Harvest continues at a rapid pace with the potato crop continuing to mature across much of Wisconsin. Gravities appear to be as high or higher than last year with specific gravities of round white potatoes reported higher than 1.0 and Russet Burbank over 1.80. The canopy has senesced quickly in part due to early blight pressure and early dying, but also due to natural senescence. It’s a pleasure to see so many fields being desiccated in preparation for harvest. There are still no confirmed cases of late blight in the state in spite of a summer with long periods of wetness and cool weather. The majority of late blight fungicides have been moved to other states where there is need to control late blight. Our industry has done a great job this year from the start of the season to now in maintaining a focus on quality pest management. The status of the crop has not changed much since last week so we felt we should focus more on key management practices to insure a successful storage season.

Key Steps to a Successful Storage Season
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1) No late blight is good news for the growers but there are other disease risks out there that can diminish the quality of a good crop.

2) Mature the crop. The crop is senescing and maturing in many parts of the state. Chemical maturity is critical in chipping potatoes prior to vine killing for good quality crop coming out of storage. Vine Killing at least 20 days prior to harvest is critical for good skin set. Skin set is important to prevent physical damage to the periderm during harvest which can lead to infection through wounds.

3) Maintain adequate soil moisture from vine kill to harvest.
   a. Soils that are too dry can lead to increased susceptibility to bruising. In addition growers are reporting higher than normal dry matter. This is often correlated with higher susceptibility to bruising. Bruise management will be necessary to minimize crop damage at harvest.

   b. Soils that are too wet can lead to enlarged lenticels that are more vulnerable to disease infection. In addition, vines have been dead due to early blight in some fields or field areas for several weeks. Heavy rains may keep soils in dead fields wet for longer periods, swell lenticels and
place the crop at risk from leak and pink rot. Delay harvest for several days if heavy rains occur.

4) Segregate potatoes from problem areas. Potatoes from flooded, diseased, or other problem fields or field areas should be segregated. Tubers from these areas tend to have more tuber rot or are more susceptible to break down once they are in storage. These areas need to be flagged before harvest and harvested last so that they can be stored in short term storage bins or run through processing plants now.

5) Harvest tubers at the appropriate pulp temperature. Pulp temperatures below 50 F increase the susceptibility of tubers to impact or black spot bruise during harvest. Harvesting tubers with pulp temperatures greater than 60 F increases the potential for disease development in storage and makes it difficult to remove field heat. (Warm conditions predicted for early September will require close monitoring of pulp temperatures during storage).

6) Remove soil and plant debris from the crop. Minimize the amount of crop debris and soil entering the storage. Soil or crop debris can decrease the air space around potato tubers blocking air flow. Decrease or lack of air flow can prevent drying of tuber surfaces, pile cooling and CO₂ exchange which all promote disease development.

7) Create a flat pile. Fill the storage so that the top of the potato pile is level. Uneven piles can lead to uneven air movement and create pockets with different microclimates. More importantly, uneven piles make it difficult to determine problem areas in the storage.

8) Remove field heat. Newly harvested tubers likely may have uneven pulp temperatures throughout the pile, respirate at higher rates, and have surface moisture. The pile temperature should be equilibrated and cooled to 55-57 F as quickly as possible.

- move the air - up to 1 to 1.5 cfm/cwt as soon as the doors close. Air circulation is important for equilibrating the pile temperature and drying tuber surfaces.

- manage humidity - the book says should maintain humidity at 95% RH to minimize shrink. Some argue no supplemental humidity is necessary during initial storage due to high humidity of WI air and amount of humidity picked up by circulating air through the pile in storage

- bring in outside air - outside air should be run through the storage for at least 4 hrs per day. Oxygen is essential for promoting wound healing and formation of the closing layer over tuber wounds (which prevents disease infection). Purging the carbon dioxide from the storage may be more important than the influence of the outside air on pile temperature.
9) **Precondition the crop.** After the field heat has been removed, the crop needs to be preconditioned to promote wound healing, optimize quality, and set up the crop for long-term storage. The duration of preconditioning will depend on end use. Preconditioning is typically done at 55 to 58°F. This temperature allows for high tuber metabolism but lowers disease development compared to warmer temperatures.

10) **Watch for problem areas.** Frequently inspect the top of the potato pile for indications of storage problems. Key signs include condensation on tubers on the top of the pile or depressions across the top of the pile. Adjust storage management as soon as problem areas begin to occur.

    Future articles will discuss lowering the pile temperature to the appropriate set point, and managing the pile for long-term storage. Have a successful and safe harvest.