

**Evaluation of post-harvest ozone and phosphorous acid treatments to control silver scurf spread on potato tubers in storage, 2011.**

Potato tubers were obtained from a grower cooperator and placed into storage on 20 Dec 2010 at the Hancock Agricultural Research Station-Storage Research Facility in Hancock, WI to evaluate the silver scurf control effect of postharvest treatments on ‘Dark Red Norland’ potato tubers. Sixteen storage containers (2 x 1 x 1 ft) accommodated a four-treatment trial with four replications. Containers were completely randomized and connected to an enclosed ventilation exhaust system. Each container held 40 potato tubers and was equipped with an input and output valve to allow proper airflow across tubers. Air at 52°F and 98% relative humidity was drawn into a portable ozone generator to produce a 25% ozonated (O<sub>3</sub>) flow and circulated through 8 of the 16 containers for 4 hours each day. The remaining 8 containers received ambient air as control. Four treatments were evaluated and included an untreated control, phosphorous acid at 12.8 fl oz/ton (Phostrol), 25% ozone-incorporated airflow, and Phostrol (12.8 fl oz) + 25% ozone-incorporated airflow. Inoculum was provided to each container by adding 13 field-infected, symptomatic tubers (of 50% disease severity) to 27 healthy-appearing tubers. Tubers were mixed to create a 40 tuber experimental unit with approximately 33% disease incidence initial status. Ten tubers were randomly selected and temporarily removed for disease and desiccation evaluations on 21 Mar (90 days post initiation or DPI) and 25 Apr (120 DPI). Averages for % disease incidence and % desiccation were analyzed with StatGraphics statistical analysis software package (StatPoint Technologies, Warrenton, VA).

Our evaluations focused on how effective Phostrol and ozone were in limiting the spread and advancement of disease progression on tubers. At 90 DPI, all treatments had a mean disease severity of ~60% and a desiccation rating of ~45%. At 120 DPI, the Phostrol treatment had the lowest disease severity and was significantly better than the ozone + Phostrol treatment. Tuber desiccation was not observed until 90 DPI and progressed by 120 DPI to 100% incidence. Post-harvest treatments with Phostrol or ozone were not significantly better than the untreated control in preventing the spread and progress of silver scurf in this trial.

Treatment and rate/ton of tubers	% Disease Severity <sup>z</sup>		% Tuber Desiccation <sup>z</sup>	
	90 DPI	120 DPI	90 DPI	120 DPI
1 Control	58.8 <sup>y</sup>	69.4 ab	46.3	100.0
2 Phostrol 12.8 fl oz.	62.5	63.8 a	43.8	100.0
3 Ozone 10ppm	59.4	70.0 ab	47.5	100.0
4 Ozone 10ppm + Phostrol 12.8 fl oz.	60.6	80.0 b	46.9	100.0

<sup>z</sup> Average disease severity and desiccation percentages on ten randomly selected tubers.

<sup>y</sup> Column means with a letter in common or with no letter are not significantly different (Fisher's LSD,  $P=0.05$ ).