

Variety Trials

An Interactive Online Database for Potato Varieties Evaluated in the Eastern United States

Mark E. Clough¹, George C. Yencho^{2,12}, Barbara Christ³,
Walter DeJong⁴, Donald Halseth⁵, Kathleen Haynes⁶,
Melvin Henninger⁷, Chad Hutchinson⁸, Matt Kleinhenz⁹,
Greg A. Porter¹⁰, and Richard E. Veilleux¹¹

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SUMMARY. Databases are commonly used to coordinate and summarize research from multiple projects. The potato (*Solanum tuberosum*) research community has invested significant resources in collecting data from multiple states and provinces, and we have developed a web-based database format for the use of researchers, farmers, and consumers. The northeast regional potato variety development project (NE1031) is a U.S. Department of Agriculture, Cooperative State Research, Education, and Extension Service (USDA-CSREES) regional project focused on developing and evaluating the suitability of new varieties and advanced clones from multiple breeding programs for a range of environments. This multistate project and its predecessors have been in existence for more than two decades, and they have resulted in the collection of a significant amount of standardized potato trial data. We have developed an interactive potato variety database that allows researchers and end-users to access and obtain potato variety trial results in one centralized site. The database is populated with the results of potato variety trials conducted in eight states (Florida, Maine, New Jersey, New York, North Carolina, Ohio, Pennsylvania, and Virginia) and two Canadian provinces (Prince Edward Island and Quebec). It currently contains over 35 data features and was developed primarily for scientists interested in potato variety development, growers, and allied industry members. Hypertext mark-up language (HTML) and hypertext preprocessor (PHP) were used to develop the database interface.

The USDA-CSREES NE1031 project entitled "Development of New Potato Clones for Improved Pest Resistance, Marketability, and Sustainability in the East" is a project that addresses the needs of the potato industry of the eastern United States through a coordinated process of potato breeding, selection, evaluation, and variety development. Potato breeding and germplasm improvement in this

project are conducted by four potato breeding programs (University of Maine, Cornell University, North Carolina State University, and USDA-Agricultural Research Service-Beltsville, MD). Early generation multisite selection, subsequent advanced clone evaluations, and variety trialing are then coordinated across eight eastern states, with collaborative research efforts extending to trial cooperators across the United States and into eastern

Canada. The overall goal of the project is to develop an array of attractive, nutritious, high-yielding, disease- and insect-resistant potato varieties that can be employed by small and large potato producers to enhance marketing opportunities, farm sustainability, and grower profits.

Breeding, selection, and development of adapted, chipping, French fry, specialty-type, and fresh market varieties are emphasized in this project. Selection procedures for processing lines emphasize high dry matter, acceptable fry color, and freedom from internal defects. Fresh market selection and evaluation emphasize excellent appearance, sensory, and nutritional qualities. Development of varieties with durable, multiple resistances to important pathogens and pests, such as late blight (*Phytophthora infestans*), verticillium wilt (*Verticillium dahliae*), early blight (*Alternaria solani*), common scab (*Streptomyces* spp.), Fusarium dry rot (*Fusarium* spp.), golden nematode (*Heterodera rostochiensis*), and colorado potato beetle (*Leptinotarsa decemlineata*) resistance are long-term priorities.

The NE1031 project is highly collaborative and takes advantage of the multiple potato breeding and variety development programs located in the eastern United States. The project has established a mechanism for sharing and exchanging germplasm and research results between eight participating states and two Canadian provinces. To facilitate easy access of key information, we have developed a web-based, user-friendly potato variety database to facilitate data management and access for the NE1031 project and the entire potato research community. This variety database site was designed primarily with the interests and needs of the potato research community in mind, but it can be accessed easily by farmers, seed brokers, and home gardeners interested in obtaining timely information on regional potato performance. The primary goal when constructing the database was to condense and distill the many variety trials that the NE1031 project conducts into a format that was standardized for key data, such as total and marketable yield, tuber appearance, plant maturity, and specific gravity. However, it was also designed to store unique data collected by

specialized members of the group, such as disease and insect resistance and cooking qualities. Currently, the database comprises 35 data fields reporting the performance of <144 different advanced clones and varieties in multiple trials. Several other potato databases exist worldwide (Table 1). None in North America currently house as much information on released and advanced clones in a single website where the end user has control of the data points in the output as does the NE1031 Potato Database. The database server is located at the North Carolina State University (NCSU), Vernon G. James Research and Extension Center (VGJREC) in Plymouth, NC, and can be accessed at the Eastern Potato Variety Development Database page (Clough, 2009) or by doing a web search on NE1031 potato variety database. The objective of this article is to inform readers of the existence and utility of this resource, and to

The development of this website and the generation of the multi-site potato variety performance data in the database would not have been possible without the support of the following funding sources: USDA CSREES NE1031 Regional Project, USDA CSREES Special Grants for Potato Research, and potato grower groups in the various participating states.

¹North Carolina State University, Department of Horticultural Science, Vernon G. James Research and Extension Center, 207 Research Station Road, Plymouth, NC 27962

²North Carolina State University Department of Horticultural Science, 214-A Kilgore Hall, Box 7609, Raleigh, NC 27695

³Pennsylvania State University, Department of Plant Pathology, 212-B Buckhout Laboratory University Park, PA 16802

⁴Cornell University, Department of Plant Breeding and Genetics, 309 Bradfield Hall, Ithaca, NY 14853

⁵Cornell University, Department of Horticulture, 15-D, Plant Science Building, Ithaca, NY 14853

⁶U.S. Department of Agriculture-Agriculture Research Service Plant Sciences Institute, Genetic Improvement of Fruits and Vegetables Laboratory, Building 010A, 10300 Baltimore Avenue, Beltsville, MD 20705

⁷Rutgers University, Department of Plant Biology/Pathology, 59 Dudley Road, New Brunswick, NJ 08901

⁸University of Florida, Department of Horticultural Sciences, PO Box 110690, Gainesville, FL 32611

⁹Ohio State University, Department of Horticulture and Crop Science, 217 Williams Hall, 1680 Madison Avenue, Wooster, OH 44691

¹⁰University of Maine, Department of Plant, Soil and Environmental Sciences, Room 114, 5722 Deering Hall, Orono, ME 04469

¹¹Virginia Polytechnic Institute and State University, Department of Horticulture, 206 Saunders Hall, Blacksburg, VA 24061

¹²Corresponding author. E-mail: craig_yencho@ncsu.edu.

Table 1. A partial list of examples of cultivated and experimental potato variety databases worldwide.

Author	Yr of electronic publication	Site title	Date last accessed	Address	Region served
M.E. Clough	2008	NCSU Potato Variety Database	13 May 2009	http://potatoes.ncsu.edu/newsrch2.php	North Carolina
M.E. Clough	2009	Eastern U.S. Potato Cultivar and Variety Database	13 May 2009	http://potatoes.ncsu.edu/ncsrch.php	Florida, Maine, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Prince Edward Island, Quebec, Virginia
S.R. James	2009	Oregon State University Potato Variety Development	8 May 2009	http://potatovariety.oregonstate.edu/	California, Colorado, Idaho, New Mexico, Oregon, Texas, Washington
U.S. Potato Gene Bank	2009	NRSP-6: United States Potato Genebank	13 May 2009	http://www.ars-grin.gov/nr6/	United States
Center for International Potato Research	2009	CIP Germplasm Ordering System	8 May 2009	http://research.cip.cgiar.org/smta/search1.php	South America
French National Federation of Potato Producers	2009	Illustrated Variety Descriptions	8 May 2009	http://www.plantdepommeeterre.org/eng/mainvar.php	France
The Leibniz Institute of Plant Genetics and Crop Plant Research	2009	Wild and cultivated potato species: GLKS passport and evaluation data	8 May 2009	http://pgrc.ipk-gatersleben.de/potato/	Germany
Nordic Genetic Resource Center	2009	SESTO Gene Bank Documentation System	8 May 2009	http://www.nordgen.org/scsto/?scp=ngb&thm=sesto	Northern Europe
European Cooperative Program for Plant Genetic Resources	2009	The European Cultivated Potato Database	8 May 2009	http://www.europotato.org/menu.php?	Europe

Clone	STATEORPROVINCE	County	TRIALdesignation	Year	TOTAL YIELD	MARKETABLE YIELD	% STANDARD	STANDARD VARIETY	REPLICATIONS	%SIZE 1	%SIZE 2	%SIZE 3	%SIZE 4	%SIZE 5
A0008-1TE	NY Upstate	TOMPKINS	RUS	2007	134	61	34	RUSSET BURBANK	4	34	47	13	6	0
A00293-2Y	NC	Washington	SPVT	2008	206	101	93	Chieftain	4	8	28	22	0	0
A81386-1	ME	Aroostook	AFRUS	1998	327	303	67	Russet Burbank	4	21	38	26	8	7
A81386-1	ME	Aroostook	SJVRU	1998	399	219	98	Russet Burbank	4	13	35	32	14	7
A81386-1	ME	Aroostook	AFRUS	1999	335	297	118	Russet Burbank	4	16	40	27	13	4
A81386-1	ME	Aroostook	SJVRU	1999	351	317	114	Russet Burbank	4	9	31	29	15	15
A81386-1	NC	Washington	RUS	1998	281	267	89	CenturyRusset	4	2	17	79	0	0
A81386-1	NC	Washington	RUS	1999	169	159	139	RussetNorkotah3117	4	4	15	79	0	0
A81386-1	NJ	Cumberland	E9903	1999	212	176	48	Sup	1	13	60	23	0	0
A81386-1	NJ	Hunterdon	E9908	1999	472	374	84	Sup	4	11	39	26	13	12
A81386-1	NY Upstate	Tompkins	Rus/Longwhite	1998	368	205	110	RussetBurbank	4	20	57	14	5	3
A81386-1	NY Upstate	Tompkins	Rus/Longwhite	1999	457	282	121	RussetBurbank	4	15	38	24	12	11
A81386-1	PA	Centre	NE184	1998	312	226	75	Kennebec	4	24	62	11	0	0
A84180-8	FL	St. Johns	NE	1998	298	191	50	Atlantic	4	25	63	1	0	0
A84180-8	FL	St. Johns	NE	2000	355	327	79	Atlantic	4	5	45	36	11	0
A84180-8	ME	Aroostook	AFRUS	1998	366	360	79	Russet Burbank	4	18	49	25	7	1
A84180-8	ME	Aroostook	SJVRU	1998	383	327	147	Russet Burbank	4	13	56	26	4	1
A84180-8	ME	Aroostook	AFRUS	1999	337	300	120	Russet Burbank	4	12	50	30	8	1
A84180-8	ME	Aroostook	SJVRU	1999	348	281	101	Russet Burbank	4	8	30	40	15	7
A84180-8	ME	Aroostook	AFRUS	2000	288	224	70	Russet Burbank	4	19	51	24	5	1
A84180-8	NC	Washington	RUS	1998	221	154	51	CenturyRusset	4	5	29	42	0	0
A84180-8	NJ	Cumberland	E9801	1998	348	257	86	Sup	1	10	49	25	0	0
A84180-8	NJ	Cumberland	E9806	1998	516	390	148	Sup	4	15	26	30	20	8
A84180-8	NJ	Cumberland	E9903	1999	323	243	66	Sup	1	7	43	27	5	0
A84180-8	NJ	Hunterdon	E9908	1999	497	306	69	Sup	4	18	35	26	14	7
A84180-8	NY Upstate	Tompkins	Rus/Longwhite	1998	274	166	89	RussetBurbank	4	28	54	15	2	1
A84180-8	PA	Centre	NE184	1998	269	183	61	Kennebec	4	26	56	11	0	0
A86102-6	FL	St. Johns	NE	1998	373	257	68	Atlantic	4	12	65	4	0	0
A86102-6	ME	Aroostook	AFRUS	1998	349	322	71	Russet Burbank	4	25	48	15	9	3
A86102-6	ME	Aroostook	SJVRU	1998	441	348	156	Russet Burbank	4	16	47	28	7	2
A86102-6	ME	Aroostook	AFRUS	1999	369	319	127	Russet Burbank	4	10	38	31	16	5
A86102-6	ME	Aroostook	SJVRU	1999	422	311	112	Russet Burbank	4	6	26	33	21	14
A86102-6	NJ	Cumberland	E9801	1998	359	270	90	Sup	1	10	49	24	3	0
A86102-6	NJ	Cumberland	E9806	1998	436	297	112	Sup	4	25	42	22	8	3
A86102-6	NY Upstate	Tompkins	Rus/Longwhite	1998	379	188	101	RussetBurbank	4	34	54	12	1	0
A96510-4Y	NY Upstate	TOMPKINS	RUS	2007	411	279	153	RUSSET BURBANK	4	8	25	42	13	12
A96510-4Y	NY Upstate	TOMPKINS	RUS	2008	332	216	119	RUSSET BURBANK	4	11	30	38	13	7
A97066-42LB	NY Upstate	TOMPKINS	RUS	2008	330	125	69	RUSSET BURBANK	4	8	20	26	29	16
AC96052-1RU	NY Upstate	TOMPKINS	RUS	2008	257	187	103	RUSSET BURBANK	4	22	57	16	4	1
AC97097-14W	NY Upstate	TOMPKINS	CO-TX-ND	2007	21	284	110	ATLANTIC	4	4	40	46	7	4
AC97521-8/Y	NY Upstate	TOMPKINS	RED	2008	362	297	119	RED	2	10	66	22	2	0
AC97521-8/Y	NY Upstate	WAYNE	GROWER	2008	471	320	78	CHIEFTAIN	1	22	78	0	0	0
Accent	ME	Aroostook	AFEME	1998	486	434	109	Superior	4	5	54	39	1	0
ACRedisland	FL	St. Johns	NE1014	2003	473	410	86	Atlantic	4	6	51	29	8	0
ACRedisland	FL	St. Johns	NE1014	2004	363	286	68	Atlantic	4	10	62	16	3	0
ACRedisland	FL	St. Johns	NE1014	2005	256	185	71	Atlantic	4	24	68	6	1	0
ACRedisland	ME	Aroostook	AFEME	2003	308	274	114	Chieftain	4	1	29	55	14	1
ACRedisland	ME	Aroostook	SJV	2003	470	417	114	Chieftain	4	5	62	31	2	0
ACRedisland	ME	Aroostook	AFEME	2004	355	320	89	Chieftain	4	3	51	43	3	0
ACRedisland	ME	Aroostook	SJV	2004	387	359	86	Chieftain	4	3	51	43	3	0

Fig. 1. A partial view of potato variety data submitted in Excel (Microsoft, Redmond, WA) format for the Northeast Potato Variety Development NE1031 project database. The top row is the name for each field. In the columns below each name are the data collaborators have sent for input into the database. The columns for clone, state or province, county, trial designation, and year are used as identifiers, which enables sorting and retrieval by variety. Columns to the right of the year column contain data specific to each variety in a given trial, location, and year.

```

|""|NOW()|NOW()|"A0008-1TE"|"NY Upstate"|"TOMPKINS"|"RUS"|"USDA-
ID"|"2007"|"A0008-1TENY UpstateTOMPKINSRUS2007"|"A0008-1TERUS2007":
|""|NOW()|NOW()|"A00293-2Y"|"NC"|"Washington"|"SPVT"|"ab"|"2008"|"A00293-
2YNCWashingtonSPVT2008"|"A00293-2YSPVT2008":
|""|NOW()|NOW()|"A81386-1"|"ME"|"Aroostook"|"AFRUS"|"."|"1998"|"A81386-
1MEAroostookAFRUS1998"|"A81386-1AFRUS1998":
|""|NOW()|NOW()|"A81386-1"|"ME"|"Aroostook"|"SJVRU"|"."|"1998"|"A81386-
1MEAroostookSJVRU1998"|"A81386-1SJVRU1998":
|""|NOW()|NOW()|"A81386-1"|"ME"|"Aroostook"|"AFRUS"|"."|"1999"|"A81386-
1MEAroostookAFRUS1999"|"A81386-1AFRUS1999":
|""|NOW()|NOW()|"A81386-1"|"ME"|"Aroostook"|"SJVRU"|"."|"1999"|"A81386-
1MEAroostookSJVRU1999"|"A81386-1SJVRU1999":
|""|NOW()|NOW()|"A81386-1"|"NC"|"Washington"|"RUS"|"."|"1998"|"A81386-
1NCWashingtonRUS1998"|"A81386-1RUS1998":
|""|NOW()|NOW()|"A81386-1"|"NC"|"Washington"|"RUS"|"."|"1999"|"A81386-
1NCWashingtonRUS1999"|"A81386-1RUS1999":
|""|NOW()|NOW()|"A81386-1"|"NJ"|"Cumberland"|"E9903"|"."|"1999"|"A81386-
1NJCumberlandE99031999"|"A81386-1E99031999":
|""|NOW()|NOW()|"A81386-1"|"NJ"|"Hunterdon"|"E9908"|"."|"1999"|"A81386-
1NJHunterdonE99081999"|"A81386-1E99081999":
|""|NOW()|NOW()|"A81386-1"|"NY
Upstate"|"Tompkins"|"Rus/Longwhite"|"."|"1998"|"A81386-1NY
UpstateTompkinsRus/Longwhite1998"|"A81386-1Rus/Longwhite1998":
|""|NOW()|NOW()|"A81386-1"|"NY
Upstate"|"Tompkins"|"Rus/Longwhite"|"."|"1999"|"A81386-1NY
UpstateTompkinsRus/Longwhite1999"|"A81386-1Rus/Longwhite1999":

```

Fig. 2. A portion of a text file created from the data submitted by collaborators. This file contains variety names and information relating to where and when the varieties were grown.

demonstrate how easily such a resource can be developed.

Materials and methods

DATABASE DESIGN. The database runs on a Mac OS X Server (version 10.4.10; Apple Computers, Cupertino, CA) with a dual 2.7 GHz PowerPC G5 processor. This is a stand-alone server located at NCSU, VGJREC. The data are submitted by collaborators in Excel (Microsoft, Redmond, WA) spreadsheet format (Fig. 1) and converted into two text files where various characters are used to delimit clones and clone elements (Figs. 2 and 3). The clone elements consist of descriptors such as year, trial, and trial location, and data specific to the performance of a clone. Using the Terminal software package provided on the Mac OS X Server, the elements of the two text files are imported into tables in a format recognized by MySQL® (MySQL®, Cupertino, CA), which is an open source relational database management system based on structured query language (SQL) (TechTerms.com, 2007). A relational database is a collection of tables that refer to each other through a common set of parameters identified in each table (Meloni, 2002). In the eastern potato variety development database,

we chose to have three sets of common data elements consisting of a combination of five specific elements. These elements consist of the variety name (or clone number), the state (or province), the county, the trial designation, and the year. For example, the first identifier contains all five data points, the second consists of the variety, trial designation, and year, and the final has only the variety and year. The purpose of having multiple identifiers is to allow data retrieval at varying levels of specificity. Data points related to specific locations not collected by each collaborator are handled easily by the MySQL® engine provided if the missing data are coded as missing and not zeros. When calculating an average, it will ignore all data that has a "." in place of the data point. All data are encapsulated in quotation marks (" "), fields are delimited by the vertical bar character (|), and the end of an entry is denoted by three colons (:). The preceding delimiters used for coding are arbitrarily designated by the administrator and are dictated to the processor to define the data points. Each of the files is also coded with the statement: NOW(), two times at the head of the entry. The NOW() statement is an SQL derived command that dates each

entry. The first statement stamps the date of upload to the database, the other records the last date the entry was altered.

INTERNET INTERFACE DESIGN. The original interface for the NE1031 eastern potato variety development database was patterned after a database developed by S.R. James (Oregon State University) that used HTML coding. This site is no longer operational. To make a more user-friendly interface, we migrated to a combination of PHP and HTML web programming, which allows users to more narrowly define the available list of varieties and advanced lines. The web interface allows visitors to limit performance of searches by variety release status, tuber color, and or plant maturity. Any combination of these three traits can be used to limit the output of lines displayed for each search. Our latest design changes have also incorporated a standardized layout using Dreamweaver (version 8.0; Macromedia, San Francisco, CA), giving the website a more professional appearance.

After a user decides which type of clones he/she is interested in (e.g., by tuber color: red, white, purple, and/or by maturity: early, midseason, late), the list is reduced to a specific set of clones, and the output can then be

```
"|"|"|NOW()|NOW()|"A0008-1TENY UpstateTOMPKINSRUS2007"|"A0008-
1TERUS2007"|"RUS2007"|"."|"134"|"61"|"34"|"RUSSET
BURBANK"|"4R"|"34"|"47"|"13"|"6"|"0"|"1.075"|"."|"124"|"1"|"8"|"4"|"6"|"21"|"0"|"
13"|"7"|"1"|"1"|"8"|"0"|"3"|"0"|"."|"."|"."|"."|"."|"."|"."|"."|"."|"."|"."|"."|"."|"."|
|2"|"1"|"1"|"1":::
"|"|"|NOW()|NOW()|"A00293-2YNCWashingtonSPVT2008"|"A00293-
2YSPVT2008"|"SPVT2008"|"7"|"206.091203"|"100.7775338"|"93"|"Chieftain"|"4"|"8"|"
28"|"22"|"0"|"0"|"."|"1.055824624"|"105"|"9"|"4"|"8"|"3"|"."|"."|"."|"."|"0"|"."|
|0"|"3"|"0"|"10"|"8"|"."|"."|"."|"."|"."|"."|"7"|"."|"None
Known"|"."|"2"|"1"|"1"|"1":::
"|"|"|NOW()|NOW()|"A81386-1MEArroostookAFRUS1998"|"A81386-
1AFRUS1998"|"AFRUS1998"|"5"|"327"|"303"|"67"|"Russet
Burbank"|"4"|"21"|"38"|"26"|"8"|"7"|"."|"1.075"|"119"|"7"|"7"|"3"|"6"|"7"|"5"|"2
|"0"|"0"|"0"|"0"|"."|"."|"."|"."|"."|"."|"64"|"60"|"49"|"2"|"4"|"9"|"A74341-4 X
Ranger Russet"|"N/A"|"5"|"2"|"1"|"1"|"1":::
"|"|"|NOW()|NOW()|"A81386-1MEArroostookSJVRU1998"|"A81386-
1SJVRU1998"|"SJVRU1998"|"5"|"399"|"219"|"98"|"Russet
Burbank"|"4"|"13"|"35"|"32"|"14"|"7"|"."|"1.08"|"115"|"7"|"4"|"4"|"7"|"45"|"6"|"
10"|"0"|"0"|"29"|"0"|"."|"."|"."|"."|"."|"."|"57"|"."|"."|"."|"9"|"A74341-4
X Ranger Russet"|"N/A"|"5"|"2"|"1"|"1"|"1":::
"|"|"|NOW()|NOW()|"A81386-1MEArroostookAFRUS1999"|"A81386-
1AFRUS1999"|"AFRUS1999"|"5"|"335"|"297"|"118"|"Russet
Burbank"|"4"|"16"|"40"|"27"|"13"|"4"|"."|"1.080"|"119"|"6"|"3"|"4"|"4"|"11"|"4"|"
7"|"0"|"0"|"0"|"3"|"."|"."|"."|"."|"."|"."|"61"|"57"|"53"|"."|"."|"9"|"A74341-4
X Ranger Russet"|"N/A"|"5"|"2"|"1"|"1"|"1":::
"|"|"|NOW()|NOW()|"A81386-1MEArroostookSJVRU1999"|"A81386-
1SJVRU1999"|"SJVRU1999"|"5"|"351"|"317"|"114"|"Russet
Burbank"|"4"|"9"|"31"|"29"|"15"|"15"|"."|"1.071"|"110"|"7"|"6"|"4"|"3"|"10"|"3"|"
3"|"0"|"4"|"28"|"0"|"."|"."|"."|"."|"."|"."|"51"|"."|"."|"."|"9"|"A74341-4
X Ranger Russet"|"N/A"|"5"|"2"|"1"|"1"|"1":::
```

Fig. 3. A portion of a text file created from the data submitted by collaborators. This file contains all of the trial data.

Eastern Potato Variety Development Database

http://potatoes.ncsu.edu/nrsrch.php

Most Visited ~ UPS NCSECU Chase .Mac CYWebCal NCSU HS CALS - G&C CALS-Grants SP&P BRD SPARCS MyPack Portal @ NC ... PINS ACCTS

HortTechnology HortTechnology Eastern Potato Variety Develop...

Eastern Potato Variety Development Database

NC State University

NE1031group Home Potato Breeding Sweetpotato Breeding NCSU Hort Sci VGJREC search

September 29, 2009

Eastern Potato Variety Development Database

NE1031 Group
NE1031 Database
Summary Generator

Participating States and Provinces

- Florida
- Maine
- New Jersey
- New York
- North Carolina
- Ohio
- Pennsylvania
- Virginia
- New Brunswick
- Prince Edward Island

Reports and Minutes

Variety Descriptions

NC STATE Horticulture
CSREES

To view only released (commercial) varieties:

Select a Tuber Color: Select a Maturity:

Sort By: ☒ Year ☐ Location

Choose A Single Variety:

Choose A State or Province:

Choose Beginning Year:

Choose Ending Year:

*Choose Field(s)

- Total Yield(cwt/a)
- Marketable Yield(cwt/a)
- Percent Standard
- Standard
- Number of Replications
- % 1s (cwt/a)
- % 2s(cwt/a)
- % 3s(cwt/a)
- % 4s(cwt/a)
- % 5s(cwt/a)
- Specific Gravity (Hydrometer)
- Specific Gravity (air-water)

☐ Show Field Keys ☐ Calculate Average ☐ Show Min and Max Values

Vernon G. James Research and Extension Center, NCSU Phone: (252) 793-4428 Fax: (252) 793-5142
Problems or Comments? Contact Mark_Clough@ncsu.edu. Updated: September 29, 2009

Fig. 4. The home page of the NE1031 eastern potato variety development database as shown on a Mac OS X Server (version 10.4.10; Apple Computers, Cupertino, CA) using the Safari browser (version 3.2.1; Apple Computers).

further constrained by selecting locations, traits, and years of interest (Fig. 4). Before clicking the submit button, the user can also choose how the data are sorted and the formatting of the summaries printed. The output is presented in a tabular form and is expressed using PHP and HTML (Fig. 5).

A second interface was constructed to allow users to build a one-page summary (Fig. 6) to compare a variety of interest with

a standard variety that can also be selected by the user. The summary includes yield, color, maturity, chipping scores, intended use, and known disease, insect, and virus resistances. If available, an image of the variety is shown on the summary.

Results and discussion

To date, individuals from 26 countries, five continents, 26

American states, and five Canadian provinces have used the database. The average length of visit is between 1 and 2 min, and the longest hit lasted 62 min (ActiveMeter, Calgary, AB, Canada). The database users have been diverse, ranging from government agencies and universities to growers and individuals from urban areas.

Future improvements for the database include building another

Clone	State or Province	County	Year	Marketable cwt/a	%1's	%2's	%3's	Specific Gravity (Air/Water)	Days to Harvest	Maturity	Shape	Overall Appearance
PeterWilcox(B1816-5)	NC	Washington	2005	151.1	12	62	20	1.06694560	112	5	5	6
PeterWilcox(B1816-5)	NC	Washington	2006	326.1	3	30	57	1.06555837	113	5	5	6
PeterWilcox(B1816-5)	NC	Beaufort	2007	84.44	5	0	83	1.06759631	105	8	5	6
PeterWilcox(B1816-5)	NC	Mitchell	2007	129.1	20	0	72	1.06718061	171	3.75	5	6
PeterWilcox(B1816-5)	NC	Washington	2007	62.16	10	49	36	1.07379483	101	4	5	5
PeterWilcox(B1816-5)	NC	Washington	2007	156.6	7	36	52	1.07608100	101	4	5	6
PeterWilcox(B1816-5)	NC	Pamlico	2007	145.5	7	0	87	1.06875784	101	4	5	5
PeterWilcox(B1816-5)	NC	Pasquotank	2007	163.6	23	0	73	1.07019591	105	3.5	5	7
PeterWilcox(B1816-5)	NC	Pasquotank	2008	70.45	38	0	60	1.07194899	104	6.5	4	6
PeterWilcox(B1816-5)	NC	Pamlico	2008	144.9	15	0	83	1.07255936	103	4	3	5
PeterWilcox(B1816-5)	NC	Washington	2008	107.0	8	58	25	1.06430635	105	4.5	4	4
PeterWilcox(B1816-5)	NC	Washington	2008	116.4	7	40	33	1.05917667	105	5	4	4
PeterWilcox(B1816-5)	NC	Mitchell	2008	30.52	42	0	38	1.07659151	126	3.25	5	6
PeterWilcox(B1816-5)	NC	Beaufort	2008	63.61	13	0	80	1.07682659	98	5	5	6
Averages				125	15	20	57	1.070	111	5	5	6
Min				30.52	3	0	20	1.05917667	98	3.25	3	4
Max				326.1	42	62	87	1.07682659	171	8	5	7

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Fig. 5. An example of the database output for the variety Peter Wilcox in North Carolina showing county, year, marketable yield, percentage of size, specific gravity, plant maturity, tuber shape, and overall. User's can choose to have the keys to the data fields displayed when the output is generated if needed.

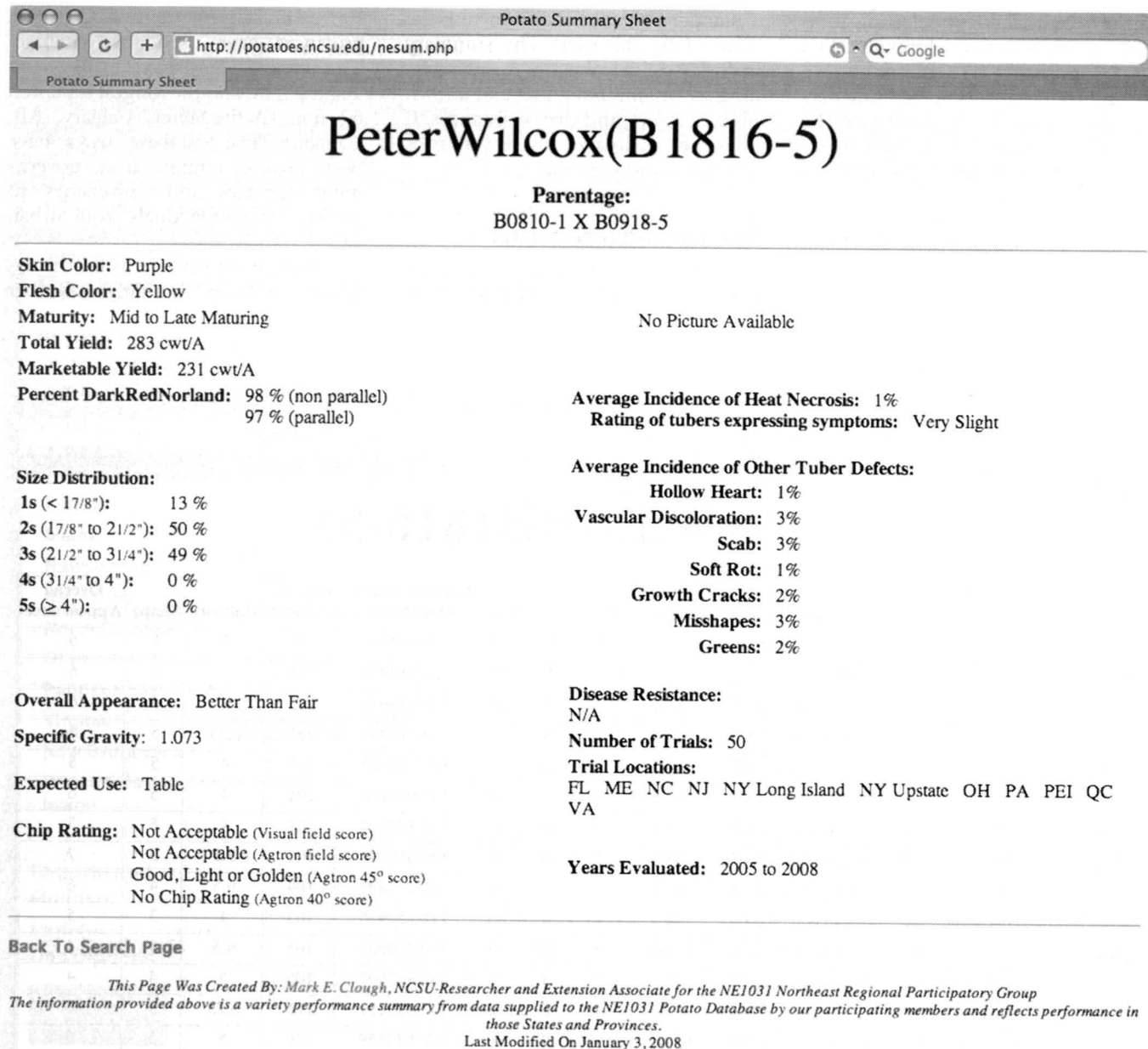


Fig. 6. An example of a one-page data summary for the variety Peter Wilcox generated within the NE1031 eastern potato variety development database site.

interface that will allow the comparison of multiple varieties for a set of user-defined parameters. New features will be added to the existing interfaces to allow a user to search for varieties with resistance to specific virus, bacterial, fungal, and/or insect pests. This will increase the overall usefulness of the database.

The utility of the NE1031 eastern potato variety development database has lead to some discussion regarding the development of a national or

North American potato variety trial database. This is a good goal; however, a major impediment to implementing such a resource relates to the diverse set of evaluation criteria collected by the individual potato research groups and regions across the country. One of the key factors enabling the development of the NE1031 potato variety database was that all regional potato cooperators agreed to evaluate our materials using a standardized set of evaluation descriptors.

Literature cited

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