Issue 16– August 23, 2024

Manitoba Potato Report

Seasonal Reports Weekly Weather Maps Potato Production

Provincial Summary

- There was widespread rainfall on Aug. 14 and 15 across Manitoba which was very beneficial to the potato crops. The cumulative precipitation from May 1 to Aug.18 is still above the 30-year normal, ranging from 112 to 167% of normal.
- With P-Days over 600 in all of agro-Manitoba, the potato crops are in rapid tuber bulking stage with good set and size profile.
- There is no late blight reported in Manitoba. “Potato early dying” is being reported from more fields.
- Total aphid counts in the traps had a sharp increase over last week. Lots of green peach aphids, and potato aphids were trapped this week, along with other aphids.
- Harvesting for “direct from field to process” has started. Early yields are encouraging.
- Regular weekly reports are also available at *http://www.mbpotatoes.ca/index.cfm*. The site has SPRAYcast® that provides a 3-day spray advisory weather forecast for selected sites.

Ag Weather Data

Precipitation and Soil Moisture

- For the week (Aug. 12 to 18) there was significant rainfall in many potato growing areas of the province on Aug. 14 and 15 (Table1, Fig 2, 3), ranging from 9-10 mm (Rivers, Glenboro) to 47 mm (Treherne, Winkler). *Province of Manitoba | agriculture - Weather Conditions and Reports (gov.mb.ca).*
- The cumulative rains from May 1 to Aug.18 are still above the 30-year normal, ranging from 112% (Glenboro) to 167% (Winkler).at the selected sites (*Table 1*). *https://www.gov.mb.ca/agriculture/weather/pubs/percent-normal-precipitation.pdf*
- By Aug. 11, low rainfall had resulted in a larger dry area in the 0-30 cm soil zone with respect to the field capacity (Fig. 1-left), but rains on Aug. 14 and 15 recharged the 0-30 cm zone (Fig 1-right).

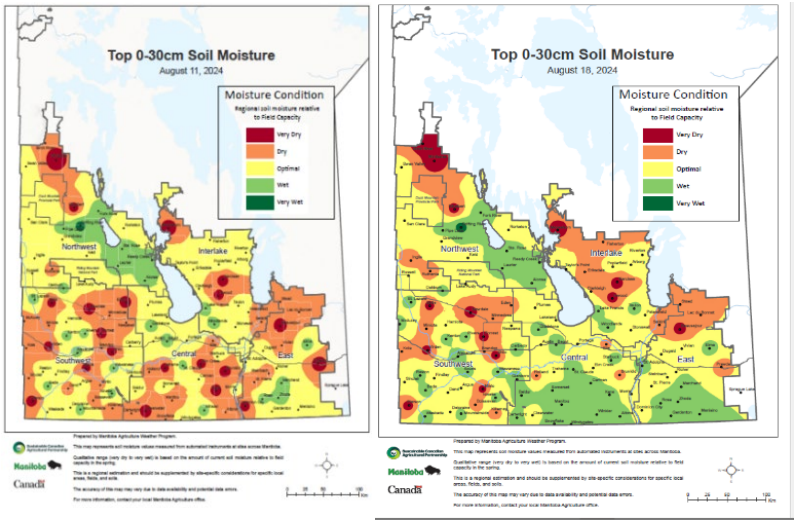

Fig. 1. Last week (left, Aug. 11) there were large potato growing areas in which the soil moisture (relative to field capacity) in 0-30 cm zone was considered to be dry; but due to rainfall on Aug. 14 and 15, the soil moisture has improved (right).

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Manitoba

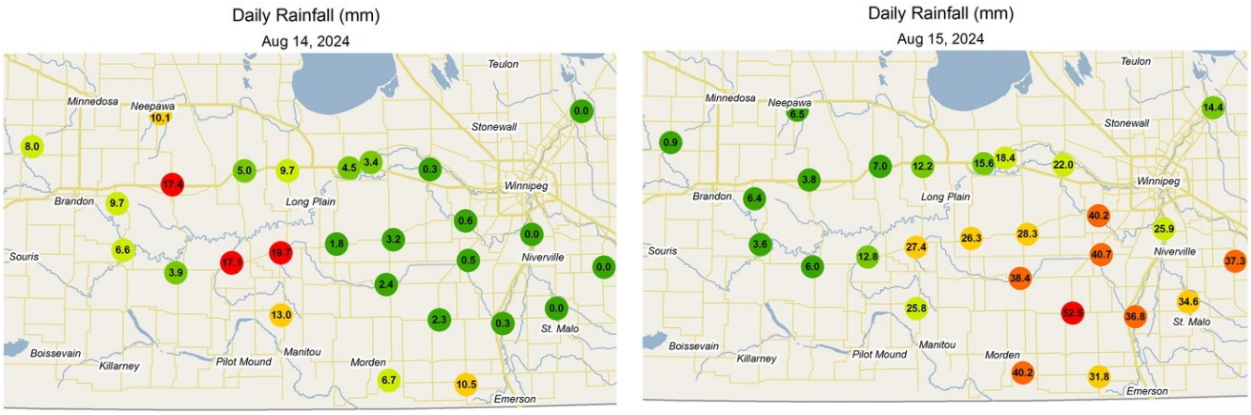

Fig. 2. Rainfall on the 14th (left) and 15th (right) of August was quite substantial and widespread in the province.

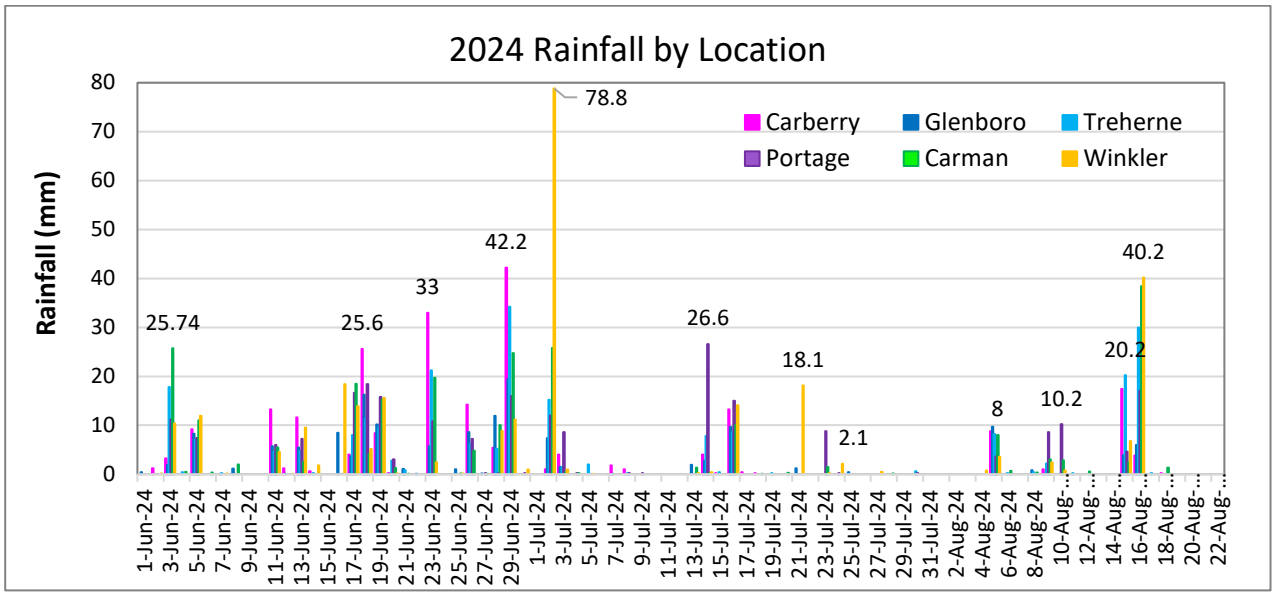

Fig. 3. There were frequent rains in May and June, on July 2-3, but relatively less from mid-July to end of July; till August 14 and 15. Supplemental irrigation was needed from early July to most of August.

- Since mid-July there has been very little rainfall in most potato growing areas, until widespread rains on August 14 and 15. These rains have improved the soil moisture especially in the top 30 cm zone.

Temperatures – Air and Soil

- Daytime high temperatures from Aug. 12 to 18 were similar to the previous week, ranging from 25.6 ^{O}C (Rivers) to 29.8 ^{O}C (Winkler). Overnight lows were generally around 2 ^{O}C warmer than last week, and ranged from 6.2 ^{O}C (Wawanesa) to 11.1 ^{O}C (Austin) (*Table 1*).
- Total accumulated heat units for potato growth, P-Days (Potato Physiological days) from June 1 (50% potato emergence) to Aug. 18 was 100 to 110% of the 30-year normal in the potato growing areas. https://www.gov.mb.ca/agriculture/weather/pubs/percent-normal-p-day.pdf. By Aug. 18, the cumulative P-Days ranged from around 600 in Rivers, Shilo and Carberry to around 650 in the Gladstone, Portage and St.

Claude areas (P-Days (mbpotatoes.ca). This heat range indicates that potato crops which emerged by June 1 are in rapid bulking stage.

- Soils have started cooling down slowly. Since a peak of 19-26 ^{O}C on Aug. 2 at 5 cm depths, the soil temperatures have cooled down to 18-23 ^{O}C on Aug. 21. At 20 cm soil depths the temperatures peaked around Aug. 1 (18-25 ^{O}C) and have dipped by Aug. 21 to 16-22 ^{O}C.

Weather Data Summary for Selected Potato Site Stations

- The "potato crop water demand" (CWD) for the week was much lower than the rainfall received in most potato sites (Table 1). However, in Austin, Glenboro, Rivers and Shilo the CWD was higher than the rainfall received. CWD is a function of crop growth, air temperature and wind speed, all of which affect the water evapotranspiration from a crop.
- According to the Environment and Climate Change Canada (ECCC) current weather forecast, some precipitation was forecast from Aug. 25 to 29 across different potato sites. Forecast for temperature highs are in high 20s ^{O}C and overnight lows in teens from Aug. 25 to 29. Aug. 24 is expected to be a hot day and overnight. Manitoba - Weather Conditions and Forecast by Locations - Environment Canada.
- SPRAYcast® (mbpotatoes.ca) projects that there are good spray times for course and medium size droplets on Aug. 22 to 23. In the afternoon of Aug. 24 the windy conditions will not be good for spraying.

*Table 1. Manitoba Ag Weather Data –**August 12 - 18***

Region	Max Temp (°C)	Min Temp (°C)	Rain (mm) for the week	Crop Water Demand (mm) for the week	Rain (mm) (Since May 1)	2024 Rainfall (% of normal) since May 1
Altona	27.9	10.5	42.1	NA	349	135
Austin	26.9	11.1	11.8	22.4	353	147
Bagot	26.5	8.9	21.8	19.9	359	149
Carberry EC	26.3	7.3	17.4	15.6	335	140
Carman	28.2	9.3	42.0	15.8	372	151
Cypress River*	-	-	-	-	-	-
Glenboro	27.2	7.8	9.9	15.2	267	**112**
Holland	26.6	7.9	29.8	21.1	330	121
Morden*	-	-	-	-	-	-
Portage EC	26.7	12.4	24.5	23.2	330	137
Rivers	25.6	8.0	8.9	20.5	278	132
Shilo	27.0	7.9	16.0	20.6	359	150
St. Claude	26.5	12.0	28.1	18.6	336	136
Treherne	26.0	8.6	47.0	17.7	343	138
Wawanesa	27.4	6.2	10.0	15.5	317	132
Winkler	29.8	9.7	46.9	18.5	429	**167**

For more Manitoba weather information, visit: *www.gov.mb.ca/agriculture/weather*

*** Data was unavailable.** **NA – Crop water demand data not available.**

Crop Progress

- Warm days and cool nights are favorable for tuberization, especially with good soil moisture. Crops are in rapid tuber bulking stages and are over 5-inch size in many fields. Tuber set has been fairly good, ranging from 8-18 per hill (Fig. 4).

- Crops short of nitrogen and / or moisture are showing higher levels of early dying. Due to frequent rains some of the fields lost nitrogen, and the fertigation may not have been able to meet the crop needs in a timely manner.
- Many crops have settled on the ground and created moist to wet micro-climate, and may lead to stem-rots and minor incidences of white mold to show up.
- Nine to ten fungicide applications have been applied so far in some farms and a few insecticide applications mostly for Colorado potato beetles and aphid control in seed fields.
- Harvest for "direct from field" to processing plant has just started. Early yields are encouraging.

Fig.4: Tuber set is generally very good, with varying levels of bulking. Photo: Janelle Lavich (Choice Agri).

Disease Monitoring

- Early blight (EB) spores in Spornado traps were substantially higher than any other time during the season. **The spore count of the cassette appeared be quite high, ranging from nearly 600,000 to 49.4 million** (Table 2)**.** It appears the rains on August 14 and 15 favoured high sporulation and dispersal. Early blight is now prevalent in most of Manitoba, and it is possible that still higher levels of early blight may develop in the coming week. Ranger Russets and early maturing varieties are showing high levels, reaching mid to top of canopy.
- Sporadic instances of blackleg/stem rot continue to be reported, and are sometimes associated with European corn borer injury on stems.
- Potato early dying (PED) is being observed in many areas (Fig. 5), the disease became more apparent after 2-3 weeks of high temperatures and low rainfall in many areas of the province.
    - Verticillium wilt is the major cause of PED at this stage in the crop. Stress on plants from heat and moisture deficit favours PED.
    - This year, shortage of nitrogen in some wet fields (due to leaching and inability to timely fertigate) may also have added N-deficiency stress.
- Virus infected plants continue to be reported from commercial fields. Seed fields in close proximity of such fields are at higher risk of virus transmission by high levels of aphid counts, as seen this week.
- There were reports of flecking on leaves (Fig 6 a-c) from Winkler and Carberry region, which appear to be air pollution related. The symptoms of injury appear to be similar to ozone injury.

Fig.5. a: Field with high level of early dying. b, c: Stem longitudinal sections of plants showing early dying symptoms, have a typical browning compared to almost white healthy stem. Verticillium infection is the main cause; but black dot disease is also associated. Photos a, b: Vikram Bisht (Manitoba Agriculture), c: Janelle Lavich (Choice Agri).

Fig.6 a, b: Flecking and chlorosis of leaf lamina appear to be air pollution toxicity; closely resembling ozone injury, as shown in the Ontario agriculture website below.

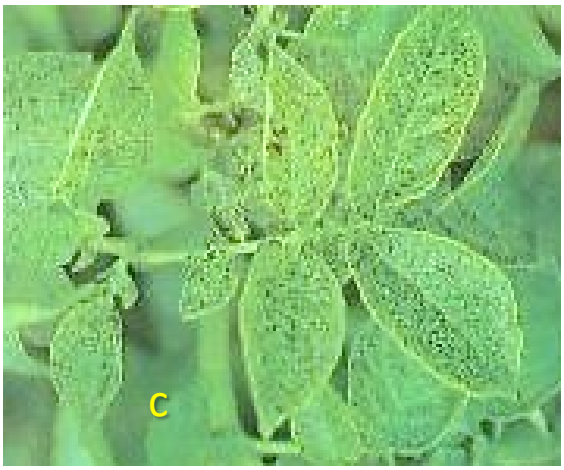

Fig 6 c: *Potato foliage with flecking "pepper spotting" injury typical of ozone injury. Huntsville, Ontario. Photo: Figure 9 in Air pollution injury on potatoes | ontario.ca https://www.ontario.ca/page/air-pollution-injury-potatoes.*

- Ozone, the major component of oxidants, is formed by the action of sunlight on products of fuel combustion and can be moved to nearby growing areas by wind. Ozone injury could occur under the following conditions
    - Atmospheric ozone levels over 80 ppb for four or five consecutive hours, or 70 ppb for a day or two are usually sufficient to injure exposed foliage at a susceptible stage of growth.
    - Humid conditions with cloudy, hazy overcast days and little breeze leads to a high concentration of pollutants at ground level and in hollows.
    - Varieties differ in their sensitivity to air pollution injury.
    - Air ozone levels are recorded by Environment Canada (Fig 7), and should be correlated to levels recorded earlier.

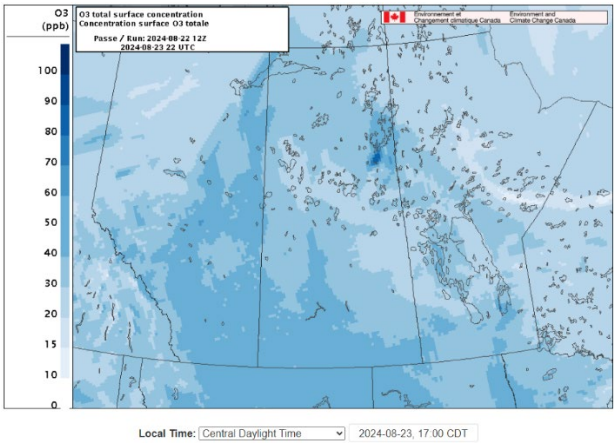

Fig 7. Ozone O3 - 72h Hourly Maps at Ground Level - 12 UTC - Prairies - Environment Canada (weather.gc.ca)

Late Blight Monitoring

Montitoring and Forecasting

- **Late blight Disease** Severity Values (DSVs) are cumulative numbers starting from June 1. Please refer to the risk maps on Late Blight (mbpotatoes.ca). The cumulative June 1 to August 22 DSVs are much above 18, the critical stage for high risk of late blight.
- Currently, the **cumulative 7-Day DSV numbers (August 15 to 22). suggest moderate to high risk** of late blight in Manitoba, if the inoculum was present. (Fig. 8)**.**
- A network of 16 passive Spornado traps for late blight spores has been set up across Manitoba. Spore trapping is another tool-in-the-box of late blight management, and does not replace scouting.
- The ninth week of cassette collections from the spore traps was on Tuesday, August 19. Results from the PCR testing are included in table 2 below.
    - No late blight (*Phytophthora infestans*) spores were trapped in the week (August 12-19) (Table 2).
    - Depending on the location, the spore numbers of *A. solani* trapped were substantially higher than anytime in the season (Table 2). The **Alternaria leaf-spot (ALS) diseases** are present in all potato growing areas of the province. The sudden surge appears to have coincided with widespread rains on August 14 and 15, which may have favoured high sporulation and dispersal. Possibly, higher levels of ALS diseases may occur in the coming weeks.
- Late blight risk maps, P-Days, and SprayCast maps are available at http://www.mbpotatoes.ca/index.cfm.

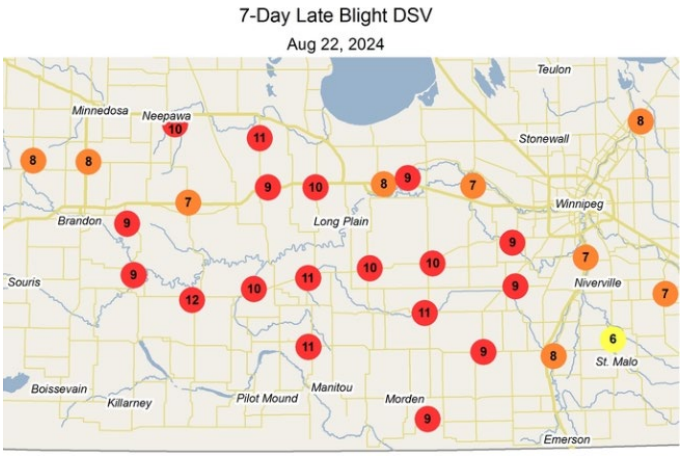

Fig. 8. 7-day cumulative DSVs for the week suggest that conditions have led to moderate to high risk of late blight, in the presence of inoculum.

Table 2: *Phytophthora infestans* and *Alternaria solani* sprore trapping - PCR results - week 9 (August 12-19).

Spore Trap Locations	Pi spores	Early blight (spore #s) max	Spornado Sr. No.
Rivers – SS (WL21)	Negative	3,060,000	H002
Shilo – MW	Negative	**25,200,000**	H362
Douglas – MW	Negative	18,200,000	F456
Wellwood – SS – 32-12	Negative	3,120,000	F462
Carberry N – HW#5 – SS	Negative	**30,800,000**	F371
Carberry N - Acad- HC	Negative	17,200,000	H381
Carberry South (B) – MW	Negative	15,200,000	F467
Glenboro – MW	Negative	1,530,000	F362
MacGregor – SG	Negative	12,200,000	H361
Melbourne – SG	Negative	594,000	F194
Treherne – CC	Negative	13,500,000	F 461
Cypress River – CC	Negative	6,550,000	F 464
Bagot – DM-Delta	Negative	5,450,000	F463
Portage – SG	Negative	**49,400,000**	F192
Carman – SG	Negative	6,970,000	LF-12
Stephenfield – VB	Negative	9,070,000	F459

"-" *Samples not received / collected by shipping time.*

Insect Pests Monitoring

- Suction and pan traps for **aphid monitoring** have been set up in eight seed potato fields across the province. Weekly monitoring is in the ninth week. Samples were received from all eight sites.
- The week's aphid counts were 248, significantly higher compared to last week's 85 total count; in fact the highest for the season (Table 3).
    - In Manitoba, 13 Green peach aphids (GPA) were trapped in the southern Manitoba sites; while **potato aphids (PA)** were trapped from mostly western sites. Based on the samples received the central seed potato areas had very low aphid count.

- The potato-colonizing aphids can spread the PVY to cleaner fields from nearby high levels of inoculum. Some commercial non-seed fields appear to have very high % of virus infected plants. Spraying with protective parafinic oils along with insecticide is recommended. Protection is necessary while the foliage remains green.
- Many seed fields have now been top-killed. It is best to protect the green foliage from aphid infestation till they are completely desiccated.
- MN/ND aphid trap counts were high and similar to the previous week – Green peach aphid captures increased over last week, and were captured from 4 out of 11 locations.

- **Aster leafhoppers** (ALH) appear to have surged in number at many sites. ALH causes aster yellows leading to purple tops and aerial tubers. No economic threshold number for potato crop is available. Pyrethroids can be inexpensive insecticides for managing ALH.
- Delta traps with Iowa strain **European corn borer** pheromone lure traps have been taken down. The season had very low counts of ECB moths as compared to previous years.

Table. 3. Weekly Aphid Report – ***Week 9 (Aug 12 - 19) 2024***

Field #	Town	RM	Green Peach Aphid	Potato Aphid	Other Aphid	Total *	ALH	PLH	Comments
Southern Region									
Field 1-H	**Winker**	Stanley	5	0	17	**22**	0	0	
Field 2-K	**Stephenfield**	Dufferin	7	0	67	**74**	0	7	
Field 3-S	**Winkler**	Rhineland	0	1	8	**9**	0	0	
Central Region									
Field 4-S	**Swan Lake**	Victoria	0	0	2	**2**	0	0	
Field 5-S	**Glenora**	Argyle	0	0	0	**0**	0	0	Not enough liquid, Suction trap count clean
Field 6-S	**Westbourne**	Portage La Prairie	0	0	2	**0**	0	0	
Western Region									
Field 7-A	**Wellwood**	North Cypress-Langford	0	10	31	**41**	0	0	
Field 8-S	**Carberry**	North Cypress-Langford	0	3	7	**10**	0	0	Suction trap count clean
	Totals of 8 sites		**13**	**15**	**222**	**248**	**1**	**8**	

* *The aphid counts are a summation from a suction trap and two pan traps in a field.*

** *Suction fan may not be working.* *ALH = Aster leafhopper, PLH = Potato leafhopper.*

Growers and industry stakeholders, please report or submit for diagnosis, any disease or insect observations of importance. If you suspect late blight in your area, please contact vikram.bisht@gov.mb.ca, or 204-745-0260.

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