impact

University of Idaho Extension programs that are making a difference in Idaho.

Potato postharvest physiology Extension program

AT A GLANCE

The Wayne and Peggy Thiessen Endowed Professorship in Potato Physiology was established to provide leadership to support the Idaho potato growers, processors and shippers.

The Situation

According to the USDA, in 2023, 6.4% (28.02 million cwt) of the total 440.13 million cwt of U.S. potato production was lost due to shrinkage and other postharvest losses. Applying this percentage to Idaho's production, an estimated 9 million cwt of potatoes were lost, translating into an economic loss of approximately $88.1 million. Shrinkage or water loss is mostly caused by inappropriate postharvest storage management.

Although potatoes are stored for eight to 12 months, considerably longer than their four-month cultivation period, postharvest management recommendations might be expected to be well-established. However, there remains a lack of knowledge in industry regarding physiology and how storage management practices influence postharvest performance.

Our Response

In response to these challenges, since 2022, a collaborative team located at the University of Idaho Kimberly Research and Extension Center has actively engaged with the Potato Storage and Agronomy Advisory Committee, led by Nora Olsen (Extension potato specialist). Together, the team identified critical topics in potato postharvest physiology and technology and developed a University of Idaho Extension program focused on delivering research-based education tailored to the needs of the Idaho potato industry.

University of Idaho Kimberly Research and Extension Center Potato Storage Open House event flyer and participants.

Extension and outreach efforts have included invited presentations at industry workshops, stakeholder presentations at national and international levels, publication of Extension bulletins and popular press articles, media interviews, organization of outreach events and dissemination of potato postharvest physiology information on social media.

Program Outcomes

Knowledge gained — since 2022, five Extension bulletins have been published, focusing on respiration rate

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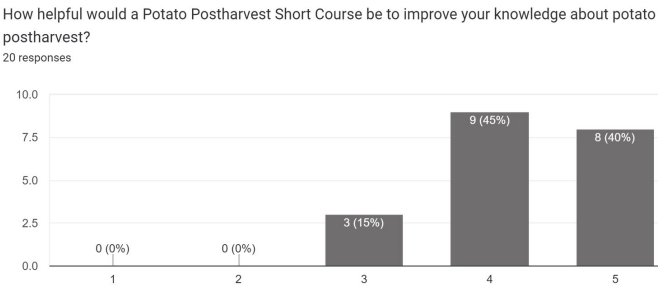
determination, weight loss, and transpiration in established and new potato cultivars. In addition, eight popular press articles were published. Key outreach activities include: 42 presentations for stakeholders (including industry workshops, webinars and radio interviews), 2,018 direct contacts and 26,778 indirect contacts. Radio interviews, magazine articles and online webinars proved highly effective in reaching the target audience.

Behavioral changes — a key example of research adoption by industry is the application of findings on wound healing metabolism at different curing temperatures. Based on this work, McCain Foods now recommends curing low-temperature sweetening-resistant (LTSR) potato cultivars at 50°F instead of 55°F. Potatoes cured at 50°F had lower final weight loss (6.0%) than those cured at 55°F (6.9%) when stored at 45°F and 95% relative humidity. If implemented at an industry scale, this practice could result in an additional 1.29 million cwt of potatoes and an estimated economic gain of $12.4 million for the Idaho potato industry.



Survey about the Potato Postharvest Short Course. 04/06/2023, 69 invitations, 20 replies (28.98%).

The Future

Continued engagement with stakeholders at national and regional events remains a priority. In addition, there is a clear need for a formal educational program on potato postharvest physiology. To address this need, the program is planning to launch a Potato Postharvest Short Course. Input collected from members of the Potato Storage and Agronomy Advisory Committee and the Idaho Potato Commission (IPC) will guide course content and structure, ensuring that the program delivers relevant, practical and actionable knowledge for industry.

In addition, the program was granted the U.S. Department of Agriculture's National Institute of Food and Agriculture conference grant, project award no. 025-67017-44833, to organize the First Fresh Pack Potato Symposium in Twin Falls in 2026.

Cooperators and Co-Sponsors

This initiative was made possible through support from the Wayne and Peggy Thiessen Potato Research Professorship, the Pacific Northwest Potato Research Consortium (NPRC), the Idaho Potato Commission (IPC) and the U.S. Department of Agriculture's National Institute of Food and Agriculture, Program Area "Novel Foods and Innovative Manufacturing Technologies" (project award no. 2024-67018-42677).

This program represents a strong step towards supporting Idaho potato growers, processors, shippers and other stakeholders by strengthening fundamental knowledge and application of potato postharvest management practices.

FOR MORE INFORMATION

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