



Potato Progress

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Idaho 2016 Volunteer Potato Outlook

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Similar to what Seymour and Boydston reported for Oregon and Washington in the February 11, 2016 Potato Progress, soil temperatures across southern Idaho have not been at or below the 28°F shown to kill potato tubers. According to AgriMet weather station data collected at five locations in southern Idaho during the 2015/2016 winter months, soil temperatures at only one location, Parma, have been 28°F or lower.

The graph in **Figure 1** below was generated using minimum soil temperatures at 2” and 4” recorded November 01, 2015 to February 23, 2016 at the AgriMet weather stations located from east to west across southern Idaho at the University of Idaho Aberdeen, Kimberly (Twin Falls), and Parma R&E Centers, and 4” soil temperatures at stations located near Ashton in eastern ID and Rupert, which is in the south between Aberdeen and Kimberly. Air temperatures during this period are shown in the **Figure 2** graph. For reference, **Figure 3** shows minimum soil temperatures at the same location November 01, 2014 to February 28, 2015.

As mentioned in the February 11th OR/WA volunteer potato outlook article, Newberry and Thornton (2004) have showed that a majority of potato tubers left in the field are in the upper 8 inches of the soil profile unless deep post-harvest tillage is conducted. Boydston has found that 38 to 45% of tuber leavings are located in the top 2” of the soil profile.

So far this winter, 2” and 4” soil temperatures at Parma have been at or below 28°F for 30 and 34 days, respectively (**Table 1**). By comparison, those temperatures have only been reached at the Kimberly for one day (2”) and Rupert two days (4”), while Aberdeen soil temps have not been that low. However, the minimum air temperature at Parma was 11 to 18 degrees higher than at the other locations. As in OR and WA, snow cover seems to have played a role in Idaho since Parma is the only location out of the five which has only experienced snow cover sporadically this winter. Snow cover at Aberdeen, for instance, was 1 inch the last week of November, 1 to 3 inches 24 out of 31 days in December, 2 to 5 inches all of January, and up until mid-February, 3 to 4 inches. Aberdeen snow cover has reduced significantly since then. *Of interest: 1” soil temperature at Parma, the only location to record at that depth, has only been 28°F for 2 days during this period (January 2 and 3, 2016).*

Table 1. Minimum air and soil temperatures at five locations across southern Idaho November 01, 2015 to February 23, 2016.

Location	°F (# of days soil temps <28 °F)		
	Air	Soil 2”	Soil 4”
Kimberly	-14	28 (1)	32 (0)
Aberdeen	-18	30 (0)	33 (0)
Parma	-2	27 (30)	27 (34)
Rupert	-13	-	28 (2)
Ashton	-20	-	29 (0)

Just because soil temperatures at Parma, Kimberly, and Rupert have hit the 28°F or lower mark, growers may not be out of the proverbial woods, yet. *The good news is that changing conditions still may result in tuber kill.* Counterintuitively, warming air temperatures could help reduce soil temperatures low enough to kill potato tubers. Due to brief increases in air temperature and/or rainfall at the beginning of this February, snow cover is already diminishing in some Idaho locations, such as Aberdeen. If air temperatures drop again while there's no longer snow cover, then temperatures in soil now without insulating snow could possibly drop low enough for long enough to kill tubers before springtime arrives and overall warmer conditions begin to prevail.

Wharton (University of Idaho) and Duynslager (Michigan State University) have developed a model that predicts the likelihood of tuber survival over the winter based on soil temperatures at 2 and 4 inches between November 1st and March 31st (see: www.lateblight.org/volunteer-risk.php and the April 3, 2015 Potato Progress (*Volume XV, Number 5*)). The key information garnered from this model is that the killing temperature in soil during this period has to have occurred for more than 120 hours before the risk of tuber survival is considered low. Last year's volunteer predictions can be seen on this volunteer potato risk site. *Stay tuned, because after collecting temperature data through March 31st, Wharton will run the prediction model for 2016 and then post that information on the aforementioned website.*

Figure 1. Soil temperatures at 2 and 4 inch: AgriMetNet weather stations at Kimberly, Aberdeen, Parma, Rupert, and Ashton, ID from Nov 01, 2015 to Feb 23, 2016.

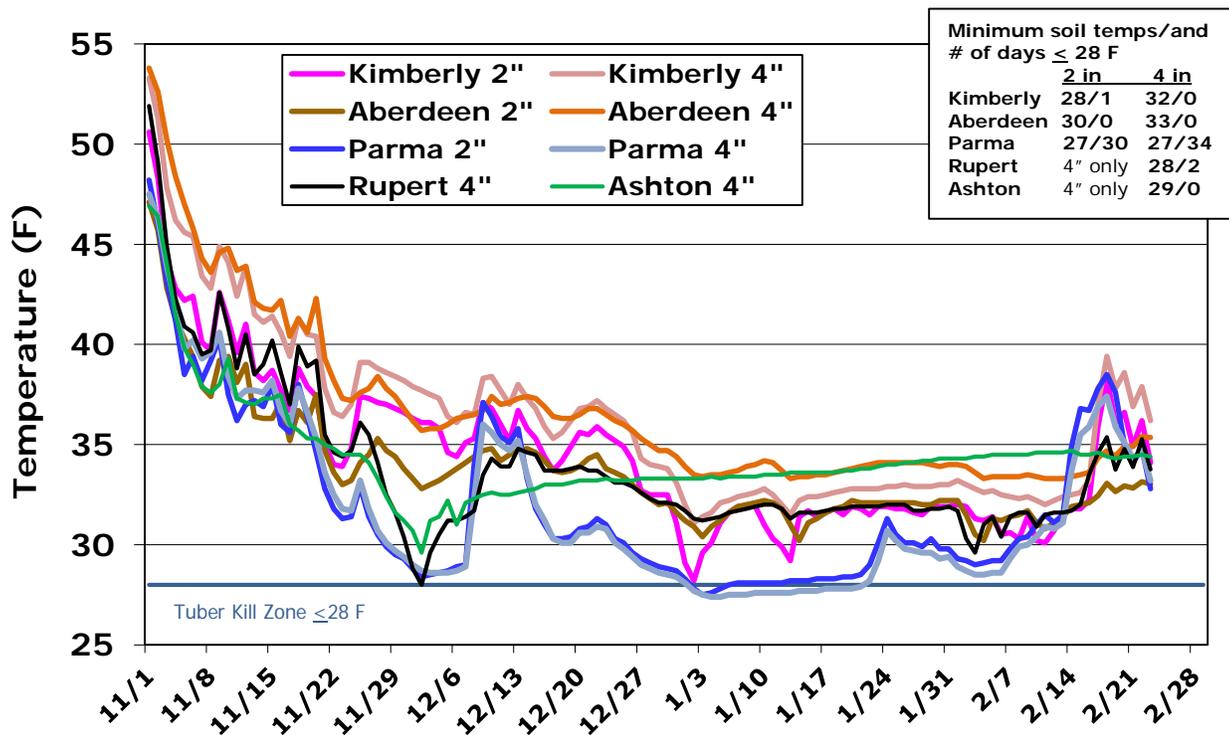


Figure 2. Air temperatures: AgriMetNet weather stations at Kimberly, Aberdeen, Parma, Rupert, and Ashton, ID from Nov 01, 2015 to Feb 23, 2016.

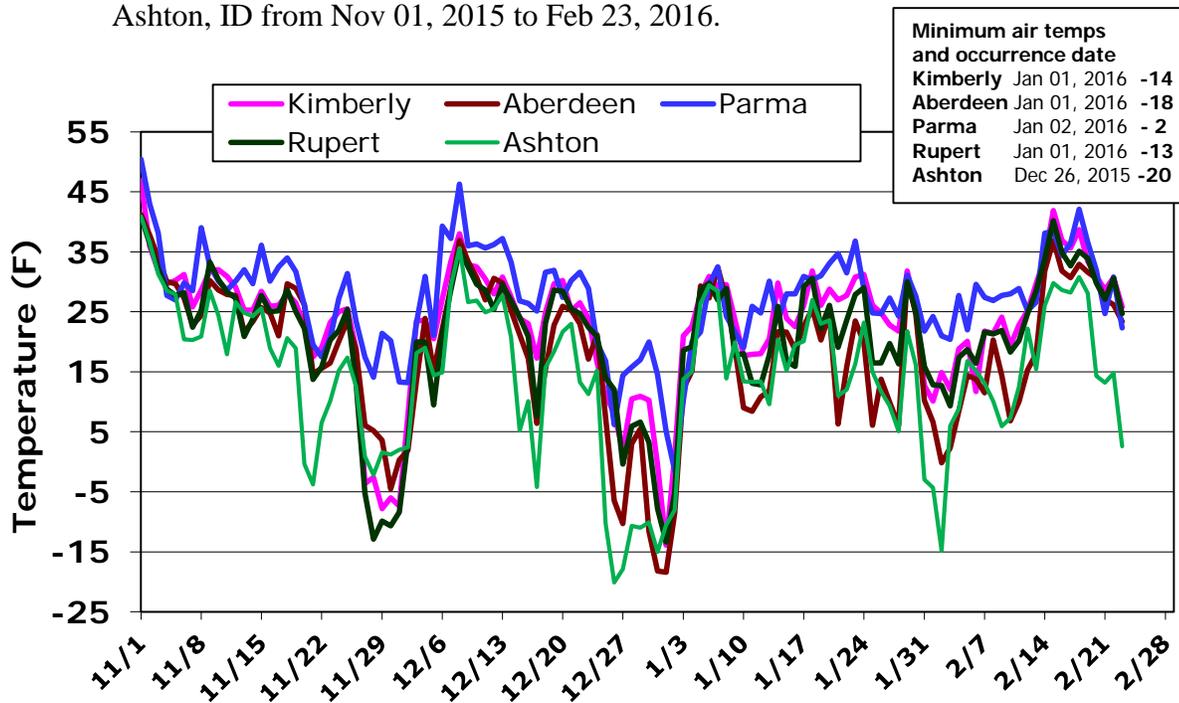
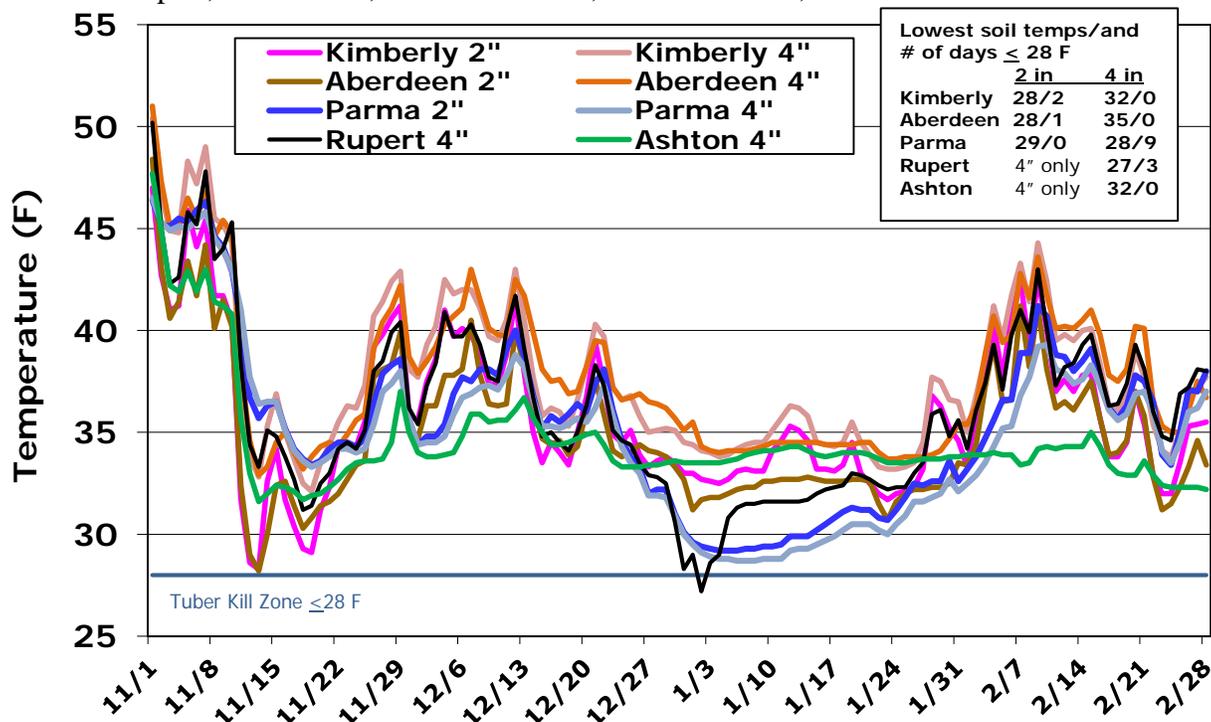
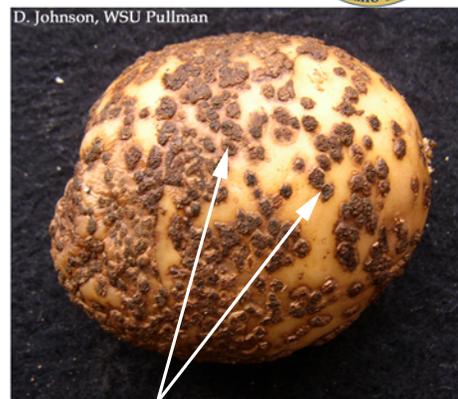
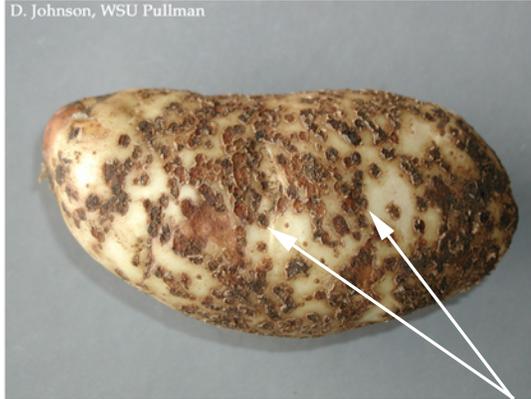


Figure 3. Soil temperatures at 2 and 4 inch: AgriMetNet weather stations at Kimberly, Aberdeen, Parma, Rupert, and Ashton, ID from Nov 01, 2014 to Feb 28, 2015.



Powdery Scab

See also: <http://www.nwpotatoresearch.com/>



Tuber symptoms can vary from shallow depressions to raised scab-like lesions. Lesions at a certain stage of development can be seen to be filled with powdery-looking structures called cystosori, hence the name of the disease, powdery scab.



Powdery scab can appear as galls on roots. These galls look something like galls caused by root-knot nematodes. Severely affected root systems can result in foliar wilting & other above-ground symptoms. Some potato varieties tend to have more symptoms on roots compared to tubers and vice versa.

Tuber symptoms of powdery scab and common scab (see reverse) are very similar, and both pathogens are sometimes found.

Management

1. Avoid planting infected seed into uninfested soil.
2. Follow good rotation practices of 3 or more years between potato crops.
3. Grow varieties that show less severe damage and symptoms in infested soil.
4. There are no effective foliar or soil-applied chemical control options.

General Information

Causal agent: The protozoan called *Spongospora subterranea*.

Distribution: Powdery scab occurs in most potato producing regions in the world, and seems to be getting more prevalent in the Northwest.

Biology: *Spongospora* is a soil-inhabiting organism with a complex life cycle. It can survive in soil without hosts for several years; hosts include many solanaceous relatives of potato including nightshades.

Dispersal: *Spongospora* is easily moved to new locations on seed tubers or in soil.

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