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2016
Potatoes USA-SNAC International Chip Variety Trials

Cooperators:

Mr. Brian Kirschenmann, Kirschenmann Farms, Inc., Bakersfield, CA
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Mr. Chris Long, Michigan State University, East Lansing, MI
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Mr. Jeremy Buchman & Jim Browning, Black Gold Farms, Charleston, MO
Dr. Craig Yencho, North Carolina State University, Raleigh, NC
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POTATOES USA – SNAC INTERNATIONAL

2016 Yield Trials Progress Report to Chip Committee - 1/4/ 2017

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Introduction

The search for new and improved chipping potato varieties is an ongoing and challenging task. The annual national Potatoes USA – SNAC International (formerly USPB-SFA) Chip Variety Trials are designed to evaluate promising chip processing clones from the various US potato breeding programs. The eleven trial locations for the 2016 PUSA-SNAC chip variety trial research program were California, Florida, Idaho, Maine, Michigan, Missouri, North Carolina, North Dakota, Oregon, Pennsylvania, and Wisconsin. These sites provide a wide range of climates, soil types and cultural practices to help assess the strengths and weaknesses of new potato varieties. The typical growing season for chipping potatoes ranges from January through May for Southern locations, which provide out-of-field chip product, while Northern sites grow from May through September, with cold storage chipping of their production to begin in October and run through April or later.

Since the USPB-SFA chip trials began in 1985, there have been 119 advanced potato breeding lines and varieties (Table 6) evaluated and compared with potato chip industry standards. Forty-two of these lines have been named and released and twenty-eight are currently in national commercial seed production. The most recently released varieties are Hodag, Lamoka, Lelah, Manistee, Pinnacle, Sebec, Tundra and Waneta - with a total of 3,457 acres of US seed in 2016. These new varieties offer the chipping industry higher yield potential, longer storage life and more consistent chip quality.

The goal for the Potatoes USA – SNAC International chip trials is to identify superior new potato lines which will be well adapted for their production area and utilization market. The potato characteristics that the chip industry is looking for are high, stable yield, disease and pest resistance, stress tolerance, specific gravity (high dry matter), bright potato chip color, potatoes free from defects, and long-term cold storage capabilities. For Southern production an earlier variety to replace Atlantic is needed which does not have internal heat necrosis or soft rot problems. Northern production would benefit from advanced selections that offer acceptable chip quality from long-term cold storage temperatures below 50°F and do not have susceptibility to scab and other organisms.

Note: advanced storage studies on sugar levels and chip color from multiple temperatures and sample dates will be conducted on the 2016 PUSA-SNAC chip trials in ID, ME, MI, ND and WI and will be reported in a separate report which will complement the yield trial reports.

2016 Potatoes USA – SNAC International trial plans

Potato breeding lines with potential for chipping are entered into the Potatoes USA – SNAC trials for three growing seasons and then replaced with new entries. If an entry experiences problems early it may be dropped from the testing program before the 2nd or 3rd year of trials. On occasion an entry may perform very well for two seasons and will be not tested for a third year. If it is deemed by the chip committee that more data needs to be collected an entry may be tested for a 4th year. All 11 chip trials have Snowden as a standard for yield and specific gravity, as well as for cold temperature storage chipping in northern locations. The low temperature-low sugar variety Lamoka was added as a long-term storage standard (to pair with Snowden) for the 7 northern trials. Atlantic is grown in the 4 southern trials as a standard for yield, specific gravity and field chipping. Fifteen entries evaluated in the 2016 PUSA-SNAC chip trials and their sources are listed below:

The following twelve entries were evaluated in all eleven states:

AF5040-8 University of Maine – Greg Porter
B2727-2 USDA-ARS – Beltsville, MD – Kathy Haynes
CO07070-10W Colorado State University – David Holm
MSR127-2 Michigan State University – David Douches
MSW485-2 Michigan State University – David Douches
NC0349-3 North Carolina State University – Craig Yencho
NDTX0981648CB-13W Texas A & M University – Creighton Miller
NY152 Cornell University – Walter De Jong
NY157 Cornell University – Walter De Jong
TX09396-1W Texas A & M University – Creighton Miller
W6822-3 University of Wisconsin – Jeff Endelman
W8822-1 University of Wisconsin – Jeff Endelman

The following entry was evaluated only in the four southern trials (CA, FL, MO, NC):

CO07070-13W Colorado State University – David Holm

The following two entries were evaluated only in the seven northern states (ID, ME, MI, MN/ND, OR/WA, PA and WI):

AF4648-2 University of Maine – Greg Porter
NDA081453CAB-2C USDA-ARS – Aberdeen, ID - Rich Novy (not in ME)

Eleven state trial coordinators for 2016:

California Brian Kirschenmann, Kirschenmann Farms, Inc., Bakersfield, CA
Florida Lincoln Zotarelli, University of Florida, Hastings, FL
Idaho Jeff Stark, University of Idaho, Aberdeen, ID
Maine Greg Porter, University of Maine, Presque Isle, ME
Michigan Chris Long, Michigan State University, East Lansing, MI
Missouri Jeremy Buchman & Joseph Budke, Black Gold Farms, Charleston, MO
North Carolina Craig Yencho, NC State University, Raleigh, NC
North Dakota Darrin Haagenson, USDA Potato Research Worksite, East Grand Forks, MN
Oregon Sagar Sathuvalli, Oregon State University, Hermiston, OR
Pennsylvania Bob Leiby, PA CO-OP Potato Growers, Inc., Harrisburg, PA
Wisconsin Felix Navarro, University of Wisconsin, Hancock, WI

2017 Potatoes USA – SNAC International trial plans

The following nine entries are scheduled for evaluation in all eleven states:

AC01144-1W Colorado State University – David Holm
AF5040-8 University of Maine – Greg Porter
B2727-2 USDA-ARS – Beltsville, MD – Kathy Haynes
MSR127-2 Michigan State University – David Douches
MSV358-3 Michigan State University – David Douches
MSW485-2 Michigan State University – David Douches
MSX540-4 Michigan State University – David Douches
NDTX0981648CB-13W Texas A & M University – Creighton Miller
NY152 Cornell University – Walter De Jong

The following two entries are scheduled for evaluation only in the four southern trials (CA, FL, MO, NC):

CO07070-13W Colorado State University – David Holm
W9968-5 University of Wisconsin – Jeff Endelman

The following entry is scheduled for evaluation only in the six northern states (ID, MI, MN/ND, OR/WA, PA and WI) (will not be in ME):

NDA081453CAB-2C USDA-ARS – Aberdeen, ID - Rich Novy

POTATOES USA - SNAC INTERNATIONAL CHIP TRIALS - 2016
CULTURAL PRACTICE DATES AND GROWING DAYS

State	City	Planting Date	Vine Kill Date	Harvest Date	Days from Planting to Vine Kill	Days from Planting to Harvest
CA	Bakersfield	10-Feb-16	3-Jun-16	8-Jun-16	114	119
FL	Hastings	15-Feb-16		17-May-16		92
ID	Aberdeen	4-May-16	1-Sep-16	21-Sep-16	120	140
ME	Presque Isle	25-May-16	12-Sep-16	29-Sep-16	110	127
MI	Howard City	20-May-16	31-Aug-16	13-Oct-16	103	146
MO	Charleston	14-Mar-16		7-Jul-16		115
NC	Columbia	1-Mar-16		20-Jun-16		111
ND	Hoople	18-May-16	2-Sep-16	27-Sep-16	107	132
OR/WA	Burbank, WA	2-May-16	18-Sep-16	17-Oct-16	139	168
PA	Chambersburg	11-May-16	13-Sep-16	27-Sep-16	125	139
WI	Hancock	6-May-16	12-Sep-16 (vk 12 & 19)	29-Sep-16	129	146

TABLE 1. 2016 POTATOES USA - SNAC CHIP TRIALS - TOTAL YIELD (cwt/acre)

		SOUTHERN TRIALS					NORTHERN TRIALS								entry
ENTRIES / STATES		CA	FL	MO	NC	avg.	ID	ME	MI	ND	OR	PA	WI	avg.	avg.
ATLANTIC	4S	562	397	456	458	468	na	404	na	na	785	na	554	na	na
LAMOKA	7N	na	na	na	373	na	465	355	489	249	672	320	413	423	na
SNOWDEN	all	544	322	436	414	429	387	367	524	296	713	496	612	485	465
AF4648-2	7N	na	na	na	na	na	389	347	347	262	585	353	419	386	na
AF5040-8	all	538	363	344	420	416	412	332	376	226	495	320	412	368	385
B2727-2	all	499	374	364	288	381	337	301	352	179	570	361	362	352	362
CO07070-10W	all	512	299	299	350	365	328	257	468	148	565	314	384	352	357
CO07070-13W	4S	601	272	368	361	401	na	na	359	na	na	na	na	na	na
MSR127-2	all	559	383	357	292	398	476	338	600	275	531	449	438	444	427
MSW485-2	all	650	436	498	348	483	514	395	575	379	740	347	521	496	491
NC0349-3	all	538	353	388	421	425	344	330	472	229	724	432	539	439	434
NDA081453CAB-2C	6N	na	na	na	na	na	483	na	386	300	642	409	280	417	na
NDTX0981648CB-13W	all	622	304	433	376	434	425	298	359	286	912	370	445	442	439
NY152	all	541	374	459	425	450	497	408	664	344	731	377	595	517	492
NY157	all	460	343	401	377	395	414	369	560	276	621	382	481	443	426
TX09396-1W	all	477	374	374	352	394	359	319	437	247	629	411	435	405	401
W6822-3	all	557	352	435	436	445	391	333	295	273	734	386	503	416	427
W8822-1	all	540	408	442	378	442	394	392	583	283	640	424	547	466	457
state average		547	357	404	379	422	413	347	462	266	664	384	467	428	426

VERY LOW LOW / BELOW AVERAGE GOOD / ABOVE AVERAGE VERY HIGH

TABLE 2. 2016 POTATOES USA - SNAC CHIP TRIALS - MARKETABLE YIELD (cwt/acre)

		SOUTHERN TRIALS					NORTHERN TRIALS								entry
ENTRIES / STATES		CA	FL	MO	NC	avg.	ID	ME	MI	ND	OR	PA	WI	avg.	avg.
ATLANTIC	4S	516	318	435	344	403	na	376	na	na	653	na	475	na	na
LAMOKA	7N	na	na	na	205	na	352	318	441	168	612	226	350	352	na
SNOWDEN	all	496	227	407	334	366	288	348	438	161	666	452	545	414	397
AF4648-2	7N	na	na	na	na	na	285	296	301	164	520	258	308	305	na
AF5040-8	all	488	260	313	327	347	366	297	303	147	450	207	340	301	318
B2727-2	all	456	305	305	182	312	266	248	304	98	551	324	286	297	302
CO07070-10W	all	437	169	243	244	273	226	219	368	41	501	216	303	268	270
CO07070-13W	4S	542	165	287	263	314	na	na	287	na	na	na	na	na	na
MSR127-2	all	504	310	288	169	318	320	306	543	144	483	401	384	369	350
MSW485-2	all	571	249	445	185	363	391	362	483	226	624	314	471	410	393
NC0349-3	all	493	294	369	341	374	262	286	420	156	671	324	448	367	369
NDA081453CAB-2C	6N	na	na	na	na	na	406	na	335	247	585	350	204	355	na
NDTX0981648CB-13W	all	556	200	388	276	355	331	265	287	132	849	286	379	361	359
NY152	all	470	289	413	324	374	376	360	578	199	540	296	497	407	395
NY157	all	358	241	366	269	309	313	338	504	175	547	252	408	362	343
TX09396-1W	all	435	305	356	251	337	285	285	407	195	541	367	319	343	341
W6822-3	all	483	226	384	360	363	280	296	198	166	665	253	407	324	338
W8822-1	all	447	296	402	295	360	299	363	515	158	545	313	493	384	375
state average		483	257	360	273	343	315	310	395	161	588	302	389	351	349

VERY LOW LOW / BELOW AVERAGE GOOD / ABOVE AVERAGE VERY HIGH

TABLE 3. 2016 POTATOES USA - SNAC CHIP TRIALS - SPECIFIC GRAVITY

		SOUTHERN TRIALS					NORTHERN TRIALS								entry
ENTRIES / STATES		CA	FL	MO	NC	avg.	ID	ME	MI	ND	OR	PA	WI	avg.	avg.
ATLANTIC	4S	1.095	1.076	1.092	1.072	1.084	na	1.098	na	na	1.082	na	1.080	na	na
LAMOKA	7N	na	na	na	1.053	na	1.097	1.093	1.081	1.098	1.078	1.073	1.076	1.085	na
SNOWDEN	all	1.090	1.078	1.085	1.074	1.082	1.092	1.102	1.086	1.087	1.074	1.076	1.077	1.085	1.084
AF4648-2	7N	na	na	na	na	na	1.089	1.084	1.075	1.097	1.076	1.077	1.070	1.081	na
AF5040-8	all	1.093	1.080	1.093	1.074	1.085	1.092	1.096	1.080	1.096	1.081	1.090	1.087	1.089	1.087
B2727-2	all	1.094	1.077	1.093	1.072	1.084	1.094	1.099	1.079	1.092	1.079	1.100	1.081	1.089	1.087
CO07070-10W	all	1.098	1.077	1.092	1.079	1.087	1.106	1.111	1.088	1.094	1.088	1.090	1.089	1.095	1.092
CO07070-13W	4S	1.086	1.072	1.071	1.068	1.074	na	na	na	na	na	na	na	na	na
MSR127-2	all	1.094	1.079	1.089	1.068	1.083	1.088	1.094	1.082	1.089	1.071	1.078	1.080	1.083	1.083
MSW485-2	all	1.092	1.071	1.096	1.070	1.082	1.093	1.104	1.086	1.100	1.084	1.092	1.083	1.092	1.088
NC0349-3	all	1.100	1.073	1.077	1.068	1.080	1.087	1.093	1.072	1.079	1.075	1.076	1.064	1.078	1.079
NDA081453CAB-2C	6N	na	na	na	na	na	1.087	na	1.078	1.098	1.076	1.089	1.080	1.085	na
NDTX0981648CB-13W	all	1.089	1.070	1.079	1.072	1.078	1.088	1.101	1.084	1.092	1.074	1.083	1.077	1.086	1.083
NY152	all	1.095	1.075	1.079	1.070	1.080	1.096	1.092	1.076	1.095	1.077	1.071	1.072	1.083	1.082
NY157	all	1.084	1.072	1.082	1.067	1.076	1.087	1.090	1.079	1.087	1.073	1.090	1.074	1.083	1.080
TX09396-1W	all	1.107	1.076	1.092	1.070	1.086	1.091	1.098	1.080	1.093	1.078	na	1.079	1.087	1.086
W6822-3	all	1.090	1.083	1.088	1.076	1.084	1.094	1.104	1.082	1.095	1.084	1.088	1.081	1.090	1.088
W8822-1	all	1.087	1.080	1.092	1.079	1.085	1.091	1.102	1.084	1.095	1.076	1.096	1.081	1.089	1.088
state average		1.093	1.076	1.087	1.071	1.082	1.092	1.098	1.081	1.093	1.078	1.085	1.078	1.086	1.085

VERY LOW LOW / BELOW AVERAGE GOOD / ABOVE AVERAGE VERY HIGH

TABLE 4. 2016 POTATOES USA - SNAC CHIP TRIALS - FIELD CHIP COLOR

	SOUTHERN TRIALS											NORTHERN TRIALS										
ENTRIES / STATES	CA	FL	FL	MO	MO	NC	NC	NC	NC	INST. avg.	MERIT avg.	ID	ID	MI	MI	ND	OR	PA	PA	WI	INST. avg.	MERIT avg.
ATLANTIC	70.0	62.1	na	3	2	2	3	1	68.5	66.9	2.2	na	na	na	na	na	2.0	na	na	57.7	57.7	2.0
LAMOKA	na	na	na	na	na	3.5	3.5	2	66.9	66.9	3.0	66.7	2	55.5	2.5	67.0	1.3	66.5	4	65.1	64.2	2.5
SNOWDEN	68.0	64.6	na	2	2	2	2	1	69.2	67.3	1.8	67.4	2	53.6	3	61.0	1.8	70.6	4	64.3	63.4	2.7
AF4648-2	na	na	na	na	na	na	na	na	na	na	na	68.4	2	56.7	3	66.0	1.5	70.0	4	60.8	64.4	2.6
AF5040-8	68.0	64.2	4	3	3	2	3	1	67.9	66.7	2.7	70.7	1	54.2	3	65.0	1.5	68.6	4	61.1	63.9	2.4
B2727-2	68.0	63.7	1	2	2	2	2	1	69.5	67.1	1.7	66.7	3	54.9	3	64.0	1.5	67.5	4	63.1	63.2	2.9
CO07070-10W	68.0	64.1	4	2	2	3	3	1	67.0	66.4	2.5	67.6	2	52.7	3	62.0	1.5	69.3	3	61.5	62.6	2.4
CO07070-13W	68.0	62.1	4	2	2	3	3	1	71.3	67.1	2.5	na	na	na	na	na	na	na	na	na	na	na
MSR127-2	68.0	60.9	2	4	2	3	4	2	66.5	65.1	2.8	66.9	3	53.8	3.5	64.0	1.5	66.9	4	61.0	62.5	3.0
MSW485-2	68.0	61.9	2	3	2	3	4	1	66.8	65.6	2.5	65.0	2	50.6	2.5	64.0	1.8	68.1	2	61.3	61.8	2.1
NC0349-3	68.0	64.7	4	4	4	3	3.5	3	66.0	66.2	3.6	68.0	2	56.5	3.5	64.0	2.5	69.1	3	65.8	64.7	2.8
NDA081453CAB-2C	na	na	na	na	na	na	na	na	na	na	na	62.9	3	53.1	2.5	59.0	2.5	66.7	4	55.7	59.5	3.0
NDTX0981648CB-13W	68.0	65.2	3	1	2	2	3	1	65.2	66.1	2.0	68.7	2	53.1	3	57.0	1.8	69.2	2	59.3	61.5	2.2
NY152	70.0	62.4	3	1	4	3.5	3	1	69.3	67.2	2.6	69.9	1	57.2	3	71.0	1.3	68.1	4	64.8	66.2	2.3
NY157	67.0	63.8	4	1	2	3	3	1	68.1	66.3	2.3	68.5	2	56.5	2.5	62.0	1.3	70.0	4	61.0	63.6	2.5
TX09396-1W	68.0	62.4	3	1	3	2	3	1	70.1	66.8	2.2	68.3	2	na	4	64.0	2.2	na	na	59.0	63.8	2.7
W6822-3	68.0	62.0	4	1	2	2	3	1	69.0	66.3	2.2	66.4	2	53.7	2	65.0	1.2	66.9	4	64.9	63.4	2.3
W8822-1	70.0	61.2	3	1	2	2	3.5	1	65.6	65.6	2.1	68.4	2	53.1	3.5	67.0	1.7	65.1	4	61.2	63.0	2.8
state average	68.3	63.0	3.2	2.1	2.4	2.6	3.1	1.3	67.9	66.5	2.7	67.5	2.1	54.3	3.0	63.9	1.7	68.2	3.6	61.6	62.9	2.5

VERY LOW | LOW / BELOW AVERAGE | GOOD / ABOVE AVERAGE | VERY GOOD

TABLE 5. 2016 POTATOES USA - SNAC CHIP TRIALS - HOLLOW HEART (%)

		SOUTHERN TRIALS				NORTHERN TRIALS						
ENTRIES / STATES		CA	FL	MO	NC	ID	ME	MI	ND	OR	PA	WI
ATLANTIC	4S	na	1	5	18	na	12.1	na	na	3	na	4.0
LAMOKA	7N	na	na	na	0	0.3	0	0	2.3	0	0	2.1
SNOWDEN	all	na	0	0	0	0	3.4	7	1.1	0	0	3.6
AF4648-2	7N	na	na	na	na	0	2	0	2.5	0	0	2.7
AF5040-8	all	na	0	0	0	0	0	0	0	0	0	3.4
B2727-2	all	na	0	5	2	0	2.2	3	0	0	0	3.0
CO07070-10W	all	na	0	0	0	0	2.1	0	0	0	0	3.2
CO07070-13W	4S	na	0	0	0	na	na	na	na	na	na	na
MSR127-2	all	na	0	2.5	0	0	0	0	0	0	0	3.3
MSW485-2	all	na	0	0	18	0	7.3	7	0	7	0	3.5
NC0349-3	all	na	2	70	56	2.8	78.3	60	37.8	10	1	6.8
NDA081453CAB-2C	6N	na	na	na	na	0.8	na	0	0	0	0	2.8
NDTX0981648CB-13W	all	na	1	5	0	0	7.9	0	0	0	0	3.0
NY152	all	na	0	20	0	0.5	32	0	1.5	0	0	2.8
NY157	all	na	1	0	2	0	2.4	0	2.5	0	0	3.1
TX09396-1W	all	na	1	12.5	0	0	9.4	7	0	0	1	2.5
W6822-3	all	na	0	0	0	0	7.4	3	0	0	0	2.8
W8822-1	all	na	0	0	0	0	2.2	0	0	0	0	3.0
state average		na	0.4	8.0	6.0	0.3	10.5	5.4	3.0	1.2	0.1	3.3

Table 6. USPB-SFA Chip Trial Entry Summary: 1985 - 2016

Atlantic (1985-2016), Snowden (1988-2016) and Lamoka (2015-2016) included in trials as standards

WNC672-2, 1985-1987
WNC521-12, 1985-1986
W879, 1985-1986
W833, 1985
TXA17-1, 1985-1986
A70369-2, 1985-1986
ND860-2, 1985-1986
G670-11, 1985
BR7093-24 (**Gemchip**), 1986-1988
W848 (**Niska**), 1986-1987
NY71 (**Kanona**), 1986-1988
NY81 (**Steuben**), 1986-1988
NY72 (**Allegany**), 1987-1989
AF236-1 (**Somerse**t), 1987-1989
MS700-70, 1987-1989
AC80545-1 (**Chipeta**), 1987-1989
LA01-38 (**LaBelle**), 1988-1990
MS716-15, 1988-1990
MS700-83 (**Spartan Pearl**), 1988-1990
W855 (**Snowden**), 1988-1990
Saginaw Gold, 1988-1990
AF875-16 (**Mainechip**), 1989-1991
D195-24, 1989
ND2008-2, 1990
Coastal Chip, 1990
CS7232-4, 1990-1992
Andover, 1991-1993
Pike, 1991-1993
NY87 (**Reba**), 1991
W887, 1991-1993
W870, 1991-1993
A80559-2, 1991-1993
NDA2031-2, 1992-1994
Suncrisp, 1992-1994
B0178-34, 1992-1994
NDO1496-1 (**Ivory Crisp**), 1993-1995
NY95, 1993
AF875-15, 1994-1996
ND2417-6 (**NorValley**), 1994-1996
ND2471-8, 1994-1996
NY102 (**Monticello**), 1994-1995
NY103 (**Eva**), 1995-1997
BCO894-2, 1995-1997
ATX85404-8, 1996-1998
AF1433-4, 1996-1998
ND2676-10 (**Dakota Pearl**), 1997-1999
B0564-8 (**Harley Blackwel**l), 1997-1999
B0564-9, 1997-1999
NY115, 1997-1999
W1313, 1999
NY112 (**Marcy**), 1998-2000
AF1668-60, 1998-2000
MSNT-1, 1998-2000
MSA091-1 (**Liberator**), 1999-2001
B0766-3, 2000-2002
AF1775-2, 2000-2002
W1431, 2000-2002
NY120, 2000-2002
AF1424-7, 2001-2003
MSG227-2, 2001-2003
W1355-1 (**White Pearl**), 2001-2003
NDTX4930-5W, 2001-2003
ND2470-27 (**Dakota Crisp**), 1999, 2003-2004
A91790-13, 2002-2004
MSF099-3, 2002-2004
B1240-1, 2004
W1773-7, 2004
ND5822C-7 (**Dakota Diamond**), 2003-2005
W1201 (**Megachip**), 2003-2005
AF2211-9, 2004-2006
MSJ461-1, 2004-2006
NY132, 2004-2006
MSJ316-A, 2005-2007
W2133-1 (**Nicolet**), 2005-2007
Beacon Chipper, 2006-2008
CO95051-7W, 2006-2008
MSJ147-1, 2006-2008
W2324-1 (**Accumulator**), 2006-2008 (2009 4S)
CO96141-4W, 2007-2009
MSJ036-A (**Kalkaska**), 2008-2009
AF2291-10, 2008-2010
CO97043-14W. 2008-2010
CO97065-7W, 2008-2010
NY138 (**Waneta**), 2008-2010
NY139 (**Lamoka**), 2008-2010
W2717-5 (**Lelah**), 2008-2010
MSJ126-9Y **(McBride)**, 2009-2011
W2310-3 (**Tundra**), 2008,2010-2011
W2978-3, 2010-2012
W5015-12 **(Pinnacle)**, 2010-2012 (7N)
ND8331Cb-2, 2011
AF0338-17 **(Sebec)**, 2011-2013 (4S)
CO00197-3W, 2011-2013
MSL292-A **(Manistee)**, 2010-2013
MSQ086-3, 2010-2013 (4S)
MSR061-1, 2011-2013 (7N)
NY140, 2011-2013
NY148, 2011-2013
W4980-1. 2011-2013
W6483-5, 2012-2013
A01143-3C, 2012-2014 (4S+6N)
AF4157-6, 2012-2014
CO02321-4W, 2012-2014
MSL007-B, 2012-2014
W5955-1 (**Hodag**), 2012-2014
A00188-3C, 2013-2015
AC01151-5W, 2013-2015
CO03243-3W, 2013-2015
W6609-3, 2013-2014
CO02024-9W, 2014-2015
MSK061-4, 2014-2015 (4S)
AC03433-1W, 2015
AF4648-2, 2015-2016 (7N)
CO07070-10W, 2016
NC0349-3, 2016
NY157, 2016
TX09396-1W, 2016
W6822-3 , 2015-2016
W8822-1, 2015-2016

CLONE: **AF4648-2**

PROGRAM: UNIVERSITY OF MAINE - GREG PORTER

PEDIGREE: NY132 X LIBERATOR

USE: Chips from 50F, does not chip well from cold storage

MATURITY: MIDSEASON

TRIALS: 7 northern Year: 2016
all 11 states Year: 2015

TOTAL Yield (7N-2016):	386	cwt/a	80% of Snowden's total yield of 485 cwt/a
TOTAL Yield (4S-2015):	358	cwt/a	87% of Snowden's total yield of 410 cwt/a
TOTAL Yield (7N-2015):	387	cwt/a	73% of Snowden's total yield of 528 cwt/a
MARKETABLE Yield (7N-2016):	305	cwt/a	74% of Snowden's marketable yield of 414 cwt/a
MARKETABLE Yield (4S-2015):	292	cwt/a	83% of Snowden's marketable yield of 352 cwt/a
MARKETABLE Yield (7N-2015):	322	cwt/a	71% of Snowden's marketable yield of 452 cwt/a
SPECIFIC GRAVITY (7N-2016):	1.081		4 units below Snowden's specific gravity of 1.085
SPECIFIC GRAVITY (4S-2015):	1.075		1 unit below Snowden's specific gravity of 1.076
SPECIFIC GRAVITY (7N-2015):	1.087		equal to Snowden's specific gravity of 1.087

SUMMARY: Low total and marketable yields (71% to 87% of Snowden).
Below trial averages for specific gravity (0.004 below Snowden).
Field chip color similar to Atlantic and Snowden, does not chip well from storage.
Larger tuber size, lower tuber set, hence higher percent ovesize.
Good bruise resistance, but relatively high skinning susceptibility.
Internal brown spot - WI-2016.
Long tuber dormancy.
Vascular discoloration in storage (MI) associated with immature tubers.
Finished trials with 2nd year in 2016.

CLONE: **AF5040-8**

PROGRAM:	UNIVERSITY OF MAINE - GREG PORTER		
PEDIGREE:	AF2376-5 X LAMOKA		
USE:	Chips from field and storage		
MATURITY:	Mid-season to medium-early		
TRIALS:	all 11 states		Year: 2016
TOTAL Yield (4S-2016):	416	cwt/a	97% of Snowden's total yield of 429 cwt/a
TOTAL Yield (7N-2016):	368	cwt/a	76% of Snowden's total yield of 485 cwt/a
MARKETABLE Yield (4S-2016):	347	cwt/a	95% of Snowden's marketable yield of 366 cwt/a
MARKETABLE Yield (7N-2016):	301	cwt/a	73% of Snowden's marketable yield of 414 cwt/a
SPECIFIC GRAVITY (4S-2016):	1.085		3 units above Snowden's specific gravity of 1.082
SPECIFIC GRAVITY (7N-2016):	1.089		4 units above Snowden's specific gravity of 1.085

SUMMARY: Round to oblong tubers.
Below trial averages for yield, with better performance in southern locations.
High specific gravity, above Atlantic and Snowden.
A range of chip color from field, breeder data indicates good storage processing.
No hollow heart in all but one trial location (3.4% in WI).
Moderately susceptible to common scab.
Good blackspot bruise resistance.
Moderately susceptible to shatter bruise.
Resistant to Ro1 of Golden Nematode.
Appears better suited to southern production with good gravity, good internal quality, and good out-of-field chip color.
Planted in all 11 state trials for 2nd year in 2017.

CLONE: **B2727-2**

PROGRAM:	USDA-ARS, Beltsville, MD - Kathy Haynes		
PEDIGREE:	B0766-3 X B2135-163		
USE:	Good out-of-field chip color		
MATURITY:	Medium vine maturity		
TRIALS:	all 11 states		Year: 2016
TOTAL Yield (4S-2016):	381	cwt/a	89% of Snowden's total yield of 429 cwt/a
TOTAL Yield (7N-2016):	352	cwt/a	73% of Snowden's total yield of 485 cwt/a
MARKETABLE Yield (4S-2016):	312	cwt/a	85% of Snowden's marketable yield of 366 cwt/a
MARKETABLE Yield (7N-2016):	297	cwt/a	72% of Snowden's marketable yield of 414 cwt/a
SPECIFIC GRAVITY (4S-2016):	1.084		2 units above Snowden's specific gravity of 1.082
SPECIFIC GRAVITY (7N-2016):	1.089		4 units above Snowden's specific gravity of 1.085

SUMMARY: Low or lowest total and marketable yields in both southern and northern trials.
Very good specific gravity, above trial averages, ~ 0.003 above Snowden.
Very good out-of-field chip scores.
Scab susceptibility similar to Snowden, very bad pitted scab in ME trial.
Small size profile.
Low levels of hollow heart, 0% to 5%.
Planted in all 11 state trials for 2nd year in 2017.

CLONE: **CO07070-10W**

PROGRAM:	COLORADO STATE UNIVERSITY - DAVID HOLM		
PEDIGREE:	B0766-3T X CO00188-4W		
USE:	Chips from 50F, reconditions from 40F		
MATURITY:	MEDIUM - MIDSEASON		
TRIALS:	all 11 states		Year: 2016
TOTAL Yield (4S-2016):	365	cwt/a	85% of Snowden's total yield of 429 cwt/a
TOTAL Yield (7N-2016):	352	cwt/a	73% of Snowden's total yield of 485 cwt/a
MARKETABLE Yield (4S-2016):	273	cwt/a	75% of Snowden's marketable yield of 366 cwt/a
MARKETABLE Yield (7N-2016):	268	cwt/a	65% of Snowden's marketable yield of 414 cwt/a
SPECIFIC GRAVITY (4S-2016):	1.087		5 units above Snowden's specific gravity of 1.082
SPECIFIC GRAVITY (7N-2016):	1.095		10 units above Snowden's specific gravity of 1.085

SUMMARY: In 6 states had the lowest total and marketable yield,
while in the rest of the states had below average if not very low yield.
Chips from 50F, reconditions after storage at 40F.
Medium maturity.
Highest specific gravity, both southern and northern trials.
Variable out-of-field chip scores.
No hollow heart in 9 of 11 trials.
Dropped after 2016 trials due to relatively low yield at many locations.

CLONE: **CO07070-13W**

PROGRAM:	COLORADO STATE UNIVERSITY - DAVID HOLM		
PEDIGREE:	B0776-3T X CO00188-4W		
USE:	Potential to recondition out of 40F		
MATURITY:	EARLY		
TRIALS:	4 south		Year: 2016
TOTAL Yield (4S):	401	cwt/a	93% of Snowden's total yield at 429 cwt/a
MARKETABLE Yield (4S):	314	cwt/a	86% of Snowden's marketable yield at 366 cwt/a
SPECIFIC GRAVITY (4S):	1.074		8 units below Snowden's specific gravity of 1.082

SUMMARY:

Early maturity.
Good yield in CA, the other 3 southern trials were low.
Attractive round tubers.
Specific gravity was low for CA, and lowest for the other 3 southern states.
Variable out-of-field chip scores, generally acceptable.
Potential to recondition out of 40.
No hollow heart in the four southern trials.
Common scab tolerant.
Planted in the 4 southern state trials for 2nd year in 2017.

CLONE: **MSR127-2**

PROGRAM:	MICHIGAN STATE UNIVERITY - DAVID DOUCHES		
PEDIGREE:	MSJ167-1 X MSG227-2		
USE:	Long-term chip-processing quality with resistance to common scab		
MATURITY:	FULL- SEASON		
TRIALS:	all 11 states		Year: 2016
TOTAL Yield (4S-2016):	398	cwt/a	93% of Snowden's total yield of 429 cwt/a
TOTAL Yield (7N-2016):	444	cwt/a	92% of Snowden's total yield of 485 cwt/a
MARKETABLE Yield (4S-2016):	318	cwt/a	87% of Snowden's marketable yield of 366 cwt/a
MARKETABLE Yield (7N-2016):	369	cwt/a	89% of Snowden's marketable yield of 414 cwt/a
SPECIFIC GRAVITY (4S-2016):	1.083		1 unit above Snowden's specific gravity of 1.082
SPECIFIC GRAVITY (7N-2016):	1.083		2 units below Snowden's specific gravity of 1.085

SUMMARY: Yields variable, below trial averages (87% to 93% of Snowden).
Specific gravity near trial averages and close to Snowden.
Field chip scores below trial averages.
Chips from short to mid-term storage.
No hollow heart in 10 of 11 trials.
Scab resistance similar to Pike.
In MI has significantly higher yield than Pike.
Tubers round, lightly netted, tan colored skin, a creamy-white flesh.
Size profile very uniform, does not go oversize or undersize much.
Medium tuber dormancy comparable to Atlantic.
Planted in all 11 state trials for 2nd year in 2017.

CLONE: **MSW485-2**

PROGRAM: MICHIGAN STATE UNIVERITY - DAVID DOUCHES

PEDIGREE: MSQ070-1 X MSR156-7

USE: Excellent chipping from field and long-term storage with resistance to late blight and stronger tolerance to common scab.

MATURITY: Mid-Season

TRIALS: all 11 states Year: 2016

TOTAL Yield (4S-2016):	483	cwt/a	113% of Snowden's total yield of 429 cwt/a
TOTAL Yield (7N-2016):	496	cwt/a	102% of Snowden's total yield of 485 cwt/a
MARKETABLE Yield (4S-2016):	363	cwt/a	99% of Snowden's marketable yield of 366 cwt/a
MARKETABLE Yield (7N-2016):	410	cwt/a	99% of Snowden's marketable yield of 414 cwt/a
SPECIFIC GRAVITY (4S-2016):	1.082		equal to Snowden's specific gravity of 1.082
SPECIFIC GRAVITY (7N-2016):	1.092		7 units above Snowden's specific gravity of 1.085

SUMMARY: One of 2 best yielders (NY152) in 2016 trials (99% to 113% of Snowden).
Specific gravity ~ trial averages in South, but very high in northern trials.
Field chip scores near trial averages.
Tubers are smooth, round, lightly netted, tan skin and white flesh.
Hollow heart in 4 trials (19% NC, 7% in ME, MI and OR).
Some elevated percentage of raw internal defects.
Planted in all 11 state trials for 2nd year in 2017.

CLONE: **NC0349-3**

PROGRAM: NORTH CAROLINA STATE UNIVERSITY - CRAIG YENCHO

PEDIGREE: SNOWDEN X B0564-9

USE: Out-of-field chipper.

MATURITY: Mid-season

TRIALS: all 11 states Year: 2016

TOTAL Yield (4S-2016):	425	cwt/a	99% of Snowden's total yield of 429 cwt/a
TOTAL Yield (7N-2016):	439	cwt/a	91% of Snowden's total yield of 485 cwt/a
MARKETABLE Yield (4S-2016):	374	cwt/a	102% of Snowden's marketable yield of 366 cwt/a
MARKETABLE Yield (7N-2016):	367	cwt/a	89% of Snowden's marketable yield of 414 cwt/a
SPECIFIC GRAVITY (4S-2016):	1.080		2 units below Snowden's specific gravity of 1.082
SPECIFIC GRAVITY (7N-2016):	1.078		7 units below Snowden's specific gravity of 1.085

SUMMARY: Total yield near trial averages, marketable yield above trial averages.
Specific gravity very high in CA, low or lowest in rest of states.
Mid-season maturity - slightly later than Atlantic.
Mixed field chip scores, near trial averages.
Excessive hollow heart (1% to 78%) across all states.
Dropped from trials after 1st year in 2016 due to excessive hollow heart.

CLONE: **NDA081453CAB-2C**

PROGRAM:	USDA-ARS, ABERDEEN, ID - RICH NOVY		
PEDIGREE:	DAKOTA DIAMOND X ND039173CAB-22		
USE:	Chips directly from field and from mid-term storage.		
MATURITY:	Mid-Season		
TRIALS:	6 NORTH		Year: 2016
TOTAL Yield (6N):	417	cwt/a	83% of Snowden's total yield at 505 cwt/a
MARKETABLE Yield (6N):	355	cwt/a	84% of Snowden's marketable yield at 425 cwt/a
SPECIFIC GRAVITY (6N):	1.085		3 units above Snowden's specific gravity of 1.082

SUMMARY: Yield equals trial averages.
Highest marketable yield for ID and ND, while lowest for WI.
Specific gravity equals trial averages, 3 units above Snowden.
Field chip score below trial average.
Very little hollow heart (> 1% in one trial, ID).
Lowest incidence of black spot bruise (MI trial).
Low common scab incidence.
Planted in 6 northern trials for 2nd year in 2017.

CLONE: **NDTX0981648CB-13W**

PROGRAM:	TEXAS A & M - CREIGHTON MILLER		
PEDIGREE:	ND8456-1 X ND7377CB-1		
USE:	Chip from field		
MATURITY:	Late		
TRIALS:	all 11 states		Year: 2016
TOTAL Yield (4S-2016):	434	cwt/a	101% of Snowden's total yield of 429 cwt/a
TOTAL Yield (7N-2016):	442	cwt/a	91% of Snowden's total yield of 485 cwt/a
MARKETABLE Yield (4S-2016):	355	cwt/a	97% of Snowden's marketable yield of 366 cwt/a
MARKETABLE Yield (7N-2016):	361	cwt/a	87% of Snowden's marketable yield of 414 cwt/a
SPECIFIC GRAVITY (4S-2016):	1.078		4 units below Snowden's specific gravity of 1.082
SPECIFIC GRAVITY (7N-2016):	1.086		1 unit below Snowden's specific gravity of 1.085

SUMMARY: Yield variable but above 4S and 7N trial averages, was highest yielder in OR.
Specific gravity below 4S trial average, with lowest gravity for FL.
Specific gravity at 7N trial average and only 1 unit below Snowden's average.
Field chip color variable, but near trial averages.
Hollow heart in FL (1%), MO (5%) and ME (8%), but 0% in the other 8 trials.
Planted in all 11 state trials for 2nd year in 2017.

CLONE: **NY152**

PROGRAM: CORNELL UNIVERSITY - WALTER DE JONG

PEDIGREE: B38-14 X MARCY

USE: long term storage and chipping from 40F to 42F

MATURITY: Medium-Late

TRIALS: all 11 states Years: 2015 and 2016

TOTAL Yield (4S-2016):	450	cwt/a	105% of Snowden's total yield of 429 cwt/a
TOTAL Yield (7N-2016):	517	cwt/a	107% of Snowden's total yield of 485 cwt/a
TOTAL Yield (4S-2015):	456	cwt/a	111% of Snowden's total yield of 410 cwt/a
TOTAL Yield (7N-2015):	531	cwt/a	101% of Snowden's total yield of 528 cwt/a
MARKETABLE Yield (4S-2016):	374	cwt/a	102% of Snowden's marketable yield of 366 cwt/a
MARKETABLE Yield (7N-2016):	407	cwt/a	98% of Snowden's marketable yield of 414 cwt/a
MARKETABLE Yield (4S-2015):	370	cwt/a	105% of Snowden's marketable yield of 352 cwt/a
MARKETABLE Yield (7N-2015):	442	cwt/a	98% of Snowden's marketable yield of 452 cwt/a
SPECIFIC GRAVITY (4S-2016):	1.080		2 units below Snowden's specific gravity of 1.082
SPECIFIC GRAVITY (7N-2016):	1.083		2 units below Snowden's specific gravity of 1.085
SPECIFIC GRAVITY (4S-2015):	1.070		6 units below Snowden's specific gravity of 1.076
SPECIFIC GRAVITY (7N-2015):	1.083		4 units below Snowden's specific gravity of 1.087

SUMMARY: One of the 2 best yielders (MSW485-2) in 2016 trials.
Yield equal to Atlantic and usually 5% to 15% higher, similar comparison to Snowden.
Specific gravity averages 0.008 less than Atlantic, 0.004 less than Snowden.
Moderate to good resistance to common scab.
Low level of external defects, but varying levels of hollow heart a concern.
Tuber dormancy about 4 weeks longer than Atlantic.
Medium-Late maturity.
High tuber set, hence higher % undersize, resulting in a very desirable size profile.
Low bruise susceptibility.
Has marker suggesting PVY resistance (but has not been tested directly).
Susceptible to race Ro1 of the golden nematode.
Planted in all 11 state trials for 3rd year in 2017.

CLONE: **NY157**

PROGRAM:	CORNELL UNIVERSITY - WALTER DE JONG		
PEDIGREE:	WHITE PEARL X NY115		
USE:	Chip from 44F		
MATURITY:	MID-SEASON		
TRIALS:	all 11 states		Year: 2016
TOTAL Yield (4S-2016):	395	cwt/a	92% of Snowden's total yield of 429 cwt/a
TOTAL Yield (7N-2016):	443	cwt/a	91% of Snowden's total yield of 485 cwt/a
MARKETABLE Yield (4S-2016):	309	cwt/a	84% of Snowden's marketable yield of 366 cwt/a
MARKETABLE Yield (7N-2016):	362	cwt/a	87% of Snowden's marketable yield of 414 cwt/a
SPECIFIC GRAVITY (4S-2016):	1.076		6 units below Snowden's specific gravity of 1.082
SPECIFIC GRAVITY (7N-2016):	1.083		2 units below Snowden's specific gravity of 1.085

SUMMARY: Mid-season maturity.
Total and marketable yields below 4S trial averages and~ equal to 7N trial averages.
Chips directly from 44F equal to or better than Snowden.
Low level of defects, low % of hollow heart in 5 trials.
Specific gravity ~ 0.006 less than Atlantic, 0.002 to 0.006 less than Snowden.
Moderate resistance to common scab.
Tuber dormancy ~ Atlantic.
Resistant to race Ro1 of the golden nematode.
Statter bruise in MI trial.
Dropped after 1st year of trials in 2016 due to marginal yield.

CLONE: **TX09396-1W**

PROGRAM: TEXAS A & M - CREIGHTON MILLER

PEDIGREE: ATLANTIC X NY139

USE: Chip from field

MATURITY: Late

TRIALS: all 11 states Year: 2016

TOTAL Yield (4S-2016):	394	cwt/a	92% of Snowden's total yield of 429 cwt/a
TOTAL Yield (7N-2016):	405	cwt/a	84% of Snowden's total yield of 485 cwt/a
MARKETABLE Yield (4S-2016):	337	cwt/a	92% of Snowden's marketable yield of 366 cwt/a
MARKETABLE Yield (7N-2016):	343	cwt/a	83% of Snowden's marketable yield of 414 cwt/a
SPECIFIC GRAVITY (4S-2016):	1.086		4 units above Snowden's specific gravity of 1.082
SPECIFIC GRAVITY (7N-2016):	1.087		2 units above Snowden's specific gravity of 1.085

SUMMARY: Total and marketable yield below 4S and 7N trial averages.
Good specific gravity, 0.002 to 0.004 above Snowden.
Out-of-field chip color near trial averages.
Large tubers, nice shape.
Hollow heart found in 5 of 11 trials (12.5% MO, 9.4% ME).
Discontinued after 1 year of trials in 2016 due to marginal yield and internal defects.

CLONE: **W6822-3**

PROGRAM: UNIVERSITY OF WISCONSIN - JEFF ENDELMAN

PEDIGREE: WHITE PEARL X DAKOTA PEARL

USE: Chip from field and long-term cold storage

MATURITY: Medium-Late

TRIALS: all 11 states Years: 2015 and 2016

TOTAL Yield (4S-2016):	445	cwt/a	104% of Snowden's total yield of 429 cwt/a
TOTAL Yield (7N-2016):	416	cwt/a	86% of Snowden's total yield of 485 cwt/a
TOTAL Yield (4S-2015):	410	cwt/a	99% of Snowden's total yield of 413 cwt/a
TOTAL Yield (7N-2015):	423	cwt/a	96% of Snowden's total yield of 442 cwt/a
MARKETABLE Yield (4S-2016):	363	cwt/a	99% of Snowden's marketable yield of 366 cwt/a
MARKETABLE Yield (7N-2016):	324	cwt/a	78% of Snowden's marketable yield of 414 cwt/a
MARKETABLE Yield (4S-2015):	327	cwt/a	91% of Snowden's marketable yield of 360 cwt/a
MARKETABLE Yield (7N-2015):	336	cwt/a	89% of Snowden's marketable yield of 377 cwt/a
SPECIFIC GRAVITY (4S-2016):	1.084		2 units above Snowden's specific gravity of 1.082
SPECIFIC GRAVITY (7N-2016):	1.090		5 units above Snowden's specific gravity of 1.085
SPECIFIC GRAVITY (4S-2015):	1.078		equal to Snowden's specific gravity of 1.078
SPECIFIC GRAVITY (7N-2015):	1.089		2 units below Snowden's specific gravity of 1.091

SUMMARY: Yield variable, very good to poor, trends towards trial averages.
Excellent specific gravity - always well above trial averages,
gravity averaging from 0.002 below to 0.005 above Snowden.
Lighter chip color than Snowden after 6 months of cold storage.
Susceptible to common scab (slightly more scab tolerant than Snowden).
High bruise susceptibility (ME, MI).
Smaller size profile.
Only had hollow heart concerns in ME (7.4%) in 2016.
Finished trials with 2nd year in 2016.

CLONE: **W8822-1**

PROGRAM: UNIVERSITY OF WISCONSIN - JEFF ENDELMAN

PEDIGREE: FASAN X TUNDRA

USE: Chip from field and long-term cold storage

MATURITY: LATE

TRIALS: all 11 states Year: 2016
4 Southern + 2 Northern Year: 2015

TOTAL Yield (4S-2016):	442	cwt/a	103% of Snowden's total yield of 429 cwt/a
TOTAL Yield (7N-2016):	466	cwt/a	96% of Snowden's total yield of 485 cwt/a
TOTAL Yield (4S-2015):	442	cwt/a	108% of Snowden's total yield at 410 cwt/a
TOTAL Yield (OR/WI-2015):	533	cwt/a	90% of Snowden's total yield at 589 cwt/a
MARKETABLE Yield (4S-2016):	360	cwt/a	98% of Snowden's marketable yield of 366 cwt/a
MARKETABLE Yield (7N-2016):	384	cwt/a	93% of Snowden's marketable yield of 414 cwt/a
MARKETABLE Yield (4S-2015):	364	cwt/a	103% of Snowden's marketable yield at 352 cwt/a
MARKETABLE Yield (OR/WI-2015):	485	cwt/a	68% of Snowden's marketable yield at 713 cwt/a
SPECIFIC GRAVITY (4S-2016):	1.085		3 units above Snowden's specific gravity of 1.082
SPECIFIC GRAVITY (7N-2016):	1.089		4 units above Snowden's specific gravity of 1.085
SPECIFIC GRAVITY (4S-2015):	1.078		2 units above Snowden's specific gravity at 1.076
SPECIFIC GRAVITY (OR/WI-2015):	1.079		2 units above Snowden's specific gravity at 1.077

SUMMARY:

Good yields in the southern and northern trials, often equal or higher than Snowden.
High specific gravity in southern and northern trials, 0.002 to 0.004 above Snowden.
Late maturity.
Nice size distribution.
Good common scab resistance.
Very little hollow heart in 2016 trials.
May have cream or yellow colored flesh, depending upon seed lot or location grown.
Finished trials with 2nd year in 2016.

California Regional Trial

2016 Potatoes USA – SNAC International Trial
Yield Trial Report

Local Trial Coordinator:

Name: Brian Kirschenmann
Grower farm: Kirschenmann Farms
City-State: Bakersfield, California
Phone #: 661-845-0100
E-mail: Brian@Kirschenmann.com

Cooperating Processor or Lab Evaluator:

Name: Sergio Duran
Company or Institution: Kirschenmann Farms
City-State: Bakersfield, California
Phone #: 661-340-0866
E-mail: Sergio@Kirschenmann.com

Trial Site Data: North Canal

Trial location: (city, state) Bakersfield, California
Soil type: Sandy Loam Soil pH: 6.8 % Organic matter: 12%
Planting date: February 10, 2016
Vine killing date: June 3, 2016
Harvest date: June 8, 2016

Growing Conditions: Normal climate and weather for Central Valley.

Experimental Design:

Bed width (inches): 32 inch Within row spacing (inches): 6.5 inch
Data plot length (feet): 320 Replication #: 4

Cultural Practices:

Fertilizer: 1000lb of dry 10-5-24 for 100 Units of Nitrogen pre-plant, 50 Gal at planting of 10-34-0, 125 Units of UN32 through the water.
Irrigation: Solid Set 2.6 af Rainfall: 1.5 inch
Disease Control: 4 Fungicide applications throughout season.
Insect Control: 3 Insecticide applications
Weed Control: 2 Herbicide applications
Vine Kill: Mow in conjunction with desiccate.
Vine killer material and rate: /# of applications? 15 Gal of inphuric acid, 5.5oz of ET herbicide
Sprout Inhibitor: None

California Regional Trial

POTATOES USA - SNAC INTERNATIONAL CHIP TRIAL - 2016

KIRSCHENMANN FARMS , BAKERSFIELD, CALIFORNIA

planted: February 10, 2016 vine kill: June 3, 2016 harvest: June 8, 2016

VARIETY	TOTAL YIELD cwt/acre	MARKETABLE YIELD cwt/acre	percent < 1 7/8"	percent 1 7/8" to 3"	percent >3"	SPECIFIC GRAVITY	AGTRON CHIP COLOR	PERCENT DEFECTS
ATLANTIC	562	516	8.3%	86.1%	5.7%	1.0946	70	0.0%
AF5040-8	538	488	9.4%	82.1%	8.5%	1.0928	68	7.5%
B2727-2	499	456	8.6%	88.2%	3.1%	1.0938	68	5.0%
CO07070-10W	512	437	14.6%	83.6%	1.8%	1.0975	68	3.5%
CO07070-13W	601	542	9.7%	80.3%	10.0%	1.0855	68	1.5%
MSR127-2	559	504	9.8%	85.7%	4.5%	1.0937	68	5.0%
MSW485-2	650	571	12.1%	80.2%	7.8%	1.0920	68	7.5%
NC0349-3	538	493	8.5%	81.8%	9.7%	1.1002	68	2.5%
NDTX0981648CB-13W	622	556	10.6%	85.8%	3.6%	1.0887	68	5.0%
NY152	541	470	13.2%	83.9%	2.9%	1.0945	70	7.5%
NY157	460	358	11.9%	87.6%	0.6%	1.0843	67	6.2%
SNOWDEN	544	496	8.9%	89.3%	1.7%	1.0896	68	3.5%
TX09396-1W	477	435	8.8%	78.9%	12.3%	1.1068	68	0.0%
W6822-3	557	483	13.2%	86.0%	0.9%	1.0897	68	0.0%
W8822-1	540	447	17.3%	82.7%	0.0%	1.0872	70	0.0%
average (of 4 replications)	547	483	11.0%	84.1%	4.9%	1.0927	68	3.6%

AF5040-8 CALIFORNIA

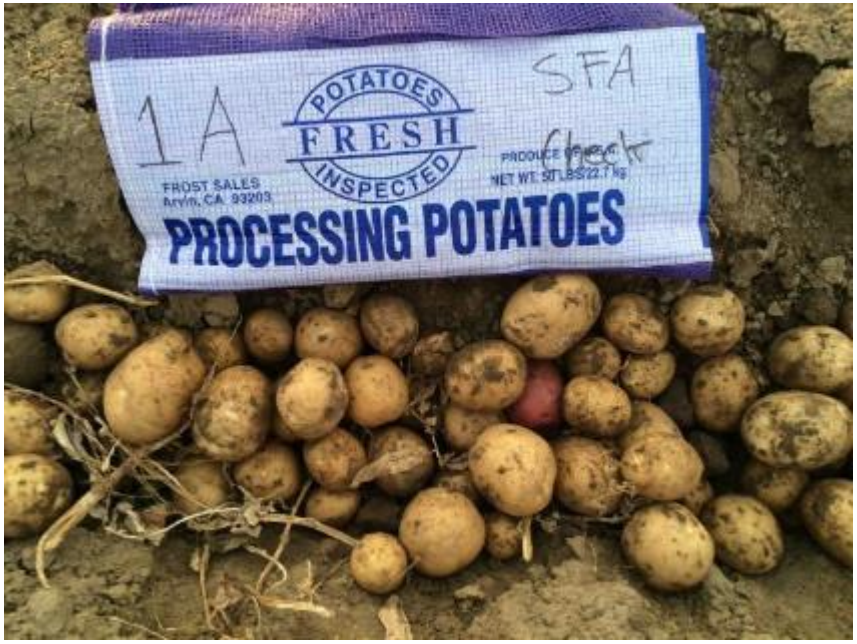
Defects 7.5%

488 cwt/a, SG 1.0928

ATLANTIC CALIFORNIA

Defects 0%

516 cwt/a, SG 1.0946



B2727-2 CALIFORNIA

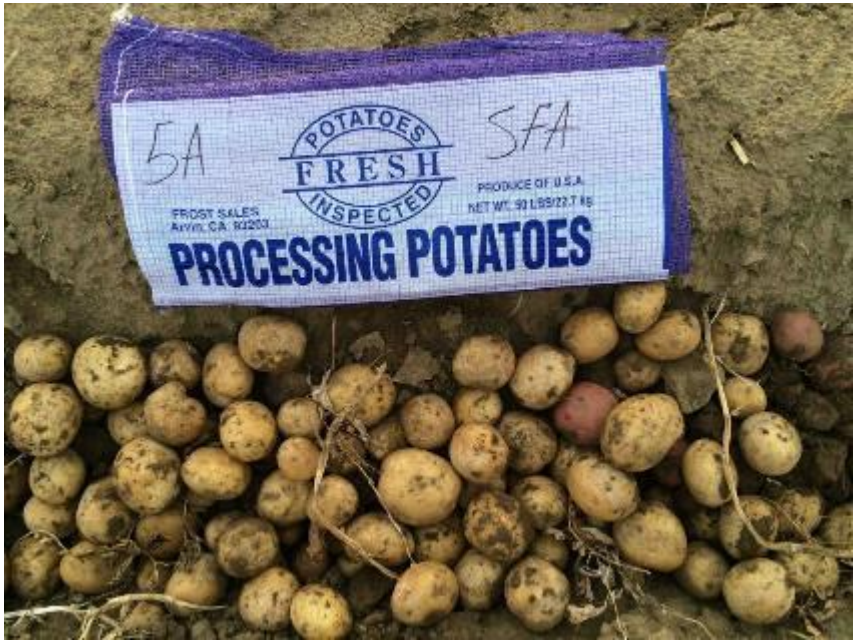
Defects 5%

Yield 456 cwt/a, SG 1.0938

CO07070-10W CALIFORNIA

Defects 3.5%

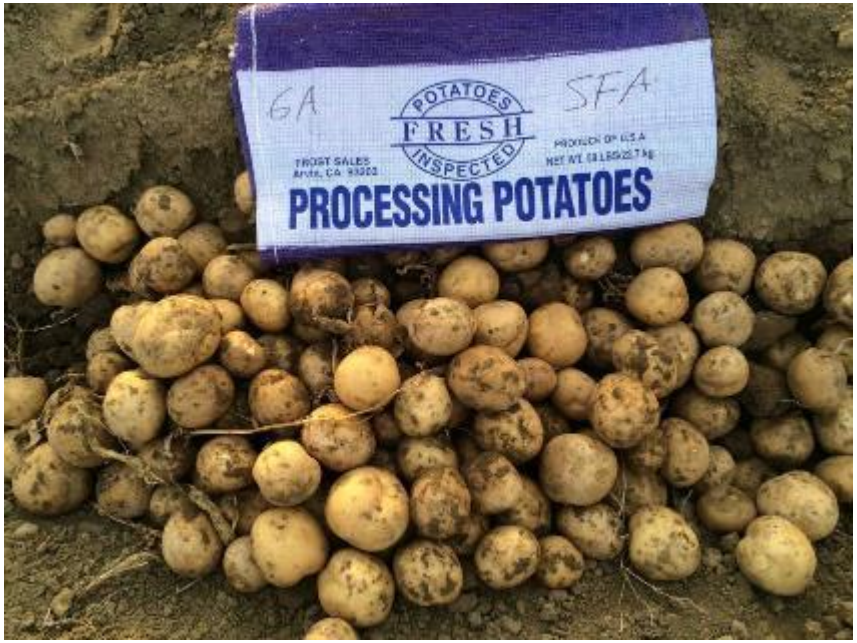
437 cwt/a, SG 1.0975



CO07070-13W CALIFORNIA

Defects 2.5%

542 cwt/a, SG 1.0855



MSR127-2 CALIFORNIA

Defects 5%

504 cwt/a, SG 1.0937

MSW485-2

Defects 7.5%

571 cwt/a, SG 1.0920

NC0349-3 CALIFORNIA

Defects 2.5%

493 cwt/a, 1.1002

NDTX098164CB-13W CALIFORNIA

5% defects

556 cwt/a, SG 1.0887

NY152 CALIFORNIA

Defects 7.5%

470 cwt/a, SG 1.1068

NY157 CALIFORNIA

Defects 6.2%

358 cwt/a, SG 1.0843, growth cracks

SNOWDEN CALIFORNIA

Defects 3.5%

496 cwt/a, SG 1.0896

TX09396-1W CALIFORNIA

Defects 0%

435 cwt/a, SG 1.1068

W6822-3 CALIFORNIA

Defects 0%

483 cwt/a, 1.0897

W8822-1 CALIFORNIA

Defect 0%

447 cwt/a, SG 1.0872

POTATOES USA - SNAC INTERNATIONAL CHIP TRIAL - CALIFORNIA -2016

COMMENTS FOR SOUTHERN PRODUCTION

ATLANTIC	Industry standard to improve upon for southern growers
AF5040-8	lower yield, good solids, try again
B2727-2	lower yield, good solids, try again
CO07070-10W	lower yield, good solids, too many undersize
CO07070-13W	good yield, solids too low, good size
MSR127-2	good yield, good solids, smaller tubers, try again
MSW485-2	great yield, good solids, good size, try again in the south
NC0349-3	good yield, good solids, good size, try again in south
NDTX0981648CB-13W	good yield, solids too low, good size
NY152	lower yield, good solids, too many undersize
NY157	lower yield, lower solids, growth cracks, maybe drop for south
SNOWDEN	industry standard for northern storage, smaller tubers, lower solids,
TX09396-1W	lower yield, good solids, low defects, try again in south
W6822-3	lower yield, lower solids, too many undersize
W8822-1	lower yield, lower solids, too many undersize

FLORIDA REGIONAL LOCATION

Local Coordinators:

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Cooperating Grower:

University of Florida/IFAS
Hastings Agricultural Extension
Center Research Farm

Cooperating Chip Processor:

Utz Quality Foods Inc.
Hanover, PA

Trial Data:

Planting Site:	University of Florida/IFAS, Hastings Agricultural Extension Center Research Farm. The soil at the field site is classified as Ellzey fine sand (sandy, siliceous, hyperthermic Arenic Ochraqualf; sand 93%, 1% clay, 6% silt). The trials were conducted under conditions that represent the grower's practices for potato production in the northeast of the state and most of the production areas of the state of Florida. The research plots were irrigated with seepage irrigation. In this system, the perched water table depth is managed by water flow into irrigation furrows spaced between beds. Potatoes were grown in 60 feet wide beds. Each bed was separated by irrigation furrows. Each bed consisted of sixteen raised potato rows. A clay layer underlies the topsoil at a depth of 3 to 5 feet in the TCAA.
Planting Date:	February 15, 2016
Harvest Date:	May 17, 2016 (92 days). Trials were harvested with a single-row commercial potato harvester
Growing Conditions:	Overall growing conditions for the 2016 growing season were rated as good. There was a good distribution of rainfall throughout the season with few large rainfall events (e.g. March 24th with 1.38" and May 17th to 20th with cumulative 3.39"). Relatively good stands and plant vigor were observed. Overall temperatures were near normal for the season. There were no freeze events during the growing season. Total and marketable yields were good for most clones tested in this trial with few exceptions. Tuber specific gravity was near normal for most of the varieties tested in this and other trials. There were only few incidences of internal defects.
Experimental Design:	This was a randomized complete block, four replication experiment designed in eight 375 ft rows with plots of two rows by 20 ft.
Row Spacing:	8 inches in-row, 40 inches between-rows.
Fertilizer:	Preplant: 14-6-12 (100 lb/acre N); Side-dress: 14-0-12 (100 lb/acre N)
Pest Control:	Pic-Clor 60 Fumigant, 11 Gallons/A, pre-plant

Regent, 3.0 oz/A, Quadris, 10.4 oz/A, and Vydate C-LV, 68 oz/A in furrow at planting
Boundary, 24 oz/A at "boarding off" for weed control
Fungicides and Insecticides as needed. IPM program used.

Chip Ratings:

Chips were prepared and rated following the procedures outlined in the Snack Food Association Chipping Potato Handbook (1995). Chips were prepared and fried by Utz Quality Foods. Chip scores are presented in Table 4.

Table 1. Plant growth characteristics.

Rating	Early Vigor (plant height)	Vine Type	Vine Maturity at Harvest/Vine Kill
1	no emergence	decumbent – poor	dead
2	leaves in rosette	decumbent – fair	+-
3	plants < 2 in	decumbent – good	yellow and dying
4	plants 2 to 4 in	spreading – poor	+-
5	plants 4 to 6 in	spreading – fair	moderately senesced
6	plants 6 to 8 in	spreading – good	+-
7	plants 8 to 10 in	upright – poor	starting to senesce
8	plants 10 to 12 in	upright – fair	+-
9	plants > 12 in	upright – good	green and vigorous

Adapted from Sisson and Porter, 2002.

TABLE **2**. Internal and external potato tuber characteristics.

Rating	Internal Flesh Color	Skin Color	Skin Texture	Tuber Shape	Eye Depth	Overall Appearance
1	White	Purple	Partial Russet	Round	Very Deep	Very Poor
2	Cream	Red	Heavy Russet	Mostly Round	+-	+-
3	Light Yellow	Pink	Mod. Russet	Round to Oblong	Deep	Poor
4	Medium Yellow	Dark Brown	Light Russet	Mostly Oblong	+-	+-
5	Dark Yellow	Brown	Netted	Oblong	Intermediate	Fair
6	Pink	Tan	Slightly Netted	Oblong to Long	+-	+-
7	Red	Buff	Mod. Smooth	Mostly Long	Shallow	Good
8	Blue	White	Smooth	Long	+-	+-
9	Purple	Cream	Very Smooth	Cylindrical	Very Shallow	Excellent

Adapted from Sisson and Porter, 2002.

Table 3. Production statistics for the 2016 USPB Snack Food Association Trial potato selections.

Clone	Total Yield (cwt/A)	Marketable Yield[1] (cwt/A)	Marketable Yield[1] % of standard	Size Distribution by Class (%)[2] C	B	A1	A2	A3	A4	Size Class Range (%) A1 to A3	Size Class Range (%) A2 to A3	Specific Gravity
Season–92 days												
AF5040-8	363	260	82	4	18	75	2	1	0	78	3	1.080
B2727-2	374	305	96	3	13	78	3	3	0	84	6	1.077
CO07070-10W	299	169	53	14	27	55	2	2	0	59	4	1.077
CO07070-13W	272	165	52	11	26	60	3	0	0	63	3	1.072
MSR127-2	383	310	97	4	14	76	4	3	0	82	6	1.079
MSW485-2	436	249	78	9	33	56	1	1	0	59	2	1.071
NC0349-3	353	294	92	4	10	65	11	10	0	86	21	1.073
NDTX081648CB-13W	304	200	63	7	22	67	3	1	0	71	4	1.070
TX09396-1W	374	305	96	4	12	72	7	5	0	85	12	1.076
NY152	374	289	91	3	17	76	2	2	0	80	4	1.075
NY157	343	241	76	6	20	67	6	1	0	74	7	1.072
W6822-3	352	226	71	8	27	60	2	3	0	65	5	1.083
W8822-1	408	296	93	5	21	71	1	2	0	74	3	1.080
ATLANTIC	397	318	100	4	13	73	6	4	0	83	10	1.076
SNOWDEN	322	227	71	5	23	68	3	1	0	72	3	1.078
MSD[3]	88	85		3	7	9	4	5	ns	8	7	0.009
P Value	<0.0001	<0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001

[1]Marketable Yield: size classes A1 to A3.

[2]Size classes: C = 0.5 to 1.5" , B = 1.5 to 1.88", A1 = 1.88 to 2.5", A2 = 2.5 to 3.25", A3 = 3.25 to 4", A4 = >4". Size Class Distribution calculated based on weight using the formula, Class Wt / (Total Yield Wt – Cull Wt) * 100.

[3]Means separated within columns by Tukey's Studentized Range (HSD) Test.

Table 4. Plant growth and tuber characteristics for the 2016 USPB Snack Food Association Trial potato selections.

	Plant Growth Characteristics [1]				Tuber Characteristics [2]							
Clone	% Stand	Early Vigor	Vine Type	Vine Maturity	IFC	SC	ST	TS	ED	APP	Chip Score	Merit
AF5040-8	100	9	6	5	2	9	8	2	5	7	64.2	4
B2727-2	98	9	6	6	2	7	7	3	8	6	63.7	1
CO07070-10W	98	9	6	5	1	6	6	2	5	6	64.1	4
CO07070-13W	99	9	6	4	2	9	6	1	8	8	62.1	4
MSR127-2	99	9	6	7	1	6	7	2	7	6	60.9	2
MSW485-2	99	9	6	6	2	7	7	1	7	9	61.9	2
NC0349-3	97	9	6	6	1	7	6	2	5	7	64.7	4
NDTX081648CB-13W	100	9	6	4	1	7	7	2	6	7	65.2	3
TX09396-1W	99	9	6	7	2	7	7	2	5	5	62.4	3
NY152	99	9	6	7	2	7	7	2	7	6	62.4	3
NY157	99	9	6	6	2	7	7	1	7	8	63.8	4
W6822-3	100	9	6	5	2	7	6	2	7	8	62.0	4
W8822-1	99	9	6	7	2	6	6	2	7	8	61.2	3
ATLANTIC	100	9	6	6	2	7	6	2	7	7	62.1	-
SNOWDEN	99	9	6	4	1	6	6	2	5	8	64.6	-

[1] Percent Stand: final stand / number of seeds planted per plot * 100 where number of seeds was 30 for 20 ft plot, 8 in spacing.
Early Vigor, Vine Type, Vine Maturity: see rating system outlined in Table 1.

[2] Internal Flesh Color (IFC), Skin Color (SC), Skin Texture (ST), Tuber Shape (TS), Eye Depth (ED), Overall Appearance (APP): see rating system outlined in Table 2. Chip Score: A subsample of potatoes from the trial was shipped to Utz Quality Snacks, chipped and scored according to the Hunter Lab rating. Merit Score: 1-4 scale: 1 = outstanding, 2 = good/keep, 3 = marginal, 4 = not acceptable/drop.

Table 5. External and internal defects for the 2016 USPB Snack Food Association Trial potato selections.

	% External Tuber Defects						% Internal Defects[2]						
											Brown Center		
Clone	Growth Cracks	Mis-shapen	Sun-burned	Rotten & misc.	Total Culls[1]	Enlarged Lenticel	HH	BR	CRS	IHN	L	M	H
AF5040-8	0	0	2	6	8	0	0	0	0	3	0	0	0
B2727-2	0	0	3	1	4	0	0	0	0	0	0	0	0
CO07070-10W	0	0	2	2	4	0	0	0	0	0	0	0	0
CO07070-13W	0	0	2	2	4	0	0	0	0	0	1	0	0
MSR127-2	0	0	1	1	2	0	0	0	0	1	0	0	0
MSW485-2	0	0	1	1	2	0	0	0	0	0	0	0	0
NC0349-3	0	0	2	1	4	0	2	0	0	8	1	1	0
NDTX081648CB-13W	0	0	1	6	7	0	1	0	0	0	1	1	1
TX09396-1W	0	0	2	2	4	0	1	0	0	1	0	0	0
NY152	0	0	2	2	4	0	0	0	0	1	1	1	0
NY157	0	0	1	4	6	0	1	0	0	6	1	1	1
W6822-3	0	0	2	1	3	0	0	0	0	3	1	0	0
W8822-1	0	0	1	1	3	0	0	0	0	1	0	0	0
ATLANTIC	0	0	2	2	4	0	1	0	0	2	0	1	0
SNOWDEN	0	0	1	1	2	0	0	0	0	1	0	0	1
MSD[3]	ns	ns	ns	4	4	ns	ns	ns	ns	7	ns	ns	ns
P Value	0.4708	-	0.2016	<0.0001	<0.0001	-	0.1083	-	-	0.0033	0.7697	0.7841	0.5935

[1]Percent of Total Yield. Total culls include the sum of growth cracks, misshapen, sunburned and rotten/misc.

[2]Percent tubers hollow heart (HH), brown rot (BR), corky ringspot (CRS), internal heat necrosis (IHN), Brown Center: light (L), moderate (M), heavy (H).

[3]Means separated within columns by Tukey's Studentized Range (HSD) Test.

Table 6. Chip sample results from UTZ Quality Foods, Inc. testing of the 2016 USPB Snack Food Association Trial potato selections.

Clone	% EXTERNAL DEFECT	% INTERNAL DEFECT	% TOTAL DEFECT	SAMPLE WEIGHT (LBS)	SAMPLE WEIGHT (GRAMS)	HUNTER LAB SCORE	MERIT SCORE	GRAV.	CHIP DEFECT DESCRIPTION/ COMMENTS	RAW TUBER COMMENTS
AF5040-8	0	4	4	2.10	953.40	64.2	13	1.090	STEM-END BROWN, ROT	SMALL TUBERS, ROUND SHAPE, SMOOTH SKIN
B2727-2	0	2	2	1.75	771.80	63.7	1	1.094		MEDIUM TO LARGE TUBERS, SOME BLOCKY
CO07070-10W	0	0	0	1.10	794.50	64.1	2	1.088		VERY SMALL TUBERS, ROUND SHAPE
CO07070-13W	0	0	0	1.30	499.40	62.1	4	1.081		MEDIUM SIZE TUBERS, ROUND SHAPE
MSR127-2	0	0	0	2.65	590.20	60.9	15	1.093	STEM-END BROWN, VASCULAR BROWN	UNIFORM MEDIUM SIZE TUBERS, ROUND SHAPE
MSW485-2	0	6	6	1.30	1203.10	61.9	8	1.082	STEM-END BROWN	EXTREMELY SMALL TUBER SIZE, ROUND SHAPE
NC0349-3	0	1	1	1.85	590.20	64.7	12	1.078	STEM-END BROWN	MEDIUM SIZE TUBERS, ROUND SHAPE
NDTX081648CB-13W	0	3	3	1.20	839.90	65.2	10	1.079	VASCULAR BROWN	SMALL TUBER SIZE, ROUND SHAPE
TX09396-1W	0	1	1	2.70	544.80	62.4	7	1.084	STEM-END BROWN	MEDIUM TO LARGE TUBER SIZE, ROUND SHAPE
NY152	0	1	1	1.60	726.40	62.4	5	1.088	STEM-END BROWN	UNIFORM MEDIUM TUBER SIZE, ROUND SHAPE
NY157	0	0	0	1.60	726.40	63.8	3	1.087		SMALL TUBER SIZE, ROUND SHAPE
W6822-3	0	6	6	1.40	749.10	62.0	11	1.097	BROWN CENTER	VERY SMALL TUBER SIZE, ROUND SHAPE
W8822-1	0	1	1	1.90	1225.80	61.2	6	1.093	STEM-END BROWN	SMALL TUBER SIZE, ROUND SHAPE
ATLANTIC	0	3	3	1.70	635.60	62.1	9	1.087	STEM-END BROWN	MEDIUM TO LARGE TUBERS, ROUND SHAPE
SNOWDEN	0	1	1	1.65	862.60	64.6	14	1.091	STEM-END BROWN	SMALL TO MEDIUM TUBER SIZE, ROUND SHAPE

HARVEST DATE: 5/17/16

SAMPLE DATE: 5/19/16

Clone Summaries

AF5040-8 - this clone had 100% of stand counts with outstanding vigor, with mid-season maturity. Marketable yield was 260 cwt/ac or 82% of Atlantic (historically 227 cwt/ac). Specific gravity of 1.080. 3% incidence of internal heat necrosis. 8% of tubers classified as culls (e.g. rotten and sunburned).

B2727-2 - mid-season maturity, this clone has 98% of the stand counts with excellent vigor. Marketable yield was 305 cwt/ac (historically 241 cwt/ac) not significantly different than Atlantic. Specific gravity 1.077. Round to oblong tubers with shallow eyes. No internal defects.

CO07070-10W - this clone was a mid-season with 98% of the stand counts. Total and marketable yields were significantly lower than Atlantic. This clone was tested in 2014 (119 cwt/ac of marketable yield 40% of Atlantic). More than 40% of the tubers fall in the B and C tuber size class.

CO07070-13W - this clone was a mid-season with 99% of the stand counts. Total and marketable yields were significantly lower than Atlantic. This clone was tested in 2014 (208 cwt/ac of marketable yield 70% of Atlantic). 37% of the tubers fall in the B and C tuber size class.

MSR127-2 - was a mid-late clone with 99% of the stand counts and excellent early vigor. Yields comparable to Atlantic, 383 cwt/ac for total (historically 310 cwt/ac) and 310 cwt/ac for marketable (historically 241 cwt/ac). Specific gravity was higher (1.079 in 2016; 1.072 historically) than previous years. Mostly round tubers, with 1% of internal heat necrosis.

MSW485-2 - mid-late maturity. This was the highest total yield of 2016 trial with 436 cwt/ac (historically 364 cwt/ac). Marketable yield was 249 cwt/ac (historically 281 cwt/ac), 42% of the tubers classified as B and C. Specific gravity 1.071. No detectable internal defects.

NC0349-3 - mid-late maturity clone with 97% of the stand counts and great early vigor. 294 cwt/ac of marketable yield (92% of Atlantic). 86% of tuber classified between A1-A3. Specific gravity 1.073. Incidence of internal heat necrosis (8%), hollow heart (2%) and brown center (2%).

NDTX081648CB-13W - this clone was a mid-early maturity with 100% of the stand and good early vigor. Marketable yield (200 cwt/ac) was significantly lower than Atlantic (historically 133 cwt/ac). Specific gravity of 1.070 (historically 1.062).

TX09396-1W - mid-late maturity clone. Similar marketable yields compared to Atlantic, 305 cwt/ac (historically 206 cwt/ac). 85% of the tuber in the A1-A3 size class. Specific gravity 1.076. Incidence of internal heat necrosis (1%) and hollow heart (1%)

NY152 - mid-late maturity clone. Total yield (374 cwt/ac) and marketable yield (289 cwt/ac in 2016 and 193 in 2014). Specific gravity of 1.075. 1% incidence of internal heat necrosis and 2% incidence of brown center.

NY157 - This is the first year of testing of this clone in FL. This clone had 99% of stand counts with outstanding vigor, with mid-season maturity. Marketable yield was 241 cwt/ac or 76% of Atlantic. Specific gravity of 1.072. Incidence of 1% of hollow heart, 6% incidence of internal heat necrosis and 3% with brown center. 6% of tubers classified as culls (e.g. rotten and sunburned).

W6822-3 - this clone was a mid-late season with 100% of the stand counts. Marketable yields were significantly lower than Atlantic (226 cwt/ac). This clone was tested in 2014 (246 cwt/ac of marketable yield 82% of Atlantic). 35% of the tubers fall in the B and C tuber size class. Incidence of 3% of internal heat necrosis. Highest specific gravity of 2016 trial with 1.083.

W8822-1 - maturity for this clone was slightly earlier than mid-season. Total yield (2016, 408 cwt/ac; this clone was tested in 2011 with total yield of 225 cwt/ac) and marketable yield (296 cwt/ac in 2016, historically 118 cwt/ac). Specific gravity 1.080. 1% incidence of internal heat necrosis.

Atlantic - was the control cultivar for this trial with 100% stand counts with good early vigor, mid-season maturity. Atlantic had relatively high total yield (2016 - 397 cwt/ac; historically 354 cwt/ac) and it was the highest marketable yield in 2016 season (318 cwt/ac; historically 301 cwt/ac). Specific gravity was 1.076 (historically 1.077). Incidence of hollow heart (1%), internal heat necrosis (2%) and brown center (1%).

Snowden - maturity for this clone was slightly earlier than mid-season. Snowden had relatively lower total yield (2016, 322; historically 360 cwt/ac) and marketable yield (227 cwt/ac in 2016, historically 303 cwt/ac) compared to Atlantic. Specific gravity 1.078 (historically 1.075). 1% incidence of internal heat necrosis.

Table 7 – Daily rainfall amounts (in) at the UF/IFAS Hastings AEC Research Farm between Jan. 1 and May 31, 2016.

Day	January	February	March	April	May
1	0.14	0.00	0.00	0.88	0.00
2	0.01	0.00	0.00	0.24	0.00
3	0.68	0.00	0.00	0.00	0.00
4	0.00	2.36	0.24	0.00	1.69
5	0.00	0.00	0.00	0.00	0.00
6	0.14	0.22	0.00	0.00	0.00
7	0.00	0.24	0.00	0.00	0.00
8	0.09	0.03	0.00	0.00	0.00
9	0.01	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.02
12	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.66	0.05	0.50
14	0.00	0.00	0.01	0.02	0.00
15	0.18	0.00	0.00	0.00	0.00
16	0.10	0.99	0.00	0.00	0.00
17	0.69	0.00	0.06	0.01	1.74
18	0.00	0.00	0.01	0.00	0.14
19	0.00	0.00	0.01	0.00	1.36
20	0.00	0.00	0.00	0.00	0.15
21	0.00	0.00	0.00	0.00	0.01
22	0.84	0.00	0.00	0.82	0.00
23	0.00	0.02	0.00	0.08	0.00
24	0.00	0.44	1.38	0.00	0.00
25	0.00	0.00	0.17	0.00	0.00
26	0.00	0.00	0.00	0.00	0.00
27	0.81	0.00	0.93	0.00	0.00
28	0.23	0.00	0.00	0.00	0.02
29	0.01	0.00	0.00	0.00	0.00
30	0.00		0.01	0.00	0.56
31	0.00		0.00		0.05
Total	3.93	4.30	3.48	2.10	6.24

Table 8 – Daily maximum and minimum air temperatures (°F) at the UF/IFAS Hastings AEC Research Farm between Jan. 1 and May 31, 2016.

	January		February		March		April		May	
Day	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1	80	59	79	52	79	44	87	62	87	66
2	60	56	79	60	78	49	82	64	89	65
3	56	50	84	69	76	47	71	52	89	70
4	62	46	77	52	63	49	78	52	75	63
5	59	49	54	42	67	44	79	51	77	57
6	57	51	60	46	70	47	74	60	75	51
7	60	52	55	42	74	47	80	62	81	51
8	68	58	63	36	77	51	83	55	87	55
9	69	60	57	44	80	54	74	50	85	57
10	68	48	54	34	82	60	75	47	84	64
11	55	37	67	32	82	60	77	57	87	65
12	62	35	75	44	81	60	84	56	88	66
13	57	37	63	42	81	65	75	65	91	67
14	62	39	63	39	84	65	75	67	88	68
15	73	54	71	47	86	65	73	68	82	60
16	73	50	72	55	87	64	75	65	85	62
17	63	47	72	47	81	66	72	55	90	70
18	59	39	64	45	79	63	74	55	87	69
19	51	35	67	51	76	66	78	54	87	68
20	64	33	73	47	79	62	78	51	85	69
21	70	37	77	54	63	43	81	59	86	70
22	70	53	76	54	70	38	85	60	84	67
23	53	36	83	61	77	45	81	64	83	62
24	54	31	80	56	83	51	80	60	86	62
25	67	34	63	48	75	62	80	60	87	62
26	70	47	61	42	81	66	82	56	84	62
27	68	57	64	37	83	70	86	62	84	64
28	61	56	71	37	83	67	88	64	85	65
29	66	46	75	45	79	61	89	64	90	67
30	68	40			77	59	88	67	92	68
31	68	47			86	66			93	69
Avg.	64	46	69	47	78	57	80	59	86	64

Idaho Regional Trial

2016 Potatoes USA – SNAC International

Local Coordinator:
Jeff Stark
Chelsey Lowder
Justin Hatch

University of Idaho
Aberdeen R&E Center
Aberdeen, Idaho

Collaborating Chip Processor:
Bob Moerkerke

Trial Data

PLANTED	4-May/2016
VINE KILLED	1-Sep/2016
HARVESTED	21-Sep/2016

PLOT LENGTH	17.7'	**HARVEST LENGTH**	17.7'
HILL SPACING	10.6"	**ROW SPACING**	36"
HILLS PER PLOT	20	**ROWS/ PLOT**	4
REPS	4		

METHOD OF HARVEST Grimme Machine

FERTILIZER

Pre plant	Nitrogen	Phosphorous	Potassium	Zn-Mn
Soil test	12	17	185	0.7-3.3
Pre-Plant	92	170	0	10.0-3.0

In-Season	Date	Rate	Product
Injection	8-Jul	35 Units	Uran
Injection	20-Jul	35 Units	Uran
Injection	3-Aug	35 Units	Uran

HERBICIDES APPLIED

Spray Coupe	26-May	1.0 pt/A	TriCor 4F
Spray Coupe	26-May	1.5 oz/A	Matrix
Spray Coupe	26-May	5.0 pt/A	Eptam 7-E

INSECTICIDES APPLIED/HILLING

Shanked	24-May	8 oz/A	Admire

FUNGICIDES APPLIED

IRRIGATION

~114 Hours/25 Inches

ENVIRONMENTAL FACTORS

Wet Fall

Table 1. IDAHO TRIAL 2016, Yield, Size Distribution, Specific Gravity

Clone	Yield (cwt/A)		Percent						
	US No 1	Total	US No 1	Size Distribution <2"	2-2.5"	2.5-3"	>3.25"	% Unusable	Specific Gravity
NDA081453CAB-2C	406	483	84	7	10	36	38	9	1.087
MSW485-2	391	514	76	19	26	40	9	5	1.093
NY152	376	497	75	22	31	35	9	3	1.096
AF5040-8	366	412	89	5	14	38	36	6	1.092
LAMOKA	352	465	75	10	16	36	22	16	1.097
NDTX0981648CB-13W	331	425	77	21	27	38	11	1	1.088
MSR127-2	320	476	67	32	32	32	3	1	1.088
NY157	313	414	75	21	25	37	13	4	1.087
W8822-1	299	394	76	22	31	34	11	2	1.091
SNOWDEN	288	387	73	26	33	32	9	1	1.092
AF4648-2	285	389	73	17	19	39	16	9	1.089
TX09396-1W	285	359	79	14	19	43	17	8	1.091
W6822-3	280	391	72	16	24	32	15	12	1.094
B2727-2	266	337	79	16	21	37	21	6	1.094
NC0349-3	262	344	76	21	26	40	10	3	1.087
CO07070-10W	226	328	69	25	29	32	7	7	1.106
Mean	**315**	**413**	**76**	**18**	**24**	**36**	**15**	**6**	**1.092**

Table 2. IDAHO TRIAL 2016, Tuber characteristics.

Clone	Tuber Appearance	Fresh Merit Score [1]	Tubers/ Plant	Avg. Tuber Size (oz.)	Tuber Shape[2]
NDA081453CAB-2C	Flat/green (3), some shatter (2)	3.8	6.3	7.5	1.9
MSW485-2	Skinning (3), round (2), green (2), few bumps	3.5	10.5	4.9	1.5
NY152	Few ats (4), some flat/green (2) some russeting/flaking skin (2)	3.5	9.9	4.9	1.6
AF5040-8	Green (4), flat (3)	3.6	5.7	7.3	2.4
LAMOKA	Flat/green (4), ats (2)	3.4	7.0	6.7	2.4
NDTX0981648CB-13W	Few ats (3), few flat/deep ends (2)	3.4	8.9	5.0	2.3
MSR127-2	Shatter (4), round unifrom (2) Mr (2),	3.9	11.3	4.3	1.6
NY157	Shatter (4), flat (3), green (2)	3.3	8.5	5.1	2.1
W8822-1	Hr (3), flaky skin (3), roudn/uniform (3)	4.1	8.2	5.0	1.6
SNOWDEN	Bumps (3), deep ends (2), few ats (2)	2.9	8.3	4.5	2.0
AF4648-2	Green (4), flat (3), few bumps	3.6	6.8	5.6	2.3
TX09396-1W	Green (2), few flat (2), few mis shapen, some skinning	3.1	6.0	5.8	2.0
W6822-3	Green (2), shatter (2)	3.3	7.4	5.4	1.9
B2727-2	Not uniform/green/scab (3), low yield	2.5	5.7	5.8	2.6
NC0349-3	Few green/ats (2) few but deep pit	3.8	7.1	5.0	1.6
CO07070-10W	Few green (2), bumps, few deep ends	3.5	7.4	4.5	2.1
Mean		**3.4**	**7.8**	**5.4**	**2.0**

[1] (1-5) 5=Best Preference Score

[2] (1-5) 1=Round

ATS=Attached Stolon, SD=Slightly Deep, D=Deep, MS=Mis-Shapen, GC=Growth Crack, GRN=Green

Table 3. IDAHO TRIAL 2016, External and Internal Defects.

	External defects[3]				Internal Defects[5]			
Clone	Scab	Growth Cracks	Knobs	Eye Depth[4]	% HH	% BC	% IBS	% VD
NDA081453CAB-2C	4.1	4.9	4.5	3.6	0.0	0	0	0
MSW485-2	4.6	4.6	5.0	3.1	0.0	0	0	0
NY152	3.8	5.0	5.0	3.4	0.5	0	0	0
AF5040-8	3.8	5.0	5.0	2.8	0.0	0	0	0
LAMOKA	3.9	5.0	5.0	3.4	0.3	0	0	0
NDTX0981648CB-13W	4.0	4.9	5.0	3.1	0.8	0	0	0
MSR127-2	4.9	4.9	4.9	3.5	0.0	0	0	0
NY157	4.0	5.0	5.0	3.5	0.0	0	0	0
W8822-1	4.8	4.9	5.0	3.6	0.0	0	0	0
SNOWDEN	4.5	5.0	5.0	2.5	0.0	0	0	0
AF4648-2	4.9	4.8	5.0	3.1	0.0	0	0	0
TX09396-1W	4.0	4.9	5.0	3.0	0.0	0	0	0
W6822-3	4.1	5.0	4.8	2.8	0.0	0	0	0
B2727-2	2.9	4.9	5.0	3.5	0.0	0	0	0
NC0349-3	3.4	4.9	5.0	3.4	2.8	0	0	0
CO07070-10W	4.5	4.9	5.0	3.4	0.0	0	0	0
Mean	**4.1**	**4.9**		**3.2**	**0.3**	**0.0**	**0.0**	**0.0**

[3] (1-5) 5=None

[4] (1-5) 1=deep, 5=shallow.

[6] Percent of defects on 10 large tubers

HH=hollow heart, BC=brown center, IBS=internal brown spot, VD=vascular discoloration

Maine Regional Trial

****YIELD, GRADE, AND OUT-OF-FIELD QUALITY REPORT****

POTATOES USA/SNACK FOOD ASSOCIATION
POTATO CHIP VARIETY TRIAL, MAINE 2016

Cooperators:

Local Coordinator:
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Cooperating Processor:
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SFA Coodinator:
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Variety Entries:

Atlantic (Field Std.)	
Lamoka (Storage Std.)	
Snowden (Storage Std.)	
AF4648-2	ME, University of Maine, Greg Porter
AF5040-8	ME, University of Maine, Greg Porter
B2727-2	USDA-ARS, Beltsville, Kathy Haynes
CO07070-10W	CO, San Luis Valley Res. Ctr., David Holm
MSR127-2	MI, Michigan State Univ., David Douches
MSW485-2	MI, Michigan State Univ., David Douches
NC0349-2	NC, NC State Univ., G. Craig Yencho
NDTX0981648CB-13W	TX, Texas A&M Univ., Creighton Miller
TX09396-1W	TX, Texas A&M Univ., Creighton Miller
NY152	NY, Cornell Univ., Walter De Jong
NY157	NY, Cornell Univ., Walter De Jong
W6822-3	WI, Univ. of Wisconsin, Jeffrey Endelman
W8822-1	WI, Univ. of Wisconsin, Jeffrey Endelman

Trial Information:

Location:	Aroostook Research Farm, Presque Isle, ME	
Soil Type:	Caribou loam	
Soil Test:	pH 5.4	Avail P (M), K (M), Ca (ML), Mg (H)
	2.3% soil organic matter	

Previous Crop:	clover/timothy (2015), oats (2014), potatoes (2013)
Planting Date:	May 25, 2016
Plot size/design:	36" row spacing, plots 2 rows x 30' Randomized (RCBD), four replicates per variety
Fertilization:	154-154-154 at planting Foliar boron applied July 6
In-row Spacing:	10" except Snowden (12") and AF4648-2 (8")
Crop Management:	Typical of commercial production in the area
Sprout Inhibitor:	MH-30 applied August 25
Vinekill Date:	September 12, 2016 (110 DAP)
Harvest Date:	September 29, 2016
Processing Date:	TBD

Procedures:

Seed potatoes were received from the cooperating programs listed above and held under controlled storage conditions at Aroostook Research Farm, Presque Isle, ME. The seed potatoes were warmed and hand-cut about two weeks prior to planting. They were suberized in controlled storage and hand-planted without a commercial seed treatment.

The trial was managed using practices typical of the production area. Weeds were controlled with a standard herbicide program followed by normal cultivation and hilling. Insect pests were controlled with an in-furrow insecticide. Subsequent foliar insecticides were applied based on insect pressure determined by regular scouting for pests. Foliar diseases were controlled using a conventional spray program based on the University of Maine Cooperative Extension's IPM program. Late blight was not observed in this trial during 2016. Vine desiccation was accomplished using a standard chemical desiccant. No supplemental irrigation was available for this trial site. Rainfall was abundant and well distributed; however, relatively dry conditions prevailed through the September maturation and harvest period (Table 1). Growing season temperatures were typical of this relatively cool growing area. The plots were harvested with a hand crew following lifting with a one-row, research-scale potato digger. All tubers were weighed and a 50-lb sample was graded for external defects and sized using a spool-type sizer. For the three largest tuber size classes, ten tubers per size class were examined for hollow heart when sufficient tubers were available. Specific gravity was determined on a ~4-kg sample using the weight-in-air/weight-in-water method. A 100-lb sample was collected at harvest and placed in 50F storage prior to shipment to a commercial chip plant for evaluation of chip quality. Additional tuber samples were placed in controlled storage for evaluation of chip color during the storage season.

Results:

Rainfall was abundant and well distributed; however, relatively dry conditions prevailed through the September maturation and harvest period (Table 1). Growing season temperature conditions were typical of this relatively cool growing area. CO07070-10W was medium-early maturing and had moderate early dying; however, all of the remaining clones had good vigor throughout the growing season and remained vigorous until the vines were desiccated (Table 2). Atlantic had the greatest early-season

vigor and it was followed closely by NDTX0981648CB-13W. B2727-2, TX09396-1, ad W8822-1 had the lowest early-season vigor. No late blight was observed in the plots during 2016. Several of the potato clones had low to moderate incidence of verticillium wilt (AF5040-8, CO07070-10W, NC0349-3, and W6822-3); however, late-season vigor was generally very good for the clones in the trial (Table 2).

Yields were very good in this trial considering that vine desiccation occurred 110 days after planting (Table 3). Tuber quality was generally quite good and specific gravities of nearly all varieties were high (Tables 3 and 4). Atlantic, Snowden, MSW485-2, NY152, NY157, and W8822-1 were highest yielding, while B2727-1, CO07070-10W, and NDTX0981648CB-13W had significantly lower yields than all of the check varieties (Table 3). AF5040-8, B2727-2, CO07070-10W, MSR127-2, MSW485-2, NC0349-3, NDTX0981648CB-13W, NY157, and W8822-1 had relatively small tuber size profiles. TX09396-1W had an especially large tuber size profile. All of the standard varieties and most of the test clones had specific gravities exceeding 1.090. Only AF4648-2 had lower specific gravity than 1.090 (1.084).

The incidence of tuber external defects was quite low for most clones in the trial (Table 4). AF4648-3 and B2727-2 had the highest incidence and both exceeded 10%. Powdery scab and common scab were present in the trial. B2727-2 had unacceptable incidence of common scab, including extensive deep pits. Hollow heart incidence was quite low for nine of the clones (3.4% or less). Hollow heart incidence exceeded 7% in the remaining six clones and was particularly high in Atlantic (12.1%), NC0349-3 (78.3%), and NY152 (32.0%).

Tuber characteristics are summarized in Table 5. AF4648-2, AF5040-8, MSW485-2, and NY157 had the best external tuber appearance. Lamoka and B2727-2 were the only clones that had more oblong tubers than would be desirable for chipping. Snowden, Atlantic, NC0349-3, and NY152 had indented stem ends and/or deep apical eyes which would make peeling difficult. MSR127-2 had more growth cracks than the other varieties. B2727-2 had scab problems and had unacceptably high incidence of deep pits caused by common scab. AF5040-8 tubers had pale yellow flesh. NY157 tubers were quite flat.

Susceptibility to skinning and bruising was evaluated by tumbling tuber samples in a drum (Table 6). Snowden, AF5040-8, CO07070-10W, NDTX0981648CB-13W, and W6822-3 were especially resistant to skinning, while Lamoka, AF4648-2, B2727-2, MSW485-2, and TX09396-1 were relatively susceptible. Lamoka, AF4648-2, MSW485-2, NC0349-3, NY152, TX09396-1, and W8822-1 were relatively resistant to fresh bruise damage. Atlantic, Snowden, ACO3433-1W, CO03243-3W, and W6822-3 were relatively susceptible to fresh bruise damage. These samples will be abrasively peeled and examined for bruise losses from storage in December to further evaluate bruise susceptibility.

Table 1. Rainfall and temperature, 2016 Aroostook Research Farm, Presque Isle, ME

Month	Week (inches)				Total	Average (^{o}F)	
	1	2	3	4	(inches)	High	Low
May	0.29	0.84	1.03	0.80	2.96	64.9	42.9
June	0.93	1.25	0.03	1.44	3.65	72.4	50.5
July	2.34	1.49	0.41	1.40	5.65	77.4	56.2
August	0.91	2.28	1.03	1.67	5.89	77.4	55.8
September	0.15	1.02	0.91	0.40	2.48	68.3	48.3
Grand total					20.63		

Table 2. Plant characteristics, PotatoesUSA/SFA Chip Variety Trial, Maine, 2016.

Variety/Clone	% Plant Stand	% Cover 7/12	7/27	8/24	9/6	Vine Mat.[1]	Foliage Color	Verticillium Wilt[2]
Atlantic	99	81	100	100	88	5.8 M. Late	Med. Green	2.3 Med-L
Lamoka	98	73	94	98	86	5.8 M. Late	Lt.-Med. Grn.	3.0 Med-L
Snowden	99	68	99	99	84	6.0 M. Late	Med. Green	2.8 Med-L
AF4648-2	100	68	98	95	80	5.3 Med.	Lt.-Med. Grn.	3.0 Med-L
AF5040-8	95	68	96	93	60	5.3 Med.	Med. Green	5.0 Mod.
B2727-2	92	58	91	95	71	5.3 Med.	Lt.-Med. Grn.	3.0 Med-L
CO07070-10W	95	68	89	84	50	4.0 M. Early	Med. Green	5.0 Mod.
MSR127-2	93	65	94	100	96	7.0 Late	Med. Green	1.3 Low
MSW485-2	100	70	100	100	89	6.8 Late	Med. Green	1.5 Low
NC0349-3	96	63	95	98	79	6.0 M. Late	Med. Green	3.8 Mod.
NDTX0981648CB-13W	100	76	100	98	76	5.5 M. Late	Lt.-Med. Grn.	2.3 Med-L
NY152	98	65	94	96	86	6.3 M. Late	Med. Dk. Grn.	2.8 Med-L
NY157	99	73	99	100	83	5.5 M. Late	Med. Green	3.3 Med-L
TX09396-1W	100	58	94	100	95	7.0 Late	Lt.-Med. Grn.	1.3 Low
W6822-3	98	63	94	96	75	5.5 M. Late	Med. Green	3.8 Mod.
W8822-1	93	58	96	99	90	6.8 Late	Med. Dk. Grn.	2.3 Med-L
LSD $_{k=100}$	3	13	11	5	18	0.9		1.2

[1]Vine Mat.: 1 to 9 where 1=very early; 3=early; 5=mid-season; 7=late; 9=extremely late. Rated September 6, 2016.
[2]Verticillium wilt: 1 to 9 where 1=none; 9=completely dead. Rated September 6, 2016.

Table 3. Yield, size distribution, and specific gravity, PotatoesUSA/SFA Chip Variety Trial, Maine, 2016.

Variety/Clone	Yield (cwt/A)[1] Tot.	US#1	%Std	Size Distribution (% by weight)[2] 1	2	3	4	5	1-7/8 to 4"	2-1/2 to 4"	Spec. Grav.
Atlantic	404	376	100	3	55	35	6	1	96	41	1.098
Lamoka	355	318	85	3	54	41	2	0	97	43	1.093
Snowden	367	348	93	2	50	42	7	0	98	48	1.102
AF4648-2	347	296	79	5	56	35	4	0	95	39	1.084
AF5040-8	332	297	79	5	68	26	1	0	95	27	1.096
B2727-2	301	248	66	6	63	29	3	0	94	31	1.099
CO07070-10W	257	219	58	9	66	22	3	0	91	25	1.111
MSR127-2	338	306	81	5	72	23	1	0	95	24	1.094
MSW485-2	395	362	96	7	72	21	0	0	93	21	1.104
NC0349-3	330	286	76	6	66	26	2	0	94	28	1.093
NDTX0981648CB-13W	298	265	70	9	76	15	1	0	91	16	1.101
NY152	408	360	96	5	59	32	4	0	95	36	1.092
NY157	369	338	100	7	65	26	2	0	93	28	1.090
TX09396-1W	319	285	90	4	38	41	18	0	96	59	1.098
W6822-3	333	296	79	4	50	40	5	0	96	46	1.104
W8822-1	392	363	96	5	67	26	2	0	95	28	1.102
Mean	347	310							95	34	1.098
CV(%)	8.9	10.6							1.7	20.8	0.665
LSD(k=100)	42	45							2	9	0.011

[1]US#1 yield was calculated as yield from 1⅞ to 4" diameter, minus tubers with external defects.
[2]Size Classes: 1=1½ to 1⅞"; 2=1⅞ to 2½"; 3=2½ to 3¼"; 4=3¼ to 4"; 5= over 4"

Table 4. External tuber defects and hollow heart incidence, PotatoesUSA/SFA Chip Variety Trial, Maine, 2016.

Variety/Clone	External Defects (% by weight)						Hollow Heart[1]
	Total	Sunb	Mshp	Grck	Scab[2]	Rot	(%)
Atlantic	3.2	1.4	0.9	0.7	0.0	0.2	12.1
Lamoka	7.9	4.8	2.2	0.4	0.3	0.2	0.0
Snowden	2.8	0.6	1.8	0.3	0.0	0.1	3.4
AF4648-2	10.5	3.9	2.8	2.2	1.1	0.4	2.0
AF5040-8	5.7	1.8	1.7	2.3	0.0	0.0	0.0
B2727-2	12.8	3.2	1.2	0.0	8.3	0.0	2.2
CO07070-10W	6.2	3.2	1.3	0.3	1.2	0.2	2.1
MSR127-2	4.9	0.1	1.4	3.4	0.0	0.0	0.0
MSW485-2	1.5	0.8	0.7	0.0	0.0	0.0	7.3
NC0349-3	7.8	2.2	1.7	0.5	3.4	0.0	78.3
NDTX0981648CB-13W	2.6	0.2	1.6	0.0	0.8	0.0	7.9
NY152	7.6	5.3	1.5	0.1	0.7	0.0	32.0
NY157	1.9	0.5	0.8	0.0	0.5	0.1	2.4
TX09396-1W	7.2	3.1	3.1	0.9	0.0	0.1	9.4
W6822-3	7.5	5.2	2.0	0.2	0.1	0.1	7.4
W8822-1	2.4	0.1	1.8	0.4	0.0	0.1	2.2
Mean	5.8	2.3	1.7	0.7	1.0	0.1	10.5
CV(%)	81.0						
LSD(k=100)	8.8						

[1]Tubers were cut in the size classes from 2½ to 4" diameter; the overall percent hollow heart is presented.
[2]Powdery scab was more prevalent than common scab in this trial; the percent scab data presented is combined common and powdery scab.

Table 5. Tuber characteristics, PotatoesUSA/SFA Chip Variety Trial, Maine, 2016.

Variety/Clone	Shape	Skin Tex-ture	Eye Depth	Gen. Appear.	Comments
Atlantic	R-O	Net	M-D	F	dse,dae, dull, netted
Lamoka	O-R	Sln.	M-S	F	oblongs, off shapes
Snowden	R-O	Net	M-D	F-P	dull, dse, dae, netted, dark
AF4648-2	R-O	S	M-S	F-G	bright
AF5040-8	R-O	S	M-S	F-G	bright, small, pale yellow (YF)
B2727-2	O-R	Sln.	M-S	P	oblongs, pitted scab
CO07070-10W	R-O	Sln.	M-S	F	coarse net, small
MSR127-2	R-O	Net	M-S	F	dull, netted
MSW485-2	R	Sln.	M-S	F-G	nice shape
NC0349-3	R	Sln.	M-D	F	deep eyes, small
NDTX0981648CB-13W	R-O	Sln.	M-S	F	pink eyes, small
NY152	R-O	Net	M-D	F	deep eyes, netted
NY157	R-O	Sln.	M-S	F-G	flat
TX09396-1W	R-O	Sln.	M-S	F	large, slight off shapes
W6822-3	R-O	Sln.	M-S	F	
W8822-1	R-O	Net	M-S	F-P	dark, netted, coarse net

Shape: R=mostly round; R-O=round to oblong; O-R=oblong to round; O=oblong
Skin Texture: S=smooth; M-S=moderately smooth; Sln.=slight net; Net=strongly netted
Eye Depth: S=shallow; M-S=moderate to shallow; M-D=moderate to deep; D=deep
Flesh Color: Wh=white; OW=off white; YF=yellow fleshed, higher numbers indicate brighter yellow; dse=deep stem end; dae=deep apical end.

Table 6. Bruise susceptibility scores, September, PotatoesUSA/SFA Chip Variety Trial, Maine, 2016.

Variety/Clone	Skinning & Bruise (tumble method)[1]				
	Prior to Peeling		Peeled Tubers		Comments on peeled tubers
	Index	% Thumbnail Cracks	% Incid.	% Surf.	
Atlantic	3.65	75.0			
Lamoka	5.74	18.0			
Snowden	3.02	40.0			
AF4648-2	5.06	25.5			
AF5040-8	2.97	75.4			
B2727-2	5.48	36.7			
CO07070-10W	1.27	70.0			
MSR127-2	4.33	68.3			
MSW485-2	5.27	13.3			
NC0349-3	4.20	8.3			
NDTX0981648CB-13W	2.35	48.4			
NY152	3.91	5.0			
NY157	4.10	90.0			
TX09396-1W	5.92	11.7			
W6822-3	2.80	80.0			
W8822-1	3.17	23.4			
Mean	3.95	43.0			
CV(%)	21.0	27.1			
LSD(k=100)	1.11	15.0			

[1]Sixty tubers were evaluated per variety/clone. Fifteen tubers per plot were tumbled on September 29 (replications #1 and 2 and October 3 (replications #3 and 4) [1 or 4 days after harvest] in a paddled drum for 1 minute at 15 rpm. Index scores indicate combined severity of skinning plus fresh bruise (higher values indicate more severe bruising). For the peeled ratings, percent incidence (% of tubers with visible bruise) and surface area values are combined scores for shatter and blackspot rated on December xx, 2016. The peeled scores will be available later in the storage season.

Variety/Clone Summary 2016:

Atlantic: Medium vine maturity, round to oblong tubers with netted skin and moderately-deep eyes. Good yields, low to moderate external defects incidence, high specific gravity, relatively high hollow heart incidence during 2015 and 2016, and moderate to high bruise susceptibility.

Lamoka: Medium-late vine maturity, oblong to round tubers with smooth to slightly netted skin, moderately-shallow eyes, and good appearance. Moderate yields, low external defects incidence, high specific gravity, low to moderate hollow heart incidence, relatively high skinning susceptibility, and relatively low bruise susceptibility.

Snowden: Medium-late to late vine maturity, round to oblong tubers with netted skin and moderately-deep eyes. Good yields, low external defects incidence, moderate to high specific gravity, low hollow heart incidence, and acceptable bruise susceptibility.

AF4648-2: Medium vine maturity, round to oblong tubers with smooth to slightly netted skin, moderately shallow eyes, and good appearance. Moderate yields, low external defects incidence except for some greening and powdery scab susceptibility, moderate specific gravity, low hollow heart incidence, relatively high skinning susceptibility, and relatively good bruise resistance scores.

AF5040-8: Medium vine maturity, round to oblong tubers with smooth skin, moderately shallow eyes, good appearance, and pale yellow flesh. Moderate to high yields, low external defects incidence, small tuber size profile, high specific gravity, low hollow heart incidence, and acceptable skinning and bruise tolerance scores.

B2727-2: Medium vine maturity, oblong to round tubers with slightly netted skin and moderately-shallow eyes. Moderate to low yields, unacceptable scab susceptibility including deep pits, small tuber size profile, high specific gravity, low hollow heart incidence, and relatively high skinning susceptibility.

CO07070-10W: Medium-early vine maturity, round to oblong tubers with slightly netted skin, moderately shallow eyes, and fair appearance. Low yield, low external defects incidence, small tuber size profile, high specific gravity, low hollow heart incidence, and relatively good skin set scores.

MSR127-2: Late vine maturity, round to oblong tubers with netted skin, moderately shallow eyes, and fair appearance. Moderate yield, low external defects incidence, small tuber size profile, high specific gravity, low hollow heart incidence, and relatively high skinning susceptibility.

MSW485-2: Late vine maturity, round tubers with slightly netted skin, moderately shallow eyes, and fair to good appearance. High yield, low external defects incidence, small tuber size profile, high specific gravity, moderate hollow heart incidence, and relatively high skinning susceptibility.

NC0349-3: Medium-late vine maturity, round tubers with slightly netted skin, moderately deep eyes, and fair appearance. Moderate yield, moderate external defects incidence, small tuber size profile, high specific gravity, extremely high hollow heart incidence, and relatively high skinning susceptibility.

NDTX0981648-13W: Medium-late vine maturity, round to oblong tubers with slightly netted skin, moderately shallow eyes with pink pigmentation, and fair appearance. Moderate to low yield, low external defects incidence, small tuber size profile, high specific gravity, moderate hollow heart incidence, and relatively good skin set scores.

NY152: Medium-late vine maturity, round to oblong tubers with netted skin, moderately-shallow to moderately deep eyes, and fair appearance. Good yields, low to moderate external defects incidence, moderate to high specific gravity, high hollow heart incidence, and low bruise susceptibility.

NY157: Medium-late vine maturity, round to oblong flattened tubers with slightly netted skin, moderately-shallow eyes, and fair to good appearance. Good yields, low external defects incidence, small tuber size profile, moderate to high specific gravity, low hollow heart incidence, and relatively high skinning susceptibility.

TX09396-1W: Late vine maturity, round to oblong tubers with slightly netted skin, moderately-shallow eyes, and fair appearance. Moderate yields, moderate external defects incidence, large tuber size profile, high specific gravity, moderate hollow heart incidence, and relatively high skinning susceptibility.

W6822-3: Medium-late vine maturity, round to oblong tubers with slightly netted skin, moderately-shallow eyes, and fair appearance. Moderate to high yields, moderate external defects incidence, high specific gravity, moderate hollow heart incidence, and moderate to high bruise susceptibility.

W8822-1: Late vine maturity, round to oblong tubers with netted skin, moderately-shallow eyes, and fair to poor appearance. High yields, small tuber size profile, low external defects incidence, high specific gravity, low hollow heart incidence, and and acceptable skinning and bruise tolerance scores.

Michigan Regional Trial

Potatoes USA – SNAC International
2016 Yield Trial Report

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Trial Site Data:

Location: Howard City, Michigan
Soil type: Loamy Sand Soil pH: 6.0 % Organic matter: N/A
Planting date: 5/20/2016
Vine killing date: 8/31/2016
Harvest date: 10/13/2016

Experimental Design:

Bed width (inches): 34 Within row spacing (inches): 10
Data plot length (feet): 23 Replication #: 3

Cultural Practices:

Fertilizer: N/A
Irrigation: N/A Rainfall: 14.55 in. (planting to harvest)
Disease Control: Bravo and Manzate
Insect Control: Cruiser Maxx Potato Extreme (seed treatment) Blackhawk (in season)
Weed Control: N/A
Vine Kill: Reglone
Sprout Inhibitor: N/A

Trial Procedure:

Trial seed was sent to the MSU Agronomy Farm in Lansing, MI during the spring of 2016 where it was cut, treated (Syngenta Cruiser Maxx® Potato Extreme) and allowed to suberize at 50°F prior to being sent to Sandyland Farms, LLC. The trial was planted by the grower cooperator on May 20th, 2016.

Pre-harvest sugar profiles were taken for each variety on August 22nd and August 31st; approximately one week and immediately prior to vine-kill. The pre-harvest sugar profile sampling protocol was conducted as follows: a canopy rating was taken for each variety as a percent rating of green foliage, canopy uniformity was noted as a percentage of how uniform the foliage coloration appeared, the number of hills required to obtain 40 tubers was recorded, along with the total number of main stems harvested. Lastly, from the 40 tubers harvested, the specific gravity, a glucose value (a percent by fresh weight), a sucrose rating (a percent by fresh weight X10) and an average tuber weight (in ounces) were recorded using the services of Techmark, Inc., Lansing, MI.

At harvest, three replicate plots of 23 feet were harvested from each entry and were used to determine trial yield averages, tuber size distribution, specific gravity and quantity of internal defects present. Analysis of Variance and mean separation were performed using JMP software. When ANOVA p-values were above the commonly established threshold of 0.05, mean separation tests were not performed.

To better assess vine vigor and maturity characteristics, vine growth ratings were made on June 22nd and August 31st respectively. Lines that matured early relative to the trial control (Snowden) include most notably CO07070-10W, NY157 and B2727-2 while lines that matured later than the control included AF4648-2, MSR127-2, MSW485-2 and AF5040-8. The rest of the lines deviated minimally from the control.

Growing Season Weather:

	From May 20th-Oct. 13th	
	Rainfall (inches)	GDD (Base 40)
2011	9.87	3795
2012	10.68	3540
2013	15.01	3667
2014	15.67	3465
2015	14.39	3623
2016	14.55	4065
Average	**13.36**	**3692**

Table A. Rainfall and GDD (Base 40) from the Entrican, MI weather station from the past 6 years (enviroweather.msu.edu).

Table A above displays precipitation and growing degree day information from the past 6 years at the Montcalm Research Center weather station (enviroweather.msu.edu) located in Entrican, MI which is close in proximity to the SNAC Trial plot. The total precipitation during the course of the growing season (described here as May 20th or the date of planting to October 13th, the day of harvest) in 2016 (14.55”) was slightly higher than the previous 6-year average (13.36”) and

the cumulative growing degree days (base 40 °F) during this same time period were notably higher in 2016 (4065) than the 6-year average (3692).

Results:

Table 1. Summary of yield, size distribution, and specific gravity data at harvest. Entries are organized based on US#1 yield, where the highest yielding lines are at the top and lowest at the bottom of the chart. Mean values are expressed below the chart along with ANOVA p-values and LSD values.

Table 1. Yield , Size Distribution*, Specific Gravity

	Yield (cwt/A)		Percent Size Distribution					
Entry	US#1	TOTAL	US#1	Small	Mid-Size	Large	Culls	Specific Gravity
NY152	578	664	87	10	85	2	1	1.076
MSR127-2	543	600	90	9	76	14	1	1.082
W8822-1	515	583	88	11	84	4	1	1.084
NY157	504	560	90	9	83	7	1	1.079
MSW485-2	483	575	84	15	83	1	1	1.086
Lamoka	**441**	**489**	**90**	**9**	**85**	**5**	**1**	**1.081**
Snowden	**438**	**524**	**83**	**16**	**81**	**2**	**1**	**1.086**
NC0349-3	420	472	89	11	80	9	0	1.072
TX09396-1W	407	437	93	7	67	26	1	1.080
CO07070-10W	368	468	79	20	77	2	1	1.088
NDA081453CAB-2C	335	386	82	11	78	9	2	1.078
B2727-2	304	352	86	13	81	5	1	1.079
AF5040-8	303	376	81	18	77	4	1	1.080
AF4648-2	301	347	87	11	73	14	2	1.075
NDTX081648CB-13W	287	359	80	20	79	1	1	1.084
W6822-3	198	295	67	32	66	1	1	1.082
MEAN	**402**	**468**	**85**	**14**	**78**	**7**	**1**	**1.081**
ANOVA p-value	**<0.0001**	**<0.0001**	**<0.0001**	**<0.0001**	**<0.0001**	**<0.0001**	0.495	**<0.0001**
LSD	**58.4**	**57.0**	**4.9**	**3.7**	**5.4**	**4.5**	-	**0.002**

*small <1 7/8"; mid-size 1 7/8"-3 1/4"; large >3 1/4"

Table 2. Summary of internal tuber quality at harvest. The internal quality across the trial was generally acceptable, but the evidence of in-season environmental stress was observed in some lines. As with table one, mean values are expressed below the chart along with ANOVA p-values and LSD values.

Table 2. At-Harvest Tuber Quality. Sandyland Farms, Howard City, Michigan.

	Raw Tuber Quality[1] (%)			
Entry	**HH**	**VD**	**IBS**	**BC**
NY152	0	23	7	0
MSR127-2	0	47	0	0
W8822-1	0	43	0	0
NY157	0	47	3	0
MSW485-2	7	40	3	0
Lamoka	**0**	**30**	**7**	**0**
Snowden	**7**	**43**	**0**	**0**
NC0349-3	60	83	0	0
TX09396-1W	7	27	3	0
CO07070-10W	0	27	7	0
NDA081453CAB-2C	0	27	7	3
B2727-2	3	13	13	0
AF5040-8	0	13	7	0
AF4648-2	0	33	3	0
NDTX081648CB-13W	0	20	0	0
W6822-3	3	50	3	3
MEAN	**5**	**35**	**4**	**0**
ANOVA P-value	**<0.0001**	**<0.0001**	0.67	0.57
LSD	**7.8**	**21.2**	-	-

[1]Internal Defects. HH = hollow heart, VD = vascular discoloration, IBS = internal brown spot, BC = brown center.

Table 3. Post-harvest chip quality from samples collected at harvest on October 13th, 2016, and processed at Herr Foods, Inc. on October 17th, 2016. Entries are organized based on processor rankings, with the highest ranking chip lines at the top and the lowest ranked lines at the bottom. Chip color was generally acceptable across the trial, with NY152 having the highest Agtron score of the trial at 57.2.

Table 3. 2016 Post-Harvest Chip Quality[1]

Entry	Agtron Color	SFA[2] Color	Specific Gravity	Percent Chip Defects[3]		
				Internal	External	Total
W6822-3	53.7	2.0	1.076	5.1	3.7	8.8
NY157	56.5	2.5	1.076	4.9	10.4	15.3
NY152	57.2	3.0	1.076	11.4	7.9	19.3
MSW485-2	50.6	2.5	1.078	11.9	7.7	19.6
NDA081453CAB-2C	53.1	2.5	1.074	7.7	2.4	10.1
B2727-2	54.9	3.0	1.074	14.0	7.9	21.9
Lamoka	**55.5**	**2.5**	**1.077**	**9.7**	**7.5**	**17.2**
Snowden	**53.6**	**3.0**	**1.080**	**11.0**	**14.5**	**25.5**
CO07070-10W	52.7	3.0	1.085	14.4	15.8	30.2
AF5040-8	54.2	3.0	1.074	10.1	11.7	21.8
TX09396-1W	NA	4.0	1.077	7.5	18.9	26.4
AF4648-2	56.7	3.0	1.074	14.5	7.2	21.7
NDTX081648CB-13W	53.1	3.0	1.078	14.4	6.7	21.1
MSR127-2	53.8	3.5	1.077	27.8	5.7	33.5
NC0349-3	56.5	3.5	1.071	20.1	6.8	26.9
W8822-1	53.1	3.5	1.079	18.2	8.2	26.4

[1] Samples collected October 13th and processed by Herr Foods, Inc., Nottingham, PA on October 17th, 2016.

Chip defects are included in Agtron and SFA samples.

[2] SFA Color: 1= lightest, 5 = darkest

[3] Percent Chip Defects are a percentage by weight of the total sample; comprised of undesirable color, greening, internal defects and external defects.

Table 4. Black spot bruise evaluation summary. Results below are from two, 25 tuber samples that were collected at harvest. One sample served as a check while the second sample was stored for at least 12 hours at 50 ºF and then placed in a plywood drum and rotated 10 times to simulate conditions conducive to bruising. After ten days of storage at room temperature, all samples were abrasively peeled and scored for bruising. The chip lines are organized by the 'average bruises per tuber', with the lowest (most desirable) at the top and highest (least desirable) at the bottom.

Table 4. Black Spot Bruise Test

	A. Check Samples[1]									B. Simulated Bruise Samples[2]								
	# of Bruises Per Tuber						Total	Percent Bruise	Average Bruises Per	# of Bruises Per Tuber						Total	Percent Bruise	Average Bruises Per
Entry	0	1	2	3	4	5	Tubers	Free	Tuber	0	1	2	3	4	5	Tubers	Free	Tuber
NDA081453CAB-2C	22	3	0	0	0	0	25	88	0.1	18	6	1	0	0	0	25	72	0.3
W6822-3	24	1	0	0	0	0	25	96	0.0	14	6	3	2	0	0	25	56	0.7
NDTX081648CB-13W	21	4	0	0	0	0	25	84	0.2	13	6	6	0	0	0	25	52	0.7
AF4648-2	23	2	0	0	0	0	25	92	0.1	13	7	3	2	0	0	25	52	0.8
Lamoka	**18**	**5**	**1**	**1**	**0**	**0**	**25**	**72**	**0.4**	**11**	**8**	**3**	**2**	**1**	**0**	**25**	**44**	**1.0**
MSW485-2	13	11	1	0	0	0	25	52	0.5	9	8	5	1	1	1	25	36	1.2
MSR127-2	17	7	1	0	0	0	25	68	0.4	2	14	6	0	1	1	24	8	1.5
NY157	17	7	0	0	0	0	24	71	0.3	7	5	7	0	1	3	23	30	1.7
AF5040-8	14	6	5	0	0	0	25	56	0.6	6	9	2	3	2	2	24	25	1.7
NCO349-3	17	6	2	0	0	0	25	68	0.4	4	8	6	3	2	2	25	16	1.9
B2727-2	12	7	3	3	0	0	25	48	0.9	4	6	7	5	2	1	25	16	1.9
W8822-1	11	10	4	0	0	0	25	44	0.7	6	6	5	3	1	4	25	24	2.0
CO07070-10W	8	9	5	2	0	0	24	33	1.0	6	3	6	5	0	5	25	24	2.2
TX09396-1W	9	10	5	1	0	0	25	36	0.9	4	4	5	7	3	2	25	16	2.3
Snowden	**15**	**5**	**5**	**0**	**0**	**0**	**25**	**60**	**0.6**	**2**	**4**	**8**	**4**	**3**	**4**	**25**	**8**	**2.6**
NY152	3	13	6	2	1	0	25	12	1.4	6	1	2	4	3	9	25	24	3.0

[1]Tuber samples collected at harvest and held at room temperature for later abrasive peeling and scoring.

[2]Tuber samples collected at harvest, held at 50ºF for at least 12 hours, then placed in a 6 sided plywood drum and rotated 10 times to produce simulated bruising. They were then held at room temperature for later abrasive peeling and scoring.

Tables 5A-B. Summary of the results from pre-harvest panel data collected on August 22nd and August 31st, 2016.

Table 5A. Pre-Harvest Panel 8/22/2016

Entry	Specific Gravity	Glucose[1] %	Sucrose[2] Rating	Canopy Rating[3]	Canopy Uniform.[4]	Number of Hills	Number of Stems	Average[5] Tuber Weight
W6822-3	1.077	0.004	0.626	75	75	5	11	2.90
NY157	1.079	0.003	0.295	50	75	3	18	3.69
NY152	1.078	0.003	0.090	75	100	2	11	3.81
MSW485-2	1.085	0.004	0.993	75	100	3	7	4.27
NDA081453CAB-2C	1.077	0.003	0.931	25	75	3	11	4.46
B2727-2	1.076	0.003	0.449	50	75	5	11	4.31
Lamoka	**1.074**	**0.006**	**0.535**	**100**	**100**	**3**	**12**	**4.26**
Snowden	**1.082**	**0.003**	**0.378**	**50**	**100**	**3**	**5**	**4.16**
CO07070-10W	1.092	0.003	0.710	25	100	4	21	2.96
AF5040-8	1.074	0.003	0.565	75	100	3	7	3.41
TX09396-1W	1.076	0.004	0.327	100	75	4	8	6.28
AF4648-2	1.067	0.008	0.503	75	100	5	10	2.95
NDTX081648CB-13W	1.072	0.014	0.890	100	100	3	11	1.85
MSR127-2	1.073	0.006	0.845	100	100	3	9	3.09
NC0349-3	1.074	0.005	1.086	25	75	4	11	3.59
W8822-1	1.085	0.003	0.415	75	100	4	15	4.11

1 Percent Glucose is the percent of glucose by weight in a given amount of fresh tuber tissue.

2 Sucrose Rating is the percent of sucrose by weight in a given amount of fresh tuber tissue X10.

3 The Canopy Rating is a percent rating of green foliage (0 is all brown, dead foliage; 100 is green, vigorous foliage).

4 The Canopy Uniformity is a percentage of how uniform the foliage health is at the date of observation.

5 The Average Tuber Weight is the total tuber weight collected, divided by the number of tubers, reported in ounces.

Table 5B. Pre-Harvest Panel, 8/31/2016

Entry	Specific Gravity	Glucose[1] %	Sucrose[2] Rating	Canopy Rating[3]	Canopy Uniform.[4]	Number of Hills	Number of Stems	Average[5] Tuber Weight
W6822-3	1.073	0.003	0.735	25	75	4	10	2.67
NY157	1.074	0.003	0.439	25	75	3	9	3.80
NY152	1.076	0.002	0.402	50	100	4	21	3.75
MSW485-2	1.079	0.002	0.52	100	75	3	8	3.88
NDA081453CAB-2C	1.070	0.002	0.727	25	100	6	15	3.04
B2727-2	1.072	0.002	0.482	25	75	5	10	4.70
Lamoka	**1.079**	**0.002**	**0.544**	**75**	**75**	**4**	**19**	**4.54**
Snowden	**1.080**	**0.002**	**0.51**	**75**	**75**	**4**	**17**	**4.32**
CO07070-10W	1.085	0.002	0.692	0	100	2	12	3.49
AF5040-8	1.075	0.002	0.512	25	75	3	10	4.13
TX09396-1W	1.082	0.003	0.54	75	75	4	13	5.21
AF4648-2	1.064	0.003	0.492	75	75	3	12	3.57
NDTX081648CB-13W	1.077	0.005	0.538	50	100	3	24	2.90
MSR127-2	1.076	0.003	0.492	100	100	2	12	3.89
NC0349-3	1.073	0.002	0.561	25	100	3	13	4.55
W8822-1	1.085	0.003	0.492	50	75	3	15	4.40

1 Percent Glucose is the percent of glucose by weight in a given amount of fresh tuber tissue.

2 Sucrose Rating is the percent of sucrose by weight in a given amount of fresh tuber tissue X10.

3 The Canopy Rating is a percent rating of green foliage (0 is all brown, dead foliage, 100 is green, vigorous foliage).

4 The Canopy Uniformity is a percentage of how uniform the foliage health is at the date of observation.

5 The Average Tuber Weight is the total tuber weight collected, divided by the number of tubers reported in ounces.

Variety Comments:

NY152: This variety recorded the top overall yield in the SNAC trial for the second year in a row with a 578 cwt. /A US#1 yield. The specific gravity (1.076) was below the trial average (1.081) (Table 1). Raw internal tuber quality was generally acceptable with 23 percent of the tubers expressing vascular discoloration and 7 percent internal brown spot (Table 2). Chip quality at Herr Foods was above average, ranking 3rd out of 16 lines for overall appearance with the highest AGTRON score of 57.2 (Table 3). NY152 had the highest level of black spot bruising with an average of 3.0 bruises per tuber (Table 4).

MSR127-2: This line was the second highest yielding variety in the 2016 trial with a 543 cwt./A US#1 yield and a slightly above average specific gravity of 1.082 (Table 1). This line exhibited a significant level of vascular discoloration at 47 percent (Table 2). This variety was below average in chip performance at Herr Foods out-of-the-field fry test, ranking 14th out of 16 entries due to internal coloration and stem end defects. Other comments on the variety include the observation that it has nice skin, no scab and a good size profile. Pre-harvest panel data for this line indicates that it may have been slightly immature, as the vines were estimated at 100% green just prior to vine-kill along with the fact that sucrose and glucose levels were still apparently dropping at the last sample date (Tables 5A-B).

W8822-1: This variety had an above average yield of 515 cwt. /A US#1 (Table 1). The specific gravity was above the trial average at 1.084. This variety exhibited a significant level of vascular discoloration in raw tuber evaluations at 43 percent (Table 2). Other observations included the mention of a cream colored flesh. Herr's ranked this line 16th of 16 lines for chip quality due to the presence of internal color and bruising. This was supported by black spot bruise evaluations which indicate that it had an average of 2.0 bruises per tuber (Table 4).

NY157: This variety recorded the fourth highest yield in this year's trial at 504 cwt/A US#1 with a slightly lower than average specific gravity at 1.079 (Table 1). As with many of the lines in the trial, vascular discoloration appeared to be significant with 47 percent recorded in addition to 3 percent internal brown spotting (Table 2). Black spot bruising was moderate with an average of 1.7 bruises per tuber (Table 4). This line was ranked number 2 among 16 entries by Herr's for chip quality with an AGTRON score of 56.5 and mention of a tuber size profile amenable to processing.

MSW485-2: This line had an above average yield of 483 cwt. /A US#1 with an above average specific gravity of 1.086 (Table 1). 40 percent vascular discoloration, 7 percent hollow heart and 3 percent internal brown spotting were observed from harvested tubers (Table 2). This line performed moderately in the black spot bruise evaluation with 1.2 bruises per tuber recorded (Table 4). Herr's ranked this line 4th of 16 for chip quality with comments including mention of nice skin and size profile (Table 3).

Lamoka: Lamoka yielded slightly above the trial average at 402 cwt. /A US#1, and tied the trial average for specific gravity at 1.081 (Table 1). Internal tuber quality was moderate with 30 percent vascular discoloration and 7 percent internal brown spotting (Table 2). Herr's ranked this line 7th of 16 with comments mentioning the oblong tuber shape with large size and minor bruising (Table 3). Lamoka performed moderately in the black spot bruise evaluation with an average of 1.0 bruises per tuber (Table 4). Lamoka appeared to be chemically mature based on pre-harvest panel data (Table 5A-B) as sucrose levels had plateaued while specific gravity had increased between the two dates.

Snowden: Snowden, the trial check variety yielded slightly above the trial average at 438 cwt./A US#1 and an above average specific gravity at 1.086 (Table 1). Seven percent of tubers evaluated displayed hollow heart along with 43 percent vascular discoloration (Table 2). Herr's ranked Snowden 8th of 16 for chip quality with 25.5 percent total defects and comments mentioning presence of stem end and a good size profile (Table 3). Snowden performed poorly in the black spot bruise evaluation at 2nd to last with an average of 2.7 bruises per tuber (Table 4).

NCO349-3: This line had an average yield at 420 cwt. /A US#1 with a below average specific gravity of 1.072 (Table 1). Raw tuber quality was very poor with 60 percent of tuber evaluated expressing hollow heart and 83 percent with vascular discoloration (Table 2). Herr's ranked this line 15th of 16 with 26.9 percent total defects and mention of substantial hollow heart, scab and stem end (Table 3). In addition, the black spot bruise evaluation showed that this line had an average of 1.9 bruises per tuber.

TX09396-1W: This line had an average yield at 407 cwt./A US#1 near the trial average, recording only 320 cwt./A US#1 with a specific gravity of 1.080 (Table 1). Twenty six percent of tubers were classified as oversized, the highest number of any line in the trial. Internal quality was moderate with 7 percent hollow heart, 27 percent vascular discoloration and 3 percent internal brown spotting noted (Table 2). Herr's ranked this line 11th of 16 for chip quality with mention of a variable size profile and internal coloration (Table 3). In black spot bruise evaluation, this line performed poorly with an average of 2.3 bruises per tuber (Table 4).

CO07070-10W: This line had a slightly lower than average yield at 368 cwt. /A US#1 and the highest specific gravity in the trial at 1.088 (Table 1). Internal tuber quality was moderate with 27 percent vascular discoloration and 7 percent internal brown spotting observed (Table 2). This was the earliest maturing line in the trial and had a uniform, round tuber shape. It was ranked 9th of 16 by Herr's for chip quality, where scab, bruising and stem end were all mentioned (Table 3). In the black spot bruise evaluation, this line had an average of 2.3 bruises per tuber (Table 4).

NDA081453CAB-2C: This line had a lower than average yield of 335 cwt. /A US#1 and a specific gravity of 1.078, slightly below the trial average (Table 1). Internal tuber quality was moderate in this line with 27 percent vascular discoloration, 7 percent internal brown spotting, and 3 percent brown center noted (Table 2). Herr's ranked this line 5th of 16 for chip quality with 9.4 percent total defects and mention of minor scab and stem end (Table 3). In black spot bruise evaluation, this line performed excellent with an average of 0.3 bruises per tuber (Table 4).

B2727-2: This line had a lower than average yield of 304 cwt. /A US#1 and a specific gravity of 1.079 (Table 1). Internal quality was moderate with 3 percent hollow heart, 13 percent vascular discoloration and 13 percent internal brown spotting noted (Table 2). Herr's ranked this line 6th of 16 for chip quality with mention of the line's oblong shape and variable size profile (Table 3). In black spot bruise evaluations this line had an average of 1.9 bruises per tuber (Table 4).

AF5040-8: This line had a below average yield of 303 cwt. /A US#1 and a specific gravity of 1.080 (Table 1). Internal quality was good with only 13 percent vascular discoloration and 7 percent internal brown spotting observed (Table 2). Herr's ranked this line 10th of 16 for chip quality with 21.8 percent total defects and mention of a variable size profile, oblong shape, severe scab and yellowish flesh (Table 3). In the black spot bruise evaluation this line performed moderately with an average of 1.7 bruises per tuber (Table 4).

AF4648-2: This variety was the third lowest yielding line in the 2016 trial at 301 cwt. /A US#1 yield with a below average specific gravity of 1.075 (Table 1). Internal raw tuber quality was moderate with 33 percent vascular discoloration and 3 percent internal brown spotting (Table 2). AF4648-2 ranked 12th of 16 lines tested at Herr Foods for overall chip quality and appearance (Table 3). It was observed that the size was larger than desirable along with the presence of stem end and internal color in the finished chips. Positive attributes of this line include the low incidence of black spot bruising (Table 4) and superior resistance to common scab.

NDTX081648CB-13W: This line had a lower than average yield of 287 cwt. /A US#1 with an above average specific gravity of 1.084 (Table 1). Internal quality was moderate with 20 percent vascular discoloration noted (Table 2). Herr's ranked this line 13th of 16 for chip quality with 21.1 percent total defects observed (Table 3) and mention of internal color and a fair amount of scab. In black spot bruise evaluations this line performed well with an average of 0.7 bruises per tuber noted (Table 4).

W6822-3: This line had the lowest average yield in the trial at 198 cwt. /A US#1 with a specific gravity of 1.082 (Table 1). Internal quality was poor with 3 percent hollow heart, 50 percent vascular discoloration, 3 percent internal brown spotting and 3 percent brown center reported (Table 2). Herr's ranked this line 1st of 16 for chip quality with only 8.8 percent total defects (Table 3) and mention of a nice size with minor defects. In black spot bruise evaluations this line performed poorly with an average of 2.0 bruises per tuber (Table 4).

Missouri Regional Trial

Local Coordinators:

Jeremy Buchman
Black Gold Farms
4320 18th Ave South
Grand Forks, ND 58201

Cooperating Grower:

Jim Browning
Black Gold Farms
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Charleston, MO 63834

Trial Data:

Planting Site:	Black Gold Farms, Charleston, Mississippi County, MO
Planting Date:	March 14, 2016
Harvest Date:	July 7, 2016 (115 days)
Growing Conditions:	Planting was delayed by one week due to heavy rain. Soil temperatures were warm compared to historical norms following a very warm winter for the location. Conditions were good for planting and very favorable temperatures persisted throughout most of the growing season until mid-June when daytime temperatures regularly reached the mid-90s. Total rainfall was 15.5 inches from planting to harvest: March 2.85 inches, April 2.87 inches, May 5.79 inches, June 1.34 inches and July 2.65 inches. Irrigation of 12.6 inches was supplemented for a total of 28.1 inches total throughout the season. Heavy rainfall occurred very close to harvest in July.
Soil Type:	Malden loamy fine sand
Experimental Design:	Four row plot (10 seed pieces per row) with double center rows harvested and combined for grading. Randomized complete block design with 4 replications.
Materials and Methods:	Field notes were taken at 100 and 115 DAP including vine vigor rating (0-10, 0 = dead and 10 = very green and healthy) and % ground cover notes along with pictures and vine comments. Stand counts were taken and all plots had > 90% stands (data not included). Stems counts were taken off one repetition by counting total stems per plot and counting plants per plot. Grading was done by weighing and counting all tubers less than 4" but greater than 1 7/8" (marketable) and those smaller than 1 7/8" to 1" (undersize). Potatoes less than 1" were not measured. No potatoes > 4" (oversize) were found in the trial. Ten (10) potatoes were selected and assessed for scab (0-10, 0 = scab-free and 10 = heavily pitted). These tubers were then cut longitudinally and assessed for Internal Heat Necrosis (IHN), Internal Brown Spot (IBS), Growth Crack (GC) and Hollow Heart (HH). Data was recorded as percentage positive for each defect. A QC sample was pooled into a single sample for each variety for specific gravity and fry sample. A 200 lb sample of each variety was sent to our processor cooperator, Jason Cornman from Snyder's-Lance, Inc. for commercial processing assessment.
Row Spacing:	Spaced 10 inches apart, 34" row width.
Fertilizer:	251 N, 86 P, 208 K
Weed Control:	Matrix 0.1 lbs/A Prowl 1.5 pts/A
Insect Control:	Wrangler – 8 fl oz/A in furrow
Disease Control:	Quadris in-furrow 8 fl oz/A Vydate in-furrow 2.1 pts/A Bravo 1.5 pts/A Manzate 4.5 fl pts/A

General Variety Comments/Photos

Atlantic:

Canopy at 100 DAP (left) and 115 DAP (right)

Tubers at grading

Comments: Standard early season check, overall good appearance and very little HH and IHN.

Snowden:

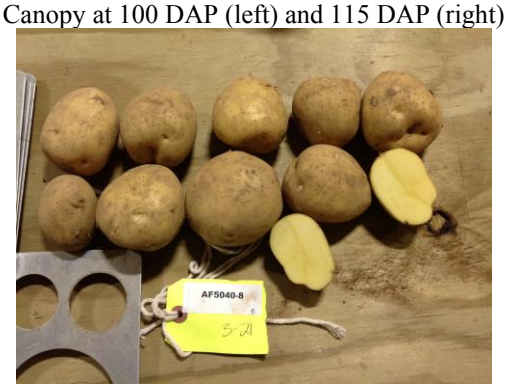
Canopy at 100 DAP (left) and 115 DAP (right)

Tubers at grading

Comments: Standard late season check, very lumpy and deep-eyed.

AF5040-8:

Canopy at 100 DAP (left) and 115 DAP (right)



Tubers at grading

Comments: Nice tuber shape, round but slightly flat, light-medium yellow flesh.

B2727-2:

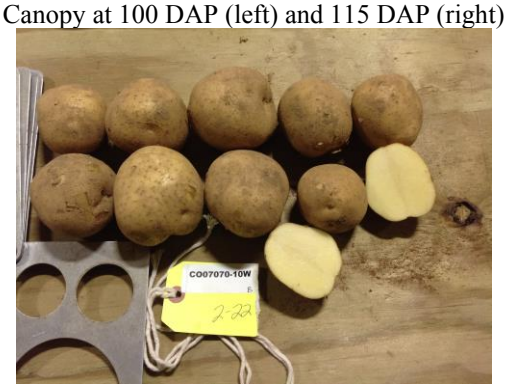
Canopy at 100 DAP (left) and 115 DAP (right)

Tubers at grading

Comments: Slightly elongated tubers with nice white flesh. Low, small but dense canopy with good ground coverage. Most scab observed in the trial.

CO07070-10W:

Canopy at 100 DAP (left) and 115 DAP (right)



Tubers at grading

Comments: Nice round tubers. Lots of wet breakdown noted during harvest.

CO07070-13W:

Canopy at 100 DAP (left) and 115 DAP (right)

Tubers at grading

Comments: High set of small tubers, weak canopy noted. Wet breakdown was noted and the variety had the heaviest amount of growth cracks observed in the trial.

MSR127-2:

Canopy at 100 DAP (left) and 115 DAP (right)

Tubers at grading

Comments: Nice shape and uniformly scab-free.

MSW485-2:

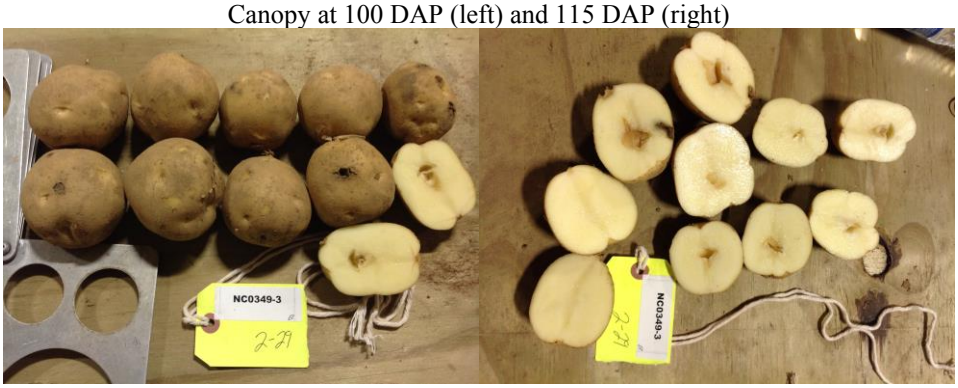
Canopy at 100 DAP (left) and 115 DAP (right)

Tubers at grading

Comments: High yield with mostly nice shape and some pear shapes. Minor IBS was noted as the only defect.

NC0349-3:

Canopy at 100 DAP (left) and 115 DAP (right)



Tubers at grading

Comments: Large, round tubers with good overall external appearance. Worst hollow heart in the trial, noted even in small tubers.

NDTX0981648CB-13W:

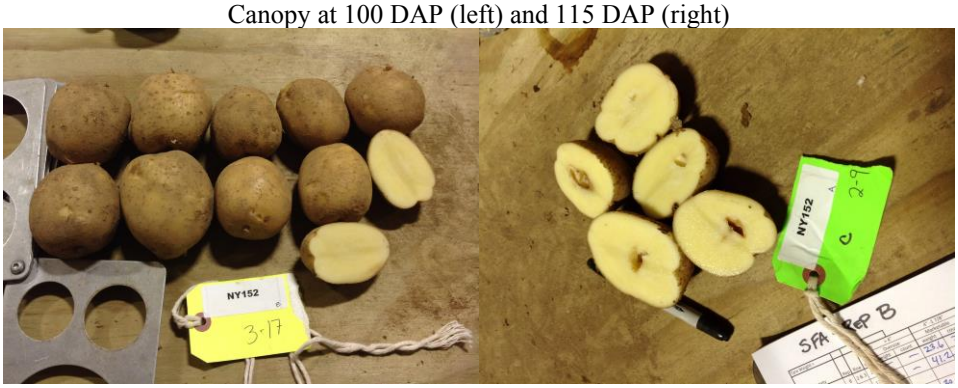
Canopy at 100 DAP (left) and 115 DAP (right)

Tubers at grading

Comments: Poor overall tuber shape, lots of pear shapes. Noted to have the lowest fry defects in the trial.

NY152:

Canopy at 100 DAP (left) and 115 DAP (right)



Tubers at grading

Comments: Nice shape and high set. Second worst hollow heart noted in the trial.

NY157:

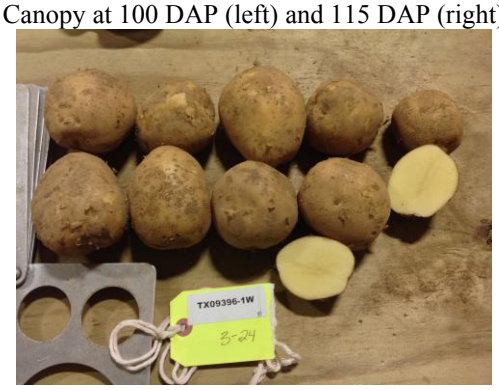
Canopy at 100 DAP (left) and 115 DAP (right)

Tubers at grading

Comments: Nice tubers with slightly flat shape. Low processed defects.

TX09396-1W:

Canopy at 100 DAP (left) and 115 DAP (right)



Tubers at grading

Comments: Poor shape when tubers get large. Large, upright canopy.

W6822-3:

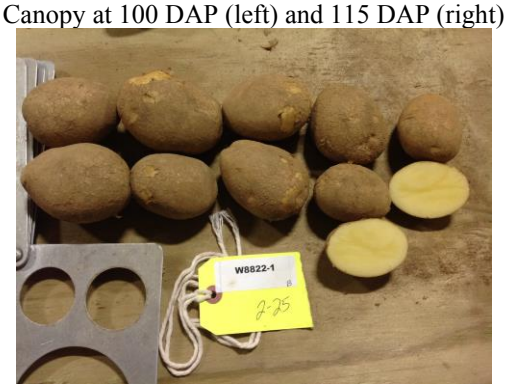
Canopy at 100 DAP (left) and 115 DAP (right)

Tubers at grading

Comments: OK shape, some deep eyes. Low internal and fry defects.

W8822-1:

Canopy at 100 DAP (left) and 115 DAP (right)



Tubers at grading

Comments: Slightly elongated tubers, pale yellow flesh and deeply russeted skin. Good upright vine.

2016 Trial Vine Notes

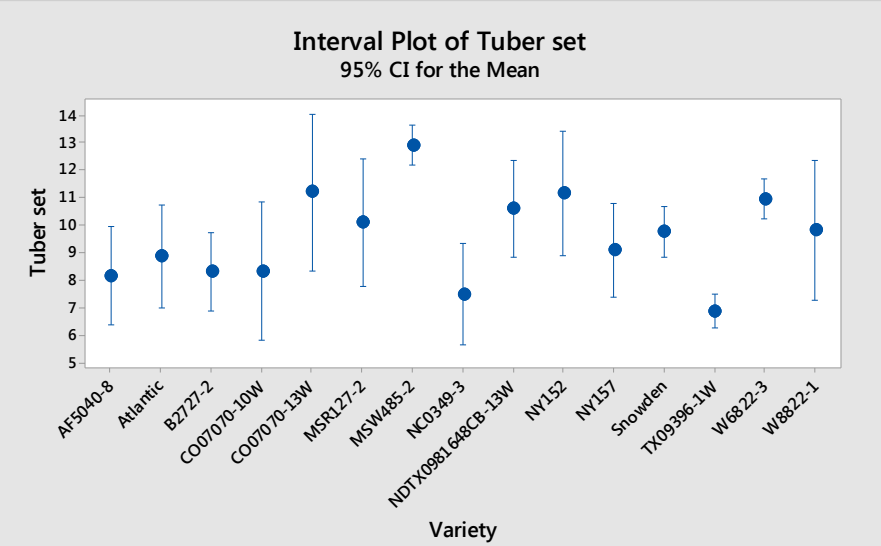
	In-season (100 DAP)				*Harvest (115 DAP)*		
Variety	Avg. stems per plant	% Ground Cover	Vine Vigor Rating (0-10)	Comments	% Ground Cover	Vine Vigor Rating (0-10)	Comments
Atlantic	3.1	55%	5	Slightly upright, open canopy	20%	3	
Snowden	3.0	60%	5	Very upright vine	45%	4	
AF5040-8	3.7	40%	4	Upright canopy	0%	0	Completely dead
B2727-2	2.6	55%	5	Small plant, recumbent vine	50%	3	
CO07070-10W	2.0	30%	3	Recumbent vine	20%	1	
CO07070-13W	3.4	25%	3	Purple stems, upright canopy	0%	0	Completely dead
MSR127-2	2.1	70%	6	Dense canopy	40%	5	
MSW485-2	1.8	70%	6	Short vine, slightly recumbent	60%	4	Heavy berry set
NC0349-3	3.4	70%	5	Upright canopy, Snowden-like appearance	25%	3	
NDTX0981648CB-13W	3.7	40%	5	Generally upright canopy	40%	2	Many dead stems
NY152	3.1	50%	5	Small vine, upright	40%	2	
NY157	2.8	30%	4	Upright canopy	15%	2	
TX09396-1W	3.0	95%	7	Generally upright canopy, good canopy color and cover	5%	4	
W6822-3	3.0	50%	5	Deep purple stems	15%	3	
W8822-1	4.2	70%	6	Short vine, purple stems	30%	4	

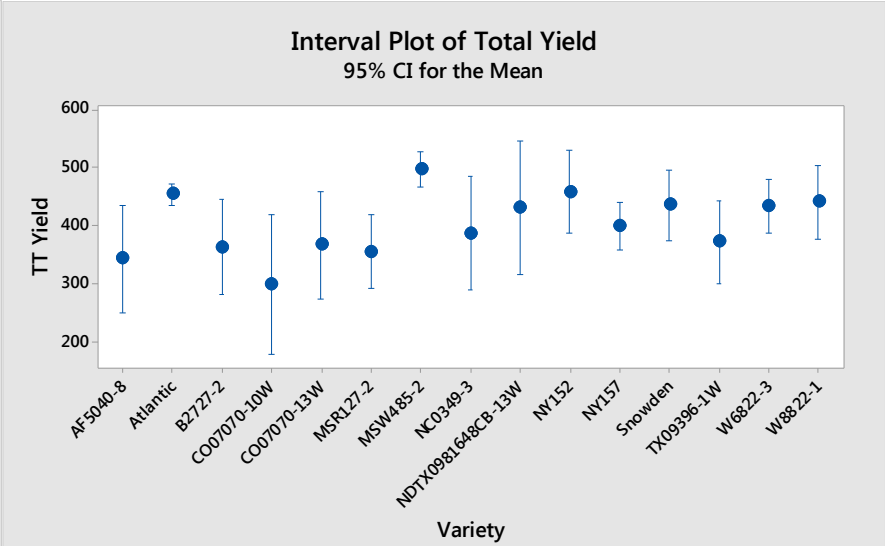
2016 Trial Yield Results

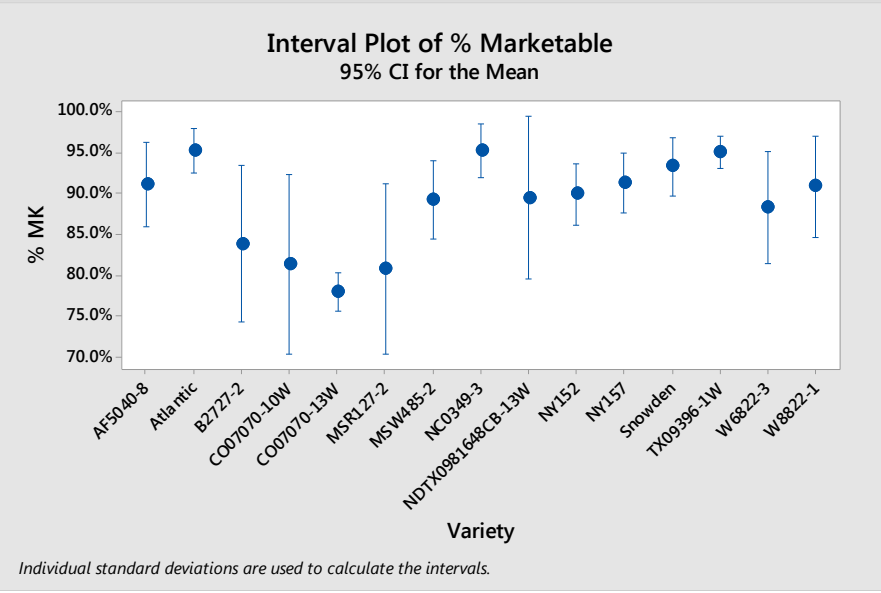
Tuber set		Total Yield		Marketable Yield		Marketable Tuber Size	
Variety	Tubers per plant	Variety	(All tubers) cwt/acre	Variety	Yield of tubers > 1 7/8", cwt/acre	Variety	Est. Tuber Weight, oz
MSW485-2	12.9 [a]	MSW485-2	498 [a]	MSW485-2	444.6 [a]	TX09396-1W	5.2 [a]
CO07070-13W	11.2 [b]	NY152	459 [ab]	Atlantic	434.0 [ab]	NC0349-3	5.0 [ab]
NY152	11.2 [b]	Atlantic	456 [abc]	NY152	413.7 [abc]	Atlantic	4.9 [abc]
W6822-3	11.0 [b]	W8822-1	442 [abcd]	Snowden	407.7 [abc]	B2727-2	4.7 [bcd]
NDTX0981648CB-13W	10.6 [bc]	Snowden	436 [abcde]	W8822-1	401.7 [abc]	W8822-1	4.5 [cde]
MSR127-2	10.1 [bcd]	W6822-3	435 [abcde]	NDTX0981648CB-13W	389.3 [abc]	Snowden	4.3 [def]
W8822-1	9.8 [bcde]	NDTX0981648CB-13W	433 [abcdef]	W6822-3	385.1 [abcd]	NY157	4.3 [defg]
Snowden	9.8 [bcde]	NY157	401 [bcdefg]	NC0349-3	369.5 [bcde]	AF5040-8	4.2 [efgh]
NY157	9.1 [cdef]	NC0349-3	388 [cdefg]	NY157	366.2 [bcde]	NY152	4.2 [efgh]
Atlantic	8.9 [def]	TX09396-1W	374 [defg]	TX09396-1W	355.2 [cdef]	NDTX0981648CB-13W	4.1 [efgh]
CO07070-10W	8.3 [efg]	CO07070-13W	368 [efg]	AF5040-8	315.0 [defg]	W6822-3	4.0 [fghi]
B2727-2	8.3 [efg]	B2727-2	364 [fgh]	B2727-2	307.7 [efg]	CO07070-10W	4.0 [fghi]
AF5040-8	8.2 [efg]	MSR127-2	357 [gh]	MSR127-2	288.3 [fg]	MSW485-2	3.9 [ghi]
NC0349-3	7.5 [fg]	AF5040-8	344 [gh]	CO07070-13W	286.4 [fg]	MSR127-2	3.8 [hi]
TX09396-1W	6.9 [g]	CO07070-10W	299 [h]	CO07070-10W	245.8 [g]	CO07070-13W	3.7 [i]
F-value	7.81	F-value	4.88	F-value	5.61	F-value	8.73
p-value	0.00	p-value	0.00	p-value	0.00	p-value	0.00
Standard deviation	1.89	Standard deviation	66.99	Standard deviation	72.68	Standard deviation	0.53
Coefficient of Variation	19.77	Coefficient of Variation	16.60	Coefficient of Variation	20.15	Coefficient of Variation	12.16

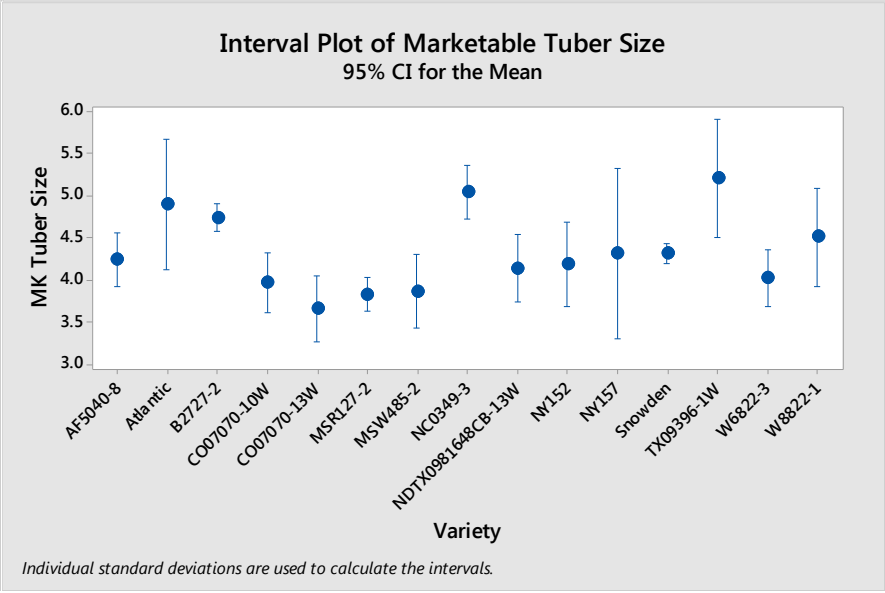
If means were found to be significantly different, Fishers LSD test was conducted. Differing means are noted by different superscript letters.

Interval Plots of Yield Data









2016 Trial Raw Grade and Processing Quality

Variety	*Hollow Heart*	*Internal Heat Necrosis*	*Growth Cracks*	*Internal Brown Spot*	*Scab Rating (0-10, 0 = best)*	*Specific Gravity*	*Fry Quality (1-5, 1 = best)*
AF5040-8	0.0%	0.0%	0.0%	0.0%	2.3	1.093	3
Atlantic	5.0%	0.0%	2.5%	7.5%	0.5	1.092	3
B2727-2	5.0%	0.0%	0.0%	0.0%	3.8	1.093	2
CO07070-10W	0.0%	0.0%	0.0%	0.0%	0.3	1.092	2
CO07070-13W	0.0%	0.0%	10.0%	0.0%	3.0	1.071	2
MSR127-2	2.5%	0.0%	0.0%	0.0%	0.0	1.089	4
MSW485-2	0.0%	0.0%	0.0%	10.0%	0.0	1.096	3
NC0349-3	70.0%	0.0%	0.0%	0.0%	2.0	1.077	4
NDTX0981648CB-13W	5.0%	0.0%	0.0%	0.0%	1.3	1.079	1
NY152	20.0%	0.0%	0.0%	0.0%	0.5	1.079	1
NY157	0.0%	2.5%	0.0%	0.0%	0.3	1.082	1
Snowden	0.0%	0.0%	0.0%	7.5%	0.3	1.085	2
TX09396-1W	12.5%	0.0%	0.0%	0.0%	0.0	1.092	1
W6822-3	0.0%	0.0%	0.0%	7.5%	0.3	1.088	1
W8822-1	0.0%	2.5%	0.0%	0.0%	0.0	1.092	1

Raw Grade

10 tubers were selected from each rep and assessed for an overall scab rating based on a 0 to 10 scale with 10 being the worst and 0 being the best. Those 10 tubers were then sliced and assessed for hollow heart, internal heat necrosis, growth cracks and internal brown spot. Data was used to calculate an average % incidence across reps for each variety.

Processing Grade

One specific gravity and fry sample was collected for each variety. Fry samples were assessed for overall fry quality on a 1 to 5 scale with 1-3 being acceptable and 4-5 being unacceptable.

Clone-Line-Variety	Slice Type	Specific Gravity	% Undersize	% Oversize	% Internal Defects	% External Defects	% Total Defects	Merit Score
AF5040-8	FLAT	1.093	8.9	0	9.4	1.0	10.4	3
Atlantic	FLAT	1.097	2.3	0	7.9	0.7	8.6	2
B2727-2	FLAT	1.097	4.4	0	4.7	3.5	8.2	2
CO07070-10W	FLAT	1.089	8.8	0	5.1	1.0	6.1	2
CO07070-13W	FLAT	1.081	10.9	0	6.1	0.3	6.4	2
MSR127-2	FLAT	1.086	7.5	0	7.0	1.0	8.0	2
MSW485-2	FLAT	1.094	11.0	0	4.7	1.2	5.9	2
NC0349-3	FLAT	1.080	2.6	0	22.3	3.5	25.8	4
NDTX0981648-13W	FLAT	1.090	1.7	0	7.6	1.3	8.9	2
NY152	FLAT	1.086	5.8	0	13.2	4.3	17.5	4
NY157	FLAT	1.085	1.7	0	4.9	0.4	5.3	2
Snowden	FLAT	1.083	3.8	0	4.5	2.2	6.7	2
TX09396-1W	FLAT	1.089	3.9	0	7.0	5.9	12.9	3
W6822-3	FLAT	1.092	9.9	0	5.3	0.2	5.5	2
W8822-1	FLAT	1.098	5.3	0	5.5	0.5	6.0	2

Merit Score

Overall chip merit score made by processor: 1=outstanding; 2 = good; 3 = marginal (acceptable in a pinch); 4 = drop
Merit score can be a decimal fraction (i.e. 1.5) if QC averages several scores

North Carolina Regional Trial

Local Coordinators:

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Raleigh NC, 27695

Mr. Mark Clough
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Cooperating Grower:

Jeff Spruill
Black Gold Farms
2815 N Gum Neck Road
Columbia, NC 27925

Cooperating Chip Processor:

Utz Quality Foods
Hanover, PA

Trial Data:

Planting Site:	Black Gold Farms, Columbia, Tyrrell County, NC
Planting Date:	March 1, 2016
Harvest Date:	June 20, 2016 (111 days)
Growing Conditions:	Planting was within the normal range, between the last week in February and the end of March for North Carolina. On April 10th after much of the materials had emerged a freeze/frost event occurred burning of tops, setting back the early-emerged plants and cancelling any advantage the plants would have gained from early emergence. Despite this setback conditions continued to favor good plant growth and the crop appeared to make up much of the ground lost in the early April freeze. Then beginning the 29th of May until the 7th of June significant rainfall occurred in the region and caused flooding in many fields to include the trial in this report. Despite the significant precipitation this trial faired well and yields were higher than expected. Total rainfall was 19.67 in from planting to harvest: March 3.07 in, April 2.85 in, May 7.06 in and June 6.64 in.
Soil Type:	Weeksville Silt loam
Experimental Design:	Randomized complete block design with 5 replications.
Row Spacing:	25 hills, spaced 10 inches apart, 34” row width.
Fertilizer:	222N, 97P, 204K, 1.3 lbs/A Nortrace citraplex 25% zinc
Weed Control:	Matrix 1 oz/A Metribuzin 1 lbs/A Intensity One 12floz/A
Insect Control:	Wrangler – 9 fl oz/A in furrow
Disease Control:	Quadris in furrow 8 fl oz/A Bravo 2 pt/A (4 applications) Revus Top 6.2 fl oz/A Curzate 60 DF 3.2 oz/A(4 applications)

Table 1.North Carolina. Merit Score, Total and marketable yield, percentage of total yield by size class, specific gravity and chip scores sorted by Marketable Yield.

Clone	Merit[1] Score	Total Yield cwt/A	Marketable Yield cwt/A	% Size Distribution by Class[2] 1	2	3	4	5	Culls	$1^{7}/_{8}$ to 4"	$2^{1}/_{2}$ to 4"	Specific Gravity[3]	Chip Color[4] 24 to 48 hrs	Chip Color[4] 5 to 7 days
AF5040-8	2	420	327	10	25	47	5	0	13	77	52	1.074	2.0	3.0
Atlantic	4	458	344	8	22	44	9	0	17	75	53	1.072	2.0	3.0
B2727-2	4	288	182	12	39	25	0	0	25	64	25	1.072	2.0	2.0
CO07070-10W	2	350	244	19	42	28	0	0	12	70	28	1.079	3.0	3.0
CO07070-13W	3	361	263	16	41	31	0	0	12	73	31	1.068	3.0	3.0
Lamoka	4	373	205	9	21	29	5	0	36	55	34	1.053	3.5	3.5
MSR127-2	4	292	169	22	39	18	0	0	22	57	18	1.068	3.0	4.0
MSW485-2	4	348	185	21	39	14	0	0	26	53	14	1.070	3.0	4.0
NC0349-3	4	421	341	9	22	53	6	0	10	81	59	1.068	3.0	3.5
NDTX0981648CB-13W	2	376	276	16	42	32	0	0	11	73	32	1.072	2.0	3.0
NY152	4	425	324	13	35	41	0	0	11	76	41	1.070	3.5	3.0
NY157	4	377	269	12	30	38	3	0	17	71	41	1.067	3.0	3.0
Snowden	2	414	334	9	28	47	6	0	10	81	53	1.074	2.0	2.0
TX09396-1W	3	352	251	11	25	40	6	0	18	71	46	1.070	2.0	3.0
W6822-3	2	436	360	10	29	47	7	0	8	83	54	1.076	2.0	3.0
W8822-1	2	378	295	14	42	34	2	0	9	78	36	1.079	2.0	3.5
Grand Mean		379	273											
CV(%)		9	14											
LSD(k=100)		52	55											

[1] **Merit Score:**
1 = Outstanding; 2 = Keep; 3 = Marginal; 4 = Drop.

[2] **Size Classes:**
1's < 1 7/8"; 2's 1 7/8 to 2 1/2"; 3's 2 1/2 to 3 1/4"; 4's 3 1/4 to 4"; 5's ≥ 4"; Culls = all defective potatoes.

[3] **Specific Gravity**
Determined by weight in air/water method.

[4] **Chip Color**
Ratings conducted by the NCSU Potato Breeding Program at the TRS/VGJREC within 48 hrs and again in 5 to 7 days after harvest: 1 = no defects, exceptionally bright; 2 = excellent, bright; 3 = good, light; 4 = golden, fair; 5 = dark defects, marginal; 6 = not acceptable.

Table 2. North Carolina. Plant vine type, disease and air pollution scores, maturity at ca. 3 weeks prior to harvest, and external and internal tuber attributes.

	Plant Data[1]				Tuber Data[2]									% Internal Defects[3]					
Clone	TYPE	DIS	POLL	MAT	CLR	TXT	TCX	TSS	SHP	EYE	SIZE	DIS	APP	HN	HNR	HH	VR	BC	SR
AF5040-8	5	8	8	5	6	6	4	7	4	6	7	8	6	0	9.0	0	0	0	2
Atlantic	6	8	7	5	6	5	5	6	3	7	7	7	5	0	9.0	18	0	0	0
B2727-2	5	8	6	5	6	6	5	7	2	8	6	5	3	0	9.0	2	0	0	2
CO07070-10W	6	7	8	4	6	7	6	5	2	7	3	8	6	0	9.0	0	0	0	0
CO07070-13W	6	8	7	5	6	6	6	6	2	7	5	8	7	0	9.0	0	0	0	0
Lamoka	9	9	7	7	6	6	5	5	5	8	6	4	3	0	9.0	0	2	0	0
MSR127-2	9	9	8	9	5	5	6	5	2	7	4	4	4	0	9.0	0	0	0	0
MSW485-2	8	9	8	9	6	6	7	5	2	6	5	4	4	4	8.9	18	0	0	0
NC0349-3	8	9	8	6	6	5	6	6	2	6	8	8	8	0	9.0	56	0	0	0
NDTX0981648CB-13W	8	9	9	8	6	7	4	7	4	7	5	8	5	0	9.0	0	0	0	2
NY152	8	8	7	5	6	7	6	7	2	8	4	8	6	0	9.0	0	0	0	0
NY157	6	7	8	5	6	6	6	6	3	7	6	5	4	0	9.0	2	0	0	0
Snowden	9	9	7	7	6	5	4	5	3	6	6	8	6	0	9.0	0	0	0	0
TX09396-1W	9	9	9	9	6	6	5	5	4	6	8	8	3	0	9.0	0	0	0	0
W6822-3	7	9	9	7	6	6	5	6	2	7	7	8	7	0	9.0	0	0	0	0
W8822-1	8	9	8	8	5	5	5	6	3	8	7	8	7	0	9.0	0	0	0	0

[1] **Plant Data:**

Vine Type: 1 = decumbent –poor canopy, 2 = decumbent – fair canopy, 3 = decumbent – good canopy, 4 = spreading – poor canopy, 5 = spreading – fair canopy, 6 = spreading - good canopy, 7 = upright – poor canopy, 8 = upright – fair canopy, 9 = upright good canopy.
Vine Disease: 1 = very severe, 5 = moderate, 9 = none.
Vine Pollution: 1 = very severe, 5 = moderate, 9 = none.
Vine Maturity: 1= very early, 5 = mid-season, 9 = very late.

[2] **Tuber Data:**

Skin Color: 1 = purple, 2 = red, 3 = pink, 4 = dark brown, 5 = brown, 6 = tan to light brown, 7 = buff, 8 = white, 9 = cream.
Skin Texture: 1= partial russet, 2 = heavy russet, 3 = moderate russet, 4 = light russet, 5 = netted, 6 = slight net, 7 = moderately smooth, 8 = smooth, 9 = very smooth.
Cross Section: 1 = very flat, 3 = flat, 5 = intermediate to oval, 7 = mostly round, 9 = very round.
Skin Set: 1 = very poor, 5 = fair, 9 = excellent.
Shape: 1 = very round, 2 = mostly round, 3 = round to oblong, 4 = mostly oblong, 5 = oblong, 6 = oblong to long, 7 = mostly long, 8 = long, 9 = cylindrical.
Eye Depth: 1= very deep, 5 = medium, 9 = very shallow.
Size: 1 = small, 5 = medium, 9 = large.
Tuber Disease: 1 = very severe, 5 = moderate, 9 = none.
Overall Appearance: 1 = very poor, 5 = fair, 9 = excellent.

[3] **Internal Defects:**

Percentage determined from 10 randomly selected potatoes /rep (40 total) in size classes 3 and 4. HN=heat necrosis; HNR=average heat necrosis rating (Rating Scale: 1= very severe to 9 = absent); HH=hollow heart; VR=vascular ring discoloration; BC=brown center; SR=soft rot

Table 3. North Carolina - UTZ Quality Foods Chip Data.

Clone	Merit[1] Score	% Defects Internal	% Defects External	%Total Defects	Specific Gravity	Defect Descriptions[2]	Chip Color[3] Hunter Lab
AF5040-8	1	1%	0%	1%	1.090	ID	67.9
ATLANTIC	1	0%	0%	0%	1.096		68.5
B2727-2	1	0%	0%	0%	1.089		69.5
CO07070-10W	1	1%	1%	2%	1.097	GRN,ID	67.0
CO07070-13W	1	0%	0%	0%	1.082		71.3
LAMOKA	2	5%	0%	5%	1.073	ID(IHN?)	66.9
MSR127-2	2	9%	0%	9%	1.087	VB	66.5
MSW485-2	1	0%	0%	0%	1.071		66.8
NC0349-3	3	13%	0%	13%	1.090	HH	66.0
NDTX081648CB-13W	1	2%	0%	2%	1.085	ID	65.2
NY152	1	0%	0%	0%	1.089		69.3
NY157	1	0%	0%	0%	1.075		68.1
SNOWDEN	1	1%	0%	1%	1.087	ID	69.2
TX09396-1W	1	1%	0%	1%	1.084	SEB	70.1
W6822-3	1	0%	0%	0%	1.081		69.0
W8822-1	1	0%	0%	0%	1.094		65.6

[1] **Merit Score:**

1 = Outstanding; 2 = Keep; 3 = Marginal; 4 = Drop.

[2] **Defect Descriptions:**

BC = Brown Center; BR = Bruising; ED = External Discoloration; GRN = Greening; HH = Hollow Heart; ID = Internal Discoloration; IHN = Internal Heat Necrosis; SB = Stem End Browning; VB = Vascular Browning; WW = Wire Worm.

[3] **Chip Color:**

Hunter Lab Scores - harvest date: 6/20/16, sample date: 6/22/16

Clone Summaries

AF5040-8: This clone was mid-maturing and had 99% stands with better than good vigor. Shapes were mostly oblong, size was medium large and overall appearance was better than fair. Marketable yields were 95% of Atlantic (historically 118%), gravity was 1.074 (historically 1.072) and chip color was excellent in the 24 to 48 hour and good in the 5 to 7 day chip tests. External defects included sunscald, misshapes, soft rot and skin blemishes due to Rhizoctonia.

Atlantic: Maturity for our main crop standard was mid-season, stands were 98% and vigor was better than fair. Shapes were round to oblong, size was medium large and overall appearance was fair. Gravity was 1.072 (historically 1.077) and chip color was excellent in the 24 to 48 hour and good in the 5 to 7 day chip tests. External defects included growth cracks, sunscald, misshapes, soft rot, common scab, and skin blemishes due to Rhizoctonia.

B2727-2: This clone was mid to late maturing and had 94% stands with better than fair plant vigor. Shapes were mostly round, size was slightly larger than medium and overall appearance was poor. Marketable yields were 54% of Atlantic (historically 53%), gravity was 1.072 (1.078 historically) and chip scores were excellent for both the 24 to 48 hour chip test and the 5 to 7 day chip test. External defects were sunscald, common scab, misshapes, growth cracks and skin blemishes due to Rhizoctonia.

CO07070-10W: This was the first year of testing of this clone in NC. Maturity for this clone was mid-season with 98% stands and better than fair plant vigor. Shapes were mostly round, size was small to medium and overall appearance was better than fair. Marketable yields were 72% of Atlantic, gravity was 1.079 and chip scores were good for both the 24 to 48 hour and the 5 to 7 day chip tests. External defects included soft rot, common scab and skin blemishes due to Rhizoctonia.

CO07070-13W: This was the first year of testing of this clone in NC. Maturity for this clone was mid season with 99% stands and better than fair plant vigor. Shapes were mostly round, size was medium and overall appearance was good. Marketable yields were 78% of Atlantic, gravity was 1.068 and chip scores were good for both the 24 to 48 hour and the 5 to 7 day chip tests. External defects included sunscald, growth cracks, misshapes, and infected lenticels.

Lamoka: : Maturity for this clone was mid to late season with 97% stands and better than fair plant vigor. Shapes were oblong, size was slightly larger than medium and overall appearance was poor. Marketable yields were 60% of Atlantic (historically 91%), gravity was 1.067 (1.071 historically) and chip scores were excellent for both the 24 to 48 hour and the 5 to 7 day chip tests. External defects included growth cracks, soft rot, sunscald and skin blemishes due to Rhizoctonia.

MSR127-2: This was the first year of testing of this clone in NC. Maturity for this clone was late season, stands were 98% and vigor was better than good. Shapes were mostly round, size was slightly smaller than medium and overall appearance was poor. Marketable yields were 49% of Atlantic (historically 56%), gravity was 1.068 (historically 1.072) and chip scores were good for the 24 to 48 hour chip test and fair for the 5 to 7 day chip test. External defects were growth cracks, misshapes, and skin blemishes due to Rhizoctonia.

MSW485-2: This was the first year of testing of this clone in NC. Maturity for this clone was very late season, stands were 96% and vigor was good. Shapes were mostly round, size was medium and overall appearance was better than poor. Marketable yields were 53% of Atlantic, gravity was 1.070 and chip scores were good for the 24 to 48 hour chip test and fair 5 to 7 day chip test. External defects were sunscalds, growth cracks, misshapes, and skin blemishes due to Rhizoctonia.

NC0349-3: This clone was slightly later than mid-season and had 90% stands with fair vigor. Shapes were mostly round, size was large, and overall appearance was better than good. Marketable yields were 100% of Atlantic (historically 93%), gravity was 1.068 historically (1.071), and chip scores were good for the 24 to 48 hour and fair to good for the 5 to 7 day tests. External defects included misshapes, sunscald, soft rot, common scab and skin blemishes due to Rhizoctonia.

NDTX081648CB-13W: This was the first year of testing of this clone in NC. This clone was late maturing and had 98% stands with good vigor. Shapes were mostly oblong, size was medium, and overall appearance was fair.

Marketable yields were 81% of Atlantic, gravity was 1.072, and chip scores were excellent for the 24 to 48 hour and good for the 5 to 7 day tests. External defects included misshapes, secondary growth, sunscald, soft rot and skin blemishes due to Rhizoctonia.

NY152: This clone was mid-season and had 96% stands with better than fair vigor. Shapes were mostly round, size was slightly smaller than medium, and overall appearance was better than fair. Marketable yields were 96% of Atlantic (historically 149%), gravity was 1.070 historically (1.064), and chip scores were fair to good for the 24 to 48 hour and good for the 5 to 7 day tests. External defects included misshapes, sunscald, soft rot, infected lenticels, tight stolon attachments and skin blemishes due to Rhizoctonia.

NY157: This clone was mid-season and had 95% stands with better than fair vigor. Shapes were round to oblong, size was slightly larger than medium, and overall appearance was less than fair. Marketable yields were 79% of Atlantic (historically 91%), gravity was 1.067 historically (1.069), and chip scores were good for the 24 to 48 hour and 5 to 7 day tests. External defects included sunscald, growth cracks, infected lenticels and many skin blemishes due to Rhizoctonia.

Snowden: Our late season standard had a mid to late maturity with 96% stands and better than fair vigor. Shapes were round to oblong, size was slightly larger than medium and overall appearance was better than fair. Marketable yields were 98% of Atlantic (historically 101%), gravity was 1.074 (historically 1.074) and chip scores for the 24 to 48 hour and 5 to 7 day chip tests were excellent. External defects included sunscald, misshapes, soft rot, growth cracks and skin blemishes due to Rhizoctonia.

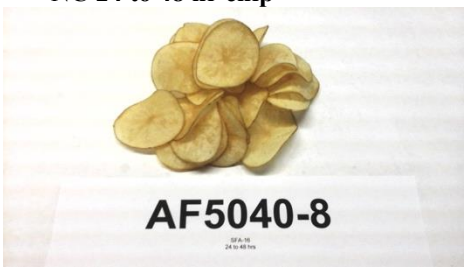
TX09396-1W: This was the first year of testing of this clone in NC. Maturity for this clone was very late and stands were 95% with fair vigor. Shapes were mostly oblong, size was large and overall appearance was poor. Marketable yields were 74% of Atlantic, gravity was 1.070 and chip scores were excellent for the 24 to 48 hour test and good for the 5 to 7 day chip test. External defects included misshapes, sunscald, growth cracks, infected lenticels and skin blemishes due to Rhizoctonia.

W6822-3: Maturity for this clone was mid to late and stands were 98% with good vigor. Shapes were mostly round, size was medium to large and overall appearance was good. Marketable yields were 107% of Atlantic (historically 103%), gravity was 1.076 (historically 1.074) and chip scores were excellent for the 24 to 48 hour test and good for the 5 to 7 day chip test. External defects included sunscald, common scab, soft rot and skin blemishes due to Rhizoctonia.

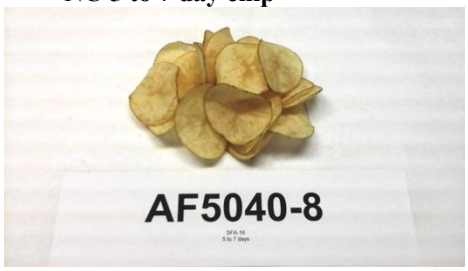
W8822-1 Maturity was late season, stands were 93% and vigor was better than fair. Shapes were round to oblong, size was medium to large and overall appearance was good. Marketable yields were 86% of Atlantic (historically 94%), gravity was 1.079 (historically 1.077) and chip scores were excellent in the 24 to 48 hour chip test and fair to good in the 5 to 7 day test. External defects soft rot, common scab, infected lenticels and skin blemishes due to Rhizoctonia.

Clone Pictures:

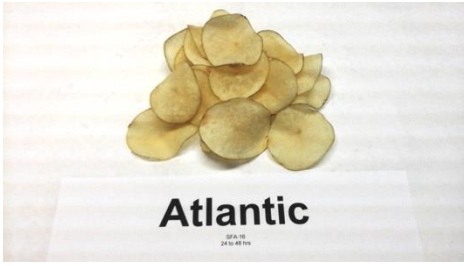
NC 24 to 48 hr chip

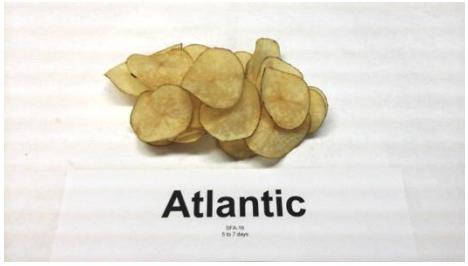


NC 5 to 7 day chip



AF5040-8





Atlantic

B2727-2

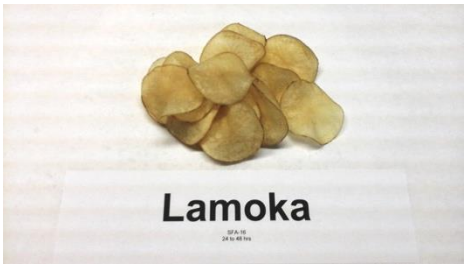
CO07070-10W

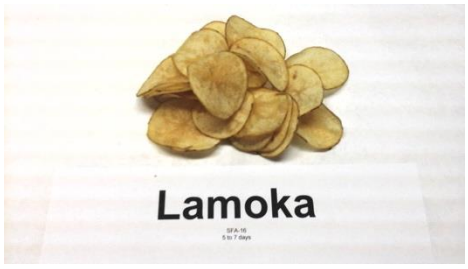
NC 24 to 48 hr chip

NC 5 to 7 day chip

CO07070-13W

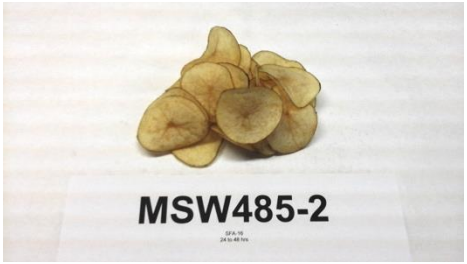
NC 24 to 48 hr chip **NC 5 to 7 day chip**





Lamoka

MSR127-2



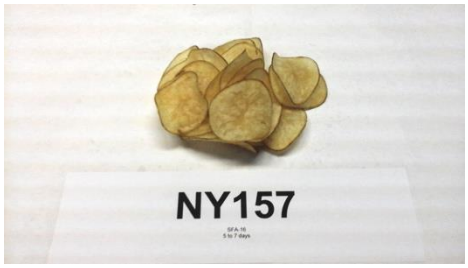
MSW485-2

NC0349-3

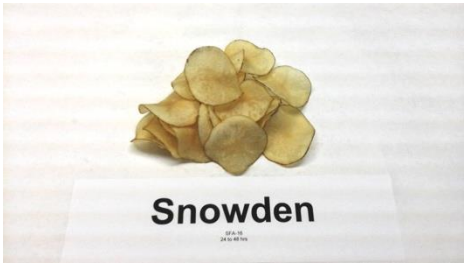
NDTX0981648CB-13W

NC 24 to 48 hr chip **NC 5 to 7 day chip**

NY152



NY157



Snowden

TX09396-1W

W6822-3

NC 24 to 48 hr chip

NC 5 to 7 day chip

W8822-1

North Dakota Regional Trial

Potatoes USA – SNAC International
2016 Yield Trial Report

Local Trial Coordinator:
Darrin Haagenson
USDA-ARS, East Grand Forks, MN 56721
Darrin.Haagenson@ars.usda.gov (701-219-4905)

Cooperating Grower:
Oberg Farms, Hoople, ND
Jamie Oberg, 701-520-2328

Cooperating Chip Processor:
Barrel O' Fun Snack Foods, Perham, MN
mikebormann@shearers.com

Trial Site Data:

Trial Location: (Hoople, ND)
Planting Date: May 18, 2016;
(12 inches in-row spacing, 36 inches between rows).
Vine Kill Desiccant Applied: September 2, 2016
Harvest Date: September 27, 2016

Growing Conditions:

Extremely difficult growing season with excessive rainfall and hail storm damage.
Received over 20'' rainfall during growing season with hail events July and early August.

Experimental Design:

Experimental unit = 60 feet of row planting.
Randomized complete block with four replicates.
F-protected LSD ($P < 0.05$) was calculated for Total and US#1 yield mean comparisons

Fertilizer: Grower applied at planting: N-115; P-60; K-100; Zn-5

Table 1. Yield, size distribution, specific gravity, and chip ratings. SNAC Chip Trial, North Dakota, 2016.

Clone	Total Yield cwt/A	US #1 Yield[1] cwt/A	% size distribution[2] <1 7/8''	1 7/8 to 3 1/2''	Cull[3]	Specific Gravity[4]	Hunter[5]
LAMOKA	249	168	32.1	65.5	2.5	1.098	67
SNOWDEN	296	161	44.9	53.4	1.7	1.087	61
AF4648-2	262	164	36.4	59.2	4.3	1.097	66
AF5040-8	226	147	34.4	63.3	2.4	1.096	65
B2727-2	179	98	44.0	53.0	3.0	1.092	64
CO07070-10W	148	41	67.2	25.6	7.2	1.094	62
MSR127-2	275	144	46.3	50.9	2.8	1.089	64
MSW485-2	379	226	39.8	58.3	1.9	1.100	64
NC0349-3	229	156	31.0	65.4	3.7	1.079	64
NDA081453CAB-2C	300	247	17.5	75.5	7.0	1.098	59
NDTX0981648CB-13W	286	132	52.4	44.6	3.0	1.092	57
NY152	344	199	41.3	56.8	1.9	1.095	71
NY157	276	175	35.9	60.3	3.9	1.087	62
TX09396-1W	247	195	21.0	73.5	5.5	1.093	64
W6822-3	273	166	38.7	57.6	3.8	1.095	65
W8822-1	283	158	43.3	55.0	1.7	1.095	67
Mean	266	161					
LSD ($P \leq 0.05$)	30	26					
CV (%)	8.1	11.7					

[1] US # 1 Yield is calculated as yield from tubers within 1 7/8 to 3 1/2'' diameter.
[2] 2016 ND trial did not possess any tubers with diameter exceeding 3 1/2''
[3] Cull includes any external mis-shaped or green tubers.
[4] Specific gravity was determined by weight in air/water method.
[5] Chip ratings were recorded with a HunterLab D25 NC.

Table 2. External and Internal Defects (% Defect by weight). SNAC Chip Trial, North Dakota, 2016.

Clone	Misshapen/ Growth Cracks	Greening	Vascular Discoloration	Hollow Heart	Bruise Rating[1]
LAMOKA	3.8	3.8	0.0	2.3	25.0
SNOWDEN	4.8	2.0	0.0	1.1	0.0
AF4648-2	4.4	3.5	0.0	2.5	6.7
AF5040-8	1.1	0.0	0.0	0.0	28.6
B2727-2	3.3	0.0	0.0	0.0	16.7
CO07070-10W	4.7	0.0	0.0	0.0	16.7
MSR127-2	8.2	0.0	0.0	0.0	46.7
MSW485-2	7.0	0.0	0.0	0.0	23.3
NC0349-3	4.7	2.3	1.8	37.8	10.0
NDA081453CAB-2C	8.8	0.0	0.0	0.0	13.3
NDTX0981648CB-13W	3.6	1.2	0.0	0.0	3.3
NY152	5.5	0.0	3.6	1.5	36.0
NY157	4.5	4.6	0.0	2.5	20.0
TX09396-1W	9.2	2.8	0.0	0.0	56.7
W6822-3	6.3	4.8	0.0	0.0	6.7
W8822-1	7.9	0.0	0.0	0.0	6.7

[1] After suberization for 4 wk at 55°F, 30 tubers were steam peeled at 100psi for 30 seconds and % tubers with bruising was recorded.

Oregon-Washington Regional Trial

Potatoes USA - SNAC International
2016 Yield Trial Report

Local Coordinator:

Name:	Vidyasagar Sathuvalli
Institution:	Oregon State University
City-State:	Hermiston, Oregon
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E-mail:	Vidyasagar@oregonstate.edu

Cooperating Grower:

Name:	Philip Mehlenbacher
Grower farm or research farm:	Mehlenbacher Farms
City-State:	Burbank, Washington
Phone #:	(509) 416-0123
E-mail:	mfi.farm@yahoo.com

Cooperating Processor or Lab Evaluator:

Name:	
Company or Institution:	
City-State:	
Phone #:	
E-mail:	

Trial Data:

Trial location:	Burbank, WA
Planting date:	5/2/2016
Vine killing date:	9/18/2016
Harvest date:	10/17/2016

Storage Data:

Storage period:
Storage temperature:
Reconditioning: (time and temperature): N/A

Growing Conditions:

Experimental Design:

Bed width (inches):	34”
Within row spacing (inches):	9.25”
Data plot length (feet):	10’
Replication #:	4

Cultural Practices:

Fertilizer:	N 240 lb/acre; P; K 110 lb/acre
Irrigation:	30”
Rainfall:	3”
Disease Control:	
	Endura
	Bravo
	Equus 720
	Cabrio
	Polyram
Insect Control:	Wrangler
	Athena
	Perm Up
Weed Control:	Gly Star Plus
	Matrix SG
	Pendimenthalin
Vine Kill:	Mechanical
Sprout Inhibitor:	

Oregon-Washington Regional Trial

Potatoes USA - SNAC International

2016 Yield Trial Report

S.No.	CLONE	Unders CWT/Acre	Culls CWT/Acre	13/4' to 21/2' CWT/Acre	21/2" to 4' CWT/Acre	over 4' CWT/Acre	Total Yield CWT/Acre	Marketable Yield CWT/Acre
1	AF4648-2	52	14	217	302	0	585	520
2	AF5040-8	28	16	139	312	0	495	450
3	B2727-2	14	5	151	401	0	570	551
4	CO07070-10W	56	9	268	233	0	565	501
6	MSR127-2	35	12	252	232	0	531	483
7	MSW485-2	104	12	375	249	0	740	624
8	NC0349-3	30	9	113	558	15	724	671
9	NDA081453CAB-2C	50	7	294	291	0	642	585
10	NDTX0981648CB-13W	47	16	291	558	0	912	849
11	TX09396-1W	33	10	169	372	46	629	541
12	NY152	90	14	372	256	0	731	628
13	NY157	45	22	209	338	7	621	547
14	W6822-3	55	15	231	434	0	734	665
15	W8822-1	83	11	296	249	0	640	545
16	ATLANTIC	22	49	130	523	61	785	653
17	LAMOKA	26	9	165	447	25	672	612
18	SNOWDEN	30	11	241	425	6	713	666

Oregon-Washington Regional Trial

Potatoes USA - SNAC International

2016 Yield Trial Report

CLONE	Skin color	Flesh Color	Russ	Eye depth	Tuber Shape	Uniformity	Growth Crack	Scab
	1-12	Actual	1-9	1-5	Actual	1-5	1-5	1-5
AF4648-2	4.0	W	7.3	3.3	R	3.7	4.8	5.0
AF5040-8	4.0	L. Yellow	7.5	3.2	R-Ob-Flat	3.3	5.0	4.7
B2727-2	4.7	W	5.5	4.0	R-Ob	3.7	5.0	4.8
CO07070-10W	4.5	W	6.8	3.8	R-Ob	3.7	5.0	4.7
MSR127-2	4.7	W	5.5	3.3	R-C	3.3	4.8	5.0
MSW485-2	4.5	W	6.7	3.3	R-S. Conp	3.3	5.0	5.0
NC0349-3	4.5	W	5.5	3.2	R	3.5	5.0	5.0
NDA081453CAB-2C	4.0	W	7.7	3.5	R-Ob	3.5	5.0	4.7
NDTX0981648CB-13W	4.2	W	6.8	3.5	R-C	3.3	5.0	4.8
TX09396-1W	4.3	W	7.0	3.3	R-C	3.3	4.8	4.7
NY152	4.3	W	6.3	3.2	R	3.3	5.0	4.8
NY157	4.3	W	6.8	3.2	R	3.2	5.0	4.8
W6822-3	4.7	W	5.7	3.0	R-pty	3.5	5.0	4.7
W8822-1	5.5	L. Yellow	5.2	3.5	R	3.5	5.0	5.0
ATLANTIC	4.7	W	5.5	3.0	R-Ob	3.5	5.0	4.8
LAMOKA	4.5	W	6.8	3.8	R-C	3.3	5.0	5.0
SNOWDEN	4.8	W	5.0	3.0	R-C	3.2	5.0	5.0

Oregon-Washington Regional Trial

Potatoes USA - SNAC International

2016 Yield Trial Report

CLONE	Shatterbruise	Skin set	Greening	Hollow Heart	Brown center	Internal Brown spot
	1-5	1-9	1-5	%	%	%
AF4648-2	4.2	6.5	4.7	0	0	0
AF5040-8	4.8	7.3	4.3	0	0	0
B2727-2	4.7	6.7	4.8	0	0	0
CO07070-10W	4.7	7.2	4.3	0	0	0
MSR127-2	4.2	7.0	5.0	0	0	0
MSW485-2	5.0	7.2	4.5	7	10	0
NC0349-3	4.7	7.3	4.3	10	7	0
NDA081453CAB-2C	4.5	7.0	4.8	0	0	3
NDTX0981648CB-13W	4.3	7.2	4.2	0	0	0
TX09396-1W	4.5	6.8	5.0	0	0	0
NY152	5.0	7.5	4.2	0	0	0
NY157	3.3	7.2	4.5	0	0	0
W6822-3	4.8	7.0	4.7	0	0	7
W8822-1	4.7	7.7	4.7	0	0	0
ATLANTIC	4.7	7.5	3.7	3	3	13
LAMOKA	4.8	6.5	4.2	0	0	0
SNOWDEN	5.0	6.8	4.8	0	7	0

Oregon-Washington Regional Trial

Potatoes USA - SNAC International

2016 Yield Trial Report

CLONE	Black spot Bruise %	Vascular Discoloration %	Transculent End %	Specific Gravity	Fry Color At Harvest 1-5
AF4648-2	3	13	0	1.076	1.5
AF5040-8	17	7	0	1.081	1.5
B2727-2	13	3	0	1.079	1.5
CO07070-10W	17	7	0	1.088	1.5
MSR127-2	13	37	0	1.071	1.5
MSW485-2	3	27	0	1.084	1.8
NC0349-3	3	70	0	1.075	2.5
NDA081453CAB-2C	17	23	0	1.076	2.5
NDTX0981648CB-13W	3	23	0	1.074	1.8
TX09396-1W	7	57	0	1.078	2.2
NY152	10	13	0	1.077	1.3
NY157	23	3	0	1.073	1.3
W6822-3	17	3	0	1.084	1.2
W8822-1	3	7	0	1.076	1.7
ATLANTIC	30	0	0	1.082	2.0
LAMOKA	10	10	0	1.078	1.3
SNOWDEN	10	23	0	1.074	1.8

Oregon-Washington Regional Trial

Potatoes USA - SNAC International

2016 Yield Trial Report

CLONE	Sugar Ends	Tubers/Plant	Emergence	Maturity
	1-5		%	% Green Left at Harvest
AF4648-2	1.3	10.1	100.0	11.7
AF5040-8	2.0	7.4	100.0	15.0
B2727-2	2.0	7.4	96.7	25.0
CO07070-10W	1.7	10.4	100.0	30.0
MSR127-2	2.0	9.3	96.7	31.7
MSW485-2	1.7	14.6	100.0	33.3
NC0349-3	3.0	8.9	96.7	30.0
NDA081453CAB-2C	2.7	10.8	100.0	33.3
NDTX0981648CB-13W	2.0	14.3	100.0	21.7
TX09396-1W	2.7	9.1	100.0	28.3
NY152	1.0	15.1	100.0	3.3
NY157	2.0	10.3	100.0	30.0
W6822-3	1.7	11.7	100.0	15.0
W8822-1	1.7	12.8	96.7	5.0
ATLANTIC	2.7	9.3	100.0	16.7
LAMOKA	1.7	9.1	96.7	18.3
SNOWDEN	1.3	11.1	100.0	20.0

Pennsylvania Regional Trial

2016 Potatoes USA – SNAC International Trial
Yield Trial Report

Local Trial Coordinator:
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Cooperating Processor or Lab Evaluator:
Mitch Keeney
Utz Quality Foods
Hannover, PA
Phone #:1-800-367-7629
mkeeney@utzsnacks.com

Trial Site Data:

Trial location:	Chambersburg, PA		
Soil type:	Hagerstown	Soil pH: 6.4	% Organic matter: 3.9
Planting date:	05/11/2016		
Vine killing date:	09/13/2016		
Harvest date:	09/27/2016		

Growing Conditions: Excessive heat through most of growing season

Experimental Design:

Bed width (inches):	36	Within row spacing (inches):	10.5
Data plot length (feet):	15	Replication #:	4

Cultural Practices:
Fertilizer:
Before planting 23 lbs. N broadcast. At planting 98-102-185. At hilling 66-0-0

Irrigation and Rainfall:	See Table
Disease Control:	See Table
Insect Control:	See Table
Weed Control:	See Table
Vine Kill:	Reglone 1.5 pt/A on 9/13/16
Sprout Inhibitor:	N/A

Total yield, greater than 1 7/8" yield, percent of standard, size distribution, percent pickouts for SFA Trial in PA, 2016

Variety/Line	Yield (cwt/A)[1]		% US#1	% of Standard[2]	% by size class[3]				% PO[4]
	Total	>1 7/8"			2	3	4	5	
Snowden	496	452	91	100	24	50	17	0	4
Lamoka	320	226	70	50	33	35	2	0	26
AF4648-2	353	258	73	57	21	35	17	0	21
AF5040-8	320	207	65	46	27	31	7	0	27
B2727-2	361	324	90	72	33	45	11	0	3
CO07070-10W	314	216	69	48	36	29	4	0	12
MSR127-2	449	401	89	89	33	46	10	0	5
MSW485-2	347	314	90	70	42	47	1	0	2
NCO349-3	432	324	75	72	27	41	7	0	15
NDA081453CAB-2C	409	350	86	78	30	40	16	0	8
NDTX0981648CB-13W	370	286	77	63	40	34	3	0	9
TX09396-1W	411	367	89	81	24	49	17	0	7
NY152	377	296	78	66	49	27	1	0	7
NY157	382	252	66	56	37	27	3	0	23
W6822-3	386	253	65	56	28	32	5	0	26
W8822-1	424	313	74	69	40	31	3	0	17
LSD[5]	81	78	10		9	9	6	0	9

[1]Yield Total = all yield including pickouts. US#1 Yield >1 7/8" = categories 2, 3, 4 and 5 excluding pickouts.

[2]Percentage of the standard, Snowden, for >1 7/8" yield.

[3]Percentage of total yield according to size class. 2=1.875-2.5 in., 3=2.5-3.25 in., 4=3.25-4.0 in., 5=>4.0 in.

[4]Percentage of total that are pickouts.

[5]LSD indicates least significant difference (*P= 0.05*).

Tuber characteristics and internal for SFA Trial in PA, 2016

Variety/Line	Tuber Characteristics[1]						Internal Defects[2]	
	TA	C	TX	Sh	TED	TCS	HH	IB
Snowden	4	5	5	2	4	5	0	3
Lamoka	4	6	6	3	4	4	0	3
AF4648-2	4	7	7	2	5	5	0	0
AF5040-8	4	6	6	3	4	4	0	2
B2727-2	5	6	5	3	5	5	0	0
CO07070-10W	4	5	5	3	6	5	0	0
MSR127-2	5	5	5	2	6	5	0	0
MSW485-2	5	6	5	2	4	6	0	1
NCO349-3	5	6	5	2	6	5	3	0
NDA081453CAB-2C	5	6	6	2	4	5	0	27
NDTX0981648CB-13W	4	6	6	2	5	4	0	0
TX09396-1W	4	6	5	2	5	5	1	15
NY152	5	6	6	2	5	6	0	0
NY157	3	6	5	3	6	4	0	0
W6822-3	3	6	5	3	5	4	0	0
W8822-1	3	4	2	3	6	5	0	0

[1]Tuber Characteristics: TA = tuber appearance: 1 = very poor, 5= fair, 9 = excellent.

C = skin color: 1 = purple, 2 = red, 3 = pink, 4 = dark brown, 5 = brown, 6 = tan, 7 = buff, 8 = white, 9 = cream.

TX = skin texture: 1 = partial russet, 2 = heavy russet, 3 = mod. russet, 4 = light russet, 5 = netted, 6 = slight net, 7 = mod. smooth, 8 = smooth, 9 = very smooth.

Sh = tuber shape: 1 = round, 2 = mostly round, 3 = round-oblong, 4 = mostly oblong, 5 = oblong, 6 = oblong-long, 7 = mostly long, 8 = long, 9 = cylindrical.

TED = tuber eye depth: 1 = very deep, 5 = medium, 9 = very shallow. TCS = tuber cross section: 1 = very flat, 5 = intermediate, 9 = very round.

[2]Internal Defects: HH = hollow heart, IB = internal browning. Total number observed out of 40 tubers. 0 = not observed.

2016 PENNSYLVANIA SNAC VARIETY TRIAL
CHIP SAMPLE RESULTS
PROCESSOR: UTZ QUALITY FOODS

Harvest Date: 9/27/16
Sample Date: 9/28/16

TRIAL LOCATION: BENDER FARMS - CHAMBERSBURG,FRANKLIN CO., PA.

VARIETY	TRIAL	% EXTERNAL DEFECT	% INTERNAL DEFECT	% TOTAL DEFECT	SAMPLE WEIGHT (LBS)	SAMPLE WEIGHT (GRAMS)	HUNTER LAB SCORE	SNAC MERIT SCORE (1-4)	GRAV.	CHIP DEFECT DESCRIPTION/CHIP COMMENTS	RAW TUBER COMMENTS
AF4648-2	2016 PA SNAC	0%	25%	25%	1.20	544.8	70.0	4	1.077	PRIMARILY STEM-END BROWN, VASCULAR BROWN	SOME KNOBBY TUBERS
AF5040-8	2016 PA SNAC	0%	29%	29%	1.02	463.1	68.6	4	1.090	PRIMARILY DARK STEM-END BROWN, VASCULAR BROWN	LARGE TUBERS
B2727-2	2016 PA SNAC	8%	25%	33%	1.30	590.2	67.5	4	1.100	WIREWORM DARK STEM-END BROWN	SMOOTH SKIN
CO07070-10W	2016 PA SNAC	0%	15%	15%	1.20	544.8	69.3	3	1.090	STEM-END BROWN	
LAMOKA	2016 PA SNAC	0%	53%	53%	1.03	467.6	66.5	4	1.073	VERY DARK STEM-END BROWN	SOME "BLOCKY" TUBERS
MSR127-2	2016 PA SNAC	0%	20%	20%	1.05	476.7	66.9	4	1.078	PRIMARILY DARK STEM-END BROWN, VASCULAR BROWN	
MSW485-2	2016 PA SNAC	0%	6%	6%	0.85	385.9	68.1	2	1.092	STEM-END BROWN, VASCULAR BROWN	LOTS OF STEMS HANGING ON TO TUBERS
NC0349-3	2016 PA SNAC	0%	12%	12%	0.80	363.2	69.1	3	1.076	STEM-END BROWN	
NDA081453CAB-2C	2016 PA SNAC	0%	34%	34%	0.60	272.4	66.7	4	1.089	STEM-END BROWN, INTERNAL DISCOLORATION	SMOOTH SKIN
NDTX081648CB-13W	2016 PA SNAC	0%	11%	11%	0.66	299.6	69.2	2	1.083	STEM-END BROWN	STEMS HANGING ON, "FLAT" TUBER SHAPE
NY152	2016 PA SNAC	0%	21%	21%	1.00	454.0	68.1	4	1.071	DARK STEM-END BROWN	VERY SMALL TUBER PROFILE
NY157	2016 PA SNAC	0%	35%	35%	0.95	431.3	70.0	4	1.090	PRIMARILY VERY DARK STEM-END BROWN	SOME SECONDARY GROWTH & SPROUTING
W6822-3	2016 PA SNAC	0%	47%	47%	1.00	454.0	66.9	4	1.088	STEM-END BROWN, INTERNAL DISCOLORATION	SOME SECONDARY GROWTH
W8822-1	2016 PA SNAC	0%	21%	21%	1.15	522.1	65.1	4	1.096	STEM-END BROWN, INTERNAL DISCOLORATION	TOUGH NETTED SKIN, KNOBBY TUBERS, SECONDARY GROWTH
SNOWDEN	2016 PA SNAC	2%	22%	24%	0.90	408.6	70.6	4	1.076	GREEN STEM-END BROWN,VASCULAR BROWN	

SNaC Chip Trial 2016 PA Variety Harvest Merit Score and Notes

Variety	Harvest Merit Score	Observations	Pickout Defects recorded in order of severity observed
Snowden	1	Excellent performance	SB, SG, MS, RH
Lamoka	3	Appearance is poor Most likeley due to heat stress	SB, SG, GC
AF4648-2	2		SB, SG, CS, MS
AF5040-8	4	Inconsistent shape Appearance poor Suspect pinkeye is present	SB, SP, MS
B2727-2	2	Very few Pickouts Oval, Consistant shape	SB, CS
CO07070-10W	3	Many creamer size tubers Size-most smalls and bigs 2 sets due to heat stress	SB, SG, CS
MSR127-2	1	Consistant high yield Nice tubers Little heat damage Very few Pickouts	SB, GC, GC
MSW485-2	1	Nice chip size Thick stolens attached Very few Pickouts Some BSR present	SB, SEDR, CS/RH
NCO349-3	2	Not Bad Lots of greening	SB, SG, CS
NDA081453CAB-2C	2	Suspect Pinkeye is present	SB, SG, MS, CS
NDTX0981648CB-13W	2	Lots of small tubers tubers slightly flat Might need longer season or increase in row space	SB, TC, MS, SG
TX09396-1W	2	Suspect Pinkeye is present Thick stolens attached Very Few Pickouts Minimal impact from heat	SB, SG, GC, MS
NY152	2	Many small tubers Nice round shape Stood up well to heat stress	SB, MS
NY157	3	Stressed by heat Some second growth tubers Some pointy tuber ends and skin cracking	SG, RH, GC, MS
W6822-3	3	Varying tuber shapes Small and large tubers	SB, SG, MS, CS/RH
W8822-1	3	Heavily russetted Some pointy tubers High # of tubers set	SG, bumpy, pointy

KEY to Pickout defects	
SB	Sunburn
SG	Second Growth
RH	Rhizoctonia symptoms
MS	Misshapen
GC	Growth Cracks
CS/RH	Common scab or rhizoct symptoms
SP	Sprouts
CS	Common scab
SEDR	Stem End Dry Rot
TC	Tuber Chaining
HC	Hairline Cracks

SNaC Chip Trial 2016 PA Pest Management Applications			
Date	**Type**	**Product**	**Application**
5/11/16	Insecticide	Platinum	In furrow at planting
5/20/16	Herbicide	Linex	1.5 pt/A
5/20/16	Herbicide	Medal	2 pt/A
5/20/16	Herbicide	Stealth	3 pt/A
5/20/16	Adjuvant	Li 700	1 pt/100 gal
6/22/16	Fungicide	Initiate	1.5 pt/A
6/22/16	Insecticide	Tombstone	2.8 oz/A
7/1/16	Fungicide	Roper	2 lb/A
7/12/16	Fungicide	Ridomil Gold	2.5 pt/A
7/25/16	Fungicide	Roper	2 lb/A
8/4/16	Fungicide	Initiate	1.75 pt/A
8/24/16	Fungicide	Zing	2 pt/A
8/29/16	Fungicide	Roper	2 lb/A
9/13/16	Fungicide	Initiate	1.5 pt/A
9/13/16	Desiccant	Reglone	1.5 pt/A

SNaC Chip Trial 2016 PA Rain and Irrigation Record in Inches

Date	Rain	Irrigation	Date	Rain	Irrigation	Date	Rain	Irrigation	Date	Rain	Irrigation	Date	Rain	Irrigation
5/11/16			6/1/16			7/1/16			8/1/16			9/1/16	0.3	
5/12/16			6/2/16			7/2/16			8/2/16	1.4		9/2/16		1.25
5/13/16			6/3/16	0.25		7/3/16			8/3/16			9/3/16		
5/14/16			6/4/16	0.4		7/4/16			8/4/16			9/4/16		
5/15/16	0.19		6/5/16			7/5/16	0.4		8/5/16			9/5/16		
5/16/16			6/6/16	0.6		7/6/16			8/6/16			9/6/16		0.5
5/17/16			6/7/16			7/7/16			8/7/16			9/7/16		
5/18/16	0.1		6/8/16			7/8/16			8/8/16			9/8/16	0.2	
5/19/16			6/9/16			7/9/16	0.2		8/9/16			9/9/16		
5/20/16			6/10/16			7/10/16			8/10/16			9/10/16	1.1	
5/21/16	0.3		6/11/16			7/11/16			8/11/16		1.00	9/11/16		
5/22/16	0.5		6/12/16			7/12/16			8/12/16			9/12/16		
5/23/16	0.2		6/13/16			7/13/16			8/13/16			9/13/16		
5/24/16	0.15		6/14/16			7/14/16	0.7		8/14/16	0.3		9/14/16		
5/25/16			6/15/16			7/15/16			8/15/16			9/15/16		
5/26/16			6/16/16			7/16/16			8/16/16			9/16/16		
5/27/16			6/17/16			7/17/16			8/17/16	0.5	1.25	9/17/16		
5/28/16	0.25		6/18/16			7/18/16			8/18/16			9/18/16		
5/29/16			6/19/16			7/19/16	0.4		8/19/16			9/19/16	0.2	
5/30/16			6/20/16			7/20/16			8/20/16			9/20/16		
5/31/16			6/21/16			7/21/16			8/21/16			9/21/16		
			6/22/16			7/22/16			8/22/16	0.2		9/22/16		
			6/23/16			7/23/16			8/23/16			9/23/16		
			6/24/16			7/24/16			8/24/16			9/24/16		
			6/25/16			7/25/16			8/25/16			9/25/16		
			6/26/16			7/26/16	0.3		8/26/16			9/26/16		
			6/27/16			7/27/16			8/27/16			9/27/16	0.3	
			6/28/16	0.2		7/28/16			8/28/16					
			6/29/16			7/29/16	0.5		8/29/16					
			6/30/16			7/30/16			8/30/16					
						7/31/16	0.8		8/31/16					

Wisconsin Regional Trial
Potatoes USA-SNAC International
-Chip Variety Trials-

-December, 2016-

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College of Agricultural and Life Sciences, University of Wisconsin-Madison

Trial Site
Hancock Agricultural Research Station, N3909 CTH V, Hancock, WI 54943

Technical Support
Amber Gotch, Assistant Researcher, Storage Research Facility
Samuel Perez- Storage Research Facility help
Joe Nord- Summer Intern, Hancock ARS
Sonia Castillo, Hancock Research Station
Paul Systma, Ag. Project Supervisor and Staff of the Hancock Agricultural Research Station, Hancock Agricultural Research Station

Trial Procedure
Seed was received from trial cooperators during April, 2016 and held in a locker in the Wisconsin Potato and Vegetable Storage Research Facility at 38°F until cutting. Seed was moved to 55°F to warm a week prior to cutting. Cutting was done by hand the week before planting, with special attention paid to cutting uniform-sized, blocky seed pieces ranging from 2 to 2½ oz in weight. Cut seed was placed in well-ventilated plastic crates and held at 55°F for to promote drying and suberizing prior to planting. Planting took place on May 6, 2016 manually. Varieties were planted in two rows of 30 feet in length. Rows were spaced 36 in. Seed pieces were placed 12 in. apart within each row for a target plant density of 14,520 plants/acre. Plots were vine-killed on September 12 and 19, and harvested using a custom-built Gallenberg plot harvester on September 29.

Plots were maintained according to standard production practices recommended by the University of Wisconsin-Madison (See Appendix). Irrigation schedules and application rates were based on in-hill soil moisture monitors and daily field observations helped by a checkbook method following the WISP2012 Irrigation Management software.

Precipitation	27.25
Irrigation	15.68

Soil type: Plainfield loamy sand

The 2016 growing season in Wisconsin was characterized by moderate temperatures and relatively wet, especially in the second half of the crop cycle. Several large rain episodes (1-3.6 inches) occurred in August and September (Fig. 1).

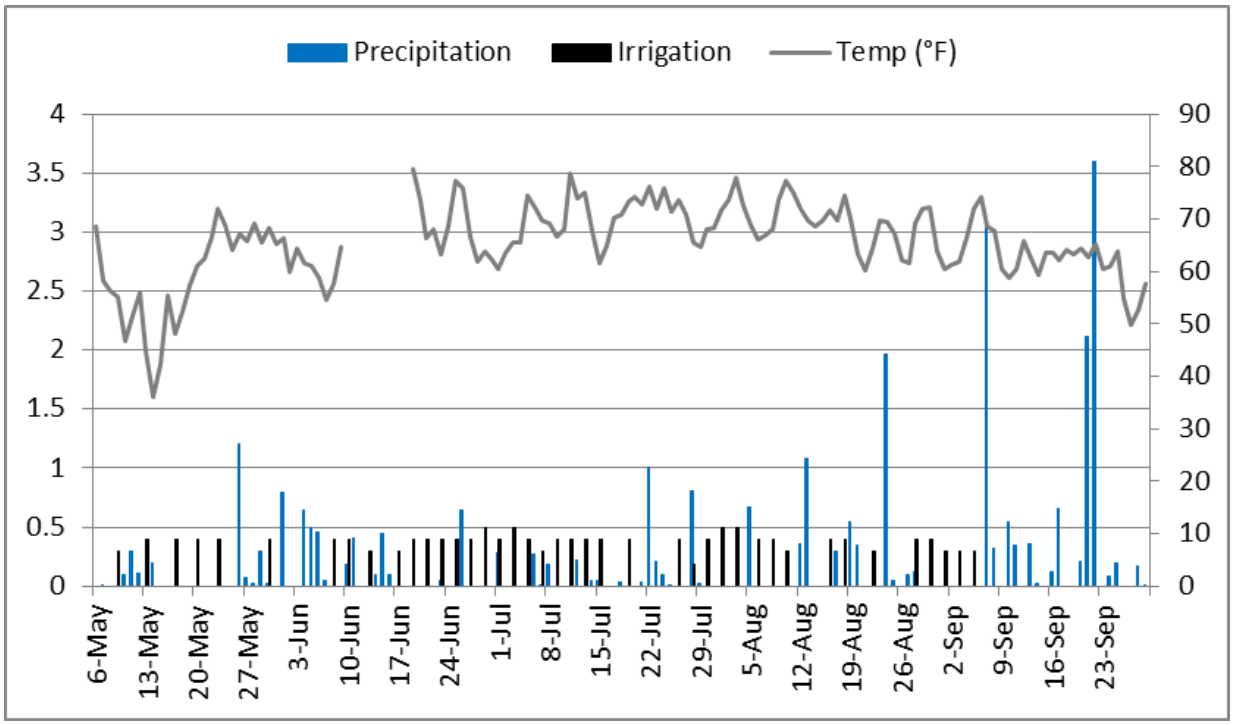


Fig. 1. Rainfall (inches, bar data) and average daily temperature (°F, line data) from May 6 to September 29, 2016. Planting data occurred on May 6 and harvest on September 29.

Plant Development Traits

This trial was planted for an intended plant density of 14,520 plants/a. The number of plants and stems were evaluated late June and plant/acre and stems per plants are reported in Table 1; similarly tubers per plants are reported as well. Plant canopy development was evaluated through July 11. Data on canopy development is also provided in Table 1 and also in Fig. 2.

Yield Data, Tuber Quality and Storage Evaluation

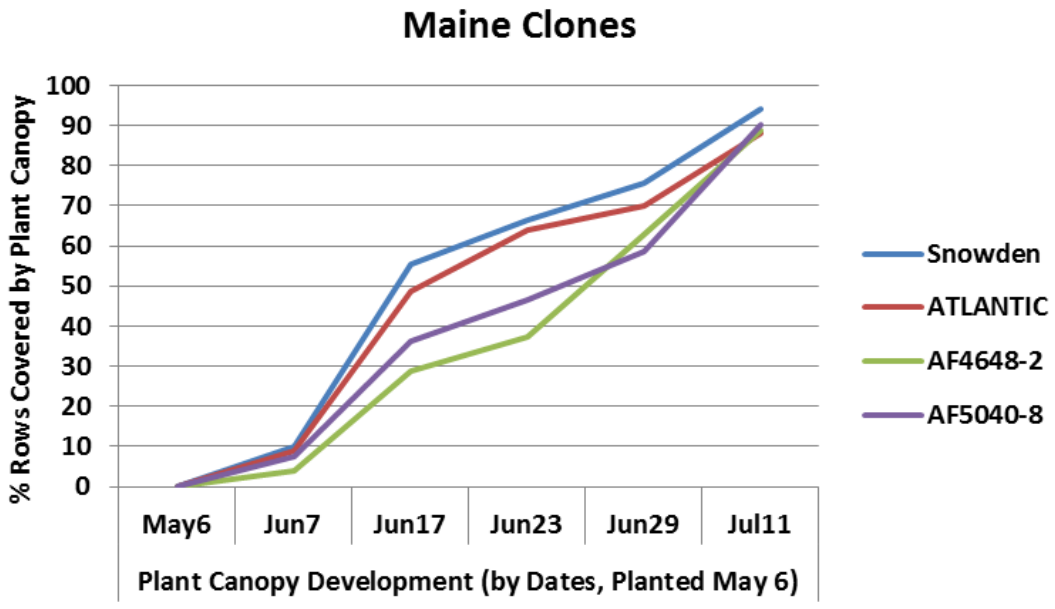
Tubers were graded and sized using a custom-built Gallenberg grader and AgRay X-ray sizer. Specific gravity measurements were taken for each variety using a Weltech PW-2050 Dry Matter Assessment System; this uses a weight in air/weight in water method. Specific gravity, total yield (cwt/a), yield (cwt/a) of undersize (tubers with less than 1.875" diameter), oversize (tubers with more than 3.25" diameter) and culls are presented in **Table 2**. **Fig. 3** shows distributions of tuber diameters for each one of the clones. Internal defects are shown in **Table 3**.

Storage profile is being pursued at the Hancock Agricultural Research Station Storage Research Facility from 45°F and 48°F. Potatoes are initially placed in a locker with controlled temperature and humidity. Data from the first processing evaluation (48°F) is reported in **Table 4 and Fig. 4**; we plan to collect data until June of 2017 and will be reported in June, at the end of the storage season.

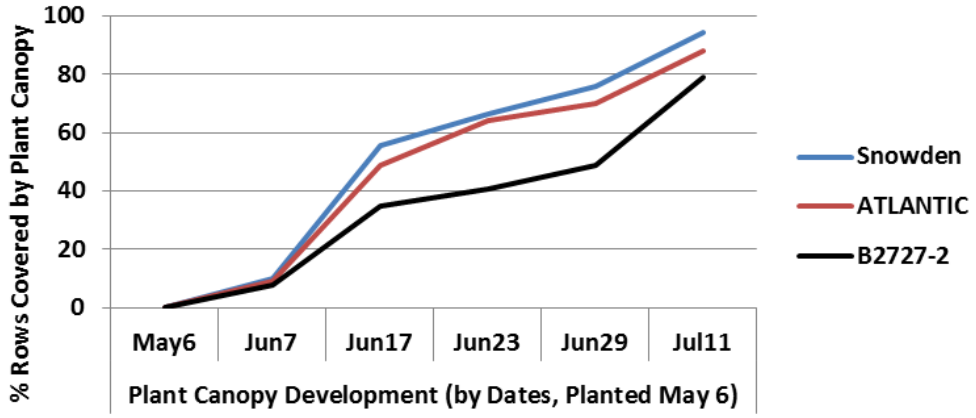
Table 1 Plant and tuber development traits

Clone	Plant/a	Tubers /pt	Stems/pt	Plant Canopy Development (by Dates, Planted May 6)					
				May6	Jun7	Jun17	Jun23	Jun29	Jul11
Snowden	12580	15.4	2.88	0	10.1	55.6	66.6	75.7	94.2
ATLANTIC	12580	11.4	2.08	0	9.1	48.8	64.1	70.1	88.0
AF4648-2	7449	10.1	1.80	0	4.1	29.0	37.4	62.8	88.8
AF5040-8	8103	12.3	2.38	0	7.5	36.4	46.5	58.7	90.1
B2727-2	5260	13.5	2.23	0	7.7	34.8	40.5	48.9	79.1
CO07070-10W	9313	15.8	2.60	0	7.2	42.6	52.7	66.5	87.9
LAMOKA	11733	9.0	1.98	0	5.0	38.5	60.3	73.6	92.3
MSR127-2	5441	16.9	2.55	0	8.4	34.3	35.5	52.8	82.2
MSW485-2	6893	19.1	1.93	0	8.0	29.7	32.6	45.7	82.3
NC0349-3	10523	11.2	2.28	0	8.4	45.3	60.8	67.9	93.1
NDA081453CAB-2C	3626	11.9	1.68	0	4.0	21.4	30.9	49.1	80.5
NDTX0981648CB-13W	10039	14.1	2.88	0	8.3	43.6	60.5	68.9	85.9
NY152	12096	16.1	2.80	0	13.4	41.3	68.5	77.1	91.5
NY157	8769	15.4	1.68	0	2.7	20.1	37.1	51.1	88.4
TX09396-1W	9132	9.2	1.58	0	4.4	33.8	38.1	52.5	81.7
W6822-3	10462	12.7	2.23	0	9.3	37.0	56.3	64.5	88.6
W8822-1	11249	13.8	2.28	0	7.6	36.7	50.0	54.9	83.5
Standard Error	905	0.8							

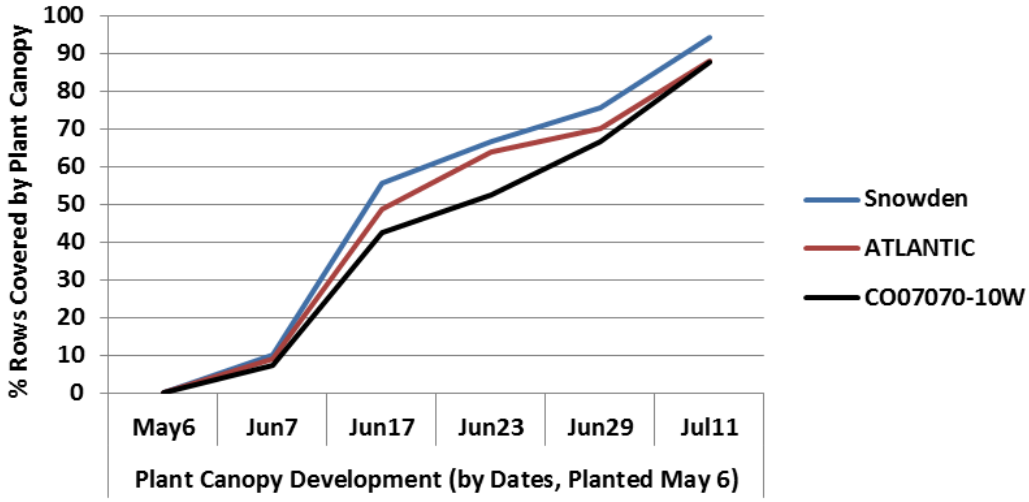
Fig. 2 Plant Canopy Evaluations



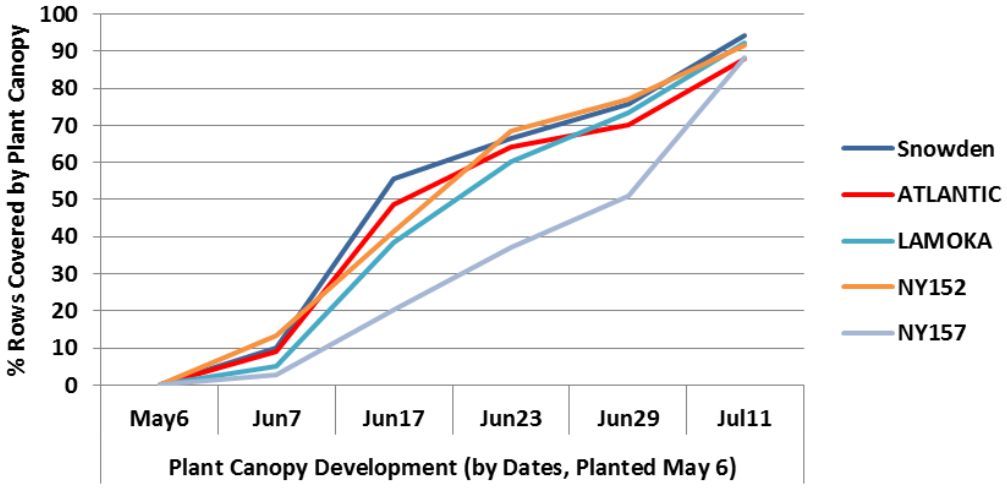
USDA_Beltsville Clones

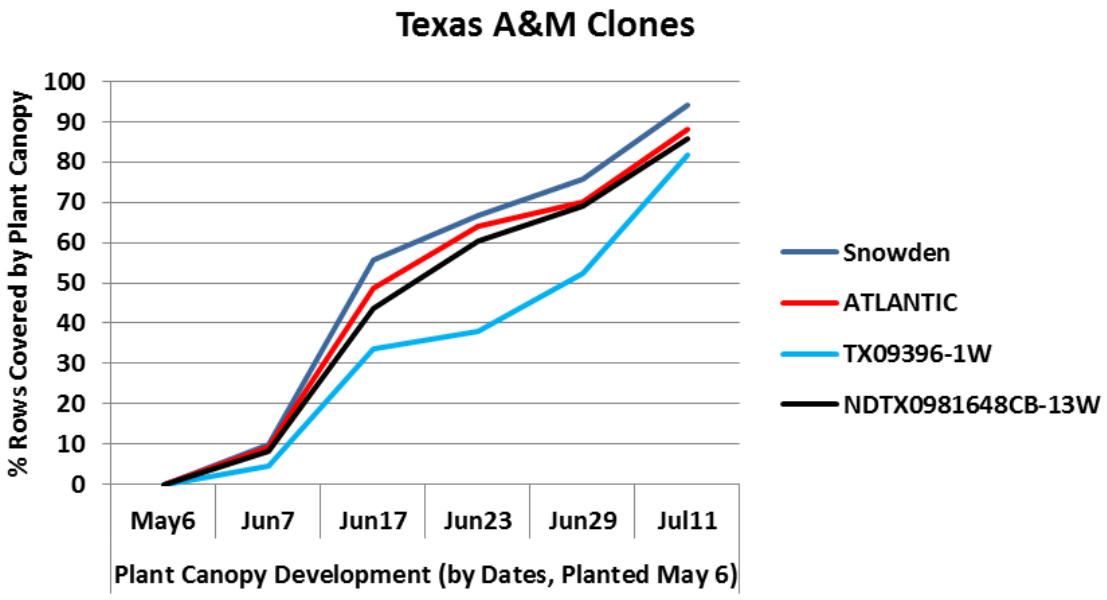


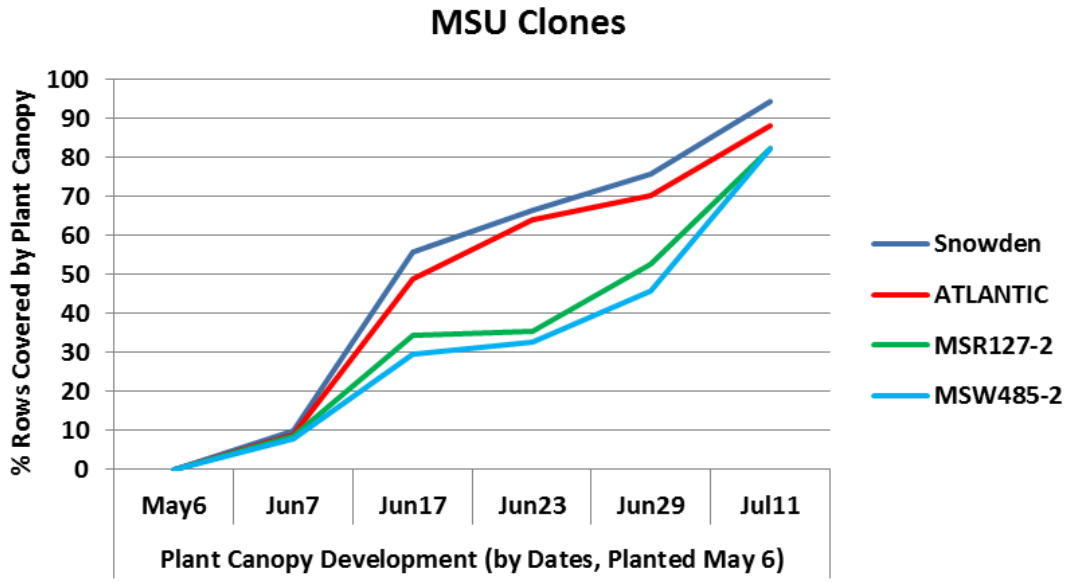
CO Clones



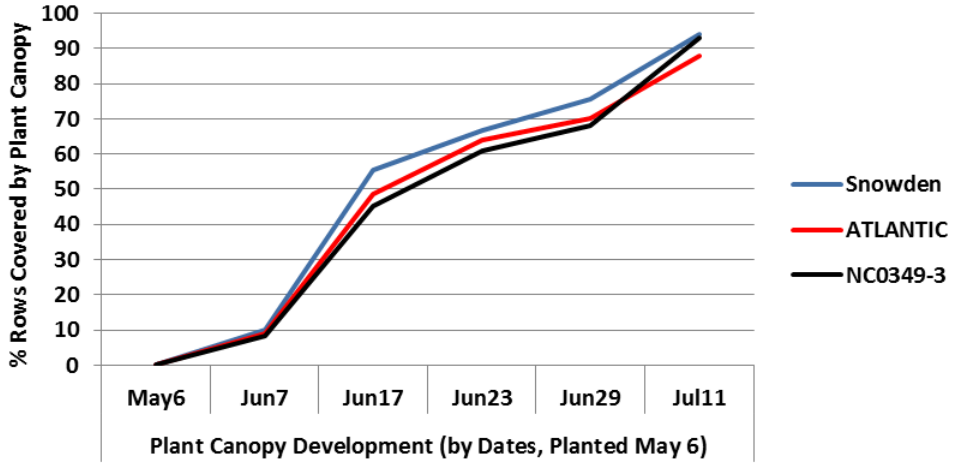
Cornell_NY Clones



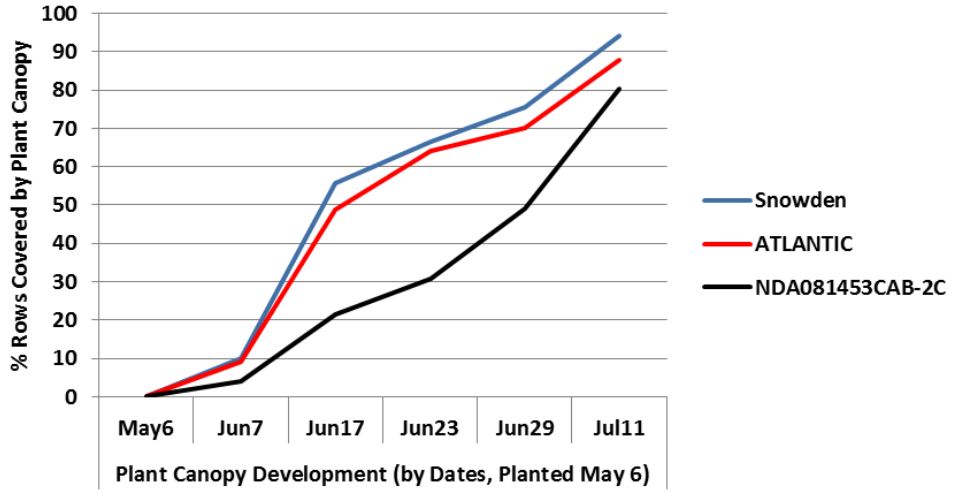

Texas A&M Clones
% Rows Covered by Plant Canopy
100
90
80
70
60
50
40
30
20
10
0
May6
Jun7
Jun17
Jun23
Jun29
Jul11
Plant Canopy Development (by Dates, Planted May 6)
Snowden
ATLANTIC
TX09396-1W
NDTX0981648CB-13W


MSU Clones
% Rows Covered by Plant Canopy
100
90
80
70
60
50
40
30
20
10
0
May6
Jun7
Jun17
Jun23
Jun29
Jul11
Plant Canopy Development (by Dates, Planted May 6)
Snowden
ATLANTIC
MSR127-2
MSW485-2

NCSU Clone



USDA_ID Clone



UW-Madison Clones

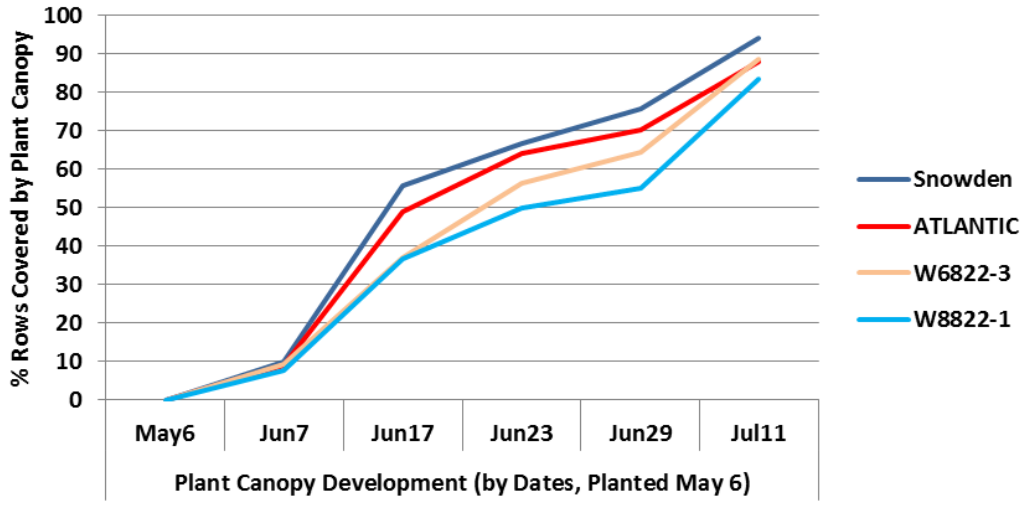
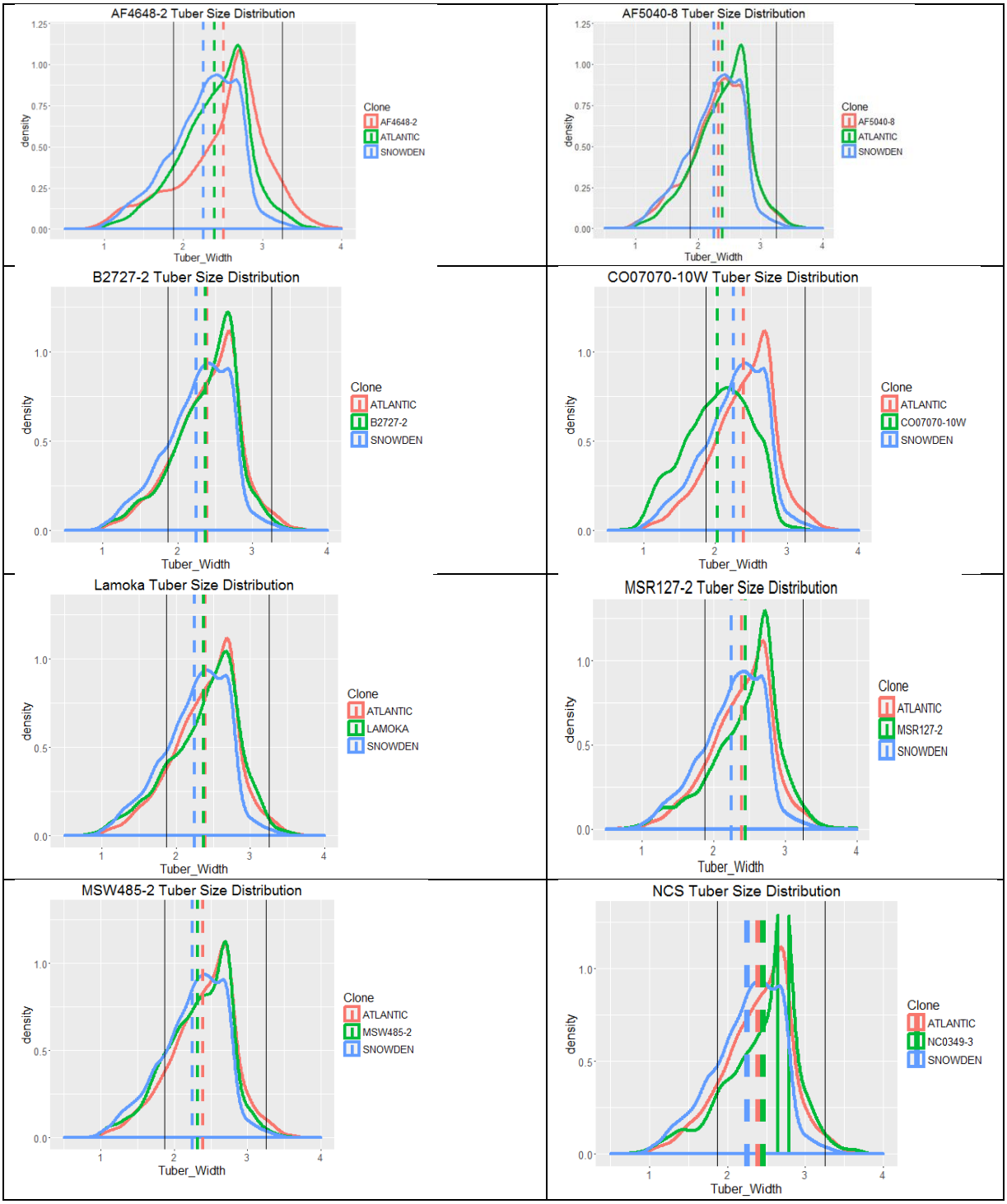


Table 2 Total tuber yield, yield of undersize tuber (<1⅞" inches in diameter), yield of tubers 1⅞" to 3¼" in diameter, oversize (> 3¼" inches) and culls, POTATOES USA-SNAC Intl clones, Hancock ARS, WI.

Clone	Total	Tubers < 1⅞"		Tubers 1⅞ to 3¼"		Tubers > 3¼"		Culls		Tuber Weight % by Cull Types			
		cwt/a	(%)	cwt/a	(%)	cwt/a	(%)	cwt/a	(%)	Green	Growth Cracks	Mis-shapen	Other
Snowden	612	34	5.5	545	89.1	12.3	2.0	20.3	3.3	86.9	5.7	5.7	1.7
AF4648-2	419	***9***	2.1	308	73.4	51.5	12.3	51.3	12.2	77.0	10.8	10.2	1.9
AF5040-8	412	***13***	3.3	340	82.6	21.2	5.1	37.0	9.0	64.0	6.7	26.7	2.7
ATLANTIC	554	***15***	2.7	475	85.8	28.9	5.2	34.8	6.3	86.6	10.4	1.3	1.7
B2727-2	362	***8***	2.2	286	79.0	11.1	3.1	56.8	15.7	68.6	26.2	2.4	2.8
CO07070-10W	384	49	12.9	303	79.0	4.1	1.1	26.8	7.0	87.7	7.7	2.9	1.7
LAMOKA	413	***12***	2.9	350	84.8	13.3	3.2	37.8	9.1	89.0	5.8	3.5	1.7
MSR127-2	438	***10***	2.4	384	87.7	23.1	5.3	20.4	4.7	65.8	22.2	7.2	4.8
MSW485-2	521	***21***	4.0	471	90.4	12.2	2.3	16.6	3.2	86.3	11.1	0.9	1.7
NC0349-3	539	***9***	1.7	448	83.2	26.6	4.9	55.0	10.2	90.2	5.7	2.3	1.8
NDA081453CAB-2C	280	***6***	2.3	204	72.8	38.4	13.7	31.6	11.3	82.9	12.0	1.1	3.9
NDTX0981648CB-13W	445	30	6.7	379	85.2	6.1	1.4	29.8	6.7	84.8	4.2	7.8	3.3
NY152	595	38	6.4	497	83.6	5.0	0.8	54.7	9.2	93.3	3.5	1.1	2.1
NY157	481	25	5.2	408	84.8	13.8	2.9	34.3	7.1	85.0	8.3	4.1	2.6
TX09396-1W	435	***7***	1.5	319	73.4	70.8	16.3	37.9	8.7	73.5	4.1	16.9	5.4
W6822-3	503	***20***	4.0	407	80.9	10.9	2.2	64.5	12.8	87.0	4.6	6.1	2.3
W8822-1	547	***23***	4.2	494	90.2	14.5	2.7	15.7	2.9	72.2	6.8	19.2	1.7
Standard Error	44	4.4		36		8.0		14.4		9.6	8.6	5.7	

Note: Culled tubers include tubers that are green, growth cracks, misshapen, knobby, rotten, etc. Large amounts of rain in August and September favored high incidence of green potatoes.
Underlined values indicate performance statistically worse than the control cultivar Snowden.
Boldfaced values indicate performance statistically better than the control cultivar Snowden.

Fig. 3 Tuber Size Distribution of SNAC Intl.



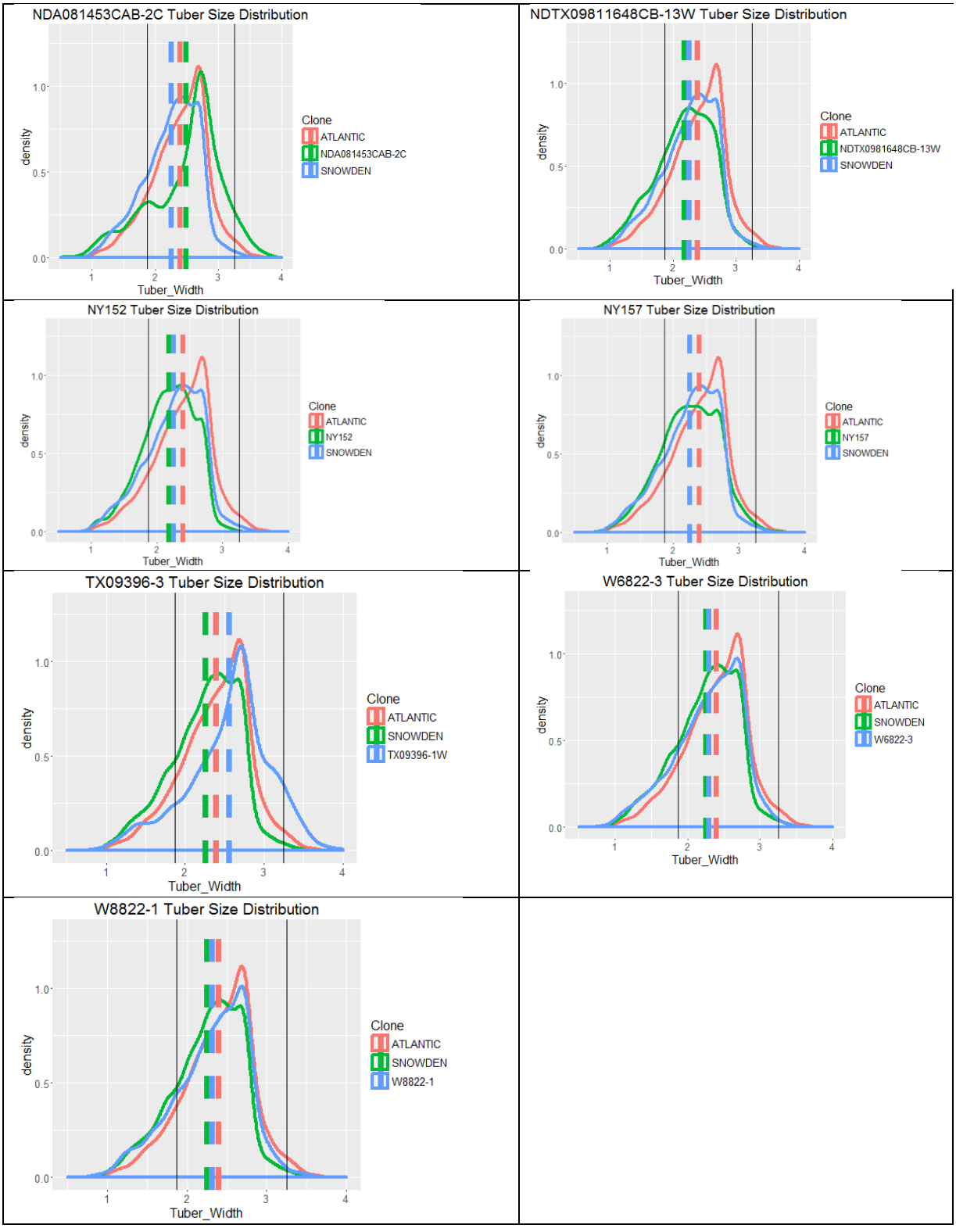

NDA081453CAB-2C Tuber Size Distribution
density
Tuber_Width
Clone
ATLANTIC
NDA081453CAB-2C
SNOWDEN
NDTX09811648CB-13W Tuber Size Distribution
density
Tuber_Width
Clone
ATLANTIC
NDTX0981648CB-13W
SNOWDEN
NY152 Tuber Size Distribution
density
Tuber_Width
Clone
ATLANTIC
NY152
SNOWDEN
NY157 Tuber Size Distribution
density
Tuber_Width
Clone
ATLANTIC
NY157
SNOWDEN
TX09396-3 Tuber Size Distribution
density
Tuber_Width
Clone
ATLANTIC
SNOWDEN
TX09396-1W
W6822-3 Tuber Size Distribution
density
Tuber_Width
Clone
ATLANTIC
SNOWDEN
W6822-3
W8822-1 Tuber Size Distribution
density
Tuber_Width
Clone
ATLANTIC
SNOWDEN
W8822-1

Table 3 Percentage of internal defects on POTATOES USA-SNAC INTL14 clones, Hancock ARS, WI.

Clone	% All Tubers	% Internal Defects (Raw Product) on 30 tubers			
	Hollow Heart	BC	IBS	VD	BSB (Raw)
Snowden	3.6	0.0	0.9	15.0	3.3
AF4648-2	2.7	3.2	13.8	15.2	3.3
AF5040-8	3.4	1.7	0.0	20.0	10.0
ATLANTIC	4.0	0.0	12.5	8.3	3.3
B2727-2	3.0	0.0	0.9	6.7	8.3
CO07070-10W	3.2	0.0	0.0	10.0	5.0
LAMOKA	***2.1***	0.0	0.0	46.7	3.3
MSR127-2	3.3	0.0	14.2	8.4	1.7
MSW485-2	3.5	5.0	0.0	26.7	0.0
NC0349-3	6.8	1.7	0.0	66.7	3.3
NDA081453CAB-2C	2.8	3.2	23.8	21.9	0.0
NDTX0981648CB-13W	3.0	0.0	0.0	10.0	15.0
NY152	2.8	0.0	0.0	13.3	0.0
NY157	3.1	0.0	0.0	23.3	0.0
TX09396-1W	2.5	0.0	10.4	11.9	10.0
W6822-3	2.8	0.0	4.2	46.7	1.7
W8822-1	3.0	0.0	0.8	21.7	5.0
Standard Error		1.1	4.2	11.0	

Note: Underlined values indicate performance statistically worse than the control cultivar Snowden.
Highlighted values indicate performance statistically better than the control cultivar Snowden.

Table 4 Specific Gravity, Tuber sugars, fry processing traits, and stem end discoloration of on POTATOES USA-SNAC INTL16 clones, Hancock ARS, WI, Storage Facility, ARS. November 21, 2016.

	Specific Gravity, Sugars and Fry Data						Stem End Discoloration Processed Chips					
Clone	Specific Gravity	Sucrose mg/g FW	Glucose mg/g FW	L	a	b	0	1	2	3	4	5
SNOWDEN	1.077	0.336	0.060	64.3	1.6	26.5	83.3	6.9	9.7	0.0	0.0	0.0
AF4648-2	1.070	0.639	0.167	60.8	2.6	24.8	79.2	6.9	13.9	0.0	0.0	0.0
AF5040-8	1.087	0.653	0.093	61.1	3.1	26.6	69.4	16.7	13.9	0.0	0.0	0.0
ATLANTIC	1.080	0.640	0.138	57.7	5.1	24.9	69.4	0.0	13.9	9.7	6.9	0.0
B2727-2	1.081	0.398	0.096	63.1	2.3	25.9	76.4	6.9	15.3	1.4	0.0	0.0
CO07070-10W	1.089	0.668	0.173	61.5	3.3	26.2	81.9	11.1	6.9	0.0	0.0	0.0
LAMOKA	1.076	0.522	0.057	65.1	1.8	25.8	81.9	4.2	8.3	5.6	0.0	0.0
MSR127-2	1.080	0.298	0.098	61.0	2.5	24.4	83.3	1.4	13.9	1.4	0.0	0.0
MSW485-2	1.083	0.393	0.088	61.3	2.3	24.4	75.0	1.4	11.1	12.5	0.0	0.0
NC0349-3	1.064	0.459	0.083	65.8	1.6	25.8	73.6	8.3	18.1	0.0	0.0	0.0
NDA081453CAB-2C	1.080	1.052	0.363	55.7	5.7	23.5	62.5	2.8	18.1	16.7	0.0	0.0
NDTX0981648CB-13W	1.077	0.360	0.498	59.3	6.8	23.9	68.1	2.8	18.1	11.1	0.0	0.0
NY152	1.072	0.427	0.024	64.8	0.9	25.9	66.7	4.2	20.8	8.3	0.0	0.0
NY157	1.074	0.473	0.092	61.0	3.7	25.3	68.1	5.6	19.4	6.9	0.0	0.0
TX09396-1W	1.079	0.586	0.113	59.0	3.5	23.9	81.9	1.4	5.6	11.1	0.0	0.0
W6822-3	1.081	0.519	0.027	64.9	0.8	25.8	80.6	15.3	4.2	0.0	0.0	0.0
W8822-1	1.081	0.445	0.092	61.2	2.3	26.2	86.1	0.0	8.3	5.6	0.0	0.0

Fig. 4 Chips processed on November 21, 2016, SNAC International Trial 2016

 AF4648-2	 AF5040-8	 ATLANTIC	 B2727-2
 CO07070-10W	 LAMOKA	 MSR127-2	 MSW485-2
 NC0349-3	 NDA081453CAB-2C	 NDTX0981648CB-13W	 NY152
 NY157	 TX09396-3W	 W6822-3	 W8822-1
			 SNOWDEN

In Wisconsin, the 2016 growing season was characterized by moderate air temperatures throughout the growing season and abundant rains in August (Fig. 1). August rains contributed to tuber greening in several varieties (Table 1). Snowden and Atlantic yield were about normal for the Hancock ARS.

For a second year now we were able to grade potatoes using an X-ray system to assess weight, width and hollow heart. Distributions and data reported for these variables use information from all graded tubers. Tuber size profile curves and defects such as hollow heart take into consideration data from all potatoes graded.

In several tables, estimates of tuber traits are given including also the standard error for the difference is included. Performance of each clone is compared to that of Snowden and this is expressed in each table as follows: clones with similar font to Snowden are not statistically significant compared to Snowden; boldfaced-italics clone performance indicates better performance than Snowden and underlined values indicate worse performance than Snowden, all using a Tukey HSD value at a 5% error rate.

Processing evaluations from 55°F occurred on November 21 and presented in Table 3 and Figure 3; important variations on specific gravity, sugar and frying profile were observed and are discussed in the clone summaries.

Clone Summary:

Seed quantity was fine and seed quality was considered good at the time of planting, but several clones could not establish themselves well.

Snowden, the control cultivar had a total yield of 612 cwt/a and the yield of tubers of <1⅞" -3¼" in diameter was 545 cwt/a. Snowden specific gravity was 1.083 which is its typical value in years of medium to high gravity in WI. Snowden hollow heart and other internal characteristics were acceptable. Strong canopy development as typical of other years.

Atlantic: As typical of this variety, early plant canopy development was fast and close to Snowden performance, yield was high, specific gravity was 1.080.

AF4648-2: Slower plant development compared to Atlantic and Snowden partially due to low density achieved. This clone was affected by tuber greening; it had 12.3% tuber culls and 77% of culled tubers were due to greening. Tuber size profile was most similar to Atlantic, although AF4648-2 had tubers with width larger than Atlantic on average. Internal brown spot was observed as a potential limitation to internal quality. Specific gravity was -0.007 compared to Snowden. Good fry color up to November 21.

AF5040-8: Slower plant development compared to Atlantic and Snowden, partially due to low density achieved. Total yield at 412cwt/a was significantly lower than Snowden. Tuber size profile is very similar to Snowden. High specific gravity. . Good fry color up to November 21.

B2727-2: Very poor plant establishment at 5,260 plants/a compared to 12,580 for Atlantic and Snowden. Plants were slow to reach 80% of canopy cover. Low tuber yield. Tuber size profile was most similar to Atlantic. Good gravity

CO07070-10W: Fast plant development similar to Snowden. Low tuber yield. Large tubers, larger than Atlantic's. High gravity.

Lamoka: Low tuber set at 9 compared to Snowden (15.4). Fast plant development close to that observed for Atlantic. Lower A size yield compared to Snowden. Tuber size profile was very similar to Atlantic. Specific gravity very close to Snowden.

MSR127-2: Very poor plant establishment at 5,441 plants/a compared to 12,580 for Atlantic and Snowden. Slow to cover the rows with its canopy, partially due to low plant density. Lower A size yield compared to Snowden. Tuber size profile was very similar to Atlantic. IBS observed in cut potatoes. Good specific gravity, 1.080, similar to the Atlantic standard. A significant percentage of growth cracks was observed.

MSW485-2: Very poor plant establishment at 6,893 plants/a compared to 12,580 for Atlantic and Snowden. Very slow at covering the rows, partially due to low density achieved. Very high number of tubers/plant.

NC0349-3: Fast initial plant development similar to Atlantic. Tuber size profile was very similar to Atlantic. High hollow heart percent at 6.8 and high vascular discoloration. Lowest specific gravity in the trial (1.064).

NDA081453CAB-2C: Very poor plant establishment at 3,626 plants/a compared to 12,580 for Atlantic and Snowden. Low yield, most likely affected by inability to establish a higher plant density. Maybe susceptible to internal brown spot. Gravity similar to Atlantic.

NDTX0981648CB-13W: Fast plant development similar to Atlantic. Yield lower than Snowden. Tuber size profile most similar to Snowden. Gravity similar to Atlantic. High glucose value and fry chips color deteriorating as of November 21.

NY152: Able to establish plant populations close what Snowden and Atlantic achieved. Fast canopy development similar to Snowden and Atlantic. High yield, similar to what was observed of Snowden. Tuber size profile most similar to Snowden's. Specific gravity was -0.005 compared to Snowden.

NY157: Slow to develop plant canopy compared to Snowden and Atlantic. Moderate yield compared to Snowden. Tuber size profile most similar to Snowden's. Specific gravity was -0.003 compared to Snowden.

TX09396: Slow to develop plant canopy compared to Snowden and Atlantic. Moderate yield compared to Snowden. A large portion of 16% of yield that was culled it was due to greening and misshapen tubers. Large tubers with size profile larger than that of Atlantic. Gravity similar to Snowden. Fry products starting to show some color.

W6822-3: Plant canopy development close to Atlantic. Yield was lower than Snowden. Susceptible to greening of tubers under the conditions of the trial. Tuber size profile closer to Snowden. Vascular discoloration of raw potatoes observed. Gravity similar to Atlantic.

W8822-3: Plant canopy somewhat lower than what was observed for Atlantic. Yield similar to Atlantic and no significantly different to Snowden. Tuber size profile intermediate between Snowden and Atlantic. Attractive round smooth tubers. Gravity similar to Atlantic.

Appendix: Agronomic Management and Pest and Disease Control

Date	Equipment	Products	Dosage	Units
9/29/2016	Harvest: Potato Digger, Blue			
9/19/2016	Vine-kill 2: Spray Coupe	Diquat E	1.5	pints/acre
		Non Ionic Surfactant 80/20	1	pints/acre
9/15/2016	Spray Coupe	Manzate Pro-Stick	1.5	lb(pound)/acre
9/12/2016	Vine-kill 1:Spray Coupe	Non Ionic Surfactant 80/20	1	pints/acre
		Diquat E	1.5	pints/acre
9/8/2016	Fungicide Application: Spray Coupe	Super Tin 80WP	3	dryoz./acre
		Manzate Pro-Stick	1.5	lb(pound)/acre
9/1/2016	Fungicide Application:Spray C.	Manzate Pro-Stick	1.5	lb(pound)/acre
8/26/2016	Fungicide Application: Spray Coupe	Forum	6	fluidoz/acre
		Bravo Weather Stik	1.5	pints/acre
8/19/2016	Fungicide Application:Spray C.	Bravo Weather Stik	1.5	pints/acre
8/11/2016	Fungicide Application: Spray Coupe	Bravo Weather Stik	1.5	pints/acre
		Revus Top	7	fluidoz/acre
		Non Ionic Surfactant 80/20	1	pints/acre
8/4/2016	Fungicide Application:Spray Coupe	Bravo Weather Stik	1.5	pints/acre
7/29/2016	Fungicide Application: Spray Coupe	Bravo Weather Stik	1.5	pints/acre
		Headline	12	fluidoz/acre
7/22/2016	Insecticide + Fungicide Application:Spray Coupe	MSO	24	fluidoz/acre
		Bravo Weather Stik	1.5	pints/acre
		Coragen	5	fluidoz/acre
7/14/2016	Fungicide Application: Spray Coupe	Bravo Weather Stik	1.5	pints/acre
		Tanos	8	dryoz./acre
7/8/2016	Airflow Fertilizer Application	34-0-0 Ammonium Nitrate	150	lb(pound)/acre
7/8/2016	Fungicide Application:Spray C.	Bravo Weather Stik	1.5	pints/acre
6/24/2016	Fungicide Application: Spray Coupe	Non Ionic Surfactant 80/20	1	pints/acre
		Agri-Mek SC	3.5	fluidoz/acre
6/16/2016	Herbicide Application: Spray Coupe	Non Ionic Surfactant 80/20	1	pints/acre
		Matrix	1.5	dryoz./acre
6/13/2016	Airflow Fertilizer Applicator	34-0-0 Ammonium Nitrate	350	lb(pound)/acre
6/9/2016	Fungicide Application: Spray Coupe	Crop Oil Conc.	1	pints/acre
		Revus	8	fluidoz/acre
5/23/2016	Herbicide Application: Spray Coupe	Metribuzin 75DF	0.5	lb(pound)/acre
		Parallel	1	pints/acre
5/23/2016	Fertilizing and Hilling: Hiller/Sidedresser	21-0-0-24S Ammonium Sulfate	360	lb(pound)/acre
5/6/2016	Hilling, Row Closing			
5/6/2016	Manual Planting, fertilizer applic: Iron Age	6-30-22-4S+micros with Platinum	550	lb(pound)/acre
5/5/2016	Soil Finisher, Brillion			
4/12/2016	Airflow Fertilizer Applicator	0-0-0-17S-21Ca, Calcium Sulfate	500	lb(pound)/acre
		0-0-60 Potash	450	lb(pound)/acre