Burbank		**2**	**279**	**482**	**58**	**33**	**58**	**0**	**9**	**1.072**	**-**	**-**	**10**	**10**	**0**	**0**	**1.5**
MN18W17091-5		1	264	380	69	31	69	0	0	1.072	-	-	0	0	0	0	1.0
Goldrush		**2**	**252**	**366**	**68**	**27**	**68**	**0**	**5**	**1.070**	**-**	**-**	**0**	**15**	**0**	**0**	**1.5**
Russet Norkotah		**1**	**242**	**350**	**69**	**30**	**69**	**0**	**1**	**1.073**	**-**	**-**	**10**	**0**	**0**	**10**	**1.0**
ND14261B-1Russ		1	191	336	57	39	57	0	4	1.082	-	-	0	20	0	0	2.0
MN18AF6758-2		1	128	241	53	42	53	0	5	1.086	-	-	10	10	0	0	2.0
ND14174-1Russ		1	45	260	17	75	17	0	8	1.077	-	-	0	50	0	0	1.0
MEAN			327	443						1.080					0.0	0.4	2.2

	PVY		CWT/A		PERCENT OF TOTAL[1]						CHIP	OTF	PERCENT (%) TUBER QUALITY[4]				
LINE	Resistant	N	US#1	TOTAL	US#1	Bs	As	OV	PO	SP GR	SCORE[2]	SED[3]	HH	VD	IBS	BC	MAT[5]
Red																	
MSFF353-1R		1	636	674	94	6	94	0	0	1.073	1.5	2.0	0	10	0	0	4.0
W17005-3R		1	503	617	82	16	82	0	2	1.066	-	-	0	20	0	0	2.0
ND14302-8R		1	471	531	89	11	89	0	0	1.065	-	-	0	0	0	0	2.0
ND14151-9R		1	469	551	85	15	85	0	0	1.071	-	-	0	0	0	0	3.0
MN18CO15083-6		1	424	605	70	30	70	0	0	1.074	-	-	0	10	0	0	4.0
MN18W17009-1		1	400	479	84	14	84	0	2	1.067	-	-	0	0	0	20	2.0
W17AF6698-1R		1	393	497	79	20	79	0	1	1.065	-	-	0	10	0	0	2.0
MN18W17026-2		1	392	540	73	24	73	0	3	1.064	-	-	0	10	0	0	2.0
W17027-3R/Y		1	370	449	83	17	83	0	0	1.070	-	-	30	0	0	0	2.0
ND14151-24R		1	370	449	82	15	82	0	2	1.063	-	-	0	0	10	0	3.0
W16025-5R		1	358	485	74	26	74	0	1	1.064	-	-	0	10	0	0	1.0
ND14336-6R		1	334	412	81	16	81	0	3	1.057	-	-	0	0	0	10	1.0
W17002-13R		1	312	467	67	32	67	0	1	1.067	-	-	0	0	10	0	1.0
W16030-4R		1	311	429	73	27	73	0	1	1.066	-	-	0	0	0	0	1.0
W17026-4R		1	304	460	66	34	66	0	0	1.058	-	-	0	0	0	0	2.0
ND14151-15R		1	303	429	71	29	71	0	0	1.073	-	-	10	0	0	0	3.0
Red Norland		**2**	**296**	**352**	**84**	**16**	**84**	**0**	**0**	**1.061**	**-**	**-**	**10**	**20**	**0**	**0**	**1.0**
MN18CO15117-2		1	296	384	77	20	77	0	3	1.075	-	-	0	0	0	0	2.0
MN18SR00011-2		1	292	405	72	28	72	0	0	1.073	-	-	0	10	0	0	2.0
MSFF182-1R	PVYR	1	260	475	55	45	55	0	1	1.085	1.5	2.0	0	30	0	0	3.0
ND14151-20R		1	257	405	63	36	63	0	1	1.064	-	-	0	20	0	0	3.0
Dark Red Norland		**2**	**255**	**302**	**85**	**15**	**85**	**0**	**1**	**1.060**	**-**	**-**	**5**	**10**	**0**	**0**	**1.5**
W17027-2R		1	240	439	55	44	55	0	2	1.061	-	-	0	0	0	0	1.0
Red LaSoda		**1**	**234**	**289**	**81**	**18**	**81**	**0**	**1**	**1.067**	**-**	**-**	**0**	**10**	**0**	**10**	**2.5**
MSFF130-1R	PVYR	1	203	365	56	44	56	0	0	1.067	-	-	0	10	0	0	2.0
ND14299-3RY		1	202	293	69	30	69	0	1	1.070	-	-	0	20	0	0	1.0
ND14168B-2R		1	179	370	48	49	48	0	3	1.084	-	-	0	0	0	0	2.0
W17007-5R		1	171	306	56	42	56	0	2	1.063	-	-	0	20	0	0	1.0
MSFF160-1R		1	121	218	56	42	56	0	2	1.058	-	-	0	10	0	0	4.0
MSFF145-2R		1	110	265	42	58	42	0	1	1.070	-	-	0	0	0	0	1.0
MSFF223-1RY	PVYR	1	108	269	40	57	40	0	3	1.077	1.5	2.0	0	0	0	0	1.0
MSFF228-1RY		1	63	321	20	80	20	0	0	1.064	-	-	0	0	0	0	1.0
MEAN			301	423						1.068					0.6	1.3	2.0

	PVY		CWT/A		PERCENT OF TOTAL[1]						CHIP	OTF	PERCENT (%) TUBER QUALITY[4]				
LINE	Resistant	N	US#1	TOTAL	US#1	Bs	As	OV	PO	SP GR	SCORE[2]	SED[3]	HH	VD	IBS	BC	MAT[5]
Speciality																	
MSFF335-2RR		1	545	654	83	17	83	0	0	1.063	2.0	2.0	0	0	0	0	4.0
MN18TX17760-2		1	484	544	89	4	89	0	6	1.067	2.0	3.0	0	0	0	0	3.0
MSFF351-1RR		1	369	496	74	19	74	0	6	1.064	-	-	0	0	0	10	3.0
MN18CO16154-9		1	310	441	70	29	70	0	1	1.089	-	-	0	0	100	0	2.0
MSFF335-1RR		1	279	566	49	51	49	0	0	1.069	-	-	0	0	0	0	3.0
MN18TX17730-8		1	194	426	46	53	46	0	2	1.072	1.5	2.0	0	10	0	0	3.0
MSFF134-2RR		1	141	274	51	47	51	0	2	1.066	-	-	0	20	0	0	1.0
MN18CO16213-2		1	63	253	25	75	25	0	0	1.075	1.5	2.0	0	0	0	0	2.0
MEAN			298	457						1.070					12.5	1.3	2.6
$HSD_{0.05}$			303	361						0.009							

[1]SIZE: B: < 2 in.; A: 2-3.25 in.; OV: > 3.25 in.; PO: Pickouts.

[2]CHIP SCORE: SNAC Scale (Out of the field); Ratings: 1-5; 1: Excellent, 5: Poor.

[3]SED: Stem End Defect, Based on Paul Bethke's (USDA/UWisconsin - Madison) 0 - 5 scale. 0 = no SED; 3 = significant SED; 5 = severe SED

[4]QUALITY: HH: Hollow Heart; BC: Brown Center; VD: Vascular Discoloration; IBS: Internal Brown Spot. Percent of 40 Oversize and/or A-size tubers cut.

[5]MATURITY RATING: August 24, 2021; Ratings 1-5; 1: Early (vines completely dead); 5: Late (vigorous vine, some flowering).

[6]Enviroweather: Entrican Station. Planting to vine kill

Plant Date: 5/5/2021

Vine Kill: 8/27/2021

Days from planting to vine kill: 114

Table 3

MICHIGAN STATE UNIVERSITY
POTATO BREEDING and GENETICS

ADAPTATION TRIAL, TABLESTOCK LINES
MONTCALM RESEARCH CENTER
May 5 to September 27, 2021 (145 days)
DD Base 40°F 3402[7]

											PERCENT (%)							LB[6]
	PVY		CWT/A		PERCENT OF TOTAL[1]						TUBER QUALITY[2]							RAUDPC
LINE	Resistant	N	US#1	TOTAL	US#1	Bs	As	OV	PO	SP GR	HH	VD	IBS	BC	SCAB[3]	MAT[4]	BRUISE[5]	x100
MSZ551-1	PVYR	2	548	588	93	5	91	2	2	1.077	0	20	20	5	1.2	4.0	2.1	0.2
MSX245-2Y		2	511	547	93	6	92	1	1	1.087	0	10	0	0	1.7	4.0	2.4	10.4
MSX156-1Y		2	482	502	96	2	84	12	2	1.069	0	0	0	0	2.2	3.0	-	29.9
MSBB343-2Y		2	474	502	95	5	92	3	0	1.082	5	10	0	0	1.8	2.0	1.2	-
MSV093-1Y		2	451	494	91	6	91	0	2	1.078	0	0	0	0	1.7	3.0	1.0	-
Blackberry		2	429	530	81	19	81	0	0	1.062	0	0	0	0	2.2	3.0	0.4	-
MSV179-1		2	427	445	96	2	95	1	2	1.064	5	5	5	0	1.5	3.0	1.9	-
MSZ109-08PP		2	413	476	87	11	87	0	2	1.064	0	0	0	0	1.3	2.5	0.5	-
MSCC447-1WR		2	397	436	91	9	90	1	0	1.074	0	0	0	0	2.2	3.5	2.1	24
MSCC447-01WP		2	379	447	84	16	84	0	1	1.076	0	0	0	0	2.7	3.5	2.9	-
MSAA174-1	PVYR	2	375	413	91	7	90	0	3	1.065	0	10	15	25	1.8	3.0	1.7	-
MSCC302-1		2	372	444	82	17	82	0	0	1.079	0	0	0	5	2.0	2.0	2.4	8.2
MSDD483-1	PVYR	2	364	461	79	21	79	0	1	1.077	0	0	10	0	2.0	2.5	-	-
MSZ615-2		2	346	369	94	6	94	0	0	1.071	0	5	0	0	1.5	1.5	1.4	-
MSZ590-1SPL		2	344	404	85	14	85	0	1	1.068	10	0	0	0	1.3	2.5	1.5	14
MST252-1Y		2	332	416	80	14	80	0	6	1.072	0	5	0	0	1.5	1.0	1.5	27.3
MSZ416-8RY		2	332	380	87	9	87	0	4	1.059	0	5	0	0	1.0	2.0	0.5	-
MSZ598-2		2	330	357	92	7	91	1	1	1.073	0	10	0	0	1.8	2.0	1.3	-
MSAA101-01RR		2	324	431	75	25	75	0	0	1.079	0	0	0	0	1.2	2.5	2.2	-
MSZ427-3R		2	313	378	83	17	83	0	0	1.062	0	5	0	0	2.7	1.5	1.2	-
MSCC553-1R	PVYR	2	305	342	89	9	88	1	1	1.071	0	0	0	0	2.5	3.0	1.1	12.4
MSZ513-2		2	286	317	90	9	90	0	1	1.074	0	0	0	0	1.7	2.0	0.9	-
MSBB371-1YSPL		2	280	330	85	15	85	0	0	1.077	0	5	0	0	1.3	1.5	1.3	-
Yukon Gold		**2**	**261**	**289**	**91**	**6**	**91**	**0**	**3**	**1.076**	**35**	**5**	**5**	**0**	**1.8**	**1.5**	**0.8**	**43.1**
MSCC720-1WP		2	240	407	59	41	59	0	0	1.081	0	0	0	0	3.3	2.0	2.2	-
MSBB351-1		2	237	261	91	9	89	2	0	1.053	0	0	0	0	1.2	1.5	0.2	16.3
MSAA127-1PP		2	227	318	71	28	71	0	1	1.056	0	0	0	0	1.5	1.5	1.4	-
MSCC614-1RYSPL		2	224	413	54	46	54	0	0	1.082	0	5	0	0	1.7	2.5	nd	30.4
MSDD254-1SPL		2	220	244	90	9	89	1	1	1.062	10	5	0	5	1.8	1.0	0.2	-

											PERCENT (%)							LB[6]
	PVY		CWT/A		PERCENT OF TOTAL[1]						TUBER QUALITY[2]							RAUDPC
LINE	Resistant	N	US#1	TOTAL	US#1	Bs	As	OV	PO	SP GR	HH	VD	IBS	BC	SCAB[3]	MAT[4]	BRUISE[5]	x100
MSBB364-1		2	213	228	93	5	93	0	2	1.051	0	0	0	0	1.5	3.0	0.6	-
MSZ157-3		2	208	322	65	34	65	0	1	1.078	0	0	0	5	2.5	2.0	0.5	-
MSZ427-1R		2	201	339	62	18	61	1	19	1.066	0	10	0	0	1.5	2.5	0.6	-
Superior		**2**	**169**	**209**	**81**	**19**	**81**	**0**	**0**	**1.071**	**0**	**5**	**0**	**0**	**0.7**	**1.0**	**1.0**	-
MEAN			334	395						1.071					1.8	2.3	1.3	
$HSD_{0.05}$			270	260						0.013								

[1]SIZE: B: < 2 in.; A: 2-3.25 in.; OV: > 3.25 in.; PO: Pickouts.

[2]QUALITY: HH: Hollow Heart; BC: Brown Center; VD: Vascular Discoloration; IBS: Internal Brown Spot. Percent of 40 Oversize and/or A-size tubers cut.

[3]SCAB DISEASE RATING: MSU Scab Nursery; 0: No Infection; 1: Low Infection <5%; 3: Intermediate; 5: Highly Susceptible.

[4]MATURITY RATING: August 24, 2021; Ratings 1-5; 1: Early (vines completely dead); 5: Late (vigorous vine, some flowering). Plant Date: 5/5/2021

[5]BRUISE: Simulated blackspot bruise test average number of spots per tuber. Vine Kill: 9/8/2021

[6]LB RAUDPC: Late blight (*P. infestans* US-23) foliar disease reaction. [7]Enviroweather: Entrican Station. Planting to vine kill 126

Table 4

MICHIGAN STATE UNIVERSITY
POTATO BREEDING and GENETICS

PRELIMINARY TRIAL, CHIP-PROCESSING LINES
MONTCALM RESEARCH CENTER
May 5 to September 14, 2021 (132 days)
DD Base 40°F 3402[9]

													PERCENT (%)							LB[8]
	PVY		CWT/A		PERCENT OF TOTAL[1]						CHIP	OTF	TUBER QUALITY[4]							RAUDPC
LINE	Resistant	N	US#1	TOTAL	US#1	Bs	As	OV	PO	SP GR	SCORE[2]	SED[3]	HH	VD	IBS	BC	SCAB[5]	MAT[6]	BRUISE[7]	x100
MSBB190-2		1	564	583	97	3	96	1	0	1.081	1.0	2.0	0	0	0	0	1.7	3.0	3.2	-
MSDD376-4	PVYR	1	560	600	93	5	92	1	1	1.093	1.0	0.0	10	0	0	0	1.5	3.0	3.4	-
MSFF079-16	PVYR	1	551	565	98	2	89	9	0	1.078	1.0	1.0	20	10	0	0	-	3.0	2.1	-
MSEE207-2	PVYR	1	534	562	95	5	95	0	0	1.080	1.0	1.0	0	0	0	0	0.5	3.0	1.6	-
MSFF031-3	PVYR	1	517	591	88	12	88	0	0	1.074	1.0	1.0	0	10	0	0	1.2	2.0	1.7	-
MSEE063-6	PVYR	1	508	537	95	5	93	1	1	1.079	2.0	3.0	10	10	0	0	0.7	3.0	2.3	-
MSFF031-6	PVYR	1	507	557	91	9	91	0	0	1.070	1.0	2.0	0	0	0	0	1.0	3.0	2.3	-
MSEE035-4	PVYR	1	472	514	92	8	91	1	1	1.089	1.0	1.0	10	0	0	0	1.2	4.0	4.1	-
MSFF008-1		1	455	485	94	6	93	1	0	1.074	-	-	0	0	0	0	1.2	3.0	-	-
MSX495-2		1	442	475	93	3	93	0	4	1.079	1.0	0.0	20	0	0	0	2.2	3.0	2.9	0.3
MSDD244-05	PVYR	1	426	460	93	6	91	1	2	1.088	1.5	3.0	20	20	0	0	1.3	3.0	2.9	-
MSEE101-2		1	405	435	93	6	93	0	0	1.090	1.5	1.0	20	0	0	0	0.5	2.0	2.9	-
MSDD372-07	PVYR	1	400	469	85	15	85	0	0	1.093	1.0	1.0	0	0	0	0	1.7	3.0	3.2	-
MSEE163-1		1	397	444	89	10	89	0	0	1.072	-	-	0	30	0	0	1.0	2.0	-	-
MSEE169-1	PVYR	1	397	425	93	5	93	0	2	1.071	-	-	0	50	50	0	1.2	3.0	-	-
MSEE031-3	PVYR	1	392	431	91	6	91	0	3	1.086	1.0	2.0	10	10	0	0	1.3	3.0	3.3	-
MSBB029-1Y		1	387	466	83	14	83	0	2	1.081	1.0	1.0	0	0	0	0	1.0	2.0	1.8	-
Atlantic		**1**	**381**	**415**	**92**	**6**	**92**	**0**	**2**	**1.092**	**1.0**	**1.0**	**40**	**20**	**0**	**0**	**2.8**	**3.0**	**2.5**	**39.7**
MSDD553-1	PVYR	1	365	386	95	5	95	0	0	1.079	1.0	1.0	0	0	0	0	2.2	4.0	1.7	-
MSBB008-3		1	357	395	91	9	91	0	1	1.085	1.0	2.0	20	0	0	10	1.0	2.0	2.5	-
MSDD249-9	PVYR	1	337	354	95	5	94	1	0	1.081	1.0	2.0	0	0	10	0	1.8	3.0	2.6	-
MSEE016-07		1	333	347	96	4	96	0	0	1.092	1.0	1.0	10	0	0	0	1.8	3.0	2.0	-
MSBB190-3		1	326	339	96	4	96	0	0	1.076	-	-	0	0	0	0	2.0	3.0	-	-
MSFF029-10	PVYR	1	324	390	83	17	83	0	0	1.090	1.0	1.0	0	20	0	0	1.8	3.0	1.0	-
MSEE016-10	PVYR	1	322	378	85	15	85	0	0	1.091	1.0	1.0	0	0	0	0	2.0	3.0	3.5	-
MSZ218-5	PVYR	1	319	337	95	5	95	0	0	1.078	-	-	50	10	0	0	1.3	3.0	-	-
MSDD372-15		1	314	329	96	4	96	0	0	1.084	1.0	2.0	10	0	0	0	1.0	4.0	2.0	-
MSAA678-1		1	314	359	87	12	87	0	1	1.075	-	-	10	0	0	0	1.0	2.0	-	-
MSV241-2		1	305	334	91	8	91	0	1	1.091	1.5	1.0	50	20	0	0	2.2	3.0	3.4	-
MSEE002-3		1	304	345	88	12	88	0	0	1.091	1.0	2.0	0	0	0	0	2.2	3.0	2.2	-
MSFF072-1Y	PVYR	1	294	353	83	7	83	0	9	1.085	1.5	1.0	10	0	0	0	1.8	3.0	2.2	-
MSFF073-3	PVYR	1	293	329	89	10	89	0	1	1.089	1.0	2.0	0	0	0	0	0.8	3.0	2.3	-
MSY089-2		1	290	307	94	6	91	3	0	1.076	-	-	0	60	0	10	2.5	3.0	-	-
MSZ042-07		1	288	301	96	3	93	2	2	1.073	-	-	70	20	0	0	1.7	3.0	-	-

													PERCENT (%)							LB[8]
	PVY		CWT/A		PERCENT OF TOTAL[1]						CHIP	OTF	TUBER QUALITY[4]							RAUDPC
LINE	Resistant	N	US#1	TOTAL	US#1	Bs	As	OV	PO	SP GR	SCORE[2]	SED[3]	HH	VD	IBS	BC	SCAB[5]	MAT[6]	BRUISE[7]	x100
MSFF002-1		1	277	318	87	13	87	0	0	1.078	1.0	1.0	0	10	0	0	1.5	2.0	1.7	-
MSAA241-1		1	277	291	95	5	95	0	0	1.075	-	-	0	50	0	0	0.8	2.0	-	-
MSFF035-2	PVYR	1	271	330	82	13	82	0	5	1.079	1.0	1.0	10	0	0	0	1.5	1.0	2.8	-
Snowden		**1**	**267**	**309**	**86**	**14**	**86**	**0**	**0**	**1.084**	**1.0**	**2.0**	**0**	**10**	**0**	**0**	**3.0**	**2.0**	**2.6**	**10.1**
MSEE191-3Y	PVYR	1	249	265	94	5	88	5	1	1.072	-	-	30	0	0	0	2.2	4.0	-	-
Pike		**1**	**232**	**263**	**88**	**12**	**88**	**0**	**0**	**1.083**	**1.0**	**2.0**	**0**	**0**	**0**	**0**	**1.0**	**2.0**	**1.8**	-
MSAA266-1		1	202	232	87	4	87	0	9	1.066	-	-	0	0	0	0	1.5	2.0	-	-
MSEE182-3	PVYR	1	114	149	76	24	76	0	0	1.080	1.0	0.0	0	0	10	10	1.7	2.0	0.6	-
MSAA309-15		1	69	120	57	39	57	0	4	1.074	-	-	0	0	0	0	0.8	1.0	-	41.7
MEAN			357	392						1.081							1.5	2.7	2.4	

[1]SIZE: B: < 2 in.; A: 2-3.25 in.; OV: > 3.25 in.; PO: Pickouts.

[2]CHIP SCORE: SNAC Scale (Out of the field); Ratings: 1-5; 1: Excellent, 5: Poor.

[3]SED: Stem End Defect, Based on Paul Bethke's (USDA/UWisconsin - Madison) 0 - 5 scale. 0 = no SED; 3 = significant SED; 5 = severe SED

[4]QUALITY: HH: Hollow Heart; BC: Brown Center; VD: Vascular Discoloration; IBS: Internal Brown Spot. Percent of 40 Oversize and/or A-size tubers cut.

[5]SCAB DISEASE RATING: MSU Scab Nursery; 0: No Infection; 1: Low Infection <5%; 3: Intermediate; 5: Highly Susceptible.

[6]MATURITY RATING: August 24, 2021; Ratings 1-5; 1: Early (vines completely dead); 5: Late (vigorous vine, some flowering).

[7]BRUISE: Simulated blackspot bruise test average number of spots per tuber.

[8]LB RAUDPC: Late blight (*P. infestans* US-23) foliar disease reaction.

Plant Date: 5/5/2021

Vine Kill: 9/8/2021

Days from planting to vine kill: 126

[9]Enviroweather: Entrican Station. Planting to vine kill

Table 5

MICHIGAN STATE UNIVERSITY
POTATO BREEDING and GENETICS

PRELIMINARY TRIAL, TABLESTOCK LINES
MONTCALM RESEARCH CENTER
May 5 to September 14, 2021 (132 days)
DD Base 40°F 3402[7]

												PERCENT (%) TUBER QUALITY[2]							LB[6] RAUDPC
	PVY		CWT/A		PERCENT OF TOTAL[1]														
LINE	Resistant	N	US#1	TOTAL	US#1	Bs	As	OV	PO	SP GR	HH	VD	IBS	BC	SCAB[3]	MAT[4]	BRUISE[5]	x100
MSCC300-1		1	530	600	88	10	87	2	2	1.072	20	0	0	0	2.8	3.0	1.0	-
MSDD088-1		1	525	558	94	6	93	1	0	1.073	0	0	0	0	1.7	3.0	0.4	47.1
MSEE048-2Y	PVYR	1	467	489	95	5	95	0	0	1.077	0	0	0	0	0.7	3.0	1.8	-
MSDD251-2Y		1	455	500	91	9	91	0	0	1.072	60	0	0	0	2.5	2.0	0.7	27.1
MSEE075-1	PVYR	1	453	461	98	2	91	7	0	1.074	0	10	0	0	2.0	3.0	2.0	-
MSFF211-2	PVYR	1	448	477	94	5	94	0	1	1.065	40	0	0	10	1.3	3.0	0.4	-
MSFF191-1Y	PVYR	1	440	476	92	8	92	0	0	1.068	60	0	0	10	2.0	3.0	0.6	-
MSFF120-2Y		1	405	432	94	6	94	0	0	1.076	0	0	0	10	1.0	2.0	1.4	-
MSZ610-3		1	402	422	95	4	91	4	1	1.082	10	30	50	0	-	3.0	2.8	-
MSEE052-5		1	346	379	91	5	91	0	3	1.073	0	0	0	0	1.7	3.0	0.4	-
MSBB213-1SPL		1	289	319	91	9	88	3	0	1.075	0	10	0	0	1.8	4.0	3.0	-
Reba		**1**	**283**	**305**	**93**	**6**	**93**	**0**	**1**	**1.071**	**10**	**0**	**0**	**0**	**2.2**	**2.0**	**1.6**	-
MSBB323-1		1	276	298	93	7	93	0	0	1.089	0	0	0	50	1.3	3.0	1.0	-
MSX137-6	PVYR	1	260	338	77	21	77	0	2	1.074	0	10	0	0	2.8	2.0	1.4	-
MSDD107-1Y		1	234	329	71	29	71	0	0	1.075	0	0	0	0	1.8	5.0	1.2	-
MSFF055-1Y		1	208	311	67	33	67	0	0	1.068	0	0	0	0	1.0	2.0	1.2	-
MSFF189-1Y		1	199	230	86	14	86	0	0	1.063	0	0	0	0	2.0	1.0	0.2	-
MSFF178-1		1	189	214	88	12	88	0	0	1.066	0	0	0	0	0.8	3.0	0.5	-
MSZ263-4		1	147	191	77	23	77	0	0	1.073	0	0	0	0	1.7	3.0	0.3	-
MSBB262-1YSpl		1	130	259	50	50	50	0	0	1.066	0	0	0	0	2.0	1.0	0	53.1
MSCC512-1PP		1	124	369	34	66	34	0	0	1.068	0	0	0	0	2.5	2.0	1.3	-
MEAN			324	379						1.072					1.8	2.7	1.1	

[1]SIZE: B: < 2 in.; A: 2-3.25 in.; OV: > 3.25 in.; PO: Pickouts.

[2]QUALITY: HH: Hollow Heart; BC: Brown Center; VD: Vascular Discoloration; IBS: Internal Brown Spot. Percent of 40 Oversize and/or A-size tubers cut.

[3]SCAB DISEASE RATING: MSU Scab Nursery; 0: No Infection; 1: Low Infection <5%; 3: Intermediate; 5: Highly Susceptible.

[4]MATURITY RATING: August 24, 2021; Ratings 1-5; 1: Early (vines completely dead); 5: Late (vigorous vine, some flowering).

[5]BRUISE: Simulated blackspot bruise test average number of spots per tuber.

[6]LB RAUDPC: Late blight (*P. infestans* US-23) foliar disease reaction.

Plant Date: 5/5/2021
Vine Kill: 9/8/2021
Days from planting to vine kill: 126

[7]Enviroweather: Entrican Station. Planting to vine kill

Table 6

MICHIGAN STATE UNIVERSITY
POTATO BREEDING and GENETICS

PRELIMINARY TRIAL, PIGMENTED LINES
MONTCALM RESEARCH CENTER
May 5 to September 14, 2021 (132 days)
DD Base 40°F 3402[7]

											PERCENT (%)							LB[6]
	PVY		CWT/A		PERCENT OF TOTAL[1]						TUBER QUALITY[2]							RAUDPC
LINE	Resistant	N	US#1	TOTAL	US#1	Bs	As	OV	PO	SP GR	HH	VD	IBS	BC	SCAB[3]	MAT[4]	Bruise[5]	x100
MSEE055-1R	PVYR	1	525	576	91	9	90	1	0	1.074	0	0	0	0	3.0	3.0	1.4	-
MSW476-4RY		1	418	473	88	12	87	1	0	1.078	10	20	0	0	1.3	2.0	1.2	-
MSFF230-2PY		1	409	469	87	10	87	0	3	1.077	0	10	0	0	3.3	4.0	1.8	-
MSBB281-1PY		1	400	423	95	5	95	0	0	1.076	10	0	0	0	2.5	3.0	-	-
MSFF247-2Y	PVYR	1	396	477	83	16	83	0	1	1.069	0	0	0	0	2.0	2.0	0.8	-
MSFF230-1		1	393	605	65	34	65	0	1	1.086	0	0	0	0	3.5	4.0	1.5	-
MSFF200-4PYSPL	PVYR	1	387	507	76	24	76	0	0	1.065	0	10	0	0	2.3	2.0	1.5	-
MSFF142-2Spl		1	379	421	90	10	90	0	0	1.071	0	0	0	10	1.0	2.0	0.8	-
MSBB308-2P		1	367	408	90	10	90	0	0	1.062	0	0	0	0	1.2	2.0	0.9	-
MSFF134-1PP		1	365	444	82	18	82	0	0	1.075	0	0	0	0	1.8	2.0	0.0	-
MSAA157-2PY		1	341	421	81	19	81	0	0	1.071	70	0	0	0	3.3	3.0	1.7	32.0
MSFF305-1RY	PVYR	1	334	385	87	11	87	0	2	1.066	0	10	0	0	1.7	3.0	0.6	-
MSFF034-4P	PVYR	1	321	417	77	19	77	0	5	1.067	40	10	40	0	2.2	3.0	0.6	-
MSFF142-1P		1	317	461	69	31	69	0	0	1.073	0	10	0	0	1.5	4.0	-	-
Dark Red Norland		**1**	**310**	**386**	**80**	**18**	**80**	**0**	**2**	**1.063**	**0**	**0**	**0**	**0**	**1.2**	**1.0**	**0.2**	-
MSX324-1P		1	296	351	84	15	84	0	1	1.086	0	10	0	0	0.5	2.0	2.0	11.6
MSFF334-1Pinto		1	124	205	61	39	61	0	1	1.058	0	0	0	0	0.7	5.0	-	-
MSFF030-1WR	PVYR	1	102	174	59	35	59	0	7	1.059	0	0	0	0	1.2	2.0	-	-
MSFF198-13PY	PVYR	1	101	262	39	61	39	0	0	1.065	0	0	0	0	1.0	4.0	0.6	
MEAN			331	414						1.071					1.9	2.8	1.0	

[1]SIZE: B: < 2 in.; A: 2-3.25 in.; OV: > 3.25 in.; PO: Pickouts.

[2]QUALITY: HH: Hollow Heart; BC: Brown Center; VD: Vascular Discoloration; IBS: Internal Brown Spot. Percent of 40 Oversize and/or A-size tubers cut.

[3]SCAB DISEASE RATING: MSU Scab Nursery; 0: No Infection; 1: Low Infection <5%; 3: Intermediate; 5: Highly Susceptible.

[4]MATURITY RATING: August 24, 2021; Ratings 1-5; 1: Early (vines completely dead); 5: Late (vigorous vine, some flowering).

[5]BRUISE: Simulated blackspot bruise test, average number of spots per tuber.

[6]LB RAUDPC: Late blight (*P. infestans* US-23) foliar disease reaction.

Plant Date: 5/5/2021
Vine Kill: 9/8/2021
Days from planting to vine kill: 126

[7]Enviroweather: Entrican Station. Planting to vine kill

Table 7

MICHIGAN STATE UNIVERSITY
POTATO BREEDING and GENETICS

DIPLOID REPLICATED TRIAL
MONTCALM RESEARCH CENTER
May 5 to September 14, 2021 (132 days)
DD Base 40°F 3402[8]

		CWT/A		PERCENT OF TOTAL[1]								PERCENT (%) TUBER QUALITY[4]						
LINE	N	US#1	TOTAL	US#1	Bs	As	OV	PO	SP GR	CHIP SCORE[2]	OTF SED[3]	HH	VD	IBS	BC	SCAB[5]	MAT[6]	BRUISE[7]
MSHH1037-01	2	435	520	84	16	84	0	1	1.076	2.0	3	0	5	0	0	1.8	3.0	1.5
MSGG685-05	2	395	550	72	24	72	0	5	1.071	1.5	3	0	0	0	0	1.5	3.5	1.1
MSGG863-A1	2	374	405	93	7	93	0	0	1.079	1.0	1	0	5	0	0	2.3	2.5	2.1
Atlantic	**2**	**366**	**393**	**93**	**6**	**93**	**0**	**1**	**1.091**	**1.0**	**1**	**20**	**0**	**0**	**5**	**2.8**	**2.0**	**1.7**
MSHH699-02	2	336	482	70	27	69	0	3	1.073	2.0	2	20	5	5	0	2.8	4.0	1.6
Lamoka	**2**	**324**	**375**	**86**	**13**	**86**	**0**	**1**	**1.086**	**1.0**	**1**	**0**	**10**	**0**	**0**	**1.5**	**2.0**	**1.9**
MSEE815-06	2	266	332	80	15	80	0	6	1.078	1.0	1	20	10	15	40	1.5	2.0	2.8
MSHH618-01	2	251	389	65	31	65	0	4	1.063	2.5	3	0	0	0	0	1.3	3.0	0.8
MSDD829-09	2	230	298	76	22	76	0	1	1.070	2.5	2	0	0	0	0	2.0	4.0	1.3
MSHH1056-01	2	212	290	73	24	73	0	3	1.074	2.0	2	50	5	15	20	2.5	4.0	2.0
MSGG623-A2	2	210	437	48	47	48	0	5	1.083	2.0	2	75	0	0	0	2.3	3.0	1.0
MSGG653-A2	2	205	478	43	50	43	0	7	1.082	2.5	2	0	0	0	0	2.5	3.5	1.5
MSGG676-01	2	192	307	63	33	63	0	4	1.073	1.5	2	10	5	0	0	1.5	3.0	1.3
MSEE824-04	2	186	271	69	31	69	0	0	1.086	1.0	1	65	0	0	0	2.0	2.0	1.1
MSHH701-01	2	145	332	44	53	44	0	3	1.081	1.5	2	5	10	5	10	1.5	4.0	2.4
MSGG600-06	2	131	356	37	61	37	0	2	1.098	1.0	1	0	0	0	0	1.3	2.5	1.4
MSHH972-03	2	106	379	28	72	28	0	0	1.076	2.0	1	0	0	5	0	1.8	3.5	2.2
MSGG603-A5	2	52	342	15	84	15	0	1	1.078	2.5	3	20	0	0	0	2.8	2.0	1.2
MEAN		245	385						1.079							2.0	3.0	1.6
$HSD_{0.05}$		138	162						0.012									

[1]SIZE: B: < 2 in.; A: 2-3.25 in.; OV: > 3.25 in.; PO: Pickouts.

[2]CHIP SCORE: SNAC Scale (Out of the field); Ratings: 1-5; 1: Excellent, 5: Poor.

[3]SED: Stem End Defect, Based on Paul Bethke's (USDA/UWisconsin - Madison) 0 - 5 scale. 0 = no SED; 3 = significant SED; 5 = severe SED

[4]QUALITY: HH: Hollow Heart; BC: Brown Center; VD: Vascular Discoloration; IBS: Internal Brown Spot. Percent of 40 Oversize and/or A-size tubers cut.

[5]SCAB DISEASE RATING: MSU Scab Nursery; 0: No Infection; 1: Low Infection <5%; 3: Intermediate; 5: Highly Susceptible.

[6]MATURITY RATING: August 24, 2021; Ratings 1-5; 1: Early (vines completely dead); 5: Late (vigorous vine, some flowering).

[7]BRUISE: Simulated blackspot bruise test, average number of spots per tuber.

Plant Date: 5/5/2021
Vine Kill: 9/8/2021
Days from planting to vine kill: 126

[8]Enviroweather: Entrican Station. Planting to vine kill

Table 8

MICHIGAN STATE UNIVERSITY

POTATO BREEDING and GENETICS

2019-2021 SCAB DISEASE TRIAL SUMMARY
SCAB NURSERY, MONTCALM RESEARCH CENTER , MI

LINE	3-YR* AVG.	2021 RATING	2021 WORST	2021 N	2020 RATING	2020 WORST	2020 N	2019 RATING	2019 WORST	2019 N
Sorted by ascending 2021 Average Rating;										
MSZ052-13	0.4	0.2	0.5	3	0.5	0.5	3	0.7	1.0	3
MSBB613-7	-	0.3	0.5	3						
MSBB614-15	-	0.3	0.5	3						
MSCC282-3RR	0.5*	0.5	0.5	3	0.5	0.5	3			
MSDD085-13	-	0.5	0.5	3						
MSDD247-11	-	0.5	0.5	3						
MSEE101-2	0.8*	0.5	0.5	3	1.0	1.5	3			
MSEE207-2	0.6*	0.5	0.5	3	0.7	1.0	3			
MSEE247-6WP	0.8*	0.5	0.5	3	1.0	1.5	3			
MSW474-1	-	0.5	0.5	3						
MSX324-1P	0.9	0.5	0.5	3	1.0	1.0	3	1.3	1.5	3
MSEE048-2Y	-	0.7	1.0	3						
MSEE063-6	0.8*	0.7	1.0	3	1.0	1.0	3			
MSFF334-1Pinto	-	0.7	1.0	3						
Superior	**1.4**	**0.7**	**1.0**	**3**	**1.8**	**2.5**	**2**	**1.7**	**2.0**	**3**
MSAA076-04	-	0.8	1.0	2						
Goldrush Russet	**0.6**	**0.8**	**1.5**	**3**	**0.3**	**0.5**	**3**	**0.7**	**1.0**	**3**
MSAA076-6	1.3	0.8	1.0	3	1.3	1.5	3	1.8	2.5	3
MSAA241-1	1.0*	0.8	1.5	3	1.2	1.5	3			
MSAA309-15	-	0.8	1.0	3						
MSAA498-18	0.8*	0.8	1.0	3	0.8	1.0	3			
MSBB012-1Y	-	0.8	1.0	3						
MSCC376-1	-	0.8	1.5	3						
MSDD244-15	-	0.8	1.0	3						
MSFF073-3	-	0.8	1.0	3						
MSFF178-1	-	0.8	1.0	3						
MSY022-2	-	0.8	1.5	3						
MSY543-2	-	0.8	1.5	3						
MSZ242-09	1.2	0.8	1.5	3	1.3	2.0	3	1.5	1.5	2
MSZ248-02	1.3*	0.8	1.5	3	1.7	2.0	3			
Vanguard Russet	1.2	0.8	1.0	3	1.5	2.0	3	1.3	1.5	3
MSAA311-1	-	1.0	2.0	3						
MSAA678-1	-	1.0	1.5	3						
MSBB008-3	-	1.0	1.5	3						
MSBB029-1Y	-	1.0	2.0	3						
MSBB625-2	0.9*	1.0	1.0	3	0.8	1.0	3			
MSBB634-8	1.2	1.0	1.5	3	1.2	1.5	3	1.5	2.0	3
MSCC374-1Y	-	1.0	1.5	3						
MSCC542-1P	1.3*	1.0	1.0	3	1.5	2.0	3			

Table 8

MICHIGAN STATE UNIVERSITY

POTATO BREEDING and GENETICS

2019-2021 SCAB DISEASE TRIAL SUMMARY
SCAB NURSERY, MONTCALM RESEARCH CENTER , MI

LINE	3-YR* AVG.	2021 RATING	2021 WORST	2021 N	2020 RATING	2020 WORST	2020 N	2019 RATING	2019 WORST	2019 N
MSDD372-15	-	1.0	1.0	3						
MSEE054-20	-	1.0	1.5	3						
MSEE163-1	1.0*	1.0	1.0	3	1.0	1.0	3			
MSEE255-1	1.3*	1.0	1.0	3	1.5	1.5	3			
MSFF031-6	-	1.0	1.5	3						
MSFF055-1Y	-	1.0	1.0	3						
MSFF120-2Y	-	1.0	1.5	3						
MSFF142-2Spl	-	1.0	1.5	3						
MSFF198-13PY	-	1.0	1.5	3						
MSZ248-10	1.0*	1.0	1.5	3	1.0	1.5	3			
MSZ416-8RY	1.1	1.0	1.0	3	1.2	1.5	3	1.0	1.5	3
Pike	**1.1**	**1.0**	**1.0**	**3**	**0.8**	**1.0**	**3**	**1.5**	**2.0**	**3**
Dark Red Norland	**1.2***	**1.2**	**2.0**	**3**				**1.2**	**2.0**	**6**
MSAA101-1RR	0.9	1.2	1.5	3	0.8	1.0	3	0.8	1.5	3
MSBB017-1	1.5*	1.2	1.5	3	1.8	2.5	3			
MSBB058-4	-	1.2	1.5	3						
MSBB308-2P	1.2	1.2	1.5	3	1.2	2.0	3	1.2	1.5	3
MSBB351-1	1.0*	1.2	1.5	3	0.8	1.5	3			
MSBB626-11	1.0*	1.2	1.5	3	0.8	1.5	3			
MSBB635-14	1.3	1.2	1.5	3	1.7	2.0	3	1.2	1.5	3
MSDD247-07	-	1.2	1.5	3						
MSDD271-10	-	1.2	1.5	3						
MSEE035-4	-	1.2	1.5	3						
MSEE169-1	1.3*	1.2	1.5	3	1.3	1.5	3			
MSFF008-1	-	1.2	1.5	3						
MSFF030-1WR	-	1.2	1.5	3						
MSFF031-3	-	1.2	1.5	3						
MSZ551-1	1.6	1.2	2.0	3	1.8	2.5	3	1.8	2.0	3
Petoskey	1.3	1.3	2.0	6	1.3	1.5	3	1.3	2.0	3
MSAA036-3	-	1.3	2.0	3						
MSAA252-7	1.4*	1.3	2.5	3	1.5	2.0	3			
MSAA392-5Y	-	1.3	1.5	3						
MSBB323-1	-	1.3	1.5	3						
MSBB371-1YSpl	1.4	1.3	2.0	3	1.2	2.0	3	1.8	2.0	3
MSCC287-1	1.5*	1.3	1.5	3	1.7	2.0	3			
MSDD244-05	-	1.3	2.0	3						
MSEE031-3	1.2*	1.3	2.0	3	1.0	1.0	3			
MSEE074-1	-	1.3	1.5	3						
MSFF211-2	-	1.3	1.5	3						
MSW476-4RY	-	1.3	2.0	3	2.0	2.0	3			
MSX324-2R	1.2	1.3	2.0	3	1.2	1.5	3	1.2	2.0	3

Table 8

MICHIGAN STATE UNIVERSITY

POTATO BREEDING and GENETICS

2019-2021 SCAB DISEASE TRIAL SUMMARY
SCAB NURSERY, MONTCALM RESEARCH CENTER , MI

LINE	3-YR* AVG.	2021 RATING	2021 WORST	2021 N	2020 RATING	2020 WORST	2020 N	2019 RATING	2019 WORST	2019 N
MSZ109-8PP	1.3*	1.3	1.5	3	1.2	1.5	3			
MSZ218-5	-	1.3	1.5	3						
MSZ590-1	1.1	1.3	1.5	3	0.7	1.0	3	1.3	1.5	3
Lamoka	**1.3**	**1.5**	**2.0**	**3**	**0.8**	**1.0**	**3**	**1.5**	**2.0**	**3**
MSAA127-7PP	1.7	1.5	2.0	3	1.7	2.5	3	1.8	2.0	3
MSAA161-4RY	1.4	1.5	2.0	3	1.3	2.5	3	1.3	1.5	3
MSAA217-3	1.9*	1.5	2.0	3	2.3	3.0	3			
MSAA266-1	-	1.5	2.0	3						
MSAA328-4	1.4*	1.5	1.5	3	1.3	1.5	3			
MSBB364-1	1.4	1.5	1.5	3	1.5	2.0	3	1.3	1.5	3
MSCC058-1	1.6*	1.5	2.0	3	1.7	2.0	3			
MSDD376-4	-	1.5	2.5	3						
MSEE075-1Spl	-	1.5	1.5	1						
MSFF002-1	-	1.5	2.5	3						
MSFF035-2	-	1.5	2.0	3						
MSFF142-1P	-	1.5	2.0	3						
MST252-1Y	1.3	1.5	2.0	3	0.8	1.0	3	1.7	2.0	3
MSV179-1	1.5	1.5	1.5	3	1.5	2.5	3	1.5	2.0	2
MSV498-1	1.4	1.5	2.0	3	1.7	2.0	3	1.2	2.0	3
MSZ427-1R	1.0	1.5	2.0	3	0.8	1.0	3	0.7	1.5	3
MSZ615-2	1.4	1.5	2.0	3	1.5	1.5	3	1.2	1.5	3
Bonafide (MSV093-1Y)	1.5	1.7	2.0	3	1.7	2.0	3	1.2	1.5	3
MSAA196-1	1.7*	1.7	2.0	3	1.7	2.5	3			
MSAA260-3	1.4*	1.7	2.0	3	1.2	1.5	3			
MSBB058-3	-	1.7	2.0	3						
MSBB190-2	-	1.7	2.0	3						
MSBB630-2	-	1.7	2.0	3						
MSCC614-1RYSpl	1.7*	1.7	2.0	3	1.7	2.5	3			
MSDD040-01	-	1.7	2.0	3						
MSDD088-1	-	1.7	2.0	3						
MSDD372-07	-	1.7	2.0	3						
MSEE052-5	1.4*	1.7	2.0	3	1.2	1.5	3			
MSEE182-3	1.1*	1.7	3.0	3	0.5	1.0	3			
MSFF305-1RY	-	1.7	2.0	3						
MSX245-2Y	1.8	1.7	2.0	3	1.8	2.0	3	2.0	2.0	3
MSZ042-07	-	1.7	2.0	3						
MSZ263-4	-	1.7	2.0	3						
MSZ513-2	1.6	1.7	2.0	3	1.5	2.0	3	1.7	2.0	3
Huron Chipper	1.7	1.8	2.0	3	1.3	1.5	3	2.0	2.5	3
Mackinaw[PVYR, LBR]	1.7	1.8	2.5	3	1.7	2.0	3	1.5	2.0	3

Table 8

MICHIGAN STATE UNIVERSITY

POTATO BREEDING and GENETICS

2019-2021 SCAB DISEASE TRIAL SUMMARY
SCAB NURSERY, MONTCALM RESEARCH CENTER , MI

LINE	3-YR* AVG.	2021 RATING	2021 WORST	2021 N	2020 RATING	2020 WORST	2020 N	2019 RATING	2019 WORST	2019 N
MSAA174-1	1.7	1.8	2.5	3	1.7	2.0	3	1.5	1.5	3
MSBB213-1Spl	1.5	1.8	2.5	3	1.5	1.5	3	1.3	1.5	2
MSBB230-1	-	1.8	2.0	3						
MSBB343-2Y	-	1.8	2.0	3						
MSCC725-232	1.5*	1.8	2.0	3	1.2	1.5	3			
MSDD107-1Y	-	1.8	2.0	3						
MSDD249-9	-	1.8	2.0	3						
MSDD254-1Spl	-	1.8	2.0	3						
MSEE016-07	-	1.8	2.5	3						
MSFF029-10	-	1.8	2.0	3						
MSFF072-1Y	-	1.8	3.0	3						
MSFF134-1PP	-	1.8	2.0	3						
MSZ242-07	1.4	1.8	2.0	3	1.0	1.5	3	1.3	1.5	3
MSZ598-2	-	1.8	2.0	3						
Yukon Gold	**2.4**	**1.8**	**2.5**	**3**	**2.5**	**2.5**	**1**	**3.0**	**3.5**	**6**
MSAA072-5	-	2.0	3.0	3						
MSBB190-3	-	2.0	2.5	3						
MSBB262-1YSpl	-	2.0	3.0	3						
MSCC302-1	2.0*	2.0	2.5	3	2.0	2.5	3			
MSDD483-1	-	2.0	2.0	3						
MSEE016-10	-	2.0	2.0	3						
MSEE075-1	-	2.0	2.0	2						
MSFF189-1Y	-	2.0	2.0	3						
MSFF191-1Y	-	2.0	2.5	3						
MSFF247-2Y	-	2.0	2.5	3						
MSY544-5R	-	2.0	3.0	3						
MSZ242-13	1.4	2.0	2.0	3	1.2	1.5	3	1.2	1.5	3
Blackberry	1.6	2.2	3.0	3	1.3	1.5	3	1.2	1.5	3
MSCC447-1WR	2.0*	2.2	3.0	3	1.8	2.0	3			
MSCC576-1	2.0*	2.2	2.5	3	1.8	2.0	3			
MSDD553-1	-	2.2	2.5	3						
MSEE002-3	-	2.2	2.5	3						
MSEE191-3Y	-	2.2	2.5	3						
MSFF034-4P	-	2.2	4.0	3						
MSV241-2	-	2.2	3.0	3						
MSX156-1Y	2.3	2.2	2.5	3	2.2	2.5	3	2.7	3.0	3
MSX495-2	-	2.2	3.0	3						
MSZ436-2Spl	1.9	2.2	3.0	3	1.8	2.0	3	1.8	2.0	3
Reba	**2.4**	**2.2**	**2.5**	**3**	**2.7**	**3.0**	**3**	**2.5**	**2.5**	**2**
MSAA091-1	-	2.3	3.0	3						
MSBB075-1Y	2.2*	2.3	3.0	3				2.2	2.5	3

Table 8

MICHIGAN STATE UNIVERSITY

POTATO BREEDING and GENETICS

2019-2021 SCAB DISEASE TRIAL SUMMARY
SCAB NURSERY, MONTCALM RESEARCH CENTER , MI

LINE	3-YR* AVG.	2021 RATING	2021 WORST	2021 N	2020 RATING	2020 WORST	2020 N	2019 RATING	2019 WORST	2019 N
MSFF200-4PYSpl	-	2.3	3.0	3						
MSBB032-1	-	2.5	3.5	3						
MSBB281-1PY	-	2.5	3.0	3						
MSCC512-1PP	2.3*	2.5	4.0	3	2.0	2.0	3			
MSCC553-1R	-	2.5	3.0	3						
MSDD251-2Y	-	2.5	3.5	3						
MSY089-2	-	2.5	3.0	3						
MSZ157-3	-	2.5	3.0	3						
MSBB611-3	2.6*	2.7	3.0	3	2.5	3.5	3			
MSCC447-01WP	-	2.7	3.0	3						
MSZ427-3R	2.0	2.7	3.5	3	2.0	2.5	3	1.3	2.0	3
Russet Norkotah	**2.4**	**2.7**	**3.0**	**3**	**2.5**	**3.0**	**3**	**2.2**	**3.0**	**3**
Atlantic	**2.4**	**2.8**	**3.5**	**3**	**1.9**	**3.0**	**6**	**2.5**	**2.5**	**3**
Manistee	2.8	2.8	3.0	3	2.5	3.0	3	3.0	3.5	3
MSBB375-1	-	2.8	3.5	3						
MSCC300-1	2.4*	2.8	3.5	3	2.0	2.0	3			
MSX137-6	2.3*	2.8	3.0	3	1.7	2.0	3			
MSAA240-5	-	3.0	3.0	3						
MSEE055-1R	2.5*	3.0	3.5	3	2.0	2.5	2			
Snowden	**2.7**	**3.0**	**3.5**	**3**	**2.4**	**3.5**	**6**	2.8	3.5	6
MSAA157-2PY	3.2	3.3	4.0	3	2.8	4.0	3	3.3	3.5	3
MSCC720-1WP	-	3.3	4.0	3						
MSFF230-2PY	-	3.3	4.0	3						
MSFF230-1	-	3.5	4.0	3						
MEAN		1.6			1.5			1.6		

SCAB DISEASE RATING: MSU Scab Nursery plot rating of 0-5; 0: No Infection; 1: Low Infection <5%, no pitted leisions; 3: Intermediate >20%, some pitted leisions (Susceptible, as commonly seen on Atlantic); 5: Highly Susceptible, >75% coverage and severe pitted leisions.

N = Number of replications.

*2-Year Average.

Table 9

MICHIGAN STATE UNIVERSITY

POTATO BREEDING and GENETICS

2021 SCAB DISEASE EARLY GENERATION TRIAL SUMMARY
SCAB NURSERY, MONTCALM RESEARCH CENTER, MI

LINE	2021 RATING	2021 N	LINE	2021 RATING	2021 N
Sorted by ascending 2021 Rating:					
MSFF132-1R	0.5	1	MSGGUNK-4Spl	1.0	1
MSGG088-4	0.5	1	MSFF292-1	1.5	1
MSGG242-1	0.5	1	MSFF321-1	1.5	1
MSGG242-3	0.5	1	MSFF335-2RR	1.5	1
MSGG267-2	0.5	1	MSGG008-11	1.5	1
MSGG268-4	0.5	1	MSGG041-3	1.5	1
MSGG275-1	0.5	1	MSGG080-4Spl	1.5	1
MSGG282-08	0.5	1	MSGG136-1P	1.5	1
MSGG282-09	0.5	1	MSGG190-3	1.5	1
MSGG349-3	0.5	1	MSGG214-08	1.5	1
MSGG394-1	0.5	1	MSGG221-3	1.5	1
MSGG426-2	0.5	1	MSGG248-1	1.5	1
MSGG445-11	0.5	1	MSGG260-7	1.5	1
MSFF017-1	1.0	1	MSGG275-6	1.5	1
MSFF160-1R	1.0	1	MSGG302-1	1.5	1
MSFF182-1R	1.0	1	MSGG302-3	1.5	1
MSFF223-1RY	1.0	1	MSGG331-3	1.5	1
MSFF334-1Pinto	1.0	1	MSGG356-3	1.5	1
MSFF351-1RR	1.0	1	MSGG409-3	1.5	1
MSGG001-7Y	1.0	1	MSGG436-3	1.5	1
MSGG072-3	1.0	1	MSFF022-2	2.0	1
MSGG087-2PY	1.0	1	MSFF037-17	2.0	1
MSGG158-11PP	1.0	1	MSFF077-4	2.0	1
MSGG186-2	1.0	1	MSFF097-6	2.0	1
MSGG190-1	1.0	1	MSFF134-2RR	2.0	1
MSGG282-07	1.0	1	MSFF149-1	2.0	1
MSGG282-10	1.0	1	MSFF206-1	2.0	1
MSGG282-20	1.0	1	MSFF303-3	2.0	1
MSGG333-1	1.0	1	MSFF338-1PP	2.0	1
MSGG349-2	1.0	1	MSFF353-1R	2.0	1
MSGG380-1	1.0	1	MSGG039-10	2.0	1
MSGG385-1	1.0	1	MSGG039-11	2.0	1
MSGG391-2	1.0	1	MSGG084-1	2.0	1
MSGG398-1	1.0	1	MSGG135-1R	2.0	1
MSGG406-1	1.0	1	MSGG137-1R	2.0	1
MSGG407-2	1.0	1	MSGG147-3P	2.0	1
MSGG409-1 (mini)	1.0	1	MSGG163-1	2.0	1
MSGG409-2	1.0	1	MSGG169-2	2.0	1
MSGG432-2	1.0	1	MSGG178-2	2.0	1

Table 9

MICHIGAN STATE UNIVERSITY

POTATO BREEDING and GENETICS

2021 SCAB DISEASE EARLY GENERATION TRIAL SUMMARY
SCAB NURSERY, MONTCALM RESEARCH CENTER, MI

LINE	2021 RATING	2021 N	LINE	2021 RATING	2021 N
Sorted by ascending 2021 Rating:					
MSGG194-3	2.0	1	MSGG028-4Y	2.5	1
MSGG195-1	2.0	1	MSGG039-08	2.5	1
MSGG216-1	2.0	1	MSGG068-1	2.5	1
MSGG219-1	2.0	1	MSGG068-2	2.5	1
MSGG247-2	2.0	1	MSGG078-7	2.5	1
MSGG263-1	2.0	1	MSGG108-2RR	2.5	1
MSGG276-4	2.0	1	MSGG127-3R	2.5	1
MSGG289-1	2.0	1	MSGG181-5	2.5	1
MSGG290-1	2.0	1	MSGG190-4	2.5	1
MSGG294-1	2.0	1	MSGG207-1	2.5	1
MSGG320-5	2.0	1	MSGG212-2	2.5	1
MSGG328-3	2.0	1	MSGG212-4	2.5	1
MSGG328-5	2.0	1	MSGG254-3	2.5	1
MSGG343-1	2.0	1	MSGG260-6	2.5	1
MSGG365-1	2.0	1	MSGG030-2	3.0	1
MSGG391-1	2.0	1	MSGG030-3	3.0	1
MSGG415-7	2.0	1	MSGG102-1RR	3.0	1
MSGG433-2	2.0	1	MSGG105-1RP	3.0	1
MSGG437-4	2.0	1	MSGG018-2Y	3.5	1
MSFF335-1RR	2.5	1	MSGG156-12PP	4.0	1
MSFF335-3Pinto	2.5	1			

Table 10

MICHIGAN STATE UNIVERSITY
POTATO BREEDING and GENETICS

2021 MSU LATE BLIGHT VARIETY TRIAL
PLANT PATHOLOGY FARM, LANSING, MI

Line Sort:			***RAUDPC Sort:***				
		RAUDPC[1]			RAUDPC[1]	*Pedigrees go w/ RAUDPC Sort*	
LINE	N	MEAN	LINE	N	MEAN	Female	Male
Atlantic	**2**	**39.7**	MSBB630-2	3	0.1	Lady Liberty	Kalkaska
Huron Chipper	3	0.5	MSBB058-3	3	0.2	NY148	MSR127-2
Lamoka	**2**	**28.6**	MSZ551-1	3	0.2	MSM182-1	MSL268-D
Mackinaw	1	2.1	MSX495-2	2	0.3	MSQ131-A	Kalkaska
MSAA091-1	3	28.4	MSBB611-3	2	0.4	NY148	MSR128-4Y
MSAA157-2PY	2	32.0	Huron Chipper	3	0.5	MSQ070-1	MSR156-7
MSAA196-1	1	0.6	MSAA196-1	1	0.6	MSW151-5	MSQ440-2
MSAA252-7	3	1.5	MSBB634-8	3	0.6	Lady Liberty	MSR169-8Y
MSAA309-15	3	41.7	MSZ042-7	1	0.7	ND8331Cb-3	MSQ086-3
MSAA498-18	1	10.8	MSBB613-7	3	0.9	Saginaw Chipper	McBride
MSBB058-3	3	0.2	MSBB614-15	3	1.1	Saginaw Chipper	MSR127-2
MSBB058-4	3	7.7	MSBB635-14	3	1.4	Lady Liberty	MSS297-3
MSBB213-1Spl	3	12.1	MSAA252-7	3	1.5	NY148	MSQ089-1
MSBB262-1YSpl	2	53.1	Mackinaw	1	2.1	Saginaw Chipper	Lamoka
MSBB351-1	2	16.3	MSBB626-11	3	4.3	Saginaw Chipper	Kalkaska
MSBB611-3	2	0.4	MSBB058-4	3	7.7	NY148	MSR127-2
MSBB613-7	3	0.9	MSBB625-2	3	8.0	MSW242-1	MSS297-3
MSBB614-15	3	1.1	MSCC302-1	1	8.2	MST500-1	MSQ086-3
MSBB625-2	3	8.0	**Snowden**	**3**	**10.1**	**Lenape**	**Wischip**
MSBB626-11	3	4.3	MSX245-2Y	2	10.4	Manistee	McBride
MSBB630-2	3	0.1	MSAA498-18	1	10.8	MSV092-2	Elkton
MSBB634-8	3	0.6	MSDD247-11	3	11.4	Mackinaw	MSV383-B
MSBB635-14	3	1.4	MSX324-1P	2	11.6	MSN105-1	Colonial Purple
MSCC302-1	1	8.2	MSBB213-1Spl	3	12.1	MSS576-5	Lamoka
MSCC447-1WR	2	24.0	MSCC553-1R	2	12.4	Red Marker #2	ND7132-1R
MSCC553-1R	2	12.4	MSZ590-1Spl	2	14.0	Superior	Picasso
MSCC614-1RYSpl	2	30.4	MSEE247-6WP	2	15.8	MSX148-1WP	MSZ219-46
MSDD088-1	1	47.1	MSBB351-1	2	16.3	MSS483-1	MSQ440-2
MSDD247-11	3	11.4	MSCC447-1WR	2	24.0	MSX035-WP	MSQ086-3
MSDD251-2Y	2	27.1	MSDD251-2Y	2	27.1	Yukon Gem	MSM288-2Y
MSEE247-6WP	2	15.8	MST252-1Y	3	27.3	MSL024-AY	MSL211-3
MST252-1Y	3	27.3	MSAA091-1	3	28.4	MSS165-2Y	Lamoka
MSX156-1Y	3	29.9	**Lamoka**	**2**	**28.6**	**NY120**	**NY115**
MSX245-2Y	2	10.4	MSX156-1Y	3	29.9	MSI005-20Y	Boulder
MSX324-1P	2	11.6	MSCC614-1RYSpl	2	30.4	Gold Nugget	MSS934-4
MSX495-2	2	0.3	MSAA157-2PY	2	32.0	Spartan Splash	Purple Heart
MSY022-2	3	32.5	MSY022-2	3	32.5	MSS176-1	MST096-2Y
MSZ042-7	1	0.7	**Atlantic**	**2**	**39.7**	**Wauseon**	**Lenape**
MSZ551-1	3	0.2	MSAA309-15	3	41.7	Atlantic	Lamoka
MSZ590-1Spl	2	14.0	**Yukon Gold**	**1**	**43.1**	**W5279-4**	**Norgleam**
Snowden	**3**	**10.1**	MSDD088-1	1	47.1	NY154	MSQ086-3
Yukon Gold	**1**	**43.1**	MSBB262-1YSpl	2	53.1	MSN105-1	MSR241-4RY

[1]Ratings indicate the average plot RAUDPC (Relative Area Under the Disease Progress Curve).
LB Isolate used: US-23

Table 11

MICHIGAN STATE UNIVERSITY
POTATO BREEDING and GENETICS

2021 BLACKSPOT BRUISE SUSCEPTIBILITY TEST
SIMULATED BRUISE SAMPLES*

ENTRY	SP GR	NUMBER OF SPOTS PER TUBER						PERCENT (%) BRUISE FREE	AVERAGE SPOTS/TUBER
		0	1	2	3	4	5+		
ADAPTATION TRIAL, CHIP-PROCESSING LINES									
Manistee	1.080	8	9	6	1	1	0	32	1.1
Huron Chipper	1.082	10	6	5	3	1	0	40	1.2
MSAA091-1	1.084	5	12	5	3	0	0	20	1.2
MSAA498-18	1.081	7	6	6	5	1	0	28	1.5
MSBB614-15	1.078	5	7	7	6	0	0	20	1.6
Lamoka	**1.080**	**4**	**9**	**8**	**4**	**1**	0	**15**	**1.6**
MSBB058-4	1.079	3	11	5	5	1	0	12	1.6
MSY022-2	1.079	5	7	6	4	2	1	20	1.8
FL2137	1.087	4	7	5	5	3	1	16	2.0
MSDD085-13	1.082	0	7	12	6	0	0	0	2.0
MSBB075-1Y	1.078	3	7	6	5	3	1	12	2.0
MSCC725-232	1.075	1	1	8	2	1	0	8	2.1
MSAA311-1	1.076	3	4	8	8	1	1	12	2.1
MSZ242-13	1.093	3	7	6	4	2	3	12	2.2
Mackinaw	1.081	0	5	11	7	2	0	0	2.2
MSBB230-1	1.088	0	8	8	3	6	0	0	2.3
MSW474-1	1.078	2	4	7	6	4	2	8	2.5
MSBB017-1	1.080	1	4	5	10	4	1	4	2.6
Petoskey	1.090	2	3	6	8	4	2	8	2.6
Petoskey (POP)	1.089	1	4	5	9	6	0	4	2.6
Atlantic	**1.089**	**1**	**4**	**6**	**7**	**2**	**4**	**4**	**2.7**
MSAA076-6	1.083	0	4	7	7	5	2	0	2.8
MSBB626-11	1.084	2	5	5	4	3	6	8	2.8
Snowden	**1.084**	**2**	**3**	**1**	**12**	**3**	**3**	**8**	**2.8**
MSDD247-11	1.091	2	5	2	4	7	5	8	3.0
MSAA217-3	1.094	0	0	10	8	1	5	0	3.0
MSZ242-07	1.092	0	2	5	10	4	4	0	3.1
MSDD247-07	1.095	0	2	5	9	5	4	0	3.2
MSAA252-7	1.081	0	2	2	8	6	3	0	3.3
MSBB611-3	1.083	0	1	4	6	5	7	0	3.6
MSAA260-3	1.083	0	1	4	7	5	8	0	3.6
MSBB058-3	1.080	0	1	3	6	4	10	0	3.8
MSBB630-2	1.078	1	3	0	3	3	15	4	4.0
MSCC058-1	1.083	0	1	2	4	8	10	0	4.0
ADAPTATION TRIAL, TABLESTOCK LINES									
MSBB351-1	1.053	21	4	0	0	0	0	84	0.2
MSDD254-1SPL	1.062	20	5	0	0	0	0	80	0.2
Blackberry	1.062	17	8	1	0	0	0	65	0.4

Table 11

MICHIGAN STATE UNIVERSITY
POTATO BREEDING and GENETICS

2021 BLACKSPOT BRUISE SUSCEPTIBILITY TEST
SIMULATED BRUISE SAMPLES*

ENTRY	SP GR	NUMBER OF SPOTS PER TUBER						PERCENT (%) BRUISE FREE	AVERAGE SPOTS/TUBER
		0	1	2	3	4	5+		
MSZ109-08PP	1.064	13	14	0	0	0	0	48	0.5
MSZ416-8RY	1.059	16	8	3	0	0	0	59	0.5
MSZ157-3	1.078	13	11	1	0	0	0	52	0.5
MSBB364-1	1.051	13	10	2	0	0	0	52	0.6
MSZ427-1R	1.066	14	7	4	0	0	0	56	0.6
Yukon Gold	**1.076**	**10**	**11**	**2**	**2**	0	0	**40**	**0.8**
MSZ513-2	1.074	9	10	4	1	0	0	38	0.9
Superior	**1.071**	**7**	**11**	**6**	**1**	0	0	**28**	**1.0**
MSV093-1Y	1.078	8	9	5	2	0	0	33	1.0
MSCC553-1R	1.071	7	10	6	2	0	0	28	1.1
MSZ427-3R	1.062	7	9	7	2	0	0	28	1.2
MSBB343-2Y	1.082	8	7	7	3	0	0	32	1.2
MSZ598-2	1.073	7	6	9	1	1	0	29	1.3
MSBB371-1YSPL	1.077	5	11	6	4	0	0	19	1.3
MSZ615-2	1.071	6	8	7	4	0	0	24	1.4
MSAA127-1PP	1.056	4	11	6	4	0	0	16	1.4
MSZ590-1SPL	1.068	7	4	8	5	0	0	29	1.5
MST252-1Y	1.072	3	9	10	1	1	0	13	1.5
MSAA174-1	1.065	4	7	6	4	2	0	17	1.7
MSV179-1	1.064	5	4	7	6	3	0	20	1.9
MSCC447-1WR	1.074	2	4	9	9	1	0	8	2.1
MSZ551-1	1.077	2	5	9	4	4	0	8	2.1
MSAA101-01RR	1.079	0	6	12	3	4	0	0	2.2
MSCC720-1WP	1.081	0	4	11	9	0	0	0	2.2
MSCC302-1	1.079	3	4	4	9	5	0	12	2.4
MSX245-2Y	1.087	1	3	9	8	4	0	4	2.4
MSCC447-01WP	1.076	0	3	1	5	2	2	0	2.9
PRELIMINARY TRIAL, CHIP-PROCESSING LINES									
MSEE182-3	1.080	13	9	2	1	0	0	52	0.6
MSFF029-10	1.090	10	7	7	1	0	0	40	1.0
MSEE207-2	1.080	2	9	9	4	0	0	8	1.6
MSFF002-1	1.078	0	11	11	1	1	0	0	1.7
MSDD553-1	1.079	3	9	7	5	1	0	12	1.7
MSFF031-3	1.074	2	11	7	2	3	0	8	1.7
Pike	**1.083**	**3**	**6**	**9**	**7**	**0**	**0**	**12**	**1.8**
MSBB029-1Y	1.081	4	6	8	5	1	1	16	1.8
MSDD372-15	1.084	4	6	7	6	2	1	15	2.0
MSEE016-07	1.092	3	3	7	10	0	0	13	2.0
MSFF079-16	1.078	3	5	7	6	4	0	12	2.1

Table 11

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POTATO BREEDING and GENETICS

2021 BLACKSPOT BRUISE SUSCEPTIBILITY TEST
SIMULATED BRUISE SAMPLES*

ENTRY	SP GR	NUMBER OF SPOTS PER TUBER						PERCENT (%) BRUISE FREE	AVERAGE SPOTS/TUBER
		0	1	2	3	4	5+		
MSFF072-1Y	1.085	1	6	8	7	3	0	4	2.2
MSEE002-3	1.091	1	4	9	9	1	0	4	2.2
MSFF073-3	1.089	1	5	6	9	2	0	4	2.3
MSEE063-6	1.079	2	4	6	9	0	2	9	2.3
MSFF031-6	1.070	2	6	8	7	3	2	7	2.3
MSBB008-3	1.085	1	4	2	12	2		5	2.5
Atlantic	**1.092**	**1**	**5**	**4**	**12**	**2**	**1**	**4**	**2.5**
Snowden	**1.084**	**0**	**4**	**8**	**11**	**1**	**2**	**0**	**2.6**
MSDD249-9	1.081	0	7	3	10	2	3	0	2.6
MSFF035-2	1.079	1	4	3	11	4	2	4	2.8
MSEE101-2	1.090	1	1	6	10	6	1	4	2.9
MSDD244-05	1.088	0	2	5	10	7	0	0	2.9
MSX495-2	1.079	0	1	2	9	1	1	0	2.9
MSBB190-2	1.081	0	0	5	7	2	3	0	3.2
MSDD372-07	1.093	0	2	6	7	4	6	0	3.2
MSEE031-3	1.086	0	2	1	11	9	1	0	3.3
MSV241-2	1.091	0	1	2	12	7	3	0	3.4
MSDD376-4	1.093	0	3	1	9	5	6	0	3.4
MSEE016-10	1.091	0	0	3	8	9	3	0	3.5
MSEE035-4	1.089	0	0	0	5	8	8	0	4.1
PRELIMINARY TRIAL, TABLESTOCK LINES									
MSBB262-1YSpl	1.066	26	1	0	0	0	0	96	0.0
MSFF189-1Y	1.063	22	4	0	0	0	0	85	0.2
MSZ263-4	1.073	19	6	1	0	0	0	73	0.3
MSEE052-5	1.073	19	3	3	0	0	0	76	0.4
MSFF211-2	1.065	17	6	2	0	0	0	68	0.4
MSDD088-1	1.073	14	11	0	0	0	0	56	0.4
MSFF178-1	1.066	13	10	1	0	0	0	54	0.5
MSFF191-1Y	1.068	14	8	3	0	0	0	56	0.6
MSDD251-2Y	1.072	13	9	4	0	0	0	50	0.7
MSBB323-1	1.089	7	14	2	2	0	0	28	1.0
MSCC300-1	1.072	8	11	6	1	0	0	31	1.0
MSFF055-1Y	1.068	9	6	7	3	0	0	36	1.2
MSDD107-1Y	1.075	9	5	8	2	1	0	36	1.2
MSCC512-1PP	1.068	9	5	6	5	0	0	36	1.3
MSFF120-2Y	1.076	7	10	2	4	1	1	28	1.4
MSX137-6	1.074	5	10	4	6	0	0	20	1.4
Reba	**1.071**	**2**	**11**	**9**	**4**	**0**	**0**	**8**	**1.6**
MSEE048-2Y	1.077	3	10	3	6	2	0	13	1.8
MSEE075-1	1.074	2	8	7	3	5	0	8	2.0

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2021 BLACKSPOT BRUISE SUSCEPTIBILITY TEST
SIMULATED BRUISE SAMPLES*

ENTRY	SP GR	NUMBER OF SPOTS PER TUBER 0	1	2	3	4	5+	PERCENT (%) BRUISE FREE	AVERAGE SPOTS/TUBER
MSZ610-3	1.082	0	1	9	9	5	1	0	2.8
MSBB213-1SPL	1.075	0	3	3	11	6	2	0	3.0
PRELIMINARY TRIAL, PIGMENTED LINES									
MSFF134-1PP	1.075	23	1	0	0	0	0	96	0.0
Dark Red Norland	**1.063**	**24**	**4**	**1**	**0**	**0**	**0**	**83**	**0.2**
MSFF034-4P	1.067	10	14	0	0	0	0	42	0.6
MSFF305-1RY	1.066	14	9	2	1			54	0.6
MSFF198-13PY	1.065	12	10	3	0	0	0	48	0.6
MSFF142-2Spl	1.071	8	16	0	1	0	0	32	0.8
MSFF247-2Y	1.069	10	9	6	0	0	0	40	0.8
MSBB308-2P	1.062	9	12	2	2	0	0	36	0.9
MSW476-4RY	1.078	8	8	6	3	0	0	32	1.2
MSEE055-1R	1.074	6	8	7	4	0	0	24	1.4
MSFF200-4PYSPL	1.065	4	9	8	4	0	0	16	1.5
MSFF230-1	1.086	2	12	8	3	0	0	8	1.5
MSAA157-2PY	1.071	3	6	10	4	0	0	13	1.7
MSFF230-2PY	1.077	0	11	9	5	0	0	0	1.8
MSX324-1P	1.086	0	7	8	6	1	0	0	2.0
DIPLOID REPLICATED TRIAL									
MSHH618-01	1.063	20	5	1	0	0	0	77	0.3
MSGG863-A1	1.079	6	10	7	2	0	0	24	1.2
MSHH699-02	1.074	3	10	11	1	0	0	12	1.4
MSHH1056-01	1.074	4	10	4	5	2	0	16	1.6
MSGG653-A2	1.081	4	2	12	7	0	0	16	1.9
MSHH701-01	1.081	2	7	8	4	1	1	9	1.9
Lamoka	**1.087**	**1**	**9**	**7**	**6**	**2**	**0**	**4**	**2.0**
MSEE824-04	1.086	1	6	6	11	1	0	4	2.2
MSEE815-06	1.078	1	5	5	10	3	0	4	2.4
MSGG676-01	1.073	0	4	8	9	3	1	0	2.6
MSHH972-03	1.076	0	4	9	7	2	3	0	2.6
MSHH1037-01	1.076	0	3	11	3	2	6	0	2.9
MSGG623-A2	1.083	0	3	3	3	2	3	0	2.9
MSGG600-06	1.098	0	3	7	6	6	3	0	3.0
Atlantic	**1.091**	**0**	**1**	**4**	**10**	**10**	**0**	**0**	**3.2**
MSGG603-A5	1.078	0	2	5	8	6	4	0	3.2
MSGG685-05	1.071	0	2	3	9	6	5	0	3.4
MSDD829-09	1.07	0	1	4	5	7	8	0	3.7

Table 11

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POTATO BREEDING and GENETICS

2021 BLACKSPOT BRUISE SUSCEPTIBILITY TEST
SIMULATED BRUISE SAMPLES*

ENTRY	SP GR	NUMBER OF SPOTS PER TUBER 0	1	2	3	4	5+	PERCENT (%) BRUISE FREE	AVERAGE SPOTS/TUBER
USPB/SFA TRIAL CHECK SAMPLES (Not bruised)									
NY163	1.083	19	5	1	0	0	0	76	0.3
NYOR14Q9-9	1.080	20	4	0	1	0	0	80	0.3
W12078-76	1.092	17	7	1	0	0	0	68	0.4
Lamoka	**1.082**	**13**	**9**	**3**	**0**	**0**	**0**	**52**	**0.6**
MSZ242-13	1.094	15	6	3	1	0	0	60	0.6
MSAFB605-4	1.078	12	11	1	1	0	0	48	0.6
MSW474-1	1.081	14	7	3	1	0	0	56	0.6
Snowden	**1.079**	**13**	**7**	**3**	**1**	**1**	**0**	**52**	**0.8**
NY165	1.081	8	9	6	2	0	0	32	1.1
USPB/SFA TRIAL BRUISE SAMPLES									
NY163	1.083	2	5	9	3	5	1	8	2.3
W12078-76	1.092	0	7	6	5	6	1	0	2.5
MSZ242-13	1.094	2	3	5	7	5	3	8	2.8
NYOR14Q9-9	1.080	1	5	3	6	8	2	4	2.8
Lamoka	**1.082**	**1**	**2**	**5**	**7**	**6**	**4**	**4**	**3.1**
MSAFB605-4	1.078	1	1	4	10	5	4	4	3.2
MSW474-1	1.081	0	1	3	3	4	14	0	4.1
NY165	1.081	0	1	1	1	3	19	0	4.5
Snowden	**1.079**	**0**	**0**	**0**	**1**	**3**	**21**	**0**	**4.8**

* Thirteen to twenty-five (dependent on the number of replications used) A-size tuber samples were collected at harvest, held at 50 F at least 12 hours, and placed in a six-sided plywood drum and tumbled to produce simulated bruising. Samples were abrasive-peeled and scored 10/26/21 (SNAC trial by POP) all other trials 11/11/2021 (PBG).

The table is presented in ascending order of average number of spots per tuber.