

2017 PAA Annual Meeting DELEGATE PROGRAM

SUNDAY, July 23, 2017

		<u>Location</u>
9:00 a.m. – 12:00 p.m.	Finance & Endowment Committee Meeting	Conference Room
11:00 a.m. – 5:30 p.m.	Horse Racing	Meet at the lobby
11:00 a.m. – 6:00 p.m.	Registration Desk/Information	Atrium
11:00 a.m. – 4:00 p.m.	Graduate Student Networking Activity	Meet at the lobby
12:30 p.m. – 4:30 p.m.	Red Hawks Baseball Game	Meet at the lobby
1:00 p.m. – 5:00 p.m.	Executive Committee Meeting	Conference Room
1:00 p.m. – 6:00 p.m.	Poster Set-up	Dakota Hall
6:00 p.m. – 8:00 p.m.	President's Reception – Taste of North Dakota	Sterling and Crowne

MONDAY, July 24, 2017

6:30 a.m. – 8:00 a.m.	Breakfast	Sterling and Crowne
6:30 a.m. – 8:00 a.m.	Editorial Board Breakfast	Mezzanine III
6:30 a.m. – 8:00 a.m.	Physiology Section Breakfast	Mezzanine IV
8:00 a.m. – 5:00 p.m.	Registration Desk/Information	Atrium
8:00 a.m. – 10:00 a.m.	Breeding & Genetics Section Meeting	Royale
8:00 a.m. – 10:00 a.m.	Plant Protection Section Meeting	Board Room
8:00 a.m. – 10:00 a.m.	Utilization & Marketing Section Meeting	Embassy
10:00 a.m. – 10:30 a.m.	Break	Dakota Hall
10:30 a.m. – 12:00 p.m.	CONCURRENT SESSION I – Breeding and Genetics I	Royale

Moderator: Jeffery Endelman

10:30 a.m. **Best Practices for Outreach among Potato Breeders and the Industry for the Evaluation of Advanced Selections**

(1) Gray, Caroline P., David G. Holm, and Katrina A. Zavislan

- 10:45 a.m. **Botanical Seed Technology at the US Potato Genebank**
(2) Bamberg, John B., Charles Fernandez, and Alfonso del Rio
- 11:00 a.m. **Genome Wide Association Mapping to Uncover the Genetic Architecture of Morphology in Peruvian Native Potatoes**
(3) Shannon, Laura M., René Gómez, Julian Soto, Oswaldo Chavez, Noelle Barkley, David Ellis, and Jeffery B. Endelman
- 11:15 a.m. **Diploid Potato Hybrids are Similar to Commercial Tetraploid Cultivars**
(4) ter Maat, Menno, Michiel de Vries, Hein Kruyt, and Pim Lindhout
- 11:30 a.m. **Dihaploid Potato Production at Michigan State University**
(5) McGlew, Kathleen, Chen Zhang, Norma C. Manrique-Carpintero, Daniel Zarka, Joseph Coombs, and David Douches
- 11:45 a.m. **Genome-wide Selection Accuracy in Tetraploid Potato F1 Populations**
(6) Carley, Cari Schmitz and Jeffrey B. Endelman

10:30 a.m. – 12:00 p.m. **CONCURRENT SESSION II – Plant Protection I** Embassy

Moderator: Darrin Haagenon

- 10:30 a.m. **The Influence of Biopesticides on Verticillium Wilt in Potatoes**
(7) Vincent, Nick M., Michael Thornton, Phillip Wharton, and Amber Moore
Frank L. Haynes Graduate Student Research Award Competition
- 10:45 a.m. **Effect of Temperature and Variety on *Pythium* leak Susceptibility in Russet Cultivars**
(8) Andrew K. Hollingshead, Nora Olsen, and Jeff Miller
Frank L. Haynes Graduate Student Research Award Competition
- 11:00 a.m. **Determining in Vitro Baseline Sensitivity of *Alternaria solani* and *Alternaria alternata* to SDHI Fungicides**
(9) Budde, Sarah M. and Neil C. Gudmestad
Frank L. Haynes Graduate Student Research Award Competition
- 11:15 a.m. **Transcriptome-wide Mining of Potato Genes Targeted by Potato Virus Y-derived Virus Small Interfering RNAs of Three Biologically Distinct Strains**
(10) Moyo, Lindani, Shunmugiah V. Ramesh, Madhu Kappagantu, Vidyasagar Sathuvalli, Neena Mitter, and Hanu R. Pappu
Frank L. Haynes Graduate Student Research Award Competition
- 11:30 a.m. **Development of an Immunocapture-reverse Transcription (RT)-PCR Methodology for Detection of Potato Mop-top Virus in Tuber and Leaf Tissue**
(11) Tran, Lisa T., Olga Nikolaeva, and Alexander Karasev
Frank L. Haynes Graduate Student Research Award Competition

11:45 a.m.	Investigating <i>Alternaria</i> Species Composition and the Population Dynamics in the Potato Early Blight Complex	
(12)	<u>Ding, Shunping</u> , Kiana Meinholz, and Amanda J. Gevens <i>Frank L. Haynes Graduate Student Research Award Competition</i>	
12:00 p.m. – 1:00 p.m.	LUNCH	Sterling and Crowne
12:00 p.m. – 1:00 p.m.	Finance & Endowment Committee Meeting	Conference Room
12:00 p.m. – 1:00 p.m.	Site Selection Committee Lunch Meeting	Mezzanine IV
1:00 p.m. – 1:30 p.m.	Travel to Symposium Location	Meet in the lobby (bus to Fargo Theatre)
1:30 p.m. – 1:50 p.m.	Welcome from 2017 LAC	Fargo Theatre
1:30 p.m. – 4:05 p.m.	<u>Extension, Production & Management SYMPOSIUM 2017</u> Decision Support Tools and Technologies for the Potato Industry	
1:50 p.m. – 2:00 p.m.	Symposium Introduction Carl Rosen, University of Minnesota	
2:00 p.m.	UAS and Remote Sensing of Insect Damage in Potatoes	
(13)	<u>MacRae, Ian V.</u> , Timothy M. Baker, and Robert Koch	
2:20 p.m.	The North Dakota Agricultural Weather Network Usage as a Crop Management Support Tool	
(14)	<u>Ritchison, Daryl</u>	
2:40 p.m.	BREAK	
2:55 p.m.	Simple Tools for Rapid Diagnostics and Decision Making	
(15)	<u>Olsen, Nora</u> , Lynn Woodell, and Mary Jo Frazier	
3:15 p.m.	Decision Support for Potato Growers Using a Pest Monitoring Network	
(16)	<u>Wohleb, Carrie H.</u> , Tim D. Waters, and David W. Crowder	
3:35 p.m.	Information Delivery Methods for Management Decisions	
(17)	<u>Robinson, Andrew P.</u> and Steven B. Johnson	
3:55 p.m. – 4:05 p.m.	Symposium Summary Carl Rosen, University of Minnesota	
4:05 p.m. – 4:55 p.m.	<u>Global Outreach Committee Invited Guest Speaker</u> A Perspective of Potato in India. Past, Present, and Future	
(18)	<u>Gangwal, Tarun</u>	

6:00 p.m. – 8:00 p.m. PAA Past President and Honorary Life Member Reception (*Past Presidents and HLMs are invited to attend*) Meet at the lobby

TUESDAY, July 25, 2017

6:30 a.m. – 8:30 a.m. Breakfast Sterling and Crowne

6:30 a.m. – 8:30 a.m. Extension, Production & Mgt. Section Breakfast Executive Room

6:30 a.m. – 8:30 a.m. Potato Crop Germplasm Committee Meeting Board Room

8:00 a.m. – 5:00 p.m. Registration Desk/Information Atrium

8:30 a.m. – 12:00 p.m. Executive Committee Meeting Conference Room

8:30 a.m. – 12:00 p.m. **CONCURRENT SESSION I – Breeding & Genetics II and Physiology I** Royale

Moderator: Sastry S. Jayanty

Breeding & Genetics II

8:30 a.m. **Targeted Mutagenesis Using CRISPR/Cas in Inbred Potatoes**
(19) Butler, Nathaniel M., Shelley Jansky, and Jiming Jiang

8:45 a.m. **Gene Editing in Diploid Potato for Herbicide Resistance via Homology Directed Repair Mechanism**
(20) Nadakuduti, Satya Swathi, Colby Starker, DaeKwan Ko, Nathaniel M. Butler, Dan Voytas, C. Robin Buell, and David Douches

9:00 a.m. **The New Infinium 22K V3 Potato SNP Array and Polyploid Clustering in GenomeStudio 2.0**
(21) Coombs, Joseph, Alicia N. Massa, Norma C. Manrique-Carpintero, Daniel Zarka, and David Douches

Physiology I

9:15 a.m. **Screening Potato Cultivars and Breeding Lines for Phytonutrients**
(22) Navarre, Roy A., Margaret J. Holden, Chuck Brown, Richard Novy, Mark J. Pavek, Michael Thornton, Brian A. Charlton, and Vidyasagar Sathuvalli

9:30 a.m. **Environmental Impact on Anthocyanin Accumulation in Fortress Russet**
(23) Jayanty, Sastry S., Diganta Kalita, and Vidyasagar Sathuvalli

- 9:45 a.m. **Gene Responses to the Sprout Inhibitor 1,4-Dimethylnaphthalene Change with Tuber Age in Storage**
(24) Campbell, Michael A.
- 10:00 a.m. BREAK Dakota Hall
- 10:30 a.m. **Increased Selection Efficiency for Cold-induced Sweetening (CIS) Resistance in Potato Breeding through Biomarkers**
(25) Gupta, Sanjay K. and James Crants
- 10:45 a.m. **Using Image Analysis to Quantify Skin Set and Color in Red Potatoes**
(26) Caraza Salas, Maria V. and Jeffrey B. Endelman
Frank L. Haynes Graduate Student Research Award Competition
- 11:00 a.m. **Effects of Edible Coatings on the Quality of Potato Tubers under Cold and Room Temperature Storage**
(27) Emragi, Esam F., Diganta Kalita, and Sastry S. Jayanty
Frank L. Haynes Graduate Student Research Award Competition
- 11:15 a.m. **Determination of Pasteur Point in Minimally Processed Potato**
(28) Ellis, Graham D., Lisa O. Knowles, and N. Richard Knowles
Frank L. Haynes Graduate Student Research Award Competition
- 11:30 a.m. **Manipulating Apical Dominance, Tuber Size, and Shape to Enhance Yield of Raw Product for Frozen-Processing**
(29) Dean, Cody J., Lisa O. Knowles, and N. Richard Knowles
Frank L. Haynes Graduate Student Research Award Competition
- 11:45 a.m. **Effect of the *Phytophthora infestans* Infection on *Solanum tuberosum* Metabolic Profile**
(30) Fageria, Samarth, Jamuna R. Paudel, Larry Calhoun, Max Itkin, Asaph Aharoni, and Helen Tai
Frank L. Haynes Graduate Student Research Award Competition
- 8:30 a.m. – 12:00 p.m. **CONCURRENT SESSION II – Extension, Production & Management I and Plant Protection II** Embassy

Moderator: Harlene Hatterman-Valenti

Extension, Production & Management I

- 8:30 a.m. **Adaptive Nitrogen and Irrigation Management Strategies to Reduce Nitrate Leaching from Potato Production**
(31) Bohman, Brian J., Carl J. Rosen, and David J. Mulla
Frank L. Haynes Graduate Student Research Award Competition

- 8:45 a.m. **Plant Back of Russet Burbank Seed Treated with Glyphosate and Dicamba**
(32) Geary, Nelson, Andrew P. Robinson, and Harlene M. Hatterman-Valenti
Frank L. Haynes Graduate Student Research Award Competition
- 9:00 a.m. **Predicting Potato Yield Loss due to Metribuzin Sensitivity in North Dakota**
(33) Ibrahim, Razi, Harlene M. Hatterman-Valenti, and Asunta (Susie) L. Thompson
Frank L. Haynes Graduate Student Research Award Competition
- 9:15 a.m. **The Effects of Potato Virus Y Strains on Quality of Four Potato Varieties in Storage**
(34) Andros, Marcus, Nora Olsen, Alexander Karasev, Kenneth Frost, and Cassandra N. Funke
Frank L. Haynes Graduate Student Research Award Competition
- 9:30 a.m. **Can Enhanced Efficiency Fertilizers Reduce N Losses and Maintain Yield in Late-sown Potatoes?**
(35) Ghosh, Upsana, Harlene M. Hatterman-Valenti, Amitava Chatterjee, and Asunta (Susie) L. Thompson
Frank L. Haynes Graduate Student Research Award Competition
- 9:45 a.m. **Influence of Mineral Oil on the Spectral Reflectance of Potato Leaves**
(36) Falde, Steffen A., Asunta (Susie) L. Thompson, and Ian V. MacRae
Frank L. Haynes Graduate Student Research Award Competition
- 10:00 a.m. BREAK Dakota Hall
- Plant Protection II*
- 10:30 a.m. **Potato Production in Bali-Indonesia and its Virus Problem**
(37) Astarini, Ida A., Deborah Margareth, Wina Andriani, Martin Joni, Made Ria Defiani, and I. Gede Rai Maya Temaja
- 10:45 a.m. **Strain-specific Resistance to Potato virus Y (PVY) in Potato and its Effect on Prevalence of PVY Strains in the Field**
(38) Funke, Cassandra N., Kenneth Frost, Nora Olsen, and Alexander Karasev
- 11:00 a.m. **Development and Validation of High Resolution DNA Melting Markers Linked to Extreme Resistance to PVY**
(39) Nie, Xianzhou, Virginia Dickison, Agnes Murphy, Mathuresh Singh, and David De Koeyer
- 11:15 a.m. **Evidence of PVY Spread through Field Management Activities**
(40) MacKenzie, Tyler D.B., Angela Gallagher, Irin Arju, Manphool Fageria, and Mathuresh Singh
- 11:30 a.m. **Weed Management in Litchi Tomato - A Trap Crop for Pale Cyst Nematode**
(41) Hutchinson, Pamela J.S., Brent R. Beutler, Tina Miera, Brenda Kendall, and Tenika Trevino
- 11:45 a.m. **Potential Yield Reduction from Simulated Drift of Dicamba and Glyphosate**

(42) Hatterman-Valenti, Harlene M. and Andrew P. Robinson

12:00 p.m. – 1:30 p.m. LUNCH Sterling and Crowne

Lunch Speaker: Pat Kole, Potato Research Advisory Committee

1:30 p.m. – 3:00 p.m. **CONCURRENT SESSION I – Breeding & Genetics III** Royale

Moderator: Asunta Thompson

1:30 p.m. **Characterizing Late Blight Resistance in North Dakota State University Potato Germplasm**

(43) Bjerke, James, Gary A. Secor, and Asunta (Susie) L. Thompson
Frank L. Haynes Graduate Student Research Award Competition

1:45 p.m. Oral Presentation Withdrawn
(44)

2:00 p.m. **Identifying Late Blight Resistance QTL in a Diploid Mapping Population of *Solanum microdontum***

(45) Pawa, Emily W., Saltanat Mambetova, Ray Hammerschmidt, and David Douches
Frank L. Haynes Graduate Student Research Award Competition

2:15 p.m. **Differential Gene Expression Analysis of *Meloidogynae chitwoodi* Resistance in Potato**
(46) Bali, Sapinder, Kelly Vining, Chuck Brown, and Vidyasagar Sathuvalli
Frank L. Haynes Graduate Student Research Award Competition

2:30 p.m. **Mapping Resistance in Tetraploid Potato for Resistance to *Globodera rostochiensis* Pathotype Ro2**

(47) Park, Jaebum
Frank L. Haynes Graduate Student Research Award Competition

2:45 p.m. **Investigating Resistance Mechanisms to Colorado Potato Beetle in Diploid Potato**

(48) Kirkwyland, Natalie, Joseph Coombs, David Douches, and Christina Difonzo
Frank L. Haynes Graduate Student Research Award Competition

1:30 p.m. – 3:00 p.m. **CONCURRENT SESSION II – Plant Protection III** Embassy

Moderator: Willem Schrage

1:30 p.m. **The Weed Link in Zebra Chip Epidemiology: Annual and Perennial Weeds as Sources of the Zebra Chip Pathogen**

(49) Cooper, William R., David R. Horton, and Jenita Thinakaran

1:45 p.m. **Use of Lycium by Potato Pyllid in the Pacific Northwest: Lessons from the Desert Southwest?**

(50) Thinakaran, Jenita, David R. Horton, William R. Cooper, and Alexander Karasev

- 2:00 p.m. **Symptom Expression of Mainstream and Specialty Potato Varieties to Bacterial Ring Rot (*Clavibacter michiganensis* subsp. *sepedonicus*) and Evaluation of In-field Detection**
(51) Whitworth, Jonathan, Neil C. Gudmestad, Rachel Selstedt, Alan Westra, Phillip Nolte, and Kasia Duellman Kinzer
- 2:15 p.m. **Epidemiology, Prediction and Management of Soil-Borne Diseases of Potato**
(52) Lees, Alison K. and Jennie L. Brierley
- 2:30 p.m. **Integrated Pest Management (IPM) for Blackleg Disease**
(53) Humphris, Sonia N., Leighton Pritchard, Gerry Saddler, Stuart Wale, John Elphinstone, Simon Gibson-Poole, Peter Skelsey, Emma Campbell, Lauren Watts, and Ian Toth
- 2:45 p.m. **Responses of *Dickeya dianthicola* to Chemical Treatment**
(54) Hao, Jianjun, Tongling Ge, Yang Song, Nayara Marangoni, He Jiang, and Steven B. Johnson
- 3:00 p.m. – 3:30 p.m. BREAK Dakota Hall
- 3:30 p.m. – 4:30 p.m. **POSTER SESSION (authors present)** Dakota Hall

Breeding & Genetics

- (55) **A New Potato Cultivar, “Mangang” with Resistance to Late Blight and Good Chipping Quality**
Park, Youngeun, Jihong Cho, Kwangsoo Cho, Janggyu Choi, Hyunmook Cho, Younggyu Lee, Dongchil Chang, Hongsub Yoo, and Yongik Jin
- (56) **Biotechnology Potato Partnership: Late Blight Resistant Potatoes for Bangladesh and Indonesia**
Douches, David, Kelly Zarka, John Medendorp, Karen Hokanson, Phillip Wharton, Craig Richael, Marc Ghislain, Cholani Weebadde, Karim Maredia, Jayne Payumo, and Hashini Galhena
- (57) **Measurement of Transgene Copy Number in Potatoes Using Droplet Digital PCR**
McCue, Kent F., Ray Collier, Ethan Gardner, and Roger Thilmony
- (58) **New Double Cropping Potato Variety 'Gangsun' with Short Dormancy and High Resistance to Late Blight**
Cho, Ji Hong, Janggyu Choi, Ju Sung Im, Kwangsoo Cho, Yongik Jin, Dongchil Chang, Youngeun Park, Hongsub Yoo, and Hyunmook Cho
- (44) **Genome Wide Association Analysis for Late Blight and Scab Resistance in Tetraploid Potato**
Enciso, Felix E., Joseph Coombs, David Douches, and Gustavo de los Campos

Extension Production & Management

Nitrogen Strategies for Improved Yield, Quality and Profitability of Russet Burbank Potatoes in Alberta

(59) Konschuh, Michele

Sustainability is Not Just a Buzzword

(60) Woodell, Lynn, Nora Olsen, Tim D. Waters, and Carrie H. Wohleb

Utility of Variable-Sized Whole Tubers to Improve Quality and Yield Parameters in Seed Potato Production

(61) Kinzer, Kasia M. Duellman, Melissa C. Bertram, Melinda A. Lent, Jill C. Randall, and Sarah A. Clark

Physiology

Effects of Stored Volume on Processing Potato Quality

(62) Fishler, Troy D., Amber M. Gotch, and Paul C. Bethke

Stem End Chip Defect Symptoms are Reduced in an RNAi Megachip Line with Decreased Invertase Gene Expression

(63) Busse, James S., and Paul C. Bethke

Plant Protection

Assessing Latent Infection of Seed Potato Tubers with *Dickeya dianthicola*

(64) Rivera-Varas, Viviana V., Jianjun Hao, Steven B. Johnson, and Gary A. Secor

eIF4E-Mediated Potato Resistance Against Potato Virus Y in Susceptible Potato Varieties

(65) Zhang, Chen, Kelly Zarka, Daniel Zarka, Jonathan Whitworth, and David Douches

Influence of Fungicide Seed Treatment and Seed Potato Tuber Type on Components of Russet Burbank

(66) Kinzer, Kasia M. Duellman, Melissa C. Bertram, Melinda A. Lent, and Phillip Nolte

Screening of the Solanacea Species Mini-core Collection for Psyllid and '*Candidatus Liberibacter solanacearum*' Resistance

(67) Levy, Julien, Douglas C. Scheuring, Angel Chappel, Sydnee Coates, Azucena Mendoza, Cecilia Tamborindeguy, and J. Creighton Miller, Jr.

Utilization & Marketing

Effect of Sucrose on Hibernate Chip Color

(68) Chhabra, Guneet, Mathew McDonald, Leonardo Lorta, and Mario Avila

6:00 pm - 8:30 pm BBQ Meet at the lobby

WEDNESDAY, July 26, 2017

6:30 a.m. – 8:30 a.m. Breakfast Sterling and Crowne

8:00 a.m. – 12:00 p.m. Registration Desk/Information Atrium

8:30 a.m. – 12:00 p.m. **CONCURRENT SESSION I – Breeding & Genetics IV** Royale

Moderator: Richard Novy

8:30 a.m. **Improving Self-compatibility and Maintaining Genetic Diversity in Diploid Potato through Recurrent Selection Cycles**

(69) Alsahlany, Maher, Joseph Coombs, Daniel Zarka, and David Douches
Frank L. Haynes Graduate Student Research Award Competition

8:45 a.m. **Examination of Ploidy in 2x × 2x *S. tuberosum* Dihaploids by Self-compatible Donors**

(70) Otieno, Susan A., Norma C. Manrique-Carpintero, Maher Alsahlany, Joseph Coombs, and David Douches
Frank L. Haynes Graduate Student Research Award Competition

9:00 a.m. **The Development and Phenotyping of Diploid Recombinant Inbred Lines of Potato**

(71) Alpers, Ryan and Shelley Jansky
Frank L. Haynes Graduate Student Research Award Competition

9:15 a.m. **Introgression of Resistance to Tuber Greening from *Solanum microdontum* into Cultivated Potato**

(72) Novy, Richard, Brian Schneider, Mark Fristad, Lura Schroeder, Jeff Stark, and Joseph Kuhl

9:30 a.m. ***Solanum bulbocastanum* Genome Assembly Improvement with Long Read Sequencing**

(73) Vining, Kelly, Chuck Brown, and Vidyasagar Sathuvalli

9:45 a.m. **The Genomic Consequences of Haploid Induction Crosses in Potato**

(74) Amundson, Kirk, Benny Ordonez, Monica Santayana, Merideth Bonierbale, Luca Comai, and Ek Han Tan

10:00 a.m. BREAK Dakota Hall

10:30 p.m. **Strategy and Progress in Developing Agile Potato Varieties for SE Asia**

(75) VanderZaag, Peter

10:45 p.m. ***Verticillium dahliae* Disease Resistance and the Regulatory Pathway for Tuberization in Potato**

(76) Tai, Helen, David De Koeyer, Mads Sondaerkaer, Martin Lague, Claudia Goyer, Lana Nolan, Charlotte Davidson, Kyle Gardner, Jonathan Neilson, Jamuna Paudel, Agnes Murphy, Benoit Bizimungu, Dennis Halterman, and Lehmann Nielson Kare

11:00 p.m. **Molecular Determinants of Resistance to *Verticillium dahliae***
(77) Kumar, Arun, Shelley Jansky, Jeffrey B. Endelman, and Dennis Halterman

11:15 p.m. **Analysis of QTL for Resistance to Potato Wart Disease in the Canadian Potato Germplasm**
(78) Bizimungu, Benoit, Jiazheng Yuan, Agnes Murphy, and Umesh Rosyara

11:30 p.m. **Identification of Factors Involved in Foliar Resistance to Bacteria in Potato**
(79) Halterman, Dennis, Pramita Basnal, and Shelley Jansky

11:45 p.m. Concurrent Session I Adjourns

8:15 a.m. – 12:00 p.m. **CONCURRENT SESSION II – Extension, Production, and Management II and Physiology II** Embassy

Moderator: Brad Geary

Extension, Production & Management II

8:15 a.m. **Potato Soil Microbial Community Analysis Pre and Post-Fumigation**
(92) Geary, Brad, Trevor Smart, Noah Rosenzweig, Brenda Schroeder, Jeff Miller, Andrew P. Robinson, Neil C. Gudmestad, Kenneth Frost, and Dennis Johnson

8:30 a.m. **Response of Three Colorado Potato Cultivars to Deficit Irrigation**
(80) Essah, Samuel Y., Allan Andales, Troy Bauder, and David G. Holm

8:45 a.m. **Effective In-Season Nutrient Management of Potato**
(81) Pavek, Mark J., N. Richard Knowles, Zach J. Holden, Chandler Dolezal, and Kathryn Bolding

9:00 a.m. **Yield and Storage Quality of Russet Burbank Potatoes following Manure Applications in Several Long-term Rotations**
(82) Frazier, Mary Jo., Nora Olsen, Amber Moore, and Megan Satterwhite

9:15 a.m. **Stopping a Freight Train: Alternative Vine Management Strategies for Early Fresh Market Potatoes**
(83) Lemke, Matthew, Jed Colquhoun, Daniel Heider, and Richard Rittmeyer

9:30 a.m. **The Effect of Harvest Timing on French Fry Textural Quality of Three Processing Potato Varieties**
(84) Waxman, Addie M., Jeff Stark, Nora Olsen, Joe Guenther, Michael Thornton, and Richard Novy

9:45 a.m. **Storage Management of Hibernate by Innate®**
(85) Rasmussen, Jolyn R., Andrew Bell, and Sharianne Hart

10:00 a.m. BREAK

Dakota Hall

10:30 a.m. **Economic Impact of Zebra Chip in the Pacific Northwest**
(86) Greenway, Gina A.

Physiology II

10:45 a.m. **Occurrence of Spindle Tuber Like Malformation, in Seed-Potato Lots Associated with a Somatic Mutation in Tissue Culture**
(87) Souza-Dias, José Alberto C., Marcelo Eiras, Claudio Roberto F. Fernandes, Carmelo Beloni, and Amy Charkowski

11:00 a.m. **Effect of Different Ventilation Conditions on Tuber Weight Loss in Rio Grande Russet**
(88) Emragi, Esam F., Michael P. Gray, and Sastry S. Jayanty

11:15 a.m. **Some Physiological Alterations in Potato under CO2 Enrichment**
(89) Lozoya-Saldaña, Hector and Deneb S. Medina

11:30 a.m. **Suppression of the Vacuolar Invertase Gene Delays Senescent Sweetening in Chipping Potatoes**
(90) Wiberley-Bradford, Amy E. and Paul C. Bethke

11:45 a.m. **Wound Healing: Some of What We Have Discovered About this Critical and Complex Process**
(91) Lulai, Ed C.

12:00 p.m. Concurrent Session II Adjourns

12:00 p.m. – 1:00 p.m. LUNCH Sterling and Crowne

12:00 p.m. – 1:00 p.m. Graduate Student Awards Committee Lunch Mezzanine I and II

12:00 p.m. – 5:00 p.m. Brewery Tour Meet at the lobby

1:30 p.m. – 4:00 p.m. PAA Business Meeting Embassy

6:00 p.m. – 7:00 p.m. PAA Awards Banquet Reception Sterling and Crowne

7:00 p.m. – 9:30 p.m. PAA Awards Banquet Sterling and Crowne
(Included in full and student registration)

THURSDAY, July 27, 2017

Breakfast (On Your Own)

5:00 a.m. – 4:00 p.m. Fishing in Devil's Lake Meet at the lobby

8:00 a.m. – 12:00 p.m.	NFPT Meeting	Mezzanine I and II
8:00 a.m. – 12:00 p.m.	Fargo Agricultural Tour	Meet at the lobby
8:00 a.m. – 4:00 p.m.	Headwaters Mississippi Tour	Meet at the lobby