Potato Progress

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Accumulated Heat Units for 2011: Ice Age Cometh?

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As you likely noticed, 2011 has been an exceptional year. The emergence and growth of most crops in the Columbia Basin has been delayed due to cooler-than-normal temperatures; potatoes are no exception. In a typical year, ambient (above-ground) heat units >45° F across the Columbia Basin begin to accumulate rapidly near the middle of April (Figure 1). This year they didn't really start to accumulate until early May – far later than the five and ten year averages.

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.

How much was emergence delayed this year? That largely depended on when and where the potatoes were planted. During most years, potatoes planted 8 inches deep in the central Basin emerge when the accumulated ambient heat units >45° F (AHU) fall between 200 and 300. Using a base value of 250 AHU, we found that the earlier potatoes were planted in 2011, the longer the delay in emergence compared with previous years, despite location (Table 1). Emergence of potatoes planted around March 15 may have been delayed by as much as 19 days compared to last year and 14 days compared to the 10 year averages (Table 1). The emergence of potatoes planted closer to May 1 may have only been delayed by 1 day compared to other years. Actual data from N.R. Knowles and team indicated that emergence of Ranger Russet was delayed by about 10 days compared to 2010 when planted 8 inches deep on April 13 of each year (Figure 2).

Cool temperatures following emergence may have further suppressed plant growth making it difficult to accurately assess how far our crop is actually behind compared to a "typical" year. Data has shown that early emergence does not necessarily equate into higher yields or quality. The Columbia Basin can be forgiving to late emerging potatoes by providing an exceptionally long growing season. Best wishes for a great crop year!

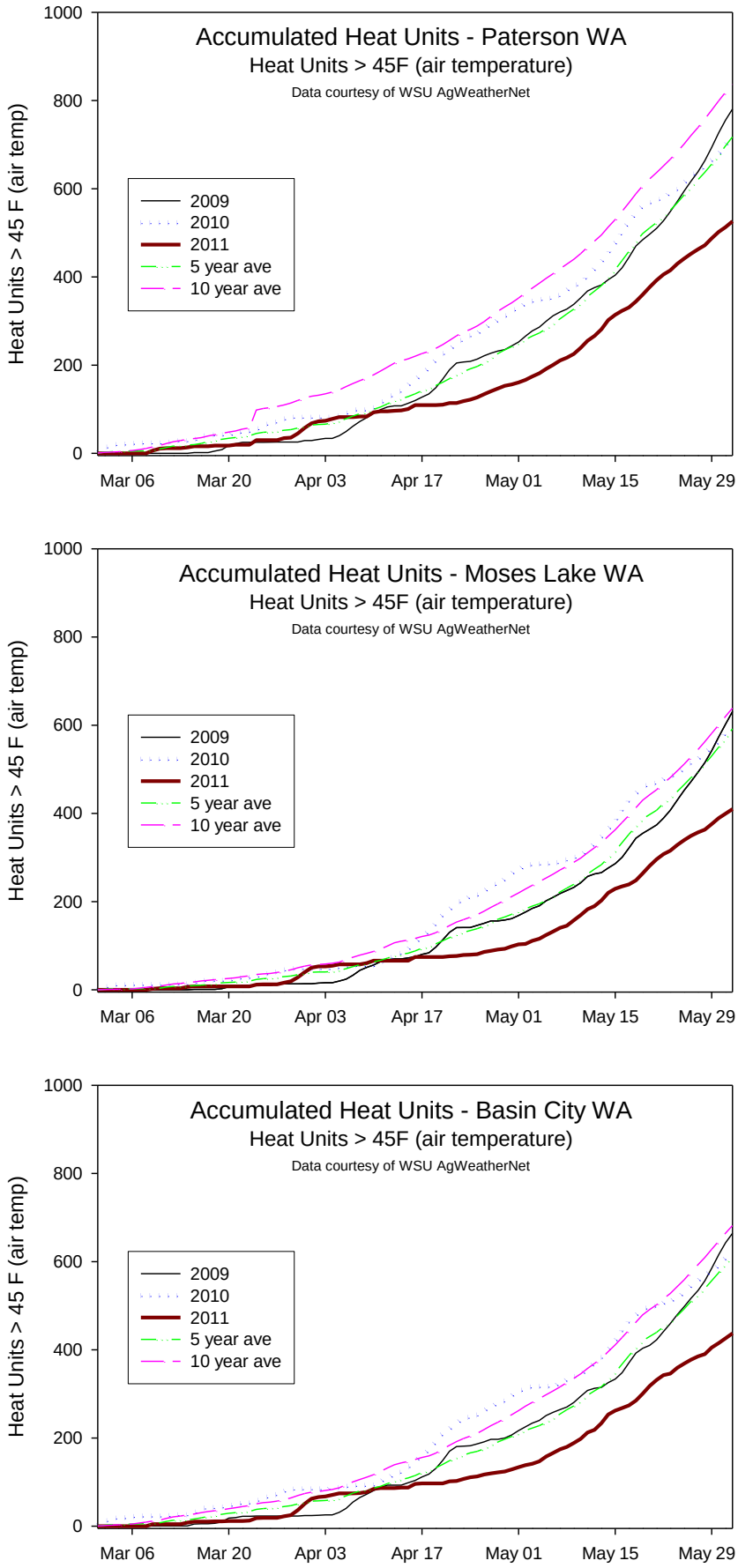


Figure 1. Accumulated ambient (above-ground) heat units >45º F for three WA locations.

Table 1. For each Washington location and planting date, the *additional* number of days needed during 2011 to accumulate 250* ambient heat units >45° F when compared to 2010 and the 5- and 10-year averages.

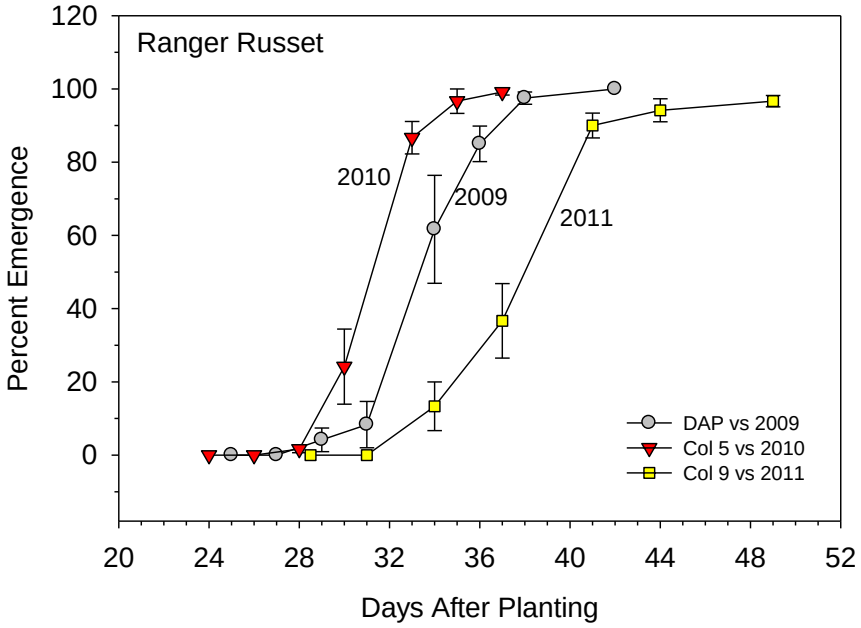
Year or Average	Moses Lake, WA Planting Date			
	March 15	April 1	April 15	May 1
2010	19	12	11	1
5 yr average	8	8	7	4
10 yr average	12	10	8	5

Year or Average	Basin City, WA Planting Date			
	March 15	April 1	April 15	May 1
2010	17	11	10	1
5 Year	7	7	6	4
10 Year	13	11	8	6

Year or Average	Paterson, WA Planting Date			
	March 15	April 1	April 15	May 1
2010	16	14	8	3
5 Year	9	7	7	4
10 Year	14	12	8	4

*Potatoes typically begin to emerge when the ambient accumulated heat units >45° F are between 200 & 300.

Figure 2. Ranger Russet emergence across three years.



2011 Washington State Commercial Seed Lot Profile and Potato Field Day Preview

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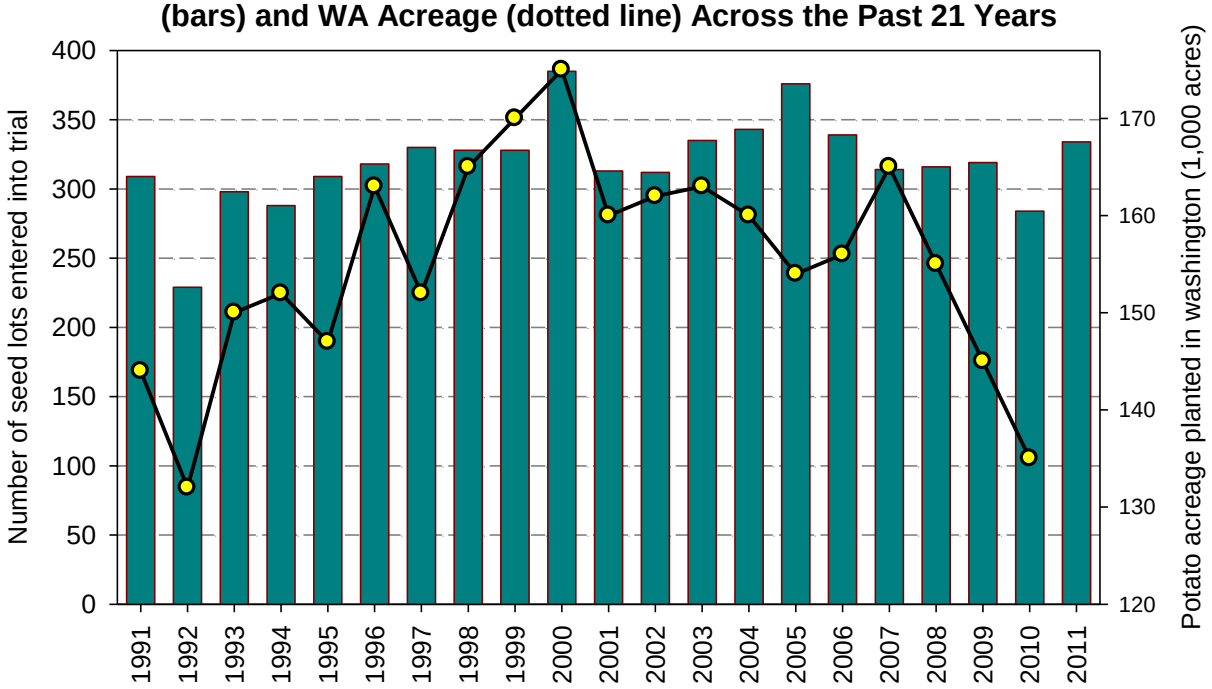
In the past three years, 30,000 acres of Washington potatoes were removed from the global market (Figure 1, dotted line). The equivalent of 240 standard-sized center pivots was taken out of potato production in WA between 2007 and 2010. The acreage linearly declined 10,000 acres per year moving from 165,000 in 2007 to 135,000 in 2010. Despite this drop, the number of seed lot samples submitted this year increased significantly compared to the previous 4 years. Three hundred thirty four samples were submitted during 2011, compared with 284 in 2010 (Figure 1, bars). Although seed lot entries were up, it is not yet clear whether the 2011 WA potato acreage will remain at 2010 levels or deviate. A decline in processed potato demand along with acreage restrictions encouraged by the United Potato cooperative likely contributed to the 2007-10 acreage reduction. Competition in the market place and a struggling economy may have also been wreaking havoc. Recent research highlighting the nutritional benefits of the potato is timely and will hopefully lead rogue consumers back to the nutritional powerhouse. We are optimistic that potato demand will rise again soon!

Figure 1. Number of Potato Seed Lots Entered into the WSU Seed Lot Trial (bars) and WA Acreage (dotted line) Across the Past 21 Years



Montana-produced seed lots declined significantly from the previous 2 years relative to other locations (Figure 2). Montana's loss appears to be Canada's, Idaho's, and Washington's gain. Canada supplied seed lots have continued to increase since the 2008 reopening of the US/Canadian border to Alberta-grown seed.

The composition of the 2011 Seed Lot Trial included 23% "Other" varieties, 21% Russet Burbank, 18% Russet Norkotah, 14% Ranger Russet, 13% Umatilla Russet, 8% Alturas, and 3% Premier Russet (Figure 3). The 2011 "Other" category was composed of 35 new, or non-mainstream varieties, ranging from numbered, non-released varieties to Yukon Gold (Figure 3). The "Other" category hit a record high in 2011 following a two-fold increase in the number of entries across the past 4 years. Ranger Russet seed lots ended a 4-year decline while Premier Russet seed lot numbers continue to trend downward.

Varieties developed by the Northwest Potato Variety Development Program/PVMI accounted for 42% of the seed lots entered into the 2011 trial and included: Premier Russet, Alpine Russet, Blazer Russet, Alturas, Ranger, Umatilla, and Gallatin Russet, Modoc, TerraRosa, Defender, PA00N14-2, AO96141-3, A01010-1, and A84180-8.

For the first time in the history of the seed lot trial (47 years), leafroll was not evident in any of the potato plants during 2010 (Figure 4). This was likely due to improved pest control products and certification efforts. The 2011 Potato Field Day will serve to inform the industry as to whether or not we see this across two consecutive years.

Figure 2. Percent of Seed Lots from each Region between 2009-11

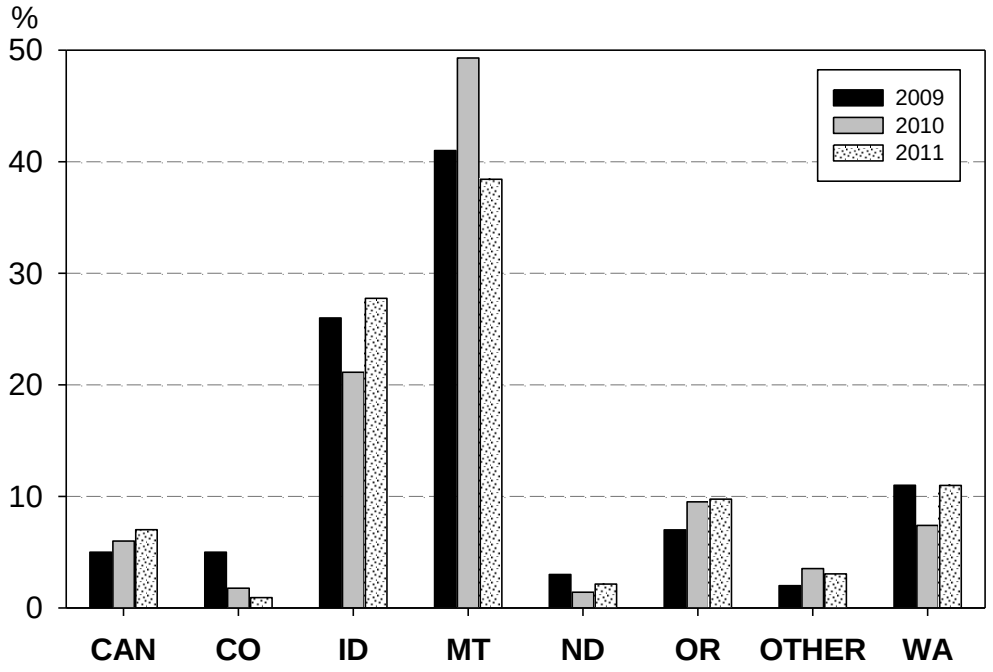
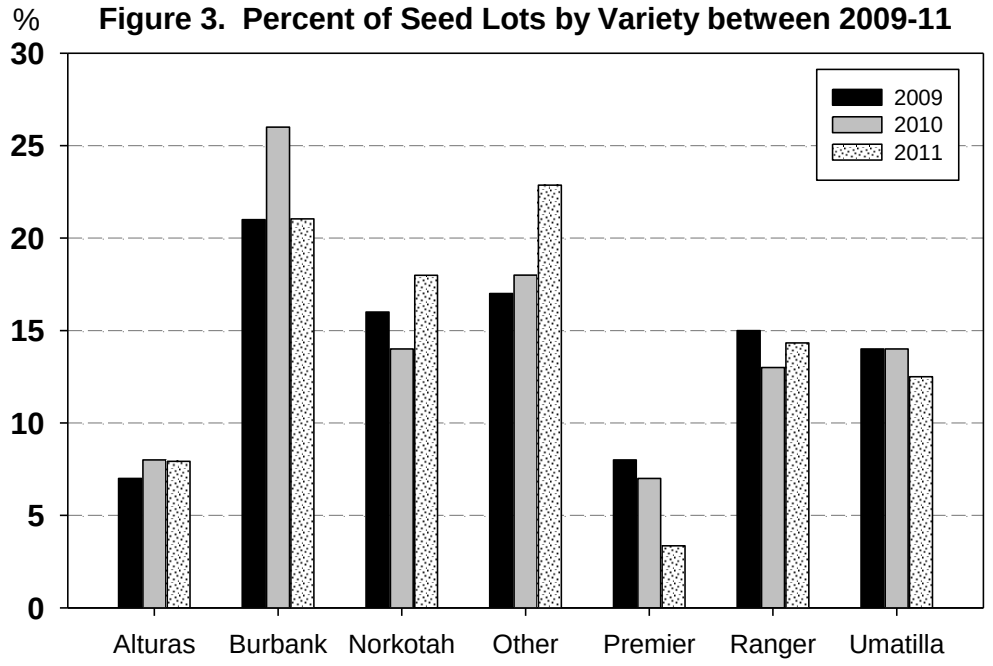
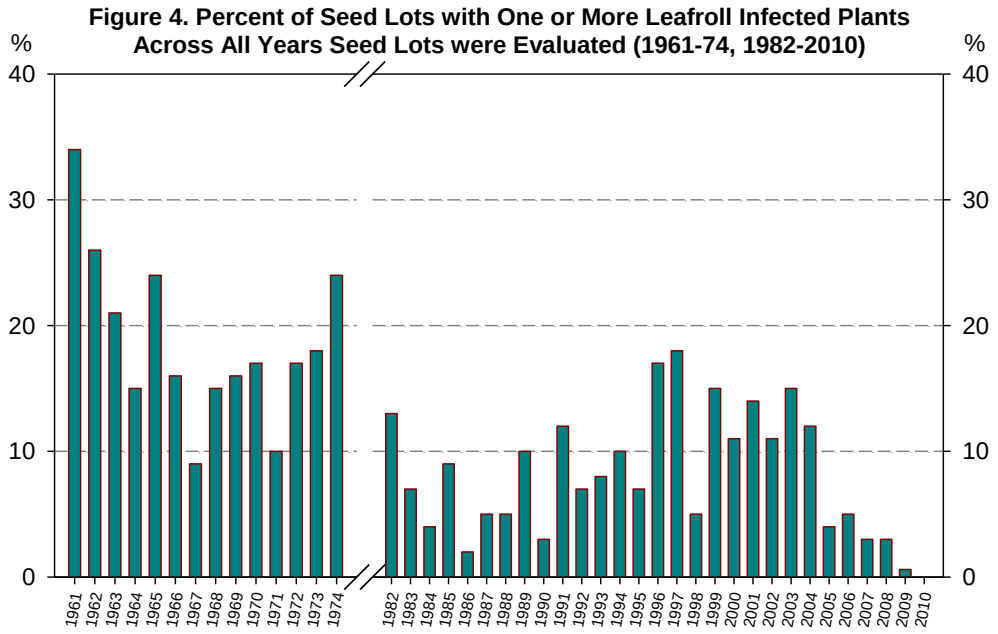


Figure 3. Percent of Seed Lots by Variety between 2009-11





The potato field day will begin at 8:30 am on THURSDAY, June 23 at the WSU Othello Research Farm. In addition to viewing the seed lots, you will be able to participate in one of two concurrent sessions. Sessions I and II will allow you to view a sample of this year's in-field research. Both sessions will offer CCA, WA, and ID recertification credits. A hosted lunch, offered between 11:30 and 1:00, will complete the field day. The agenda, seed lot information, and a map to the research center can be found on our website: www.potatoes.wsu.edu.

Pesticide License Recertification Credits are as follows:

Commercial Seed Lot Trial Disease Results and Viewing
WA: 1 credit
ID: 1 credit
CCA: 1 Pest Management credit

Concurrent Session I: Potato Cultural Practices Field Tour
WA: 1 credit
ID: 1 credit
CCA: 1 Crop Management, 0.5 Soil & Water, and 0.5 Pest Management credits

Concurrent Session II: Potato Pest Management Field Tour
WA: 2 credits
ID: 2 credits
CCA: 2 Pest Management credits