



Potato Progress

Research and Extension for Washington's Potato Industry

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Post Harvest Application of Phosphorous Acid for Tuber Late Blight Control

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Phosphorous acid has been shown to be effective as a post harvest application for the reduction of late blight rot in storage. Post harvest application of phosphorous acid in the Columbia Basin this season may be an effective tool along with other management tactics previously published (Johnson 2011) to reduce the impact of infected tubers in storage.

The use of phosphite or salts of phosphorous acid was investigated as a post-harvest applied fungicide after research demonstrated that these products could control diseases on potatoes caused by Oomycetes (Johnson *et al.* 2004). Application of phosphorous acid to tubers after harvest and prior to storage can result in a reduction in post-harvest infection by *P. infestans*. In experiments where tubers were submersed in a suspension of *P. infestans* sporangia/zoospores, applications of phosphorous acid-based fungicides (= phosphonate, phosphites) significantly reduced tuber blight (Miller *et al.* 2006). Phosphorous acid fungicides are more effective for this purpose than general disinfestants such as hydrogen peroxide/ peroxyacetic acid products (HPPA) or chlorine dioxide-based products.

Duration between the occurrence of inoculation and post-harvest treatment appears to impact the efficacy of the product applied. HPPA was effective in reducing late blight incidence when applied immediately after inoculation, but was not effective when treatment was made one hour or more after inoculation (Miller *et al.* 2006). Phosphorous acid applications were effective in significantly reducing late blight up to six hours after inoculation. Complete control of late blight was obtained with 12.8 fl oz/ton of phosphorous acid when applied in a larger scale trial (one ton of tubers stored for 77 days at 8.9°C; *unpublished data*). As a result of this work, phosphorous acid is now being used more commonly for post-harvest control of late blight and pink rot.

Typically post-harvest products are applied as a low-pressure, low-volume spray as potatoes are being conveyed into storage. Post-harvest fungicides and disinfestants can be applied to potatoes as a low volume aqueous spray as the potatoes are conveyed into storage. The spray boom is generally located in an area where the potatoes may roll, such as a star-table or a drop from one conveyor to the next, to ensure adequate coverage of the tuber. Post-harvest applications may include one or multiple sets of spray nozzles. With all the post-harvest applied products, full coverage of the tuber is needed for optimal efficacy. The volume of product applied ranges from 0.25 gal to 1 gal/ton tubers. In general, 0.5 gal/ton is recommended to ensure adequate tuber coverage and to avoid excess water on the tuber surface and surrounding equipment.

Several formulations of phosphorous acid are available and active ingredients may differ. Phostrol, Resist 57, Crop-phite and Fosphite have been tested and been found to be effective as a post-harvest application for late blight.

References

Johnson, D.A., 2011. Checklist for managing late blight infected tubers in storage. Potato Progress XI, no 12 (Sept 28).

Johnson D.A., Inglis D.A., Miller J.S. (2004) Control of potato tuber rots caused by oomycetes with foliar applications of phosphorous acid. Plant Dis. 88:1153-1159.

Miller J.S., Olsen N., Woodell L., Porter L.D., Clayson S. (2006) Post-harvest applications of zoxamide and phosphite for control of potato tuber rots caused by Oomycetes at harvest. Am. J. Potato Res. 83: 269-278.

WSPC Research Review Process and Meeting Dates Finalized

The potato commission is about to embark on another fall and winter of hard work on reviewing and planning it's research program. All documents describing the process are posted on the website:

www.potatoes.com/research.cfm

Below are a couple excerpts. Check the website for all the details!

Goals (of the research review and planning process)

1. Build communication, cooperation, and understanding among the commission, other industry members, and the scientific community.
2. Develop an overall research program that is a collaboration between industry and scientists and their institutions aimed to maintain or improve profitability of Washington potato growers.
3. Form strong cooperation among the Pacific Northwest potato commissions and scientists to achieve maximum benefit from all research dollars in the region.

2011-2012 Review and Reporting Schedule

1. **November:** Meetings of subject-matter meetings.

Plant Protection: *November 2, 9:00 am - 4:00 pm, WSPC Office, Moses Lake*

Crop Management: *November 3, 8:30 - 10:30 am, WSPC Office, Moses Lake*

Variety Development/Breeding: *November 3, 10:45 - 12:00 noon, WSPC Office, Moses Lake*

Economic, Sustainable, and Value-Added Research:** *November 3, 12:45 pm - 3:00 pm, WSPC Office, Moses Lake*

2. **December:** Proposals due to WSPC office **December 15.**

See www.potatoes.com/research.cfm or contact Andy Jensen at the commission office for guidance on proposal preparation.

3. **January 15:** Annual progress reports due to the Commission office.

4. **February:** Research results and proposals presentations.

February 15 - 16, 2012, Pasco.