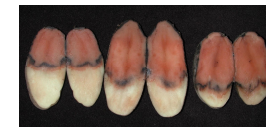# Effect of Irrigation Frequency on Pink Rot in Potatoes

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Introduction

Pink rot is most commonly caused by the Oomycete *Phytophthora erythroseptica*. The disease is favored by excess soil moisture (Blodgett, 1945; Bonde, 1938). As a result, irrigation management is critical for controlling pink rot in potatoes. Overwatering can lead to increased pink rot incidence. Even with proper irrigation management, some varieties will still develop pink rot. Fungicides (particularly mefenoxam and metalaxyl) can be effective in reducing pink rot (Taylor et al., 2004).

Objectives

1. Evaluate frequency of irrigation on the incidence of pink rot.

2. Evaluate fungicide performance under differing irrigation regimes.

Materials and Methods

Research plots (8 rows wide, 40 feet long) were established in 2010 and 2011 in a field that had been continuously cropped to potato for over 7 years. Treatments consisted of three irrigation regimes replicated four times:

1. Irrigation three times per week

2. Irrigation twice per week

3. Irrigation once per week

Each plot received the same amount of water each week. The total amount of water to be applied was estimated based on forecasted ET for the coming week. The total amount of water applied per week was usually close to 2.25 inches during tuber development and bulking. Plots were irrigated using Senninger mini-wobblers as shown in the photo above.

In 2011, four rows of each 8-row plot were treated with foliar applications of metalaxyl (MetaStar 2E) when the largest tubers were dime-sized and again two weeks later.

At harvest, total yield was estimated by harvesting all tubers from two rows in each plot. Tubers were then left on the ground overnight to dry. The incidence of pink rot was then determined.
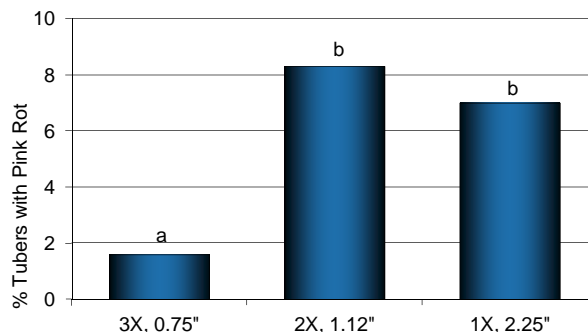

Figure 1. Effect of irrigation frequency on pink rot incidence for Premier Russet; Minidoka, ID; 2010.
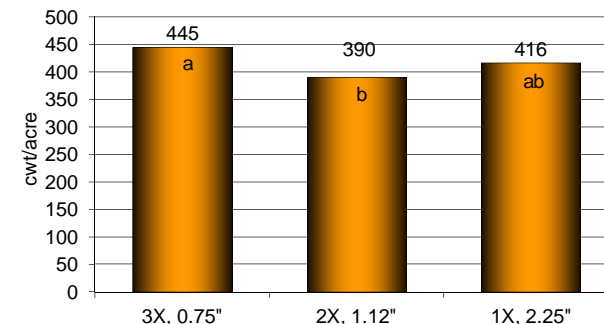

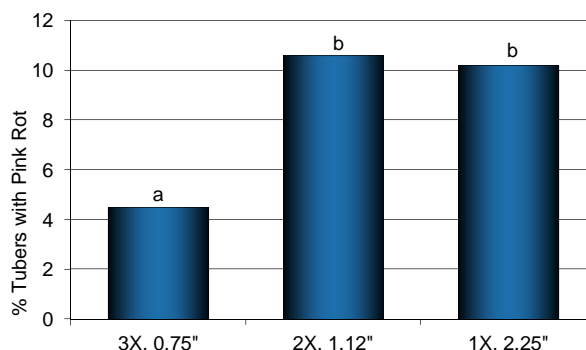Figure 2. Effect of irrigation frequency on total tuber yield for Premier Russet; Minidoka, ID; 2010.

Figure 3. Effect of irrigation frequency on pink rot incidence for Premier Russet; Minidoka, ID; 2011.
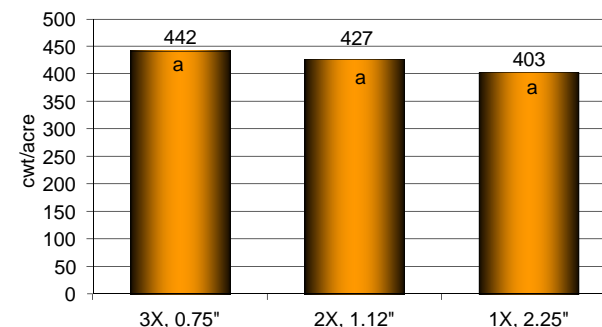

Figure 4. Effect of irrigation frequency on total tuber yield for Premier Russet; Minidoka, ID; 2011.

Table 1. Effect of fungicide treatment averaged over all three irrigation treatments on pink rot incidence and total tuber yield for Premier Russet; Acequia, ID; 2011.

	% Pink Rot	Yield (cwt/acre)
Untreated check	9.8 a	409 a
MetaStar 2E, 12.8 fl oz 2x	6.5 a	439 a

Literature Cited

1. Blodgett, E.C. 1945b. Water rot of potatoes. Plant Disease Reporter 29: 124-126.
2. Bonde, R. 1938. The occurrence of pink rot and wilt in Maine. Plant Disease Reporter 22: 460.
3. Taylor, R.J., Salas, B., and Gudmestad, N.C. 2004. Differences in etiology affect mefenoxam efficacy and the control of pink rot and leak tuber diseases of potato. Plant Disease 88: 301-307.

A copy of this poster can be downloaded by scanning the QR code to the right:

Results and Discussion

1. Less water applied more frequently resulted in significantly less pink rot in both years of the trial. Irrigating three times per week resulted in fewer diseased tubers than irrigating once or twice a week.

2. Irrigating three times per week is similar to what is done under pivot irrigation in some fields in southern Idaho. Set-and-move wheel lines, hand lines, or solid set pipe may irrigate once or twice a week. These results indicate pink rot may be less severe under pivots than other irrigation types.

3. Total tuber yield was generally greater with increased irrigation frequency.

4. Application of metalaxyl did not significantly reduce pink rot or increase yield. The interaction between irrigation and fungicide was not significant so only main effects were presented here.

5. Isolations of the pink rot pathogen in this area have been shown to be resistant to metalaxyl. This may explain the lack of efficacy of the MetaStar application.