

Wisconsin Department of Agriculture, Trade and Consumer Protection
Agriculture Development and Diversification Program
2006 GRANT PROJECT PROGRESS REPORT

Date: May 25, 2010

WDATCP Contract No.: **21061**

Project Title: **Development and Promotion of Specialty Potato Varieties for the Fresh Market Grower**

Contractor Name: **Dept. of Horticulture, UW-Madison**

Project Leader: **Jiwan Palta**

Progress Report For: Through the end of the grant period (Final Report)

This report is submitted in fulfillment of the grant contract. (Attach additional pages of information, if needed.) **NOTE: Attach invoice form and all supporting documentation for project expenditures.**

Please describe project activities for this reporting period.

1. Presentation of Specialty Potatoes at Grower's meetings and Field Days
2. Distribution of brochure depicting specialty potato selections to potato growers.
3. On farm trials of specialty potato lines.
4. Seed multiplication and evaluation of lines with potential as specialty potatoes

Please describe accomplishments and objectives met during this reporting period. What knowledge was gained or advancements were made during reporting period?

1. Presentation of Specialty Potatoes at Grower's meeting and Field Day in 2008.

During the grant period we used the growers meetings and field days, at the Rhinelander Agricultural Research Station and at the Hancock Agricultural Research Station, to promote potato breeding lines of specialty potatoes. In addition we met with the potato growers and Industry representatives at the SpudPro committee meetings. These meetings are conducted three times a year. At the winter meetings every year we meet at the Rhinelander Agricultural Station. At these meetings we took the opportunity to show the growers a set of lines with potential as specialty potato and conduct a participatory selection exercise showing tubers of the highlighted lines to obtain their growers feedback (Appendix 1). The same strategy was used at the Hancock field days in the summer. In the Rhinelander field day there were not tubers available to show, but printed material was presented to growers.

2. **Feedback from Participatory Selection Exercise:** Growers observed 39 breeding lines including fingerlings, baby potatoes, small size red and colored potatoes as depicted in Appendix 2. Growers has expressed interested in trialing thirty of our new specialty lines in their own farms in 2010 with the intention to commit to a few lines that may be superior in quality. Growers have suggested the type of tuber shape, size, and flesh and skin color most desired by buyers. As an example fingerlings should have smooth shiny skin and the flesh of purple potatoes should be colored (not white). These are important input since little is known about market preference in the emerging market of specialty potatoes.

3. On farm trials of specialty potato lines.

In 2008 and 2009, several growers received specialty potato lines for on-farm tests. Chris Malek from Malek Farms Inc. has contributed data on specialty breeding lines that he evaluated in the past two years. Two fingerling lines were of interest in this test: 04-3312-2 (purple) and 04-3310-1 (red). In addition, his comments on red, yellow flesh breeding lines are given in the table below in Table 1.

4. Seed multiplication of lines with potential as specialty potatoes in 2008 (Table 2) and 2009 (Table 3). Thirty nine lines identified as specialty potatoes were planted and are listed below. The cleanliness for potato virus Y is being tested so that clean seed of these selected lines can be to be able to increased selected lines to share with growers. A number of new breeding lines have been selected following feedback on traits that are appreciated by growers as learned from participatory selection exercises and on-farm experiences. At present the total number of specialty lines exceeds 60. These lines were planted in 2009 and a new set of 31 lines were selected with highly desired traits and they are depicted in Table 3. These lines are to be further tested in 2010.

5. Distribution of catalog depicting specialty potato selections (attached) to potato growers.

A brochure including several specialty potato breeding lines was sent to potato growers in Wisconsin previous to the Wisconsin Grower Education Conference that was held at Stevens Point WI in February of 2010.

6. Participatory Evaluation of specialty potatoes on storage and plan for the next stage of the project

Last February in the course of the UW-Extension & Wisconsin Potato and Vegetable Growers Association Annual Growers Conference held at Stevens Point (February 2-4, 2010) several growers met with the breeding program and expressed interest in joining effort to evaluate and possibly use selections that are being generated from this project. These growers visited the Rhinelander Agricultural Research Station to join us in a participatory selection work to choose a number of lines that they are interested in trialing in their farms to select from their farm experiences those that will be included in their production, promotion and marketing efforts in the next 3-5 years. These growers expressed interest in selection, promotion and marketing of our selected specialty potatoes.

Table 1. On-farm performance of potato breeding lines considered for organic farming, Malek Farms, Rosholt WI, 2008.

Organic Potato Plots - Rosholt, WI					
Malek Farms Inc.					
	Gross	No. 1	B-size (<2")	Cull	
Line	Yield (cwt.)	Yield (cwt.)	Yield (cwt.)	Yield (cwt.)	Comments
W2609-1R	150.0	100.0	27.8	22.2	Moderate silver scurf; round; very little scab; small
W3957-6R	173.5	17.6	61.8	94.1	Most culls=scuffed, cut, quack, scab; lots of silver scurf
W6270-1R	205.6	66.7	58.3	80.6	Some silver scurf; some leak; some scab
W5260-2R	138.2	44.1	64.7	29.4	Little silver scurf; small; some surface scab
W2799-1R	168.8	90.6	46.9	31.3	Dark red skin; variable shape; some silver scurf; little scab
W5767-1R	263.2	189.5	21.1	52.6	Few pitted scab; large size; some silver scurf; netting; deep apical eyes; dk red
W2618-5Y	155.9	52.9	38.2	64.7	Pit scab; growth cracks
W3852-4Y	241.7	200.0	27.8	13.9	Very little scab; quite smooth
W3846-4Y	167.6	129.7	35.1	2.7	Small; flat; very smooth; acceptable flesh color
W6153-6Yrus	191.7	30.6	116.7	44.4	Small; lots of surface scab; not pretty
W4132-1LB	302.9	264.7	29.4	8.8	Smooth; very little scab; like Salem

Table 2. Lines selected as specialty by the potato breeding program in 2008

Lines	Line name	Traits
1	04-3310-1	Red skin red flesh fingerling
2	94-4386-5	Small red potato with yellow flesh
3	04-3312-1	Purple skin, purple flesh thick fingerling
4	04-3312-2	Purple skin, purple flesh thick fingerling
5	03-337-3	Red skin, red flesh thick fingerling
6	03-337-2	Red skin, red flesh thick fingerling
7	04-3311-4	Small purple potatoes with cream-purple variegated lines
8	04-3310-2	Red skin, red flesh fingerling
9	00-30044-10	small,yellow flesh buff netted skin
10	00-30054-8	pink skin,yellow flesh
11	00-3017-3	small,intense yellow flesh
12	00-3038-4	oval,yellow flesh,small/med size
13	00-4252-1	small,purple skin,purple flesh,white center
14	00-4252-3	variable shape,purple skin,purple flesh
15	01-1133-1	elongated,cream skin,purple flesh,center is cream
16	0133-1	med size,~rough,purple patterns in flesh,Peace & Love
17	02-3094-1	elongated,smooth,yellow flesh
18	04-3311-1	large,variable shape,eyes,varigated cream/purple skin
19	04-3311-3	variable shape,elongated small,pear shape
20	2006-4H-489	rough,white fingerling,white flesh
21	5348-123	red skin,intense yellow-reddish flesh
22	90DH156-3	round/oval,yellow flesh
23	90-DH-156-3	small,/med size,white skin,yellow flesh
24	93-1177-3	small,round,pink,yellow flesh
25	94-108000-1	nice looking,yellow flesh,skins,netted heavily
26	94-4102-8	small,yellow flesh
27	97-5624-18	Baby potato, med size,variable shape,cream flesh
28	97-5672-12	Baby potato, med size,smooth,cream pale yellow flesh
29	99-2743	constricted fingerling,flesh is cream and purple/purple
30	99-300028-11	variable shape,scab,yellow flesh
31	99-300028-8	small/mesd size,~smooth,yellow flesh
32	99-30009-2	nice looking,pink ,red eyes,yellow flesh,variable shape,small
33	99-30009-7	small/med size,pale yellow flesh
34	99-4204-12	med size,oval,ring of purple flesh
35	AH57-73	small,variable shape,purple skin,cream fleah
36	W5301-2	Baby potato, small,smooth
37	W7067-2	Baby potato, small,smooth
38	Spec 44	small/med size,~variable shape,yellow flesh,~pale
39	Spec19	med size,oblong,red skin/flesh

Table 3. Specialty lines evaluated in 2008-09, flesh and skin color, cooking quality and harvest and storage comments

Clonal ID	Mati	Skin color	Flesh Color Harvest	Cooking quality	Comments
00-30044-10	ML	rus	light yellow	light yellow flesh	heavy russet skin (excess), vascular discoloration
00-3017-3	ME-				small,intense yellow flesh
00-4252-3	ME-				variable shape,purple skin,purple flesh
02-3094-1	ML				elongated,smooth,yellow flesh
03-337-2	ME				prostrate
03-337-3	ME-	red	dark red to purple		mid size, sweet potato type, short dormancy
04-3310-1	ML	red	red	dark pink flesh	long red fingerling,jelly ends
04-3312-1	L	very dark purple	purple	very dark purple	very small,watch
2006-4H-489		yellow, tough	yellow		red patches
90DH156-3	L				round/oval,yellow flesh, dark violet flowers, v narrow leaves
94-108000-1	ML+	yellow	yellow	ok	watch skin netting
94-4386-5	ML-	pink	Yellow	light yellow, sweet taste	yellow flesh, almost orange skin
97-5672-12	ME+				med size,smooth,cream pale yellow flesh
99-2743	L+	dark purple	Variegated cream/purple	purple turns to gray when cooked,bitter taste,s	purple peruvian type - fingerling,white/purple flesh
99-300028-8	L	yellow	dark yellow	ok	mid size
99-30009-7	ML+	lt red	red	vascular ring,thin skin	too long and large?sweet pota to type,short dormancy
99-4204-12	ME-	white	variegated dark purple/g	white turns to bluish gray	white skin/purple flesh-growth cracks
A06305-1	ML+	yellow	med yellow	nice,tough skin	faint red patches-more saleable?
A06305-2	ML	yellow/Pink	lt yellow		faint red patches -more saleable?
CO04298-1		red	white		not special?
CO05028-1	L-				full bloom,huge vine,fine skin,spreading
CO05028-2RY	L				
CO05081-1	ML-	dark purple, white	very dark purple	Dark purple	exdark flesh,very small tubers,violet flower
CO05107-1	L	Purple	dark purple	variegated cream/red	bright purple flesh,deep eyes
CO05107-2	L	Purple	dark purple	variegated cream/red	~deep eyes
CO06253-1	ML-				
CO06253-2	ML-				
Eemst Ling	ML-				small,fingerling, straight
French Fingerlin	L	dark purple	very dark purple	thick skin	very late,purple skin/flesh, white flowers
H143-1	ML	very dark purple	very dark purple		skin has strong flavor,flesh does not
H143-2	ML	dark purple	dark purple		white ring on edge when raw
H44-1	ME	mid yellow	mid yellow		mid sized,netted
H57-1	ML-	brown	purple		brown skinned/purple flesh,allegator skin
Long Rode	ML	yellow	light yellow		sm fingerling, yellow flesh, no seed to Mike
Mrs. Mochlors Y	ML				med size,yellow flesh,ovals,~pear shape
ND 060893CB-1	ME-				
ND 070967B-1	ML				lt yellow flesh, mostly white blended,pink eyes
ND059732-2		red	white	* Good flavor & skin*	not special,short dormancy
ND059761B-1				dark yellow skin and flesh	red with white patches
ND060873AB-1	ME-				
ND070967B-1	ML				
Patrons	ME-				med size,rough,yellow flesh

Clonal ID	Maturity	Skin color	Flesh Color Harvest	Cooking quality	Comments
QSMS12-1	ME	white/purple	white/purple	cream turns gray after cooked,very good taste	purple/ white with white patches
QNSDSU03-1	ME-	red	white	very thick skin	lt red skin/white fl, small, high set, uniform sz, needs yellow flesh, sweet taste
QNSDSU04-1	L	red	white		main flow red
QNSDSU04-2	ML				
QNSDSU04-3	ML				
QNSDSU07-1	ME+	light red	variegated white/red	flesh colors variable	small,uniform
QNSDSU07-2	ML				
QNSDSU07-3	ML	red/purple	white/red	red star centered-cooked	
QNSDSU07-4	ML				
QSWI04-1	ML-				
Red Thumb	ME-	light red	pink		larger fingerling
Ruby Pulsivers B	ML+	red	white		med size,variable shape,purplish skin,white flesh
Russian Blue	L				speckled pale flesh,purple skin, dark blue flowers
Spec 44	ML				small/med size,~variable shape,yellow flesh,~pale
Spec19	ML-				med size,oblong,red skin/flesh
Stalorsky R					med size,pear shape
V07018-1	ML-				upright
V07019-1	ML	white	white	discolor around eyes only	leafy
V07019-2		white	white	**discolored by the eyes,good	
V07136-1	ME-	white	white	Thin skin	lg fingerling pointed stem end,
V07136-2	ME	white	white	tough skin	lgwht, lg-fingerling, best skin finish
W5301-2	ME	white	white		pale yellow flesh,small,smooth, small vine
W7067-2		white	white		watch vasc disease,nice size,short dormancy
W8352-1		yellow	yellow		best skin finish of Ysk/yellow flesh,nice
W8778-1P	ML				
W9253-1	L	very dark purple	dark red	red and white variegated, slight variegation aft	red skin/red fl, later mat., yld?round,very small & late!!
W9253-2	ML-				
W9338-1	ML-	dark purple			violet flower,small fine leaf
W9338-2	ML-				
W9338-3	ML-			raw red variegation, thing tough skin	
W9338-4	L-				deep eyes
W9344-1	ML-	red	dark red		red thumb like xred, dark red,red flesh,good finish
W9344-2	ML	dark purple	verig purple	white purple variegation, thin skin	very smooth,shallow eye,small, red thumb like
W9350-1	ME-	red	pink		rd skin/red fl, they like colors
W9350-2	ME	lt red	dark purple	good cooked color*	dark flesh,white center
W9351-1	ME	lt red	purple/white	thin skin,pretty color	flesh verig purple/white
W9351-2	ME-	dark red	purple/red	vascular ring,good taste!	excel violet skin internal color acceptable, watch skin text, sharp taste
W9351-3	ME	lt purple	lt purple	gray edge/blue gray inside.thin skin	goodd maturity, size/color
W9360-1	ML-	red	red		red skin/red flesh
W9395-1RY		red	yellow	*,vascular ring,tougher skin	tends to fingerling, larger size/shallow eyes, 10 lb excess
W9962-1		yellow	yellow		red patches on yellow,deep eyes

7. Future Objectives and Work

1. To submit a new specialty potato project to the DATCP-ADD that capitalizes in the interest of several organized Wisconsin growers.
2. To organize and provide seed and expertise to enhance the efforts of Wisconsin growers for on-farm experiences of specialty breeding lines that they have selected with us via participatory breeding in this period.
3. Provide Wisconsin growers with new specialty potatoes that can be successfully used in their production and marketing strategies.

Fig. 1. Participatory selection work at the Rhinelander Agricultural Research Station Feb2010
Left hand side front to back: Chad Mallek, Nick Sommers and Mike Copas.
Right hand side: Kirk Willie, Russel Wysocki and Felix Navarro. Leaving the room Edith Parker (Station personnel).



APPENDIX 1: Specialty Potatoes Selected in 2008 Fingerlings and Baby Potatoes



04-3310: Red skin red flesh fingerling with attractive smooth and shiny appearance.



99-2743: Purple skin with cream purple speckled flesh constricted fingerling.

04-3312-1: smooth purple fingerling with purple flesh.





W6002-1R: smooth round red potato of uniform medium size with good grower appeal.



W2978-3: nice looking round white potato line

APPENDIX 2: New Specialty Breeding Lines Selected in 2009



03-337-2: Obtained from Andy/Shelley in 06



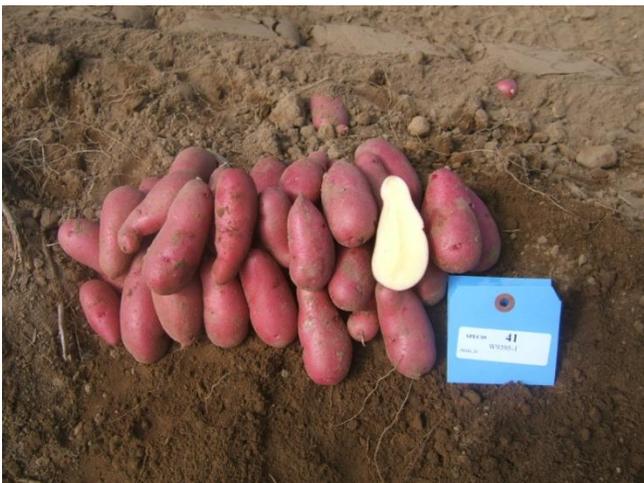
03-337-3: Obtained from Andy/Shelley in 06



99-30009-7: Obtained from Andy/Shelley in 06



W9351-2



W9395-1Y



H57-1



04-3310-1: Obtained from Andy/Shelley 06



V07019-1



V07019-2



V07136-1



V07136-2



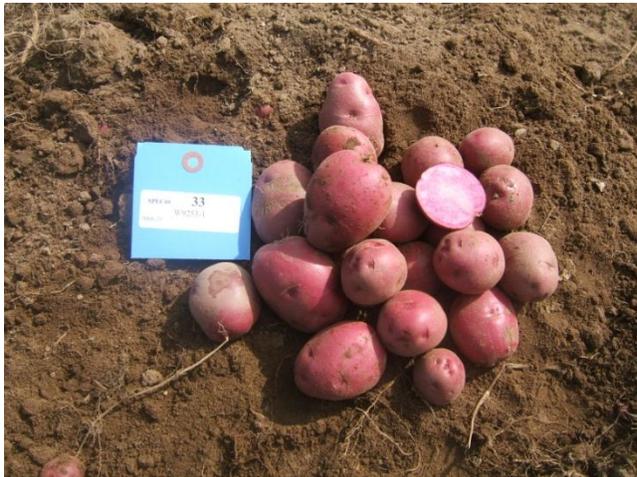
04-3312-1: Obtained from Andy/Shelley in 06



94-8346-5: Obtained from Andy/Shelley in 06



QSNDSU07-3



W9253-1R



W9350-1



W9344-1



W9351-2



W9350-2



W9351-3



W9351-1



W9344-2



C005801-1



H143-1



QSMS12-1



V06305-2



ND059761B-1



99-00025-8 Clone obtained from Andy/Shelley



W8352-1Y



W5301-2Y



00-30044-10: Obtained from Andy/Shelley in 06



94-108000-1: Obtained from Andy/Shelley in 06



99-4204-12: Obtained from Andy/Shelley in 06



00-3038-4: smooth baby potato with yellow flesh



W7067-2: Baby potatoes smooth and round shape with white flesh.



W7067-2: Baby potatoes smooth and round shape with white flesh.

