Comments about potato harvest and the cold weather (Nora Olsen and Mike Thornton, University of Idaho)

Temperatures will be well below freezing this week, and there are still some potatoes left in the ground awaiting harvest. Probability of frost damage occurring on some of the remaining crop is high. Although weather is always hard to predict, it appears cooler temperatures will prevail over the next 10 days, providing little reprieve to wait for warmer weather. The cooler temperatures will decrease the window of opportunity to harvest at or above recommended temperatures. Here are just a few considerations for mitigating the risk of frost/cold temperature related quality problems:

1. Soil temperatures have been rapidly getting cooler since the start of September. That means that the protection from frost afforded by warm soil below the 4 inch depth is rapidly going away, and it will also take longer for tuber pulp temperatures to warm to favorable harvest conditions each morning in the remaining few weeks of harvest. You may now need to harvest outside ideal temperatures and increase the risk for quality issues.
2. Cold pulp temperatures will dramatically increase the risk of both shatter and blackspot bruising. Be extremely vigilant in lessening impacts, minimizing drops, and keeping chains full. More information and educational videos can be found at https://www.uidaho.edu/cals/potatoes/bruise-management.
3. It can be difficult to sort out frosted potatoes especially if they are not showing shriveling, weeping, or typical frosted symptoms. Show various examples of frosted potatoes to help employees identify and sort out those potatoes going into storage. Green potatoes have a higher chance of frost. Instruct employees to pick out all green potatoes going into storage.
4. As frosted potatoes breakdown in storage they give off considerable water and increase overall humidity in the storage. Factor the additional water in and adjust humidification as needed. You will need to dry out the frosted potatoes with a strong ventilation and reduced humidity program. Moisture given off from the frosted potatoes needs to be exhausted, and if recirculated, humidification needs to be adjusted to factor in the substantial return air moisture. Frosted potatoes have the potential for soft rot development – lots of air, reduced humidity, no free moisture, and temperatures of 50F or lower will help in lowering the risk of breakdown. Note -- humidity reductions will negatively impact quality of the good potatoes with increased risk of higher shrinkage and pressure bruise.
5. Cold potatoes still need to be wound healed, but extreme caution is needed to avoid condensation in storage. Depending upon humidity, warm air on cold potatoes has the potential for condensation on the potatoes and rot breakdown. Adjust humidity and temperatures to avoid condensation and decide if you can wound heal at cooler temperatures. Healing will take longer and potatoes will lose more weight and be at a greater risk for pressure bruise and dry rot decay, but the risk for soft rot may be lessened. Process potatoes will need to be warmed and cured at temperatures and durations to lower sugar accumulation that occurred due to the colder temperatures.

There are often no clear directives in dealing with frost and cold potatoes and recommendations will vary on a case-by-case basis. Level of frost, duration and extent of cold temperatures, variety, and intended use will all play into decisions made in the next few days. Additional information can be found in an article by Bethke and Fishler “Out in the Cold- coping with frost damaged potatoes” on pages 34-35 in the March 2019 Potato Grower Magazine (http://read.uberflip.com/i/1083747-

march-2019/33?m4=). Feel free to contact Mike Thornton (208-722-6701 ext. 221; miket@uidaho.edu) or Nora Olsen (208-423-6634; norao@uidaho.edu) at the University of Idaho for further discussions and recommendations.