



2018 ANNUAL REPORT

POTATOESUSA.COM



A MESSAGE FROM THE **DIRECTOR**



In 2009 I achieved a lifelong goal and thruhiked the Pacific Crest Trail. My preparations and planning for the 2,658-mile trek were meticulous—I knew where I was going to camp each night for the first month on the trail. And the plan worked exactly

as it was drawn up...for the first day. When I woke up the next morning, I knew that I had to adapt immediately. I learned very quickly that the enjoyment of my hike was inversely related to the weight of my backpack. Items that 24 hours prior had seemed indispensable were suddenly trivial, even unwanted. Likewise, it was abundantly clear that my original daily mileage goals weren't exactly the best barometer of success and perhaps needed to be more reflective of reality.

In 2019 we are entering the fifth year of our Potatoes USA Research journey. Although we had a pretty good idea of what to expect when we started and planned accordingly, we couldn't know for sure with certainty what was around the bend or over the next pass until we were there. Even though we have more than 24,000 chip and fry clone records available on the Variety Data Management (VDM) System, it was impossible to know that the VDM would require dozens, if not hundreds of changes along the way to meet the evolving data needs of growers, processors and breeders.

Similarly, with so many different perspectives and valuable opinions on the best route to arrive at our research destination increased potato research for the benefit of the U.S. industry—it is difficult to predict the precise pathway to the shared goal. And like any journey worth being on, we'll probably need the humility to adapt a few times yet before we get there.

In the meantime, we'll keep methodically putting one foot in front of the other, eventually reaching our destination, and savoring the hard-earned accomplishments along the way.

Ryan J. Krabill Director of Research Potatoes USA ryan@potatoesusa.com (303) 873-2319

Research Committee Membership

Chris Hansen – Co-Chair, CSS Farms (New York)

Eric Schroeder – Co-Chair, Schroeder Brothers Farms (Wisconsin)

Bryan Bender, Bender Potatoes (Pennsylvania)

Jennifer Borowicz, HFC, Inc. (Minnesota)

Tom Enander, Enander Seed Farm (North Dakota)

Brian Meisner, Lenz Family Farms (Colorado)

Jordan Reed, Price Reed, LLC (Washington)

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POTATO RESEARCH ADVISORY COMMITTEE

USDA AWARDS \$8 MILLION FOR POTATO SOIL HEALTH RESEARCH

In July 2018, the U.S. Department of Agriculture's National Institute of Food and Agriculture (USDA NIFA) announced that it was fully funding a soil health research project specific to the U.S. potato industry. The award is the single largest Specialty Crop Research Initiative (SCRI) grant ever awarded to the potato industry since the implementation of the SCRI program in 2009. The remarkable achievement would not have been possible without the unparalleled teamwork between Potatoes USA, the National Potato Council, and state potato organizations across the country.

The project—"Enhancing Soil Health in U.S. Potato Production Systems"—is led by Dr. Carl Rosen at the University of Minnesota. Each of the project's four objectives is led by a co-project director:

- 1. Enhance potato health, productivity, and quality via management-based optimization of soil microbiomes and physicochemical characteristics (Dr. Linda Kinkel, University of Minnesota)
- Determine on-farm soil health-based indicators associated with potato crop health, yield and quality (Dr. Noah Rosenzweig, Michigan State University)
- Identify the incentives, impediments, and determinants of adopting practices and technologies that improve soil health in potato production (Dr. Chris McIntosh, University of Idaho)

4. Facilitate adoption of soil health best management practice systems by the potato industry (Dr. Matthew Ruark, University of Wisconsin-Madison)

The award was the result of a collaborative effort between growers and researchers to identify the challenges unique to an industry that cultivates its crop within the soil. It demonstrated unprecedented industry backing, coordinated by PRAC, that resulted in 108 industry support letters. The number of support letters was double that of the *Dickeya* proposal the previous year.

The project, slated for funding through September 2022, is still in the relatively early phases of implementation. The research team has been meeting regularly by conference call and is working to establish soil sample collection and handling protocols prior to planting in 2019. For more information and to stay up to date on the project's progress, please visit http://potatosoilhealth.cfans.umn.edu/.



PRAC Members

Eric Schroeder – Chair, Schroeder Brothers Farms (Wisconsin)

R.J. Andrus, Idahoan Foods (Idaho)

A.J. Bussan, Wysocki Produce Farm (Wisconsin)

Tom Enander, Enander Seed Farm (North Dakota)

Heath Gimmestad, Friehe Farms (Washington)

Chris Hansen, CSS Farms (New York)

Tamas Houlihan, Wisconsin Potato & Vegetable Growers Association (Wisconsin)

Pat Kole, Idaho Potato Commission (Idaho)

Brian Meisner, Lenz Family Farms (Colorado)

Doug Messick, Retired (Colorado)

Mark Otto, Agri-Business Consultants, Inc. (Michigan)

Jordan Reed, Price Reed, LLC (Washington)

Chris Voigt, Washington State Potato Commission (Washington)

Mike Wenkel, Michigan Potato Industry Commission (Michigan)



NECROTIC VIRUS RESEARCH STILL A TOP **GROWER PRIORITY**

In August 2018, members of the Potato Research Advisory Committee unanimously supported an ambitious research proposal to address necrotic viruses in potato. The project, "Development of Sustainable System-Based Management Strategies for Vector-Borne, Tuber Necrotic Viruses in Potato," was put forward by Dr. Alexander Karasev at the University of Idaho.

Industry sent 71 letters of support to Dr. Karasev in support of his proposal that seeks to continue a strong tradition of addressing necrotic virus research in potato through the USDA NIFA Specialty Crop Research Initiative (SCRI) program. Research proposals addressing necrotic viruses were submitted and funded through the SCRI program in both 2009 and 2014.

If funded, Dr. Karasev's project would seek to build on the important work completed in the prior projects. Specifically, the project would focus on minimizing virus transmission and improving detection methods in early generations. It would also establish vector management strategies. In the long term it would result in molecular markers to identify genes providing resistance to both viruses and their vectors.

The proposal is currently under review at USDA and a funding decision is not expected until Summer 2019.

INDUSTRY SEEKS POTATO BREEDING BREAKTHROUGH

Potato breeding is slow and expensive due primarily to its tetraploid nature. Whereas genetic gains are much easier to realize in diploid crops like corn that possess only one pair of chromosomes, the presence of two pairs of chromosomes in potato make similar genetic gains much more difficult. Thus it should come as no surprise that the potato industry is still relying on varieties developed in some cases over 100 years ago.

A team of U.S. potato breeders led by Dr. Shelley Jansky with the USDA Agricultural Research Service in Wisconsin is hoping to change all that. Last year, Dr. Jansky requested industry support for a planning grant through the USDA NIFA Specialty Crop Research Initiative (SCRI). The industry obliged and provided 23 support letters. The proposal was subsequently awarded \$50,000 in 2018, laying the groundwork for Dr. Jansky and her team to compete for \$4.1 million through the SCRI program. The proposal—"Creating a New Paradigm for Potato Breeding Based on True Seed"—was supported by industry with 70 letters of support and is currently in the initial stages of evaluation at USDA. A final funding decision will not be made until Summer 2019.

If successful, Dr. Jansky and her research team will have converted common potato varieties from tetraploid to diploid by crossing domesticated potato lines with wild species of potatoes that possess the ability to self-fertilize. Positive or negative traits can then much more easily be isolated and removed or added through traditional breeding techniques.

For additional information on the project, please contact Dr. Shelley Jansky at <u>shjanksy@wisc.edu</u>.



PUTTING POTATO RESEARCH ON **A STRONG FOOTING**

The U.S. potato industry is seeking to conduct a potato research knowledge gap analysis. The effort comes in response to discussion among state potato organization leadership in July 2018. At the subsequent Potato Research Advisory Committee (PRAC) meeting the next month, the committee supported an organized effort to address the need with a planning grant through the USDA NIFA Specialty Crop Research Initiative (SCRI).

Following the circulation of a Request for Proposal by Potatoes USA, PRAC elected to work with Dr. Joe Guenthner of the University of Idaho to develop the proposal. The project proposal—"Potato Knowledge Gap Analysis"—is currently under review by USDA. If funded, it would provide \$50,000 to identify potato research knowledge gaps. This information could then be used to inform future research needs identified by PRAC. A funding decision is not expected until Summer 2019.

DICKEYA PROJECT PROGRESS

In 2016, the Potato Research Advisory Committee (PRAC) selected Amy Charkowski's "Integrating Next-Generation Technologies for Management of Bacterial Soft Rot Pathogens of Potato" for national industry support. It was the first project actively supported by the potato industry following the creation of PRAC and garnered 54 support letters from growers and processors across the country. Ultimately, the project was awarded \$2.7 million by USDA in 2017 to address the challenges presented by the outbreak of *Dickeya* and *Pectobacterium* in several growing areas in the eastern United States.

While the project is funded through September 30, 2021, Dr. Charkowski and her team have been making steady progress on the project. To date, a species of *Dickeya* (*D. dianthicola*) and four species of *Pectobacterium* (*P. atrosepticum*, *P. brasiliense*, *P. parmentieri*, and *P. carotovorum*) have been identified as particularly important to the U.S. potato industry, with the possibility of discovering additional species ever present. Initial results suggest that a single test to detect all species of interest without false positives is unlikely. The team has also confirmed that the presence of both *Dickeya* and *Pectobacterium* in potato stems accelerates blackleg symptoms. They have discovered that pathogens spread mainly during harvest and are working to identify the impact of vine kill methods to help minimize the potential spread of the disease. Finally, they have been successful in identifying wild potato species that are resistant to both *Dickeya* and *Pectobacterium* which could be integrated into domestic lines.

The next meeting of the research team and advisory board is tentatively scheduled for Fall 2019 in Denver, Colorado. Interested growers and processors are encouraged to attend and should contact Potatoes USA Research for more details. You may also contact Dr. Charkowski directly at <u>Amy.Charkowski@colostate.edu</u>.

To learn more about the project and get regular updates, please visit <u>http://potatobacteria.org/wordpress/</u>.

2018 RESEARCH **PRIORITIES**

In February 2018, the Potato Research Advisory Committee (PRAC) gathered in Washington, D.C. during the National Potato Council's Potato D.C. Fly-In. The purpose of the meeting was to establish research priorities for the upcoming year. Rather than select a single area of potato research as was done the year before with soil health, the group identified several categories of research needs to address. The categories and correlating objectives include:

DISEASE

Identification and development of diagnostic and management tools, including the certification system, to better control foliar and soil borne pathogens to boost overall potato production. Priority diseases include Mop Top, Powdery Scab, PVY (all strains), late blight, Zebra Chip, Tobacco Rattle, *Dickeya* and others.

CROP MANAGEMENT

Identification and development of management tools, from seed production to commercial sales, to improve the crop quality through enhanced nutrient efficiency and other cultural practices to achieve higher yields and manageable specific gravity.

SOIL HEALTH

Identification and development of management tools to control pests and pathogens that deplete soil health. These include all necrotic viruses, nematodes, *Verticillium*, and other pests and pathogens.

SUSTAINABILITY

Identification and development of management tools to address sustainability concerns within the industry.

TECHNOLOGY DEVELOPMENT

Identification and development of management tools to incorporate innovative technologies into potato research and production.



Roundtable Brings Growers and Researchers **TOGETHER**

On April 26, 2018, potato growers and researchers from across the country converged on the Westin Hotel at the Denver International Airport to participate in a Potato Research Roundtable sponsored by Potatoes USA through the Potato Research Advisory Committee (PRAC). The meeting served as a forum for leaders in the potato industry and research community to evaluate PRAC methodology and execution over the 20 months since its inception. Participants shared ideas and areas for improvement while gaining a better understanding of the research goals of the industry from a national perspective.

Since it was created in August 2016, PRAC has served as the primary vehicle for the U.S. potato industry to establish annual research priorities and build industry support for research proposals that would address the established research priorities. Since then, the U.S. potato industry has generated 338 letters of support for eight selected project proposals. Of those eight projects, four were funded and three are pending.

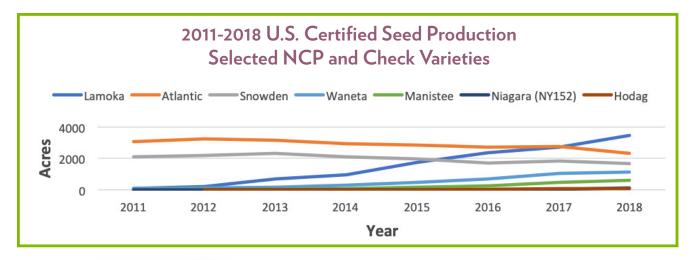
The productive nature of the meeting has generated interest among both the grower and research community in hosting future meetings of a similar format. In particular, a roundtable focused on the development of a national strategy to improve breeding efficiency in potatoes may occur as soon as spring 2019.

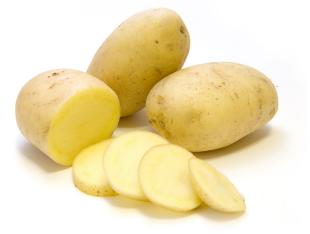


NATIONAL CHIP PROGRAM

NATIONAL CHIP PROGRAM CONTINUES STRONG GROWTH

The National Chip Program (NCP) continued its impressive growth in 2018 when measured by U.S. certified seed acres, closing out the year with 5,376 total acres. This represented an increase of more than 1,000 acres in 2017. The growth was driven primarily by Lamoka (755 acres), Manistee (132 acres), Waneta (99 acres) and newcomer Niagara (81 acres), formerly known as NY152. By contrast, there were acreage reductions for Atlantic (-435 acres), Snowden (-144 acres) and Dakota Pearl (-174 acres).





The NCP was established 10 years ago with the goal of developing varieties that would ultimately improve upon Snowden out of storage and Atlantic for fresh processing. The combined acreage of NCP varieties now exceeds the combined acreage of Snowden and Atlantic by nearly 1400 acres, a true testament to the success of the program.



SOUTHERN TRIAL TO

Although unmistakable progress has been made, the industry is placing a renewed emphasis on developing a variety that will thrive in the southern growing regions that have long been served by Atlantic. This effort is particularly important in light of the significant weather challenges seen in nearly every growing area in 2018.

Two years ago, Dr. Dave Douches at Michigan State University proposed a concentrated variety development effort located at North Carolina State University (NCSU) with day-to-day management by NCSU potato breeder Dr. Craig Yencho. At the time, the Early Generation Southern Selection (EGSS) project was proposed to be a two-year project that would evaluate up to 500 varieties in small 8-hill plots. Successful clones would then be moved on to the National Chip Processor Trials that so often serve as the precursor to the commercialization of public chipping varieties in the United States.

Due to the project's success, members of the Potatoes USA Chip Committee recommended in December 2018 that the EGSS be continued beyond the original two years in hopes that it will ultimately shorten the development time of a chipping variety suitable for production in the southeast, and possibly elsewhere.



PROGRAM GRADUATES

Niagara (2018) – Cornell University Hodag (2016) – University of Wisconsin Manistee (2015) – Michigan State University Lamoka (2014) – Cornell University Waneta (2014) – Cornell University Sebec (2014) – University of Maine

Chip Committee Members

Tyler Backemeyer – Chair, CSS Farms (Nebraska) Jim Allan, Shearer's Foods (Ohio) Mike Behrendt, Black Gold Farms (North Dakota) Jim Fitzgerald, Utz Quality Foods (Pennsylvania) Phil Gusmano, Better Made Snack Foods (Michigan) Mike Harcourt, Snyder's-Lance (North Carolina) Alan Jones, Jones Potato Farm (Florida) Tom Prasalowicz, Heartland Farms (Wisconsin) Brian Sackett, Sackett Potatoes (Michigan)





2019 FAST TRACK & MINI FAST TRACK VARIETIES

FAST TRACK MSX540-4 (Mackinaw)

MINI FAST TRACK

B2869-29 B2904-2 BNC182-5 CO02321-4W (Winterset) MSV030-4 MSW075-2 MSW474-1 MSY156-2 MSZ042-7 MSZ063-2 MSZ219-14 MSZ242-13 NC470-3 NY162 NY163 W12078-76

NOTE: Comprehensive clone data and photos can be found at <u>https://potatoesusa.mediusag.com/</u>.

NATIONAL FRY PROCESSORS TRIAL



NATIONAL FRY PROCESSORS TRIAL

In 2018, the National Fry Processors Trial (NFPT) completed its second year as a tiered program with 38 total clones—28 in Tier One, eight in Tier Two, and 10 in Tier Three. 2018 saw 17 fewer clones than participated the previous year. The reduction is attributed to a more defined set of clone attribute targets established by the NFPT Steering Committee in January 2018. The targets resulted in enhanced selectivity during the clone nomination process.

Just as 2018 was a challenging year for the potato industry around the globe, the NFPT was not immune to the extreme weather events that plagued so many growing areas. Late season snow affected planting in Wisconsin and substantial early season snowfall followed by frigid temperatures in October had an adverse effect on the harvest in North Dakota. In fact, only yield data was able to be salvaged from the North Dakota trial location due to significant frost damage to the tubers.

In 2019, the program will have 46 clones—33 in Tier One, six in Tier Two, and seven in Tier Three. A complete list of clones from both 2018 and 2019 are included in this section. Barring additional extreme weather events that would prevent the clones from being harvested, all clones will be available for visual evaluation in mid-October during the annual NFPT Field Day. Interested growers and processors are encouraged to attend the evaluation in East Grand Forks, Minnesota at the USDA Agricultural Research Service Potato Research Worksite. For additional details, please contact Potatoes USA Research staff.

NFPT Steering Committee

Jennifer Borowicz, HFC, Inc. Tina Brandt, J.R. Simplot Company Bill Brewer, Oregon Potato Commission Don Flannery, Maine Potato Board Tamas Houlihan, Wisconsin Potato and Vegetable Growers Association Donavon Johnson, Northern Plains Potato Growers Association Pat Kole, Idaho Potato Commission Chris Rhynalds, Lamb Weston Tom Salaiz, McCain Foods Andy Thompson, Cavendish Farms Chris Voigt, Washington State Potato Commission

2018 CLONE

TIER ONE (20)

A10594-4sto A10594-8VR A10595-13sto A10947-3CSR A11188-1 A11226-1 A11737-1LB AF5494-3 AF5628-2 AF5644-8 AF5661-13 AOR10633-1 CO10087-4RU CO10091-1RU COAF11149-5 ND12241YB-2Russ NDAF113476CB-3 TX13590-9Ru W13012-18rus W13A11229-1rus

TIER TWO (8)

A07098-4 A07705-4 A07769-4 AAF10237-4 AAF10615-1 AF5492-6 AOR08540-1 OR12133-10

TIER THREE (10)

A07061-6 A071012-4BF A08433-4sto AAF07521-1 AF5071-2 AF5406-7 **A002183-2** AOR06576-1 C009036-2RU ND050032-4Russ

Bold denotes kept for 2019

NOTE: Comprehensive clone data and photos can be found at <u>https://potatoesusa.mediusag.com/</u>. Registration required.





2019 CLONE **ROSTER**

TIER ONE (33)

A09086-1LB A09119-4LB A10007-3 A10071-1 A10508-2LB A10611-3adg A11188-1 A11194-1 A11234-2 A11326-1 A12114-7 A12115-16sto A12314-1sto AAF10943-4 AF5521-1 AF5707-1 AF5731-11 AF5750-16 AF5750-17 AF5762-4 AF5789-1 AOR11217-3 AOR12149-1 AOR13064-2 CO11009-3RU CO10094-5RU COA11013-2 ND113100-1Russ ND13242B-8Russ ND13243B-3Russ ND13243B-14Russ ND13288-2Russ NDAF092412-3Rus

TIER TWO (6)

A10595-13sto A11737-1LB AF5644-8 AF5661-13 ND12241YB-2Russ NDAF113476CB-3

TIER THREE (7)

A07769-4 A10594-8VR AAF10615-1 AF5492-6 AO02183-2 AOR08540-1 OR12133-10

Potates

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