



Potato Progress

Research & Extension for the Potato Industry of
Idaho, Oregon, & Washington

Andy Jensen, Editor. ajensen@potatoes.com; 208-939-9965

www.nwpotatoresearch.com

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October 21, 2014

Zebra Chip Research Conference

November 9-12, 2014

Portland, Oregon

Crowne Plaza Downtown Convention Center

1441 NE 2nd Avenue, Portland, OR

Join researchers, growers, and industry representatives from around the world who will gather to exchange scientific information along with presenting their latest research. This is the opportunity to network with colleagues and enhance your knowledge and skills. Feel free to share this announcement with any associates who would benefit from this meeting. [See the full agenda below.](#)

Meet and Greet Mixer: Nov. 9, 5:00 -7:00 p.m.

General Sessions: Nov. 10 & 11, 8 a.m. – 5 p.m.

Full breakfast and lunch will be provided November 10th & 11th with your evenings free to enjoy the atmosphere and cuisine of Portland.

Register Now: <https://agriferegister.tamu.edu/index.cfm/productDetails/ProductID/1553/>

Crowne Plaza Hotel Reservations: <https://resweb.passkey.com/go/scrizebrachip>

More information: 806-354-5800 – pagarrett@ag.tamu.edu

2014 SCRI Zebra Chip Annual Reporting Session

Crowne Plaza — Portland, OR

Sunday, November 9

Welcome Reception: Courtyard and Foyer

5:00 – 7:00 PM **Registration, Welcome Reception and Poster Setup**

Sponsors: Frito-Lay, DuPont, Syngenta, Bayer CropScience, Dow AgroScience, NW Potato Research Consortium, ConAgra Foods

Monday, November 10

Meeting Room: Belmont

6:30 – 8:00 **Breakfast Buffet / Registration / Poster Setup**

SESSION I

Psyllids & Zebra Chip Survey Results

8:00 – 8:15 **Welcome and Introduction – Charlie Rush**

8:15 – 8:35 Psyllid survey results for 2014. **F. Workneh**, L. Paetzold, J. Bradshaw, B. Warfield, A. Silva, D. Henne, and C.M. Rush.

8:35 – 8:55 Three years of monitoring potato psyllids, '*Candidatus Liberibacter solanacearum*', and zebra chip in Idaho. **E. Wenninger**, N. Olsen, M. Thornton, P. Nolte, J. Miller, J. Dahan, and A. Karasev.

8:55 – 9:15 Progress in regional assessments of zebra chip incidence and associated factors. **F. Workneh**, D.C. Henne, J. Bradshaw, L. Paetzold, and C.M. Rush.

9:15 – 9:35 Three years of psyllid natural history studies in the west. **A. Jensen**.

9:35 – 10:15 **Break**

SESSION II

Ecology & Management

10:15 – 10:35 Impact of vine-kill on Lso and zebra chip symptom development in tubers following late season psyllid infestations. **C.M. Rush**, F. Workneh, L. Paetzold, N. Olsen, D. Henne, and A. Rashed.

10:35 – 10:55 How to use PsyllidScout. **J. Bradshaw**.

10:55 – 11:15 Interactions of potato psyllids, plant virus, and '*Candidatus Liberibacter solanacearum*'. **S.M. Prager**, C. Wallis, and J.T. Trumble.

11:15 – 11:35 Effects of '*Candidatus Liberibacter solanacearum*' infections on the physiology of tubers at different storage temperatures. **C. Wallis**, A. Rashed, F. Workneh, and C.M. Rush.

11:35 – 11:55 Chasing zebra chip in the Columbia Basin: Updates and what is next. **S. Rondon**.

11:55 – 1:20 **Lunch**

SESSION III

Chemical Control

1:20 – 1:40 Resistance evaluation and insecticide rotation programs for control of potato psyllids. **J. Trumble** and S. Prager.

1:40 – 2:00 Assessing movement and insecticide resistance in potato psyllid populations between Mexico, Central America, and United States. **B. Bextine**, A. Lopez, J. Munyaneza, D. Henne, and R. Villanueva.

2:00 – 2:20 Update on the management of the tomato-potato psyllid and zebra chip with the use of products containing DuPont™ Cyazypyr™. **J. Alvarez**, H. Portillo, B. Annan, J. Munyaneza, T. Mustafa, and C. Brister.

- 2:20 – 2:40 Proper use and timing of Bayer CropScience insecticides for control of potato psyllid. **M. Schwarz**, J. Bell, A. Beaudoin, G. Schwarzlose, and R. Perkins.
- 2:40 – 3:00 Evaluation of insecticides and insecticide management programs for control of potato psyllid in the Pacific Northwest. **T. Waters**.

SESSION IV

Poster Session *Open Viewing*

- 3:30 – 5:00 View posters and visit with researchers in an informal setting.
1. Toward the identification of genes involved in plant disease development: transcriptomic analysis of two potato cultivars in response to Lso infection. **J. Levy**, C. Miller, C. Tamborindeguy, A. Ravindran, D. Gross, and E. Pierson.
 2. RNAi and potato psyllid management. **B. Bextine**, D. Hail, B. Sharma, and J. Macias.
 3. Characterization of the serralysin gene cluster of '*Ca. Liberibacter solanacearum*' and its relationship to zebra chip development. **A. Ravindran**, P. Saenkham, J. Levy, B. Pierson, H. Lin, and D. Gross.
 4. In Planta cultivation/enrichment and whole genome sequence analyses of '*Candidatus Liberibacter solanacearum*' from California. T. Frigulti, Z. Zheng, N. Clark, C. Wallis, R. Lee, M. Keremane, J. Bushoven, and **J. Chen**.
 5. '*Candidatus Liberibacter solanacearum*' development in Russet Norkotah under commercial storage conditions. **A. Rashed**, C.M. Wallis, L. Paetzold, L. Woodell, N. Olsen, F. Workneh, M. Rashidi, E.J. Wenninger, and C.M. Rush.
 6. The dynamic role of water pulse in plant affects psyllid infestation. O. Huot and **C. Tamborindeguy**.
 7. Carrot psyllid feeding behavior on carrot and potato - an EPG study. L. Collins, **A. Nissinen**, and S. Pietravalle.
 8. The Mexican conundrum of hot potato psyllids: commercial hosts, and surveyed sites. **R. Villanueva**, G. Esparza, D. Henne, L. Paetzold, and C.M. Rush.
 9. Sequence analysis of '*Candidatus Liberibacter solanacearum*' (Lso-C) isolated from carrot psyllids collected in Scandinavia. **K. McCue**, G. Lazo, V. Sengoda, and J. Munyaneza.

Tuesday, November 11

Meeting Room: Belmont

7:00 – 8:00 **Breakfast Buffet**

SESSION V

Pathogen & Vector Haplotypes

- 8:00 – 8:20 Effect of haplotype on the transmission of Lso in eight potato cultivars. **R. Shjerve**, C. Johnson, A. Wen, V. Johansen, and N. Gudmestad.
- 8:20 – 8:40 Investigating the effect of Lso haplotype on plant infection and symptoms development. **J. Levy**, J. Yao, A. Mendoza, O. Huot, F. Ibanez, and C. Tamborindeguy.
- 8:40 – 9:00 Assessing transmission of '*Candidatus Liberibacter solanacearum*' haplotypes through seed potato. **K. Swisher** and J. Munyaneza.
- 9:00 – 9:20 Temporal and spatial variation of psyllid haplotype occurring in indigenous vegetation of Texas. **L. Paetzold**, A. Rashed, F. Workneh, and C.M. Rush.
- 9:20 – 9:40 Liberibacter transmission efficiency among potato psyllid haplotypes. **J. Munyaneza**, T. Mustafa, K. Swisher, D. Horton, and R. Zack.
- 9:40 – 10:00 Assessing reproduction between potato psyllid haplotypes. **T. Mustafa**, J. Munyaneza, D. Horton, W. Cooper, K. Swisher, and R. Zack.
- 10:00 – 10:20 **Break**

SESSION VI

Pathogen Genomics & Resistance Breeding

- 10:20 – 10:40 Conformity of genome variation among isolates of '*Candidatus Liberibacter solanacearum*' from North America. **C. Johnson**, S. Thompson, A. Wen, A. Lu, K. Sullivan, R. Frampton, A. Pitman, R. Crowhurst, G. Smith, and N. Gudmestad.
- 10:40 – 11:00 Comparative genomics identification and characterization of unique orthologs in '*Candidatus Liberibacter solanacearum*'. **R. Frampton**, S.M. Thompson, C. Johnson, A. Lu, K. Sullivan, A. Wen, A. Pitman, R. Crowhurst, I. Scott, N. Gudmestad, and G. Smith.
- 11:00 – 11:20 Update on the 2014 zebra chip variety screening trial. **J. Munyaneza**, G. Bester, D. Ronis, R. Novy, P. van Hest, J. Nordgaard, J. Buchman, and S. Thompson.
- 11:20 – 11:40 Breeding for host plant resistance to zebra chip in Texas. **C. Miller**, D. Scheuring, J. Koym, J. Levy, D. Henne, E. Pierson, J. Trumble, R. Novy, B. Charlton, and C. Brown.
- 11:40 – 12:00 Breeding for resistance/tolerance to zebra chip disease with the use of species-derived potato germplasm. **R. Novy**, S. Prager, B. Vindeola, J. Trumble, and J. Munyaneza.
- 12:00 – 1:20 **Lunch**

SESSION VII

Pathogen Diagnostics

- 1:20 – 1:40 Development of multiplex quantitative taqman real-time PCR for genotyping '*Candidatus Liberibacter solanacearum*' in potato psyllid and potato. **A. Wen**, C. Johnson, and N. Gudmestad.
- 1:40 – 2:00 Improved PCR-based detection of '*Candidatus Liberibacter solanacearum*'. **H. Lin**.
- 2:00 – 2:20 Diagnostics targeting haplotype specific regions In '*Candidatus Liberibacter solanacearum*' genomes. S. Thompson, C. Johnson, A. Lu, R. Frampton, K. Sullivan, A. Wen, A. Pitman, R. Crowhurst, I. Scott, N. Gudmestad, and **G. Smith**.
- 2:20 – 2:40 Improved '*Candidatus Liberibacter solanacearum*' detection in plants and insects. **B. Bextine**, D. Hail, C. Powell, and J. Hansen.
- 2:40 – 3:00 Assessment of the preference of *Bactericera cockerelli* for '*Candidatus Liberibacter solanacearum*'-infected and pathogen-free solanaceous hosts. **J. Thinakaran**, E. Pierson, C. Tamborindeguy, and D. Henne.
- 3:00 – 3:20 Discussion and Announcements – Meeting adjourns

Annual Northwest Potato Conferences

Idaho Potato Conference: January 20-22, Pocatello, Idaho

<http://web.cals.uidaho.edu/potatoconference/>

Washington-Oregon Potato Conference: January 27-29, Kennewick, Washington

<http://www.potatoconference.com/>

Record Heat Characterizes the 2014 Growing Season

Nic Loyd; Meteorologist, Washington State University AgWeatherNet (nicholas.loyd@wsu.edu)
Gerrit Hoogenboom; Director, WSU AgWeatherNet (gerrit.hoogenboom@wsu.edu)

If you thought that it has been especially hot recently, you're right. 2014 has been Prosser's warmest March to September period since records began in 1990.

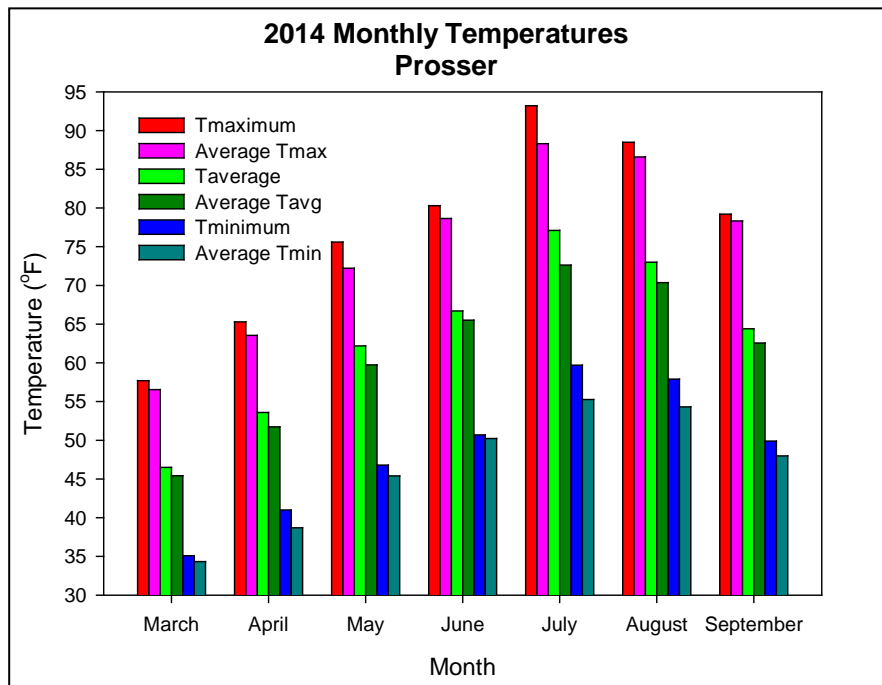
Temperatures in eastern Washington have been above normal in each month since March, which makes this scorching growing season one to remember. Following their warmest spring season since 1994, Prosser's summer of 2014 was the hottest since AgWeatherNet records began a quarter century ago. In fact, the last time any season was so warm relative to normal was the winter of 2002/2003. More recently, a late season heat wave on October 6th sent temperatures soaring above 90 degrees in parts of central Washington. Several locations, including Moses Lake, Prosser, and the Tri-Cities, experienced record October warmth.

One hallmark of the 2014 growing season has been the consistency of above normal temperatures in central and eastern Washington. Rather than a few episodes of extreme heat or all-time record high temperatures, this year has instead given us a notable abundance of somewhat warmer than normal days and nights. This pattern was particularly evident in July, which was the warmest month on record at Prosser and many other climate sites around central Washington. July's mean high temperature (93.2°F) surpassed the previous record (92.1°F, July 2013) by more than one degree, and was nearly 5 degrees above normal. The 2014 Accumulated Growing Degree Day (April 1 to October 5) value at Tri-Cities was 4483 units, which is 476 units above the recent average.

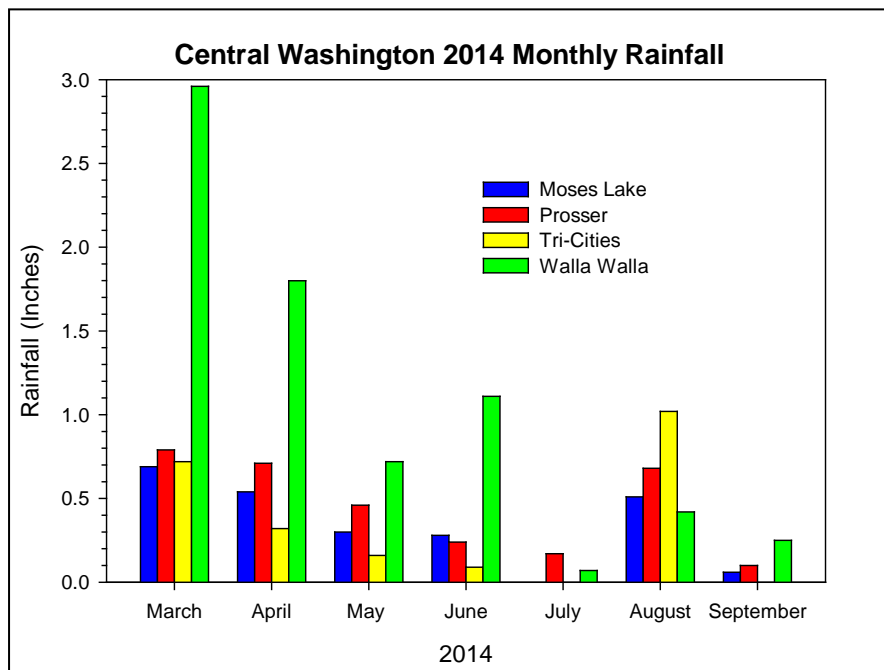
| April 1 to October 5 Accumulated Growing Degree Days | | | |
|---|------------------------------|-------------------|-------------------|
| | Base Temperature 45°F | | |
| Location | <i>2014</i> | <i>Recent Avg</i> | <i>Difference</i> |
| <i>Prosser (WSU HQ)</i> | 3866 | 3443 | 423 |
| <i>Tri-Cities (WSU TC)</i> | 4483 | 4007 | 476 |
| <i>Walla Walla (Walla Walla)</i> | 4025 | 3608 | 417 |
| <i>Moses Lake</i> | 3838 | 3480 | 358 |

The Tri-Cities weather station recorded 100+ degree readings on 10 separate days during July, which included one day (July 16th) that featured a 109 degree high temperature. However, the heat has hardly been limited to the daytime. Wahluke Slope observed its fair share of sultry nights, including a low of 84 degrees on July 13th, along with daily low temperatures above 70 degrees on a majority (18) of July mornings. Still, the abnormal warmth was not relegated exclusively to July. May was also a noteworthy month in which Prosser experienced the warmest mean May high since 1993. The Tri-Cities recorded five 100+ degree days during the early part of August alone, while the month of August 2014 was Prosser's hottest August on record. Overall, the Tri-Cities had accumulated a net water deficit (precipitation minus evapotranspiration) of about 55 inches from March 1 through the end of September.

Unfortunately, the blistering weather was not without consequences, as our state suffered through its largest wildfire on record this summer. The Carlton Complex fire burned more than 400 square miles, and created large smoke plumes that periodically darkened skies across central and eastern Washington.



Given this oppressive context, it is hard to believe that the spring season began with most of central Washington experiencing sub-30 degree high temperatures during a rare, late winter arctic intrusion on March 2nd. The cool blast was followed by an active and wet period during which Montesano received nearly 8 inches of rainfall in one week (March 2 to 8). Other highlights of the period include 0.41 inches of rain at Walla Walla on June 18th, and a 50 mph wind gust at FishHook on July 23rd.



For better or worse, with the prospect of a developing El Niño, unusually warm conditions may be with us for some time to come.

Further details about Washington’s weather and climate are available at the AgWeatherNet website, weather.wsu.edu. Please send questions or suggestions to Nic Loyd, nicholas.loyd@wsu.edu, or Gerrit Hoogenboom, gerrit.hoogenboom@wsu.edu.