Potato Progress

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Accumulated Heat Units for 2010: A Wet, But Mostly Typical Spring

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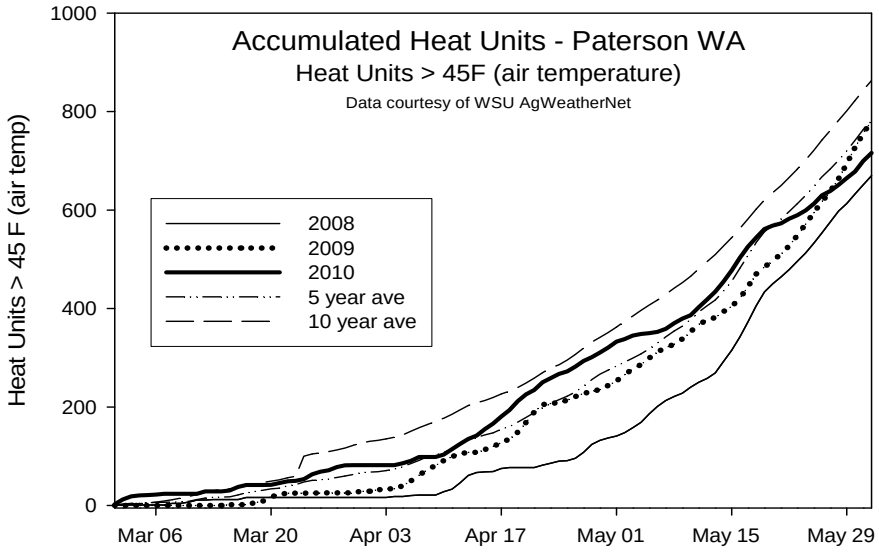
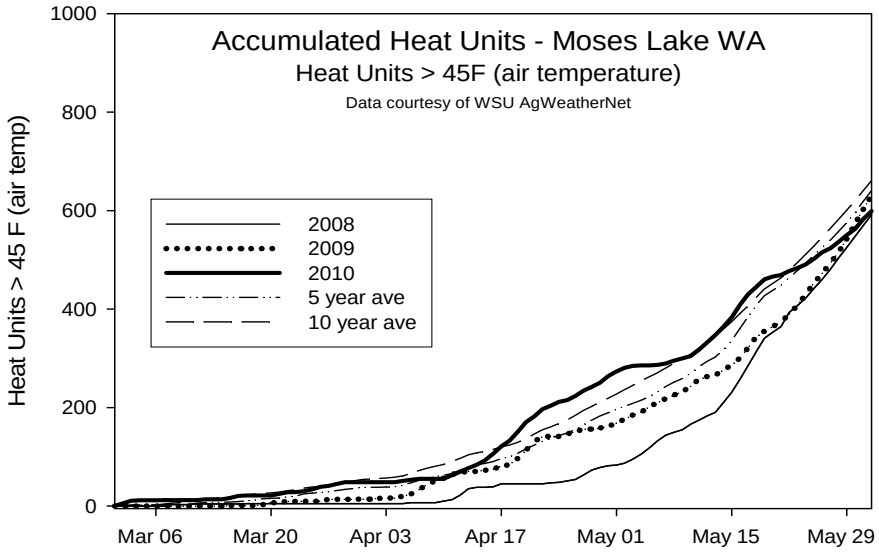
In a typical year, ambient heat units >45 F across the Columbia Basin begin to accumulate in early to mid March. This year heat units started to accumulate rapidly in mid March - approximately equal to or greater than the five and ten year average (see Figures below). From early March to late May heat units were accumulated significantly faster than the previous two years; more typical of the Basin on average. Despite being a wet spring, accumulated heat units were at levels that we are used to seeing and conducive for potato growth. Overall, March to May heat units were significantly higher than those in 2009 and 2008 but stalled during late May, falling below the five and ten year averages. In short, this year's Columbia Basin heat unit accumulation during the planting-to-emergence interval was quite typical; however, accumulation during the past two weeks has plunged below average.

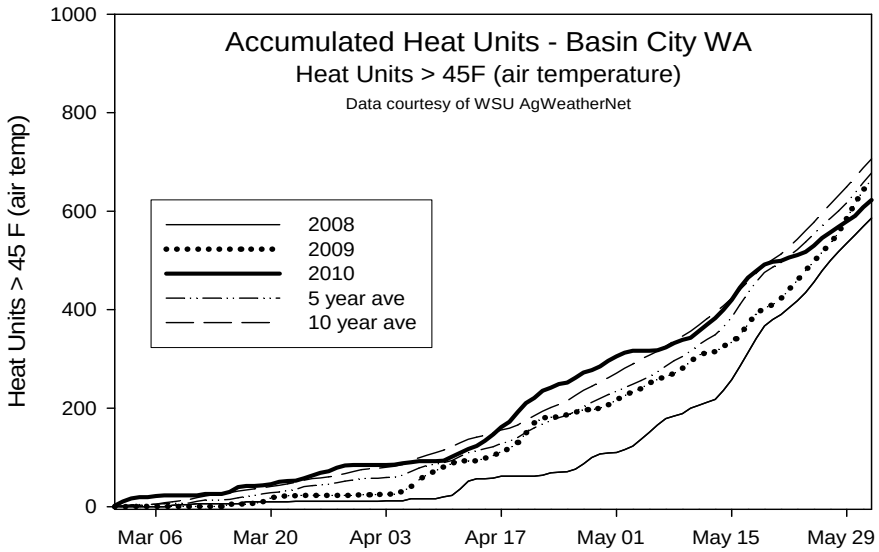
Potatoes typically emerge between 25 and 40 days after planting in the Basin. Of course, this is dependent on many factors. Soil moisture and temperature are most commonly cited as the major factors that contribute to potato sprout growth and emergence rate. Additional factors include seed size and health, sprout health, sprout/eye location on the mother seed tuber, soil fertility, cultivar, mother-tuber physiological age, volume and mechanical resistance of soil, and seed tuber dormancy. Rapid sprout emergence can promote early-season disease resistance in potato shoots and stems and allow plants to capture solar radiation early in the season. It is important to note, however, that early emergence does not always equate into an increase in yield and can leave some plants vulnerable to an early season frost.

Accumulated heat units, also known as day-degrees and degree-days, are often used to demonstrate or predict sprout emergence. They are calculated by taking the average daily temperature from each day and subtracting the growing base temperature (45 F). The heat units for each day are then added over time to provide accumulated heat units (see figures below). Although potatoes can form sprouts near 40 F, growth is extremely slow. To calculate accumulated heat units, we used a base temperature of 45 F because it is generally more conducive for vegetative growth.

The amount of heat units required in the soil for sprouts to break the soil surface depends on all the factors above and changes for each situation. In general, the faster heat units are accumulated, the quicker plants will emerge. The figures below were calculated with above-ground (ambient temp) heat units. Best wishes for the remainder of your growing season!


Accumulated Heat Units - Paterson WA
Heat Units > 45F (air temperature)
Data courtesy of WSU AgWeatherNet
Heat Units > 45 F (air temp)
1000
800
600
400
200
0
2008
2009
2010
5 year ave
10 year ave
Mar 06
Mar 20
Apr 03
Apr 17
May 01
May 15
May 29


Accumulated Heat Units - Moses Lake WA
Heat Units > 45F (air temperature)
Data courtesy of WSU AgWeatherNet
Heat Units > 45 F (air temp)
1000
800
600
400
200
0
2008
2009
2010
5 year ave
10 year ave
Mar 06
Mar 20
Apr 03
Apr 17
May 01
May 15
May 29


Accumulated Heat Units - Basin City WA
Heat Units > 45F (air temperature)
Data courtesy of WSU AgWeatherNet
Heat Units > 45 F (air temp)
1000
800
600
400
200
0
2008
2009
2010
5 year ave
10 year ave
Mar 06
Mar 20
Apr 03
Apr 17
May 01
May 15
May 29

Early Blight (*Alternaria*) Isolations From Commercial Fields in 2010

We will be determining the relative levels of the two *Alternaria* species (early blight and brown spot) in the Columbia Basin in 2010 and request your help in obtaining leaf samples with early blight type lesions.

Sampling Protocol
Samples should be from fields when they exhibit early blight lesions.
8 full-leaf samples are needed from each field.
Samples should be at least 20 paces or 20 rows apart.

Repeat collecting from the sample field in August or near time of vine kill or harvest.
It is okay to sample next to the pivot road.

Shipment of samples
Place samples between DRY paper towels, press flat, and place into paper bags. Please do not use plastic bags. No additional moisture should be added. Bags should be labeled with the following information:

1. Date of collection
2. Field location and ID
3. Cultivar
4. Foliar fungicides applied, rate and dates
5. Collector and contact information. We'll let you know results.

It's important to deliver samples the same day of collection. Please do not let the samples sit in the sun or leave them overnight in your pickup.

Samples can be sent to Lydia Tymon Putnicki or Dennis Johnson (over night delivery is best) at:

Department of Plant Pathology
Washington State University
PO Box 646430
Pullman, WA 99164-6430

Or deliver to Rudy Garza at the Othello Research Center (509-488-3191), Tim Waters (509-554-0152), or Carrie Wohleb (509-707-3510). Samples may be taken directly to the WSU Othello Potato Shed and placed in the walk-in cooler near the back of the building. If this happens, please make sure Rudy is informed.

Lydia's contact information: ltymon@wsu.edu

Mark Your Calendars

WSU Potato Field Day – June 24, 8:30 am – 1 pm, Othello Research Unit, Hosted lunch. Contact: Mark Pavek, 509-335-6861, mjpavek@wsu.edu.

Note the field day is on Thursday this year!

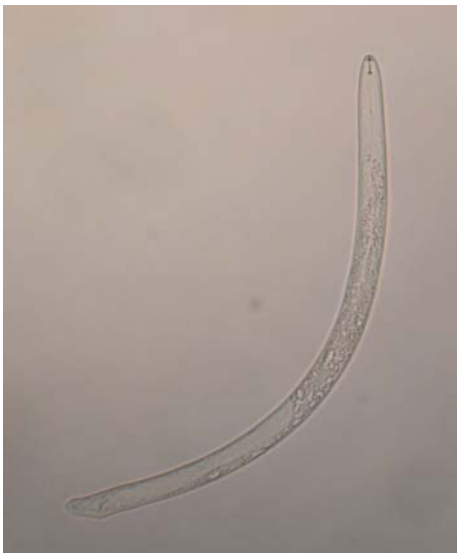
OSU Potato Field Day – June 29, 8:30 am, OSU Hermiston. Contact: http://oregonstate.edu/dept/hermiston/

WSU Mount Vernon NWREC Field Day – July 8, 4:00 pm. Contact: Don McMorran, 360-428-4270, ext 225.

Potato Association of America – August 15-19, Corvallis, OR. Contact: http://oregonstate.edu/conferences/event/paa2010/

New Plant Nematologist at WSU

Dr. Axel Elling joined the Department of Plant Pathology at Washington State University in Pullman as Assistant Professor in July 2009. He began his nematology training as an undergraduate student in Germany and received his doctorate from Iowa State University, where he worked primarily on the soybean cyst nematode under the guidance of Dr. Thomas Baum. At WSU, Axel's research focuses on the molecular interactions between plant-parasitic nematodes and their hosts. Very few plant species are resistant to these microscopic roundworms and their management is difficult. Understanding the molecular mechanisms that allow nematodes to infect plants is important, because it will enable the development of new control strategies. Plant-parasitic nematodes are a significant problem for potato growers in Washington. Axel is currently investigating the molecular principles that allow the Columbia root-knot nematode (*Meloidogyne chitwoodi*) to infect potatoes. The Washington State Potato Commission provides financial support for his research program at WSU. More about Axel Elling's program can be found at http://plantpath.wsu.edu/people/faculty/elling.htm



The root lesion nematode, *Pratylenchus penetrans*.