

Every Day is Fry Day – From Potato to French Fry

Speakers:

Zachary Frederick

Manitoba Horticulture Productivity Enhancement
Centre

Lindsey Andronak

Agriculture and Agri-Food Canada

Objectives:

To demonstrate the best management practices for growing potatoes acceptable to the processing industry in Manitoba.

Collaborator: Manitoba Horticulture Productivity Enhancement Centre

Demonstration Summary:

Contrary to popular belief, potatoes are not a high-water use crop compared to many other crops. They only require 16-20 inches of water during the growing season, whereas other crops require at least 20 inches (wheat and canola) and up to 25 inches (corn). What makes irrigation so important to a potato crop is that potatoes are extremely sensitive to water stress. Therefore, growers must maintain soil moisture levels within a narrow range, and the exact range changes throughout the growing season.

The total amount of rainfall within the growing season is usually not adequate for Manitoba processing growers that are aiming for maximum yield potential and quality. In addition, concentrated rain events, with long gaps between rains, are not ideal for maximum yield and quality. Consequently, growers need to supplement the water needs of the crop through irrigation. Irrigation systems provide uniform amounts of water to the crop over the duration of the season that the grower can supply water to the system. Growers can determine the amount of water needed by the crop by determining soil moisture levels using various equipment, demonstrated in our plot as outlined below.

Six rows of Russet Burbank potatoes were planted to demonstrate potato growing practices with an emphasis on irrigation management. The plot was fertilized with 422 lbs of ESN per acre and 179 lbs of MAP per acre. All potatoes were treated with Potato ST fungicide and Titan insecticide as a seed treatment. Potatoes were hand weeded throughout the season irrigated as needed. Three different moisture monitoring systems were installed in the plot; Watermarks with sensors at 12 and 24 inches, a Decagon soil moisture and temperature logger with sensors at seed piece height, 15 cm and 30 cm, and an AquaSpy with moisture and EC sensors every two inches for 48 inches.

If improperly irrigated (either too much or too little), potatoes can exhibit poor growth and decreased yields. Tuber quality is often affected, the most obvious symptom being rot from excess water. However, there are also numerous other external (cracking, malformation,

enlarged lenticels) and internal (hollow heart, sugar ends, blackheart) that effect both fresh and processing quality.

Attendees were able to observe sensor setup, how readouts are performed, what the data looks like and how it is interpreted with each sensor. Attendees could also see how a linear irrigator is setup and run. Unexpected guests in the form of Colorado Potato Beetles and a bacterial disease called Blackleg also became part of the exhibit for the public to learn about what these pests and diseases look like and how they are managed. As a conclusion to each presentation, representatives from the J.R. Simplot Company offered fresh French fries to attendees.