PRAIRIE CROP DISEASE MONITORING NETWORK

PRAIRIE WIND TRAJECTORY AND CEREAL RUST RISK REPORT for June 24-30, 2025

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Agriculture and Agri-Food Canada (AAFC) and Environment and Climate Change Canada (ECCC) have been working together to study the potential of trajectories for monitoring insect movements since the late 1990s. Trajectory models are used to deliver an early-warning system for the origin and destination of migratory invasive species, such as diamondback moth. In addition, plant pathologists have shown that trajectories can assist with the prediction of plant disease infestations and are also beginning to utilize these same data. We receive two types of model output from ECCC: reverse trajectories and forward trajectories.

'Reverse trajectories' (RT) refer to air currents that are tracked back in time from specified Canadian locations over a five-day period prior to their arrival date. Of particular interest are those trajectories that, prior to their arrival in Canada, originated over northwestern and southern USA and Mexico, anywhere diamondback moth populations overwinter and adults are actively migrating. If diamondback adults are present in the air currents that originate from these southern locations, the moths may be deposited on the Prairies at sites along the trajectory, depending on the local weather conditions at the time that the trajectories pass over our area (e.g. rain showers, etc.). Reverse trajectories are the best available estimate of the ''true'' 3D wind fields at a specific point. They are based on observations, satellite and radiosonde data.

Disclaimer

Information related to trajectory events based on forecast and diagnostic wind fields and cereal rust risk is experimental, and is **OFFERED TO THE PUBLIC FOR INFORMATIONAL PURPOSES ONLY**. Agriculture and Agri-Food Canada, Environment Canada, and their employees assume no liability from the use of this information.

1. RUST DEVELOPMENT IN SOURCE LOCATIONS

a. Pacific Northwest (PNW)

i. The USDA-ARS Cereal Disease Laboratory posts maps showing observations of stripe and leaf rust in the USA and maps as of July 3, 2024 (note no changes from the June 17-23, 2025 PCDMN rust risk update) are shown in Figures 1-4, with information for the PNW region in Figures 1a and 1b.

ii. In the most recent update on June 18, 2025, Dr. Chen, USDA-ARS/WSU, indicated that they have finished stripe rust assessments in their winter wheat trials at five locations in Washington State and at Hermiston, Oregon (Dr. Chen, USDA-ARS/WSU, Stripe Rust Update and Special Notes on Yr5 and Yr15, June 18, 2025, Stripe rust report 06/19/25 | WAWG). Very high levels of stripe rust (>=90%) occurred at these locations on susceptible test lines/varieties. In contrast, stripe rust severities in commercial fields in the PNW on both winter and spring wheat have been low and generally <1%. Reduced rainfall will likely limit further development of stripe rust on spring wheat, although fungicide is suggested on susceptible varieties where increased moisture has occurred or with irrigated crops. Dr. Chen also indicates that the 2025 season for stripe rust on winter wheat is mainly over now.

iii. Drs. L. Hebb and U. McKelvy, Montana State University (MSU), reported on the recent observations of stripe rust in research trial plots at multiple Montana locations (Stripe Rust Found on Winter Wheat in Montana – Northern Ag Network and https://www.ars.usda.gov/ARSUserFiles/50620500/CRBs/2025%20CRB%20June%2027.pdf).

1. Symptoms were found on susceptible varieties in test plots in southwestern Montana near Bozeman (Gallatin County), and at the Kalispel Northwestern Agricultural Research Centre

(Flathead County). Levels at the Gallatin County trial were generally low to moderate depending on the variety/line, while trace levels were observed at the Kalispel trial site

2. There was an additional report of trace levels at another research farm (A.H. Post Farm) near Bozeman in southwestern Montana
3. No symptoms of stripe rust have been observed on winter wheat in trials at Moccasin (central MT), Sidney (eastern MT), Huntley (southern MT).

iv. **As of July 3, 2025, the current limited development of stripe rust, especially in commercial fields, and dry weather conditions in the PNW suggests this region represents a low risk of being a source of stripe rust inoculum for Prairie wheat growers in 2025. Further significant PNW stripe rust development is not expected, while the winter wheat crop is well into the grain filling period and as the crop starts to mature it will no longer be an important source of stripe rust for the Prairie region (https://www.wawg.org/crop-progress-report-06-16-25/, Crop progress report 06/30/25 | WAWG).**

1. The observation of stripe rust in Montana trial sites brings the stripe rust problem much closer to southern Alberta and southwestern to southcentral Saskatchewan and could represent a regional source of this disease.

v. Currently there are no reports of stripe rust symptoms in Prairie winter or spring wheat crops.

b. **Texas/Oklahoma**

i. **As of July 3, 2025, the Texas/Oklahoma region is no longer a significant source of stripe, leaf, stem and crown rust inoculum for dispersal into the Prairie region of Canada.** As of June 29, 2025, 80% and 71% of the Texas and Oklahoma winter wheat crops have been harvested, respectively (https://quickstats.nass.usda.gov/results/6973F6E0-3DE0-3153-BEBB-489BD4DB599D). Given the growth stage of Texas and Oklahoma winter wheat crops, they no longer represent an important source of uredospores which only develop on green living non-senesced plant tissues.

c. **Kansas/Nebraska**

i. County-based observations of stripe rust in Kansas and Oklahoma winter wheat fields as of June 26, 2025, are shown in Figure 5 (https://wheat.agpestmonitor.org/stripe-rust/). Note only some states appear to be using this reporting tool.

ii. Dr. DeWolf provided an update on June 3, 2025 regarding the appearance of low levels of stem rust in two Kansas counties, while also indicating stripe rust had been found in several central and northwestern Kansas counties, but generally at low levels ([CEREAL-RUST-SURVEY], E. DeWolf, Stem Rust Detection in Kansas, June 3, 2025, http://fmp.crl.umn.edu/fmi/webd/CRS-mail).

iii. Earlier this spring there was a report of stripe rust in Ontario and this may be related to overwintering of the pathogen on winter wheat, while the agpest monitor site also indicates further detections (Figure 5, https://www.realagriculture.com/2025/05/growers-must-be-vigilant-as-stripe-rust-confirmed-in-ontario/?utm_source=twitter&utm_campaign=May%2014%2C%202025&utm_medium=soci). This early development could act as a source of stripe rust for further regional development and as a consequence scouting, especially in fields planted to susceptible varieties, may be needed along with potential fungicide application.

iv. Continued stripe rust development has been reported in Ontario (https://x.com/OntAg/status/1925899641133953228; https://farmtario.com/crops/ontario-growers-urged-to-scout-for-stripe-rust/, https://x.com/JoannaMWallace/status/1932153361312383092, https://x.com/Ellen_Sparry/status/1932112213692588128, https://x.com/Ellen_Sparry/status/1932062087116706245, https://x.com/KelseyBanks/status/1931652768424436007).

v. On June 13, 2025, Dr. Wegulo indicated that stripe rust had continued to spread in Nebraska with a total of 14 counties reporting stripe rust symptoms, while only one county had reported very low levels of leaf rust (Figure 6, https://cropwatch.unl.edu/stripe-rust-expands-nebraska-wheat-fields-leaf-rust-remains-isolated/). On June 16, J. Fomba, Graduate Research Assistant, University of Nebraska-Lincoln, reported observations of stripe rust during surveys in Nebraska (https://x.com/FombaJanis/status/1934668034079326511).

vi. The most recent update from Nebraska indicates continued observations of stripe rust, especially in eastern Nebraska, although its late arrival will likely have minor impacts on winter wheat yields (https://cropwatch.unl.edu/late-season-rust-observed-eastern-nebraska-wheat-limited-yield-impact-expected/). Significant levels of leaf rust were observed at a research site in Lancaster county, while stripe rust infections are starting to mature with the production of the teliospore stage. Surveys indicated that leaf rust was found in two more counties, with a total of three counties being affected, while stripe rust is in 14 counties (Figure 6).
    1. Dry conditions in Nebraska likely have slowed down development of stripe and leaf rust, while the USDA Farm Service Agency has indicated as of June 26, 2025, that drought conditions in numerous Nebraska counties have resulted in these regions being a "primary natural disaster areas due to drought conditions" (https://cropwatch.unl.edu/news/usda-designates-numerous-nebraska-counties-natural-disaster-areas-due-drought/).

vii. In late May the first observation of stripe rust was reported in Wisconsin in a research trial at the Arlington Agricultural Research Centre (Stripe Rust Detected in Wisconsin Wheat | Wisconsin Ag Connection, Figure 5). Symptoms were observed on a susceptible trial line.

viii. In a June 19, 2025, North Dakota State University (NDSU) Crop & Pest Report, Dr. A. Friskop, reported that none of the cereal rusts have been reported in North Dakota, while further updates on the appearance of rusts will be provided (https://www.ndsu.edu/agriculture/sites/default/files/2025-06/09%20June%2019%202025%20CPR%20Final.pdf).

ix. **As of July 3, 2025, there is generally a low risk associated with the Kansas/Nebraska region being a significant source of stripe and leaf rust inoculum for dispersal into the Prairie region of Canada.** Drought conditions that have occurred in Nebraska will likely limit further rust development. The observation of stripe rust in Wisconsin in late May also brings the stripe rust issue potentially closer to the central to eastern Prairie region. Finally, winter wheat development in Kansas is progressing with 53% of the crop harvested and 94% mature as of June 29, 2025 (https://quickstats.nass.usda.gov/results/6973F6E0-3DE0-3153-BEBB-489BD4DB599D and https://quickstats.nass.usda.gov/results/1C41AA49-0BF1-39A2-A1D0-1F984815FB2F). In Nebraska as of June 29 approximately 4% of the winter wheat crop has been harvested (https://quickstats.nass.usda.gov/results/6973F6E0-3DE0-3153-BEBB-489BD4DB599D). As Kansas and Nebraska winter wheat crops move towards maturity and harvest, they no longer represent an important source of uredospores which only develop on green living non-senesced plant tissues.

2. Reverse trajectories (RT)

a. Since April 1, 2025 the majority of reverse trajectories that have crossed the prairies have originated from the Pacific Northwest (Idaho, Oregon and Washington) (Figures 7-12).

b. **Pacific Northwest (Washington, Oregon, Idaho)** – Since April 1, 2025, the greatest number of reverse trajectories, crossing the Prairies, have originated from the Pacific Northwest (n=1030, Figure 7). Most of these trajectories passed over Alberta and western regions of Saskatchewan (Figure 8). For the week of June 24-30, 2025 there have been a total of 143 trajectories for 35 locations up from the 114 reverse trajectories that passed through the Prairie region over 35 locations from June 17-23, 2025 (Table 1). BEISEKER and LETHBRIDGE, AB, and SELKIRK, MB each had six trajectories, while CALGARY and OLDS, AB, GAINSBOROUGH, GRENFELL, NAICAM, NORTH BATTLEFORD, TISDALE, WATROUS, and WEYBURN, SK, and BRANDON, RUSSELL, and SWAN RIVER, MB each had five trajectories from the Pacific Northwest from June 24-30, 2025. MEDICINE HAT and VULCAN, AB, REGINA, and YORKTON, SK, and ARBORG, CARMAN, DAUPHIN, PORTAGE, each had four trajectories during this same period, with EDMONTON, LACOMBE, PROVOST, SEDGEWICK, and VEGREVILLE, AB, KINDERSLEY, MOOSE JAW, SASKATOON, SWIFT CURRENT, and UNITY, SK having three trajectories each from the Pacific Northwest for June 24-30, 2025 (Table 1). The remaining two locations had 1-2 trajectories from the Pacific Northwest. Interestingly several locations were in Manitoba (Figure 9).

   i. **As of June 30, 2025, there is moderate-high risk associated with the PNW region being a significant source of wind trajectories for dispersal of the stripe rust pathogen into most of the Prairie region. Locations with three or more trajectories during this period would be at higher risk.**

c. **Oklahoma and Texas** – Given that Texas and Oklahoma crops are mature and being harvested, this region is no longer a significant of wind trajectories for dispersal of rust pathogens into the Prairie region of Canada (https://quickstats.nass.usda.gov/results/6973F6E0-3DE0-3153-BEBB-489BD4DB599D).
d. **Nebraska and Kansas** – A total of 298 reverse trajectories, originating from Kansas and Nebraska have crossed the prairies, primarily Manitoba and Saskatchewan (April 1 – June 30, 2025) (Figure 10). Most of these trajectories passed over Manitoba and central to eastern Saskatchewan (Figure 11). From June 24-30, 2025, there were a total of 17 trajectories over 13 Prairie locations, compared with 18 trajectories for nine locations from June 17-23, 2025 (Table 2). All locations with trajectories from the KS/NE region had 1-2 events from June 24-30, 2025 (Table 2).
   i. **As of June 30, 2025, there is a low risk associated with the KS/NE region being a significant source of wind trajectories for dispersal of rust uredospores into most of the Prairie region.**
e. **Montana** – Given the recent observations of stripe rust at several Montana locations over the last few weeks, this region could represent a source of stripe rust spores for the Prairie region. A total of 1059 reverse trajectories, originating from Montana, have crossed the prairies (April 1 – June 30, 2025) (data not shown). From June 24-30, 2025, there were a total of 101 trajectories over 28 Prairie locations (Table 3). GAINSBOROUGH, SK, BRANDON, CARMAN, PORTAGE, and SELKIRK, MB each had six trajectories from Montana from June 24-30, 2025, with SWIFT CURRENT, and TISDALE, SK, and ARBORG, MB having five trajectories. Over the same period, MEDICINE HAT, AB, and MOOSE JAW and WEYBURN, SK had four events, while LETHBRIDGE, AB, GRENFELL, KINDERSLEY, NAICAM, NORTH BATTLEFORD, REGINA, SASKATOON, WATROUS, and YORKTON, SK, and DAUPHIN and RUSSELL, MB each had three trajectories.
   i. **As of June 30, 2025, there is a low to moderate risk associated with the Montana region being a significant source of wind trajectories for dispersal of rust uredospores into most of the Prairie region.**

3. Prairie Crop Development, Weather Conditions, and Overwintering of Rust

a. Winter wheat – Winter wheat is moving into the grain filling stages, with some Manitoba crops setting seed (https://tinyurl.com/3e7xw9tv, https://tinyurl.com/2edadm3j, https://tinyurl.com/59b7835t).
b. Spring wheat – Across the prairie region spring wheat is generally moving out of the stem elongation and into the flag and head emergence stages, although early seeded fields are starting to flower (https://tinyurl.com/3e7xw9tv; https://tinyurl.com/2edadm3j; https://tinyurl.com/59b7835t).
c. This past week (June 23-29, 2025) the average temperature across the Prairies ranged from around 12 to 20°C, with the coolest areas being in Alberta and northern cropping areas of Saskatchewan (Figure 12).
d. Growing season temperatures (April 1-June 29, 2025) have been 1-3 °C above average for large areas of the Prairies, although the BC Peace was up to 3°C above normal for this period, while areas around Grande Prairie, AB, southcentral and southeastern Saskatchewan and western Manitoba have been close to normal or slightly cooler than normal (Figure 13).
e. Accumulated rainfall over the past week (June 23-29, 2025) ranged from around 0 to 52 mm for the Prairie region. Levels were lowest in Manitoba, and areas in central to southern Saskatchewan and large areas of Alberta (Figure 14). Wetter areas included the northeastern Alberta and central to northern cropping areas of Saskatchewan, and northwestern Manitoba.
f. Growing season rainfall from April 1 to June 29, 2025 has been below normal in the Peace region of Alberta northeastern Alberta, northwestern Saskatchewan and a path from southwestern to northeastern Saskatchewan, and most of Manitoba (Figure 15). Large areas of Alberta from the Edmonton region to the US border, west-central Saskatchewan, the Saskatoon region, and southeastern Saskatchewan, and southwestern Manitoba have had close to average to above average rainfall (Figure 15).
g. Currently, there are no reports of early season stripe rust development in winter wheat, which would suggest potential overwintering, especially of stripe rust (personal communication: S. Rehman, R. Aboukhaddour, AAFC Lethbridge; and H.R. Kutcher, U. of S.).

4. **Overall Rust Risk Assessment and Need For In-Crop Scouting**
   a. **Crop development and weather**
      i. Prairie winter wheat crops are generally moving into the post-heading and grain filling growth stages, while much of the spring wheat crop is moving into flag leaf emergence, with some early planted crops moving into head emergence and flowering.
      ii. Temperatures have been somewhat higher than normal for most of the Prairie region since April 1, 2025, and from June 23-29, 2025 temperatures ranged from around 12 to 20°C. These temperatures are generally not conducive to leaf and stem rust development, although cooler temperatures are more conducive for stripe rust.
      iii. Growing season rainfall for the Prairie region has been variable with some areas below or above normal. Recent rainfall in some areas the Prairies could potentially have washed rust spores from the air and into wheat crops, especially winter wheat, while also resulting in canopy moisture conditions that may favour infection and further rust development.
   b. **Pacific Northwest** – There were moderate to high numbers of reverse wind trajectories that passed over the PNW region and into the prairies from June 24-30, 2025. Stripe rust development, especially in commercial winter wheat fields is generally lower versus 2024. **Overall, as of July 3, 2025 the risk of stripe rust appearance from the PNW is generally low and scouting for this disease in the Prairie region is generally not urgent (Figure 16).** Nonetheless, Prairie locations with three or more trajectories may be at higher risk (Table 1). The late development and low levels of stripe rust in commercial PNW fields has had an overall dampening effect on the rust risk from the PNW.
   c. **Montana** - The recent detection of stripe rust in research plots at multiple locations in Montana brings the stripe rust issue adjacent to the Prairie region. These observations bring the stripe rust problem much closer to southern Alberta and southern Saskatchewan and could represent a regional source of this disease. There were a moderate number of trajectories that passed over Montana and into the Prairie region from June 24-30, 2025. **Overall, as of July 3, 2025 the risk of Montana acting as a source of stripe rust for Prairie region is generally low given observations of stripe rust have been in research trial plots.** However, further stripe rust development in commercial Montana wheat fields could increase the risk for Prairie producers.
      i. Prairie wheat growers in areas with >=three trajectories from Montana are encouraged to be on the look out for symptoms of stripe rust, **especially in fields planted to susceptible to moderately susceptible varieties.** For information on cereal variety reactions for stripe rust, please consult your Provincial variety guides:
         1. Alberta
         2. Saskatchewan
         3. Manitoba.
   d. **Kansas-Nebraska corridor** – There was a low number of wind trajectory events from the KS/NE region for June 24-30, 2025. **Overall, as of July 3, 2025 the risk of stem, leaf, stripe, and crown rust appearance from the Kansas-Nebraska corridor is generally limited and scouting for these diseases in the Prairies is not urgent (Figure 17).** Dry conditions and the progress of winter wheat crop towards maturity and harvest will reduce the risk from the KS/NE region. However, the detection of stripe rust in research plots in Wisconsin brings the stripe rust issue closer to the Prairie region.
   e. Where farmers or consultants noticed stripe rust development on winter wheat in the fall of 2024, it is recommended to scout winter wheat fields that have resumed growth in spring 2025. Scouting is especially critical where the variety being grown is susceptible/moderately susceptible to stripe rust. Currently, there are no early spring reports of stripe rust on winter wheat.

Contacts for rust research and extension expertise

f. **Research**
   i. Reem Aboukhaddour, AAFC Lethbridge, AB, reem.aboukhaddour@agr.gc.ca. Stripe rust;
   ii. H.R. Kutcher, University of Saskatchewan, Saskatoon, SK, randy.kutcher@usask.ca. Stripe rust;
   iii. B. McCallum, AAFC Morden, MB, brent.mccallum@agr.gc.ca. Leaf, stem, and stripe rust;
   iv. Xiben Wang, AAFC Brandon/Morden, MB, xiben.wang@agr.gc.ca. Stem and crown rust of oat.
   v. S. Rehman, Western Crop Innovations (formerly Olds College/Alberta Agriculture), Field Crop Development Centre, Lacombe, AB, srehman@westerncropinnovations.com. Stripe and leaf rust;
   vi. G. Brar, University of Alberta, gurcharn.brar@ualberta.ca. Stripe rust.

g. **Extension**
   i. Alberta Ministry of Agriculture and Irrigation, Mike Harding, michael.harding@gov.ab.ca;
   ii. Saskatchewan Ministry of Agriculture, Alireza Akhavan, alireza.akhavan@gov.sk.ca;
   iii. Manitoba Ministry of Agriculture, TBA.

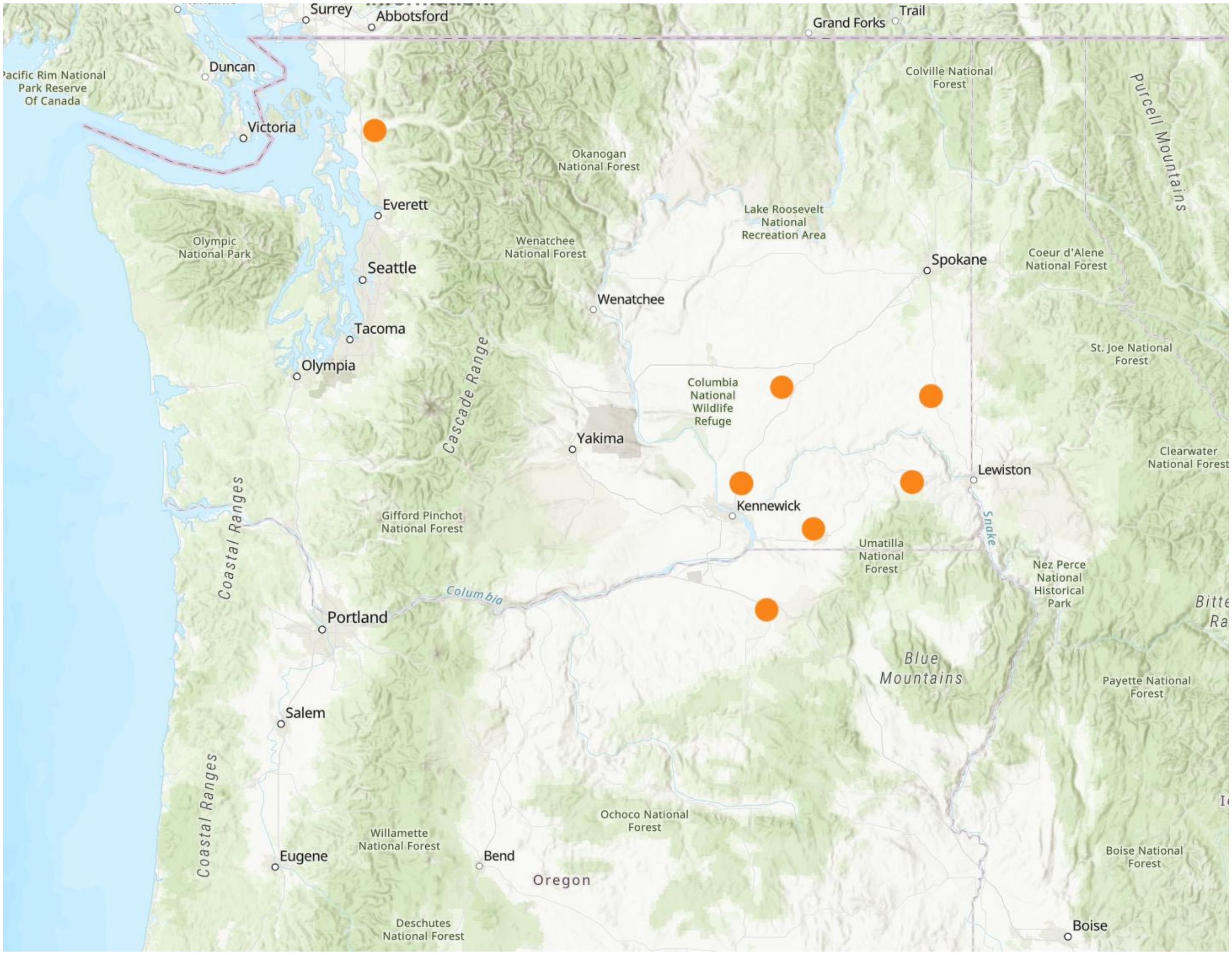


Figure 1a. Pacific Northwest stripe rust observations in wheat, USDA-ARS, Cereal Disease Laboratory, Cereal Rust Observation Maps as of July 3, 2025 (note no changes from the June 17-23, 2025 PCDMN rust risk update). https://usdaars.maps.arcgis.com/apps/mapviewer/index.html?webmap=7eabb3bc66c045568a406569b731ac6d (note the map is updated as new reports are received).

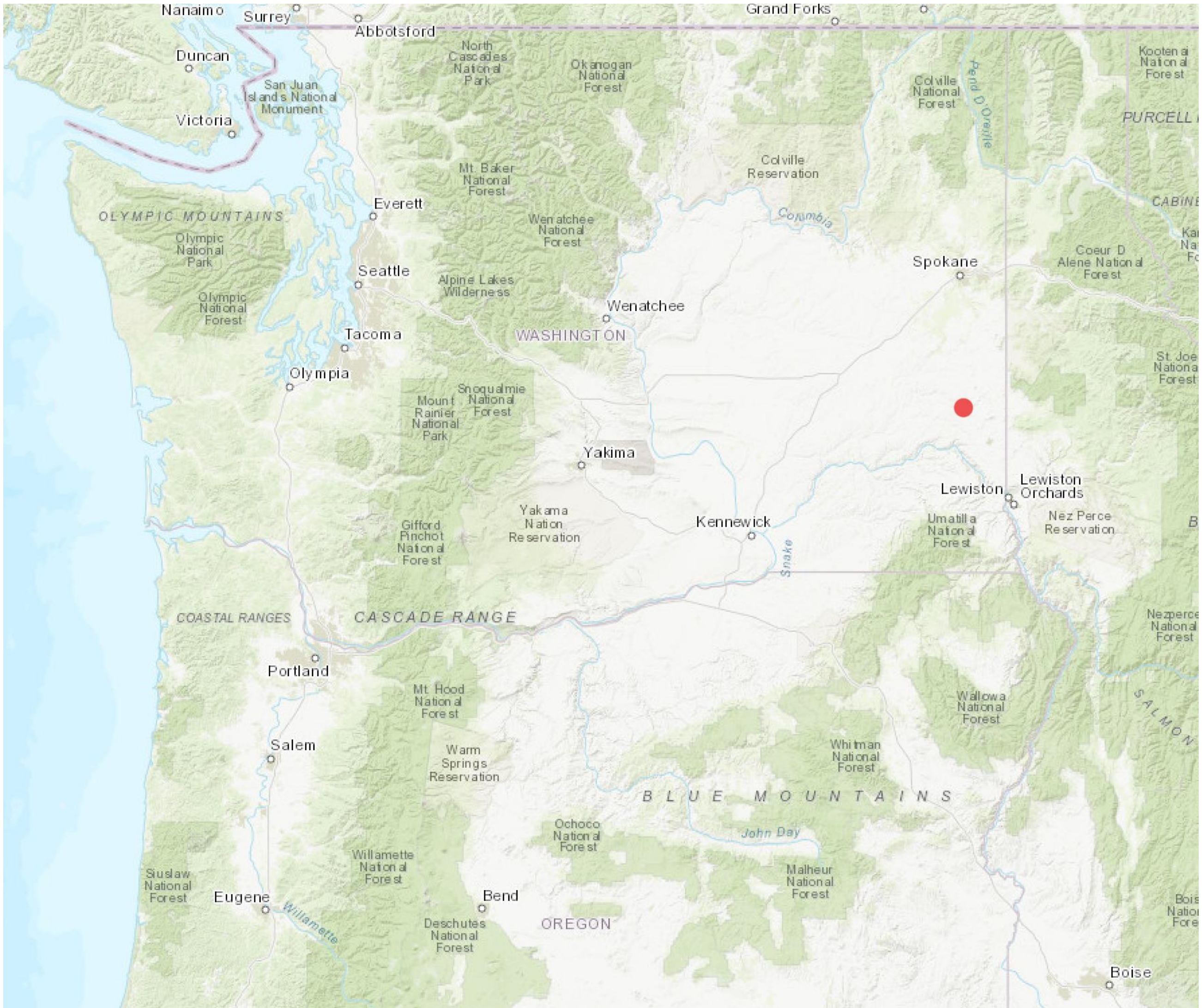


Figure 1b. Pacific Northwest leaf rust observations in wheat, USDA-ARS, Cereal Disease Laboratory, Cereal Rust Observation Maps as of July 3, 2025 (note no changes from the June 17-23, 2025 PCDMN rust risk update), https://usdaars.maps.arcgis.com/apps/mapviewer/index.html?webmap=5dedcdc1a86443a09189c2b6e5598c54 note the map is updated as new reports are received).

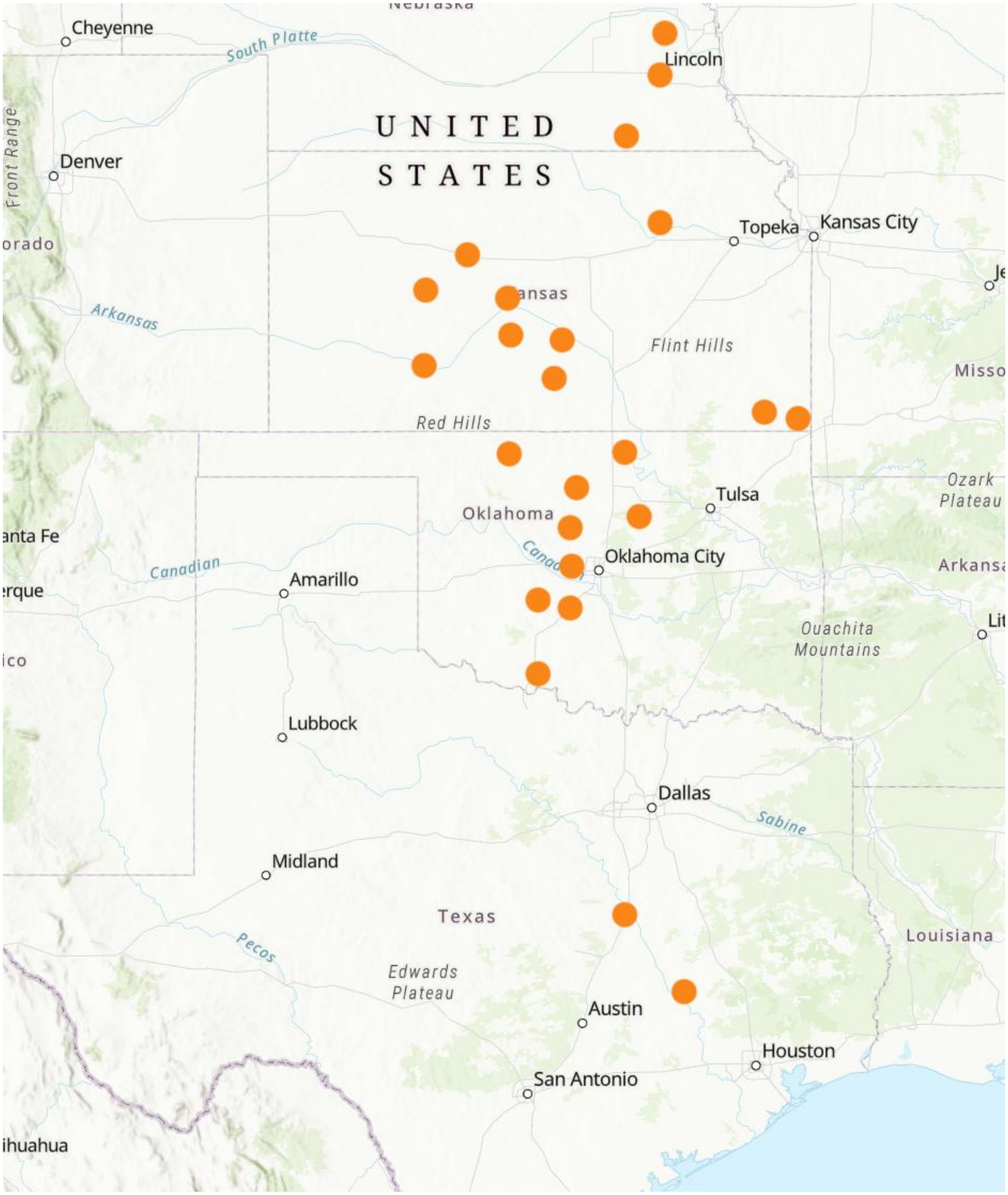


Figure 2. Texas, Oklahoma, and Kansas stripe rust observations in wheat, USDA-ARS, Cereal Disease Laboratory, Cereal Rust Observation Maps as July 3, 2025 (note no changes from the June 17-23, 2025 PCDMN rust risk update), https://usdaars.maps.arcgis.com/apps/mapviewer/index.html?webmap=7eabb3bc66c045568a406569b731ac6d (note the map is updated as new reports are received).

Figure 3. Texas and Oklahoma leaf rust observations/collections in wheat, USDA-ARS, Cereal Disease Laboratory, Cereal Rust Observation Maps as of July 3, 2025 (note no changes from the June 17-23, 2025 PCDMN rust risk update), https://usdaars.maps.arcgis.com/apps/mapviewer/index.html?webmap=5dedcdc1a86443a09189c2b6e5598c54 (note the map is updated as new reports are received).

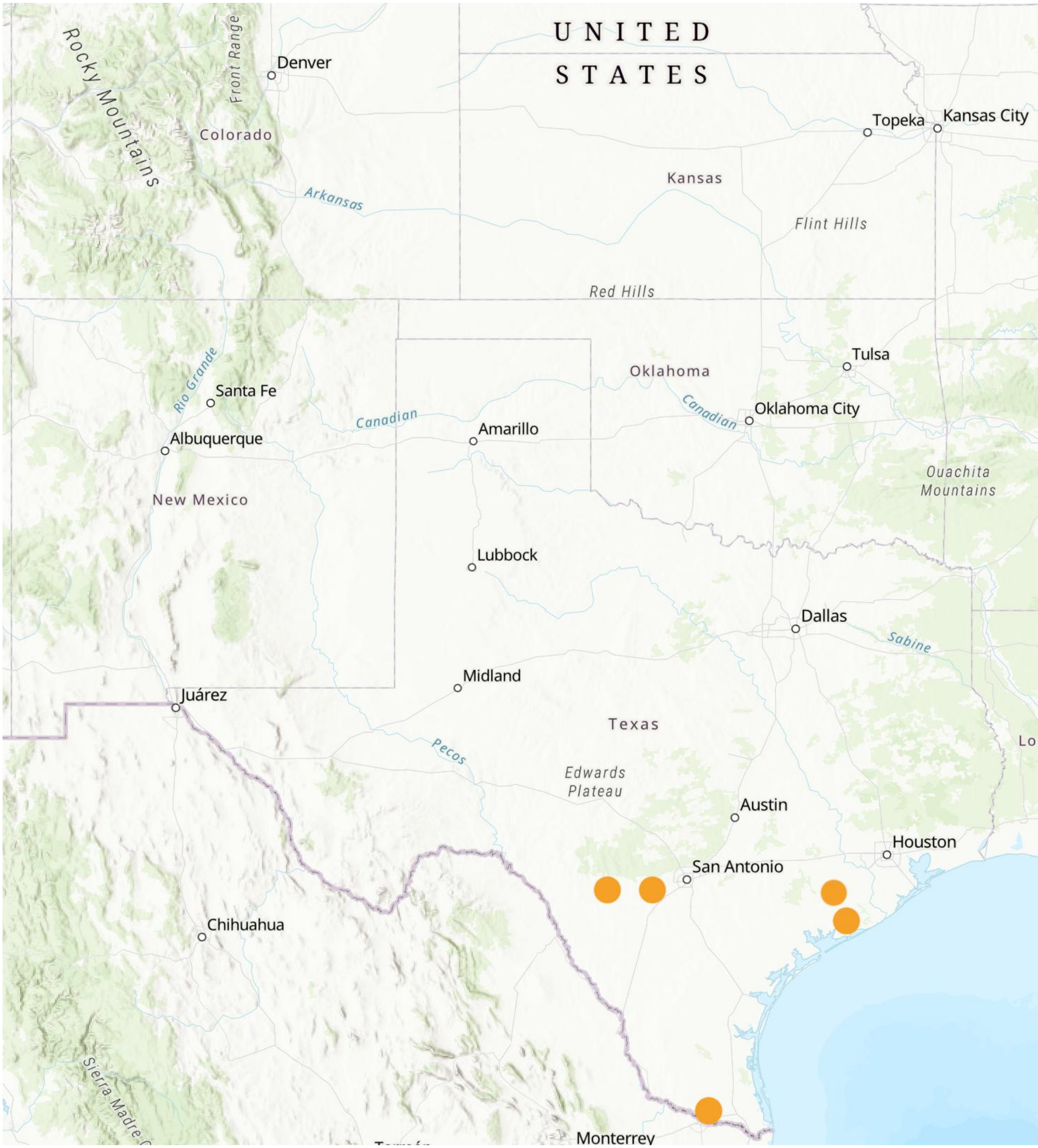


Figure 4. Texas oat crown rust observations/collections in wheat, USDA-ARS, Cereal Disease Laboratory, Cereal Rust Observation Maps as of July 3, 2025 (note no changes from the June 17-23, 2025 PCDMN rust risk update), https://usdaars.maps.arcgis.com/apps/mapviewer/index.html?webmap=a5bae196706b48fa83a8d5e1b344f802 (note the map is updated as new reports are received).

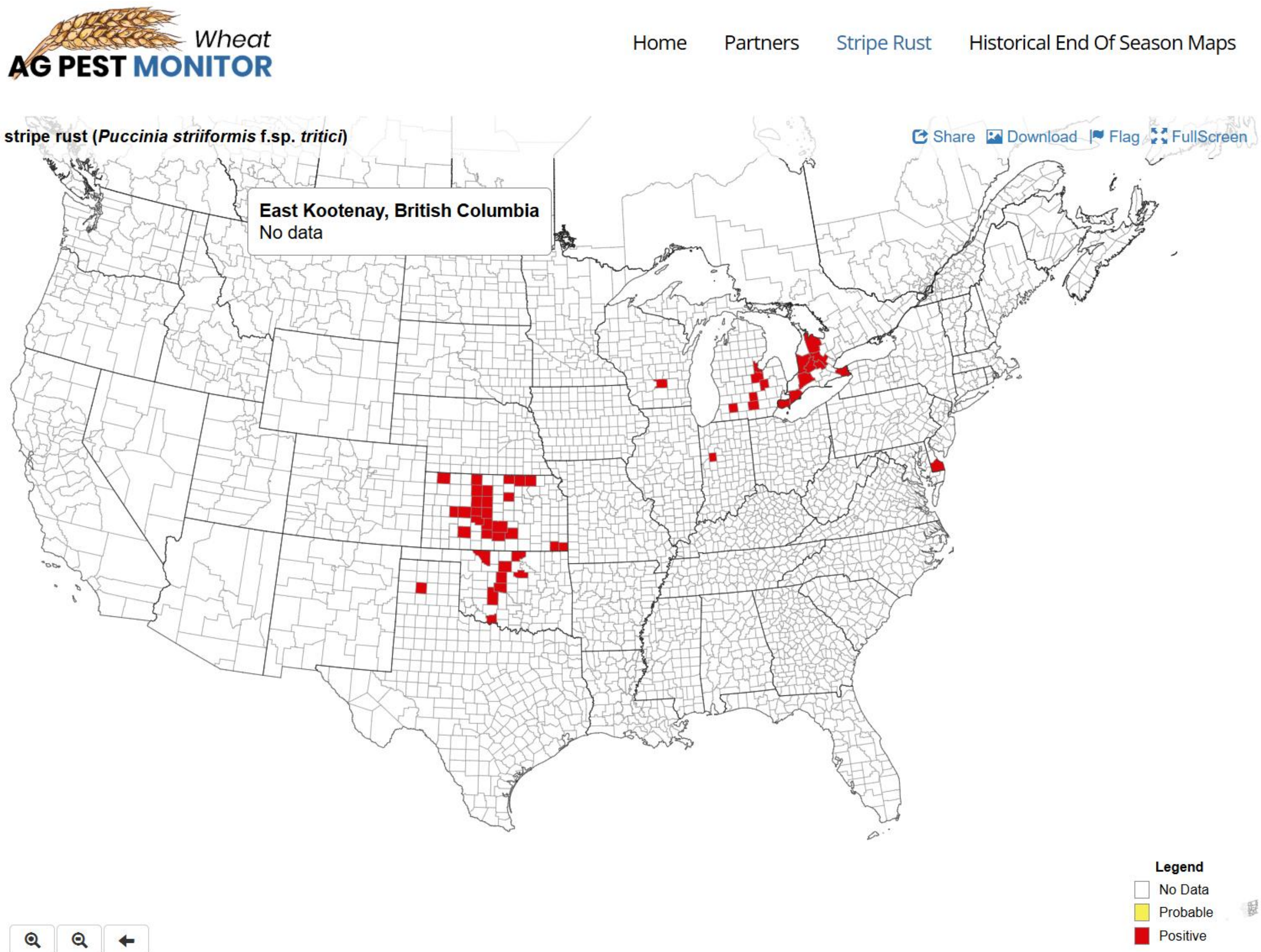
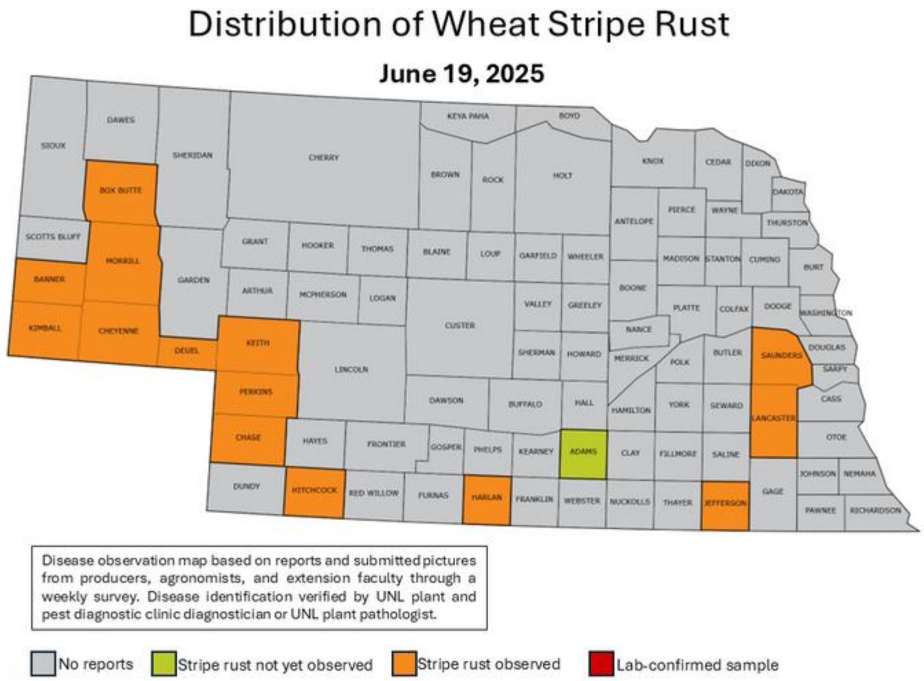


Figure 5. USA stripe rust observations, as of July 3, 2025, courtesy of AG PEST MONITOR: Wheat, https://wheat.agpestmonitor.org/stripe-rust/.



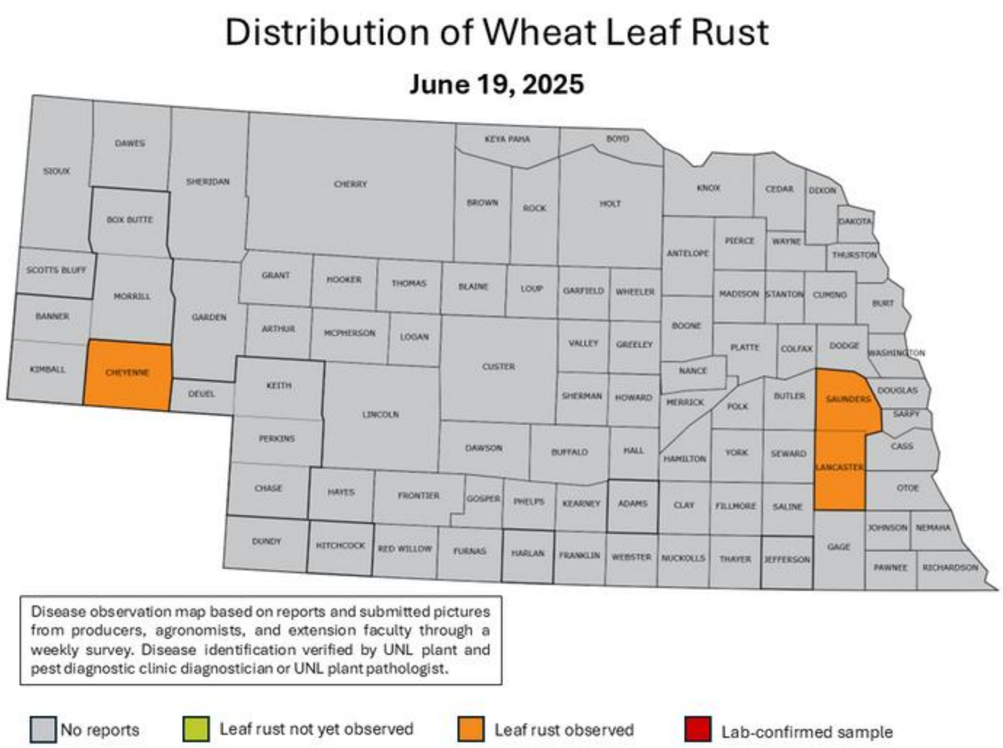


Figure 6. Distribution of stripe (top) and leaf (bottom) rust in Nebraska, USA, as of June 19, 2025 (https://cropwatch.unl.edu/late-season-rust-observed-eastern-nebraska-wheat-limited-yield-impact-expected/).

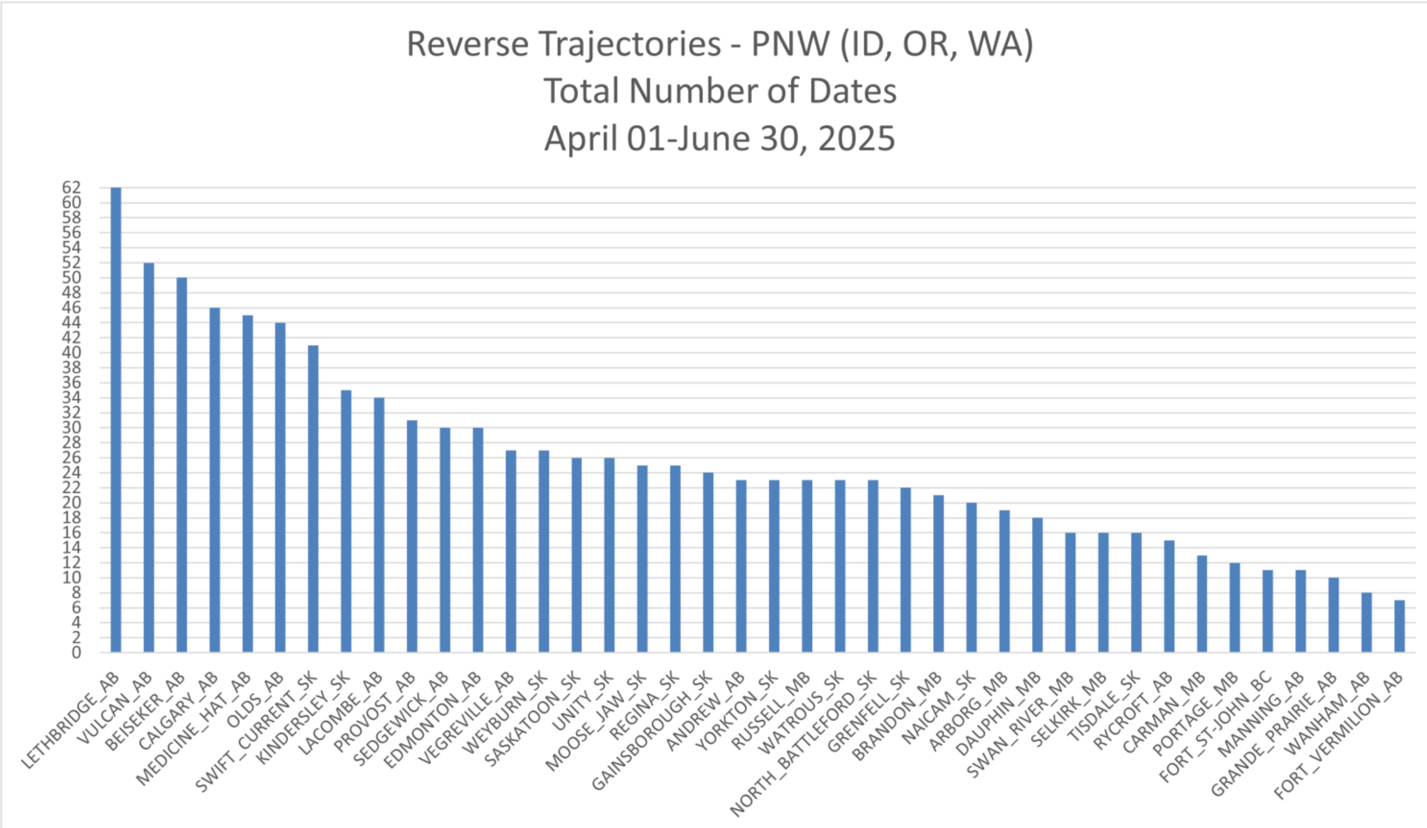


Figure 7. Reverse trajectory locations and number of events, for reverse trajectory events originating from the Pacific Northwest region of the USA, April 1 – June 30, 2025.

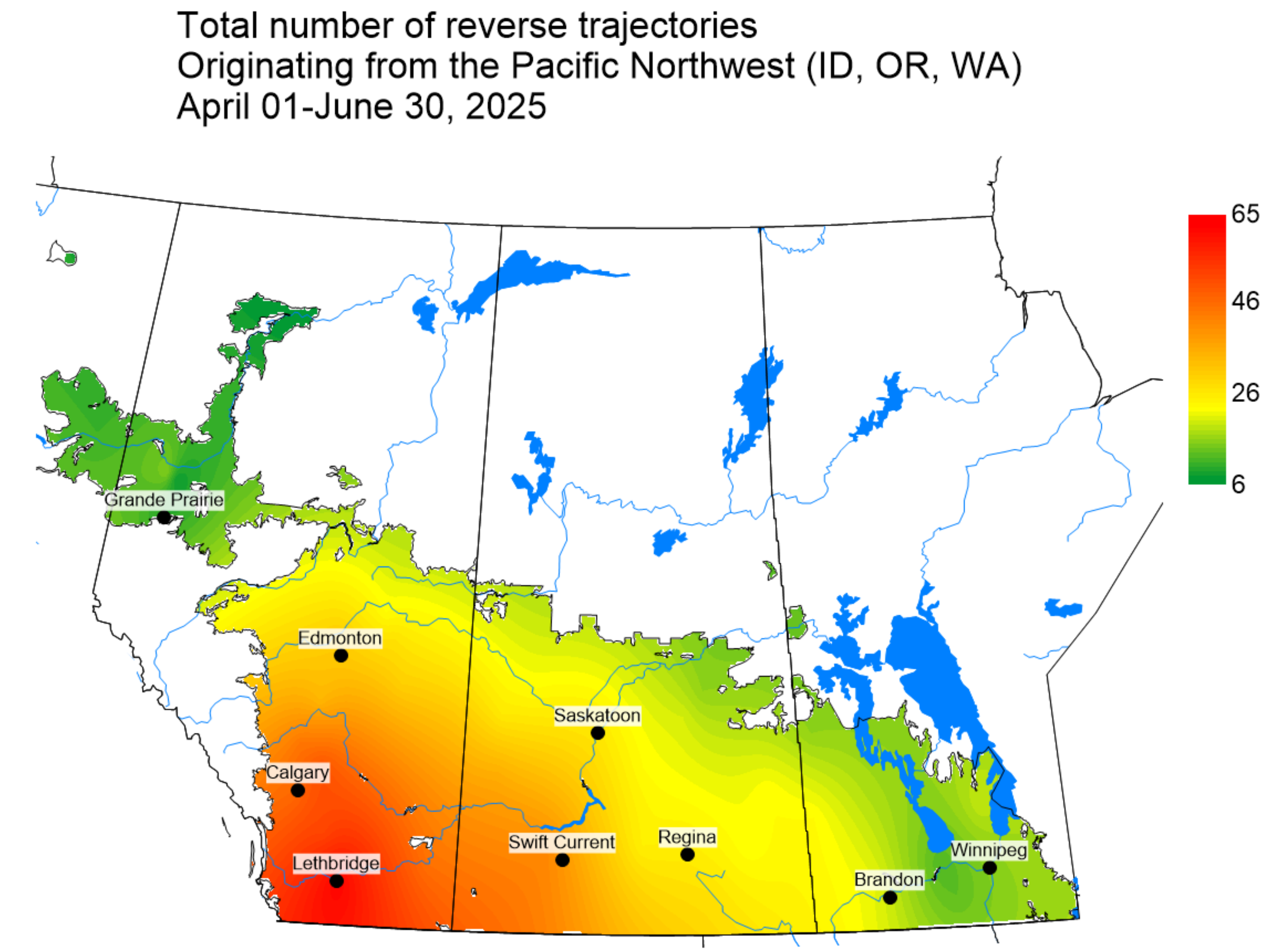


Figure 8. Total number of dates with reverse trajectories originating from the Pacific Northwest region of the USA that have crossed the Prairies between April 1 – June 30, 2025.

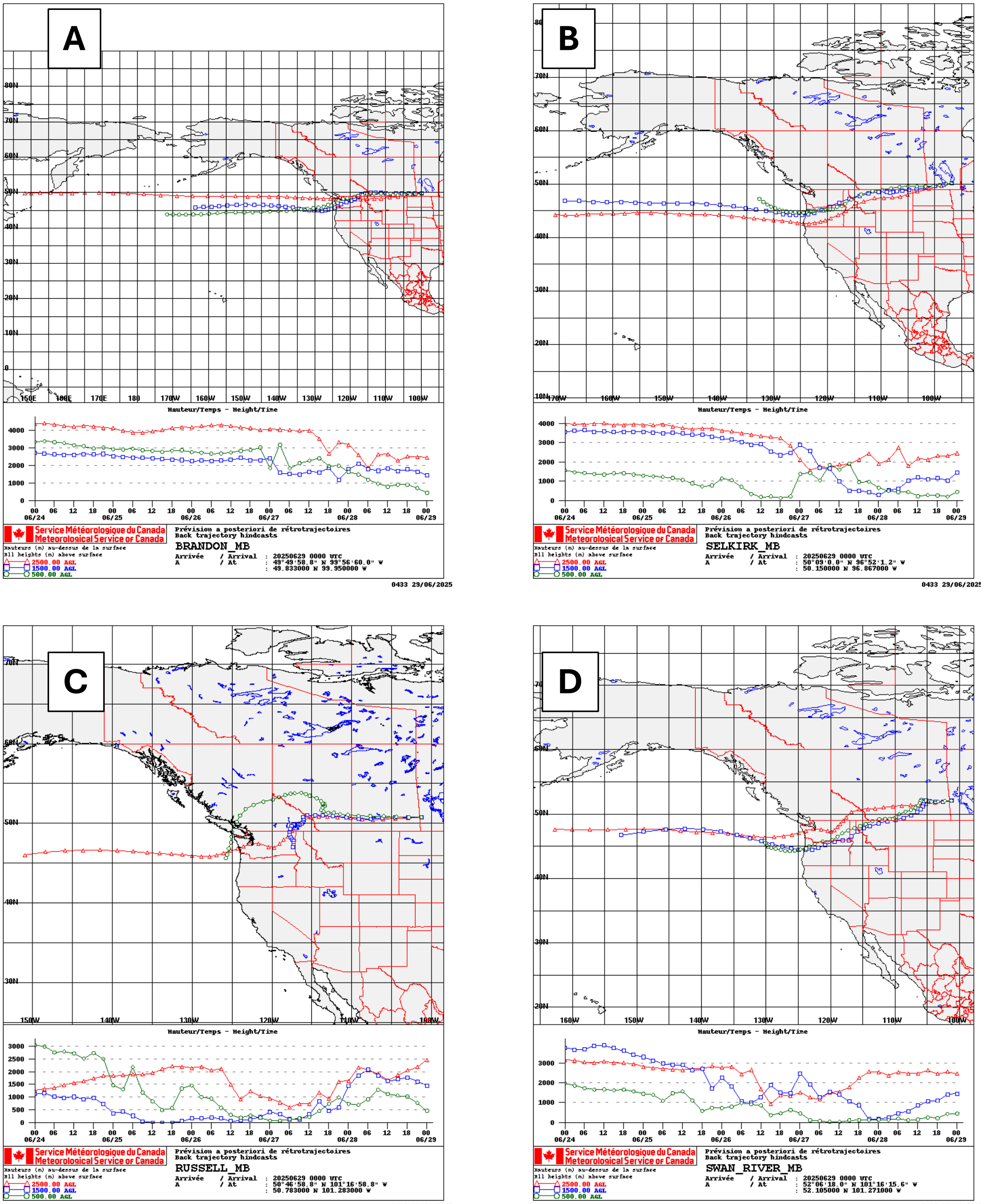


Figure 9a-d. Wind trajectory maps from Environment Canada for Brandon (A), Selkirk (B), Russell (C), and Swan River (D), MB, June 29, 2025.

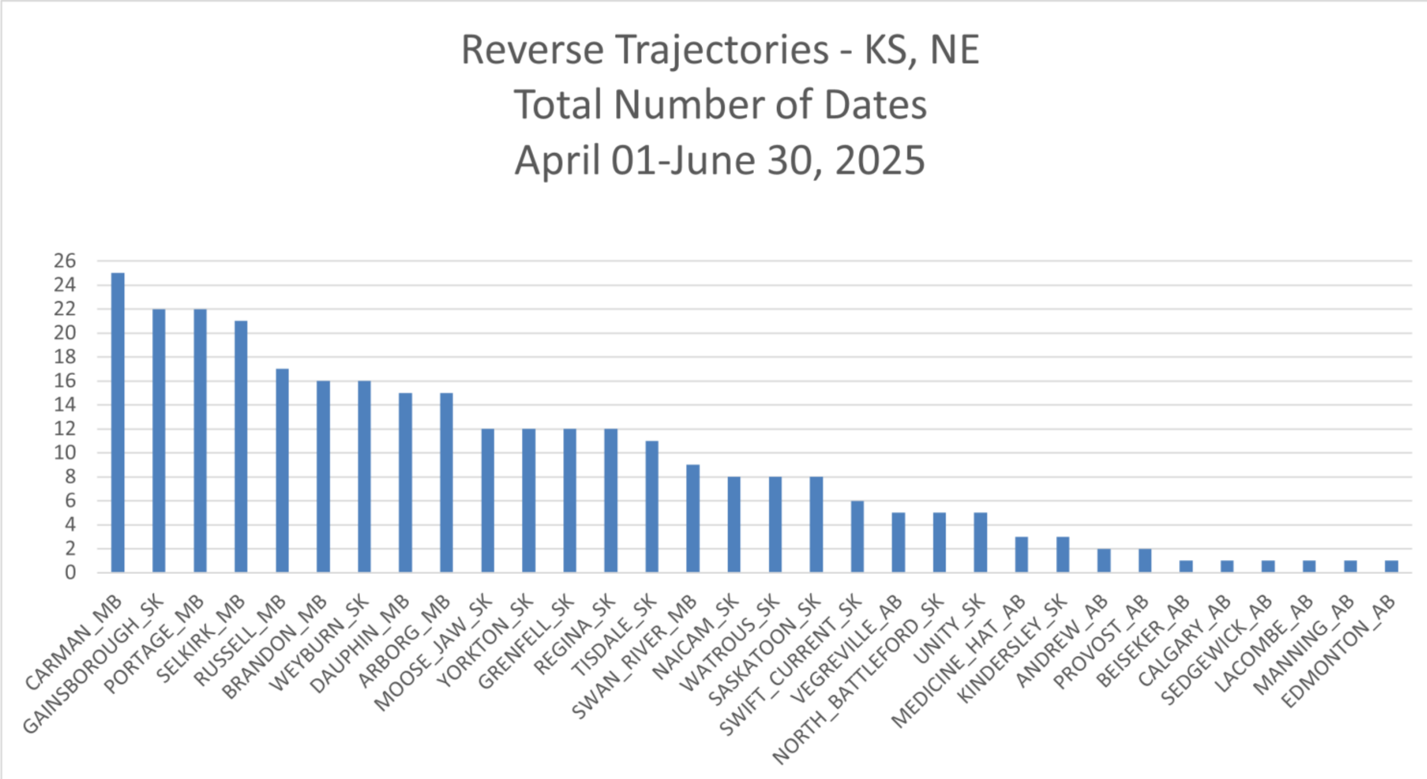


Figure 10. Reverse trajectory locations and number of events, for reverse trajectory events originating from Kansas and Nebraska, USA, April 1 – June 30, 2025.

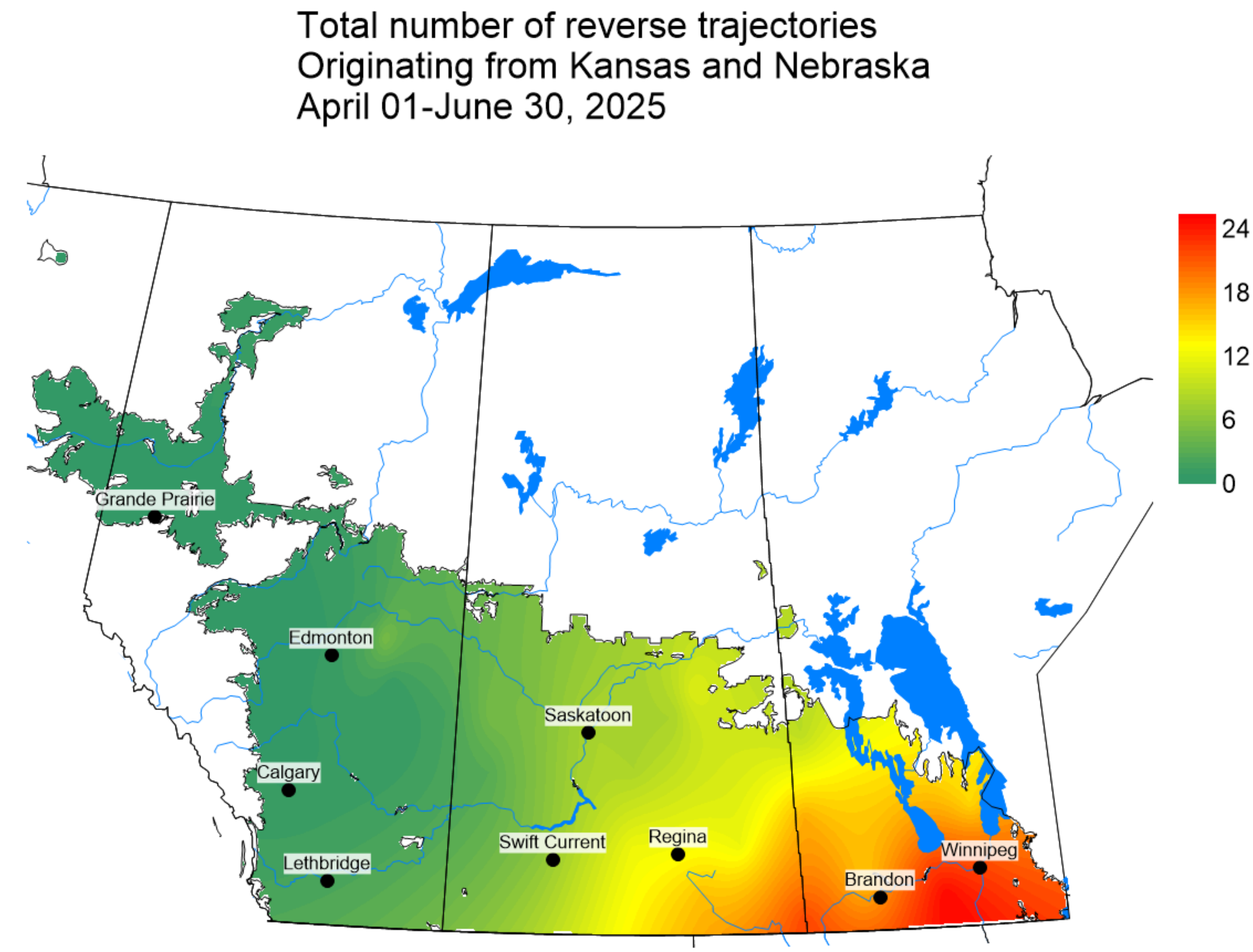


Figure 11. Total number of dates with reverse trajectories originating from Kansas and Nebraska, USA that have crossed the Prairies between April 1 – June 30, 2025.

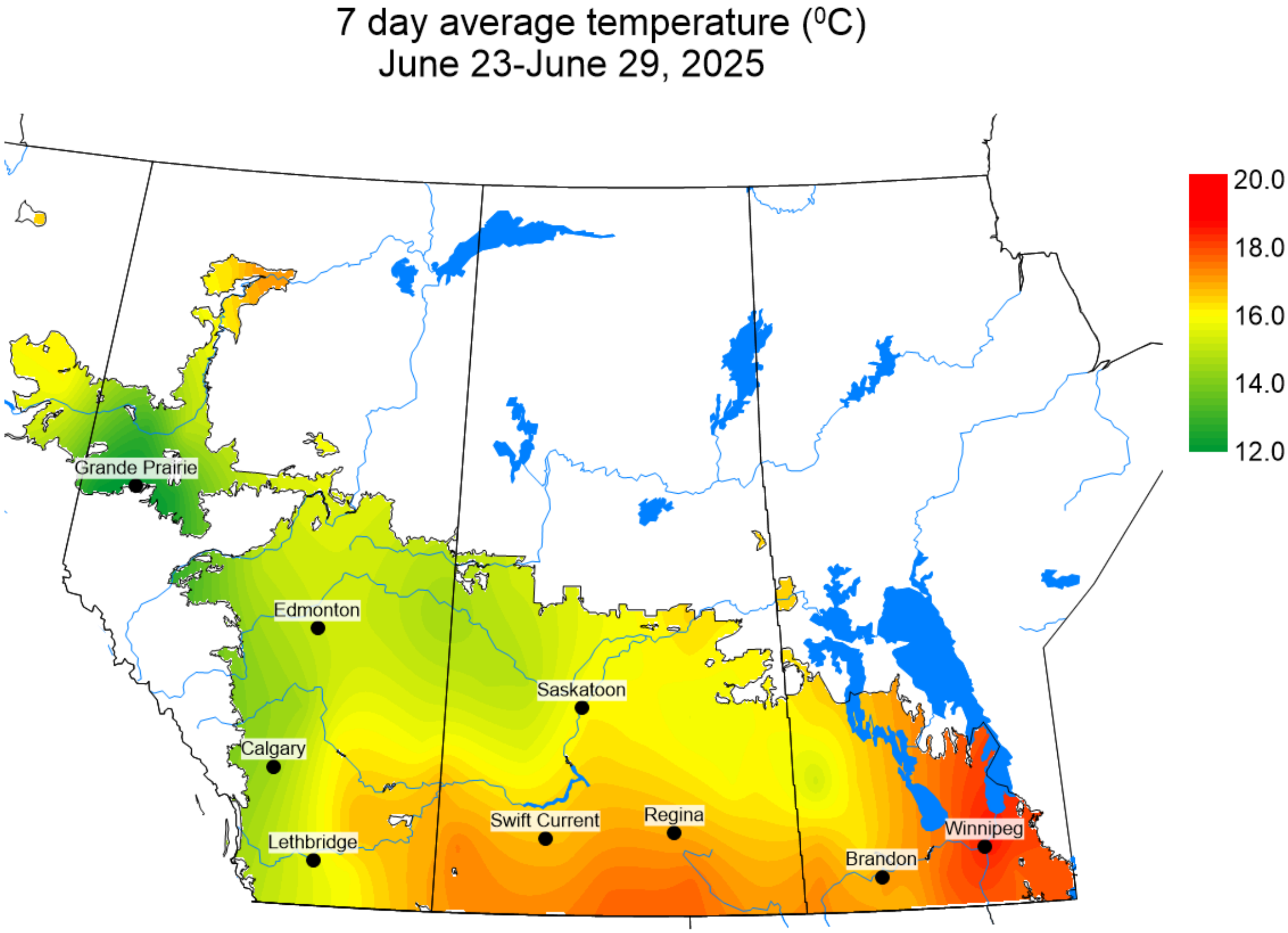


Figure 12. Seven day average temperature (°C), Prairie region, June 23-29, 2025.

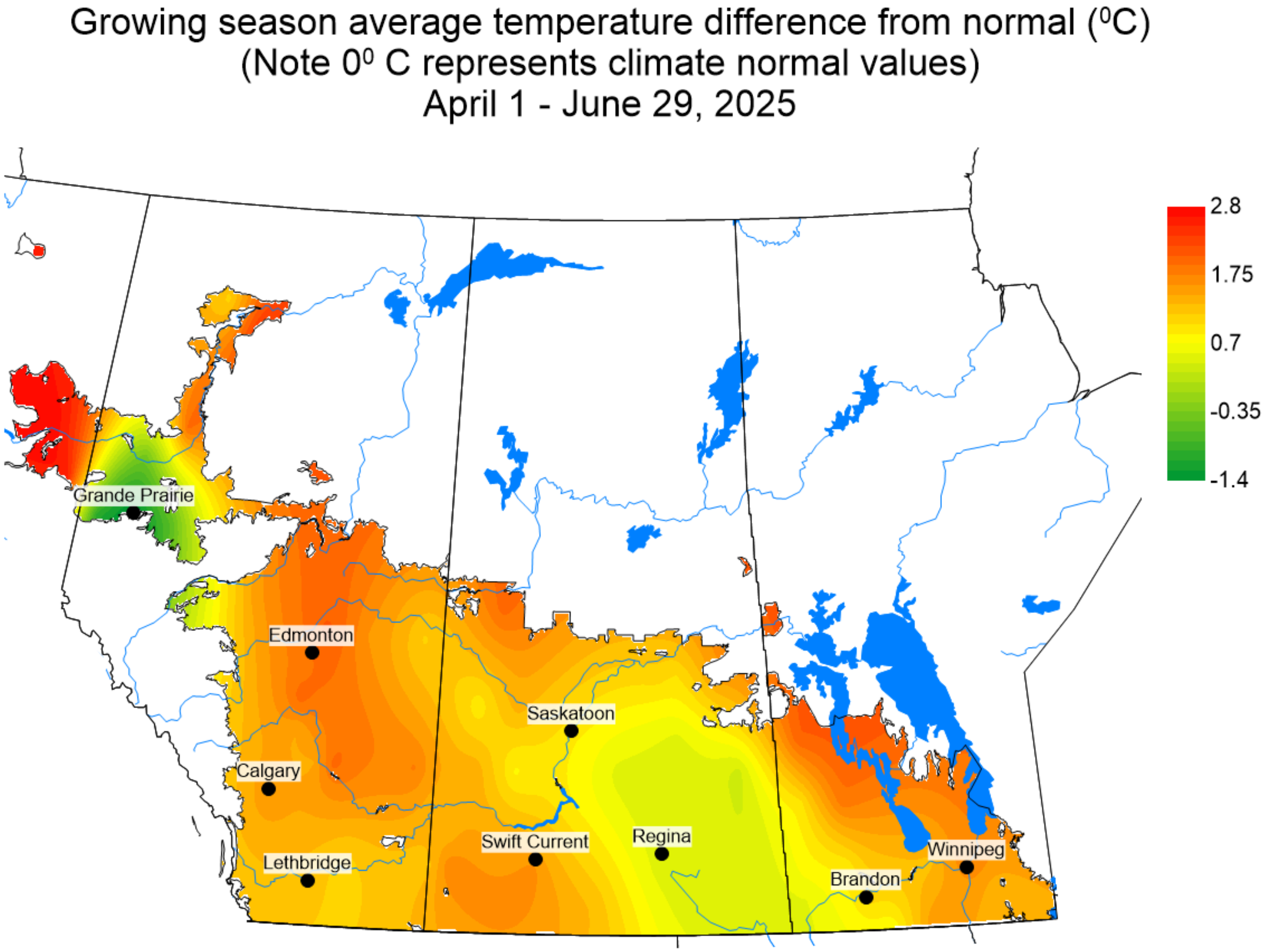


Figure 13. Growing season average temperature (°C) difference from normal, Prairie region, April 1 – June 29, 2025.

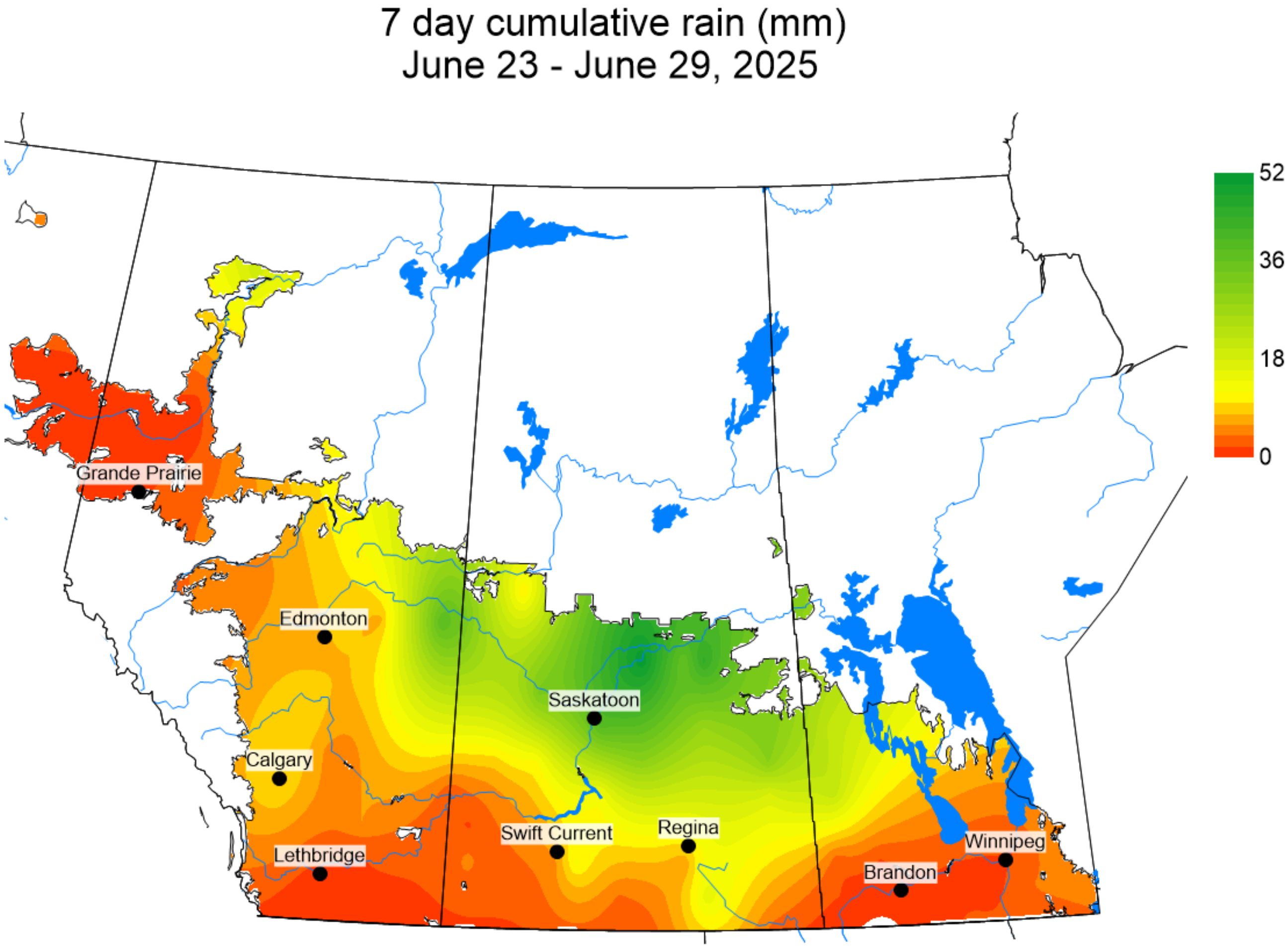


Figure 14. Seven day accumulated rainfall (mm), Prairie region June 23-29, 2025.

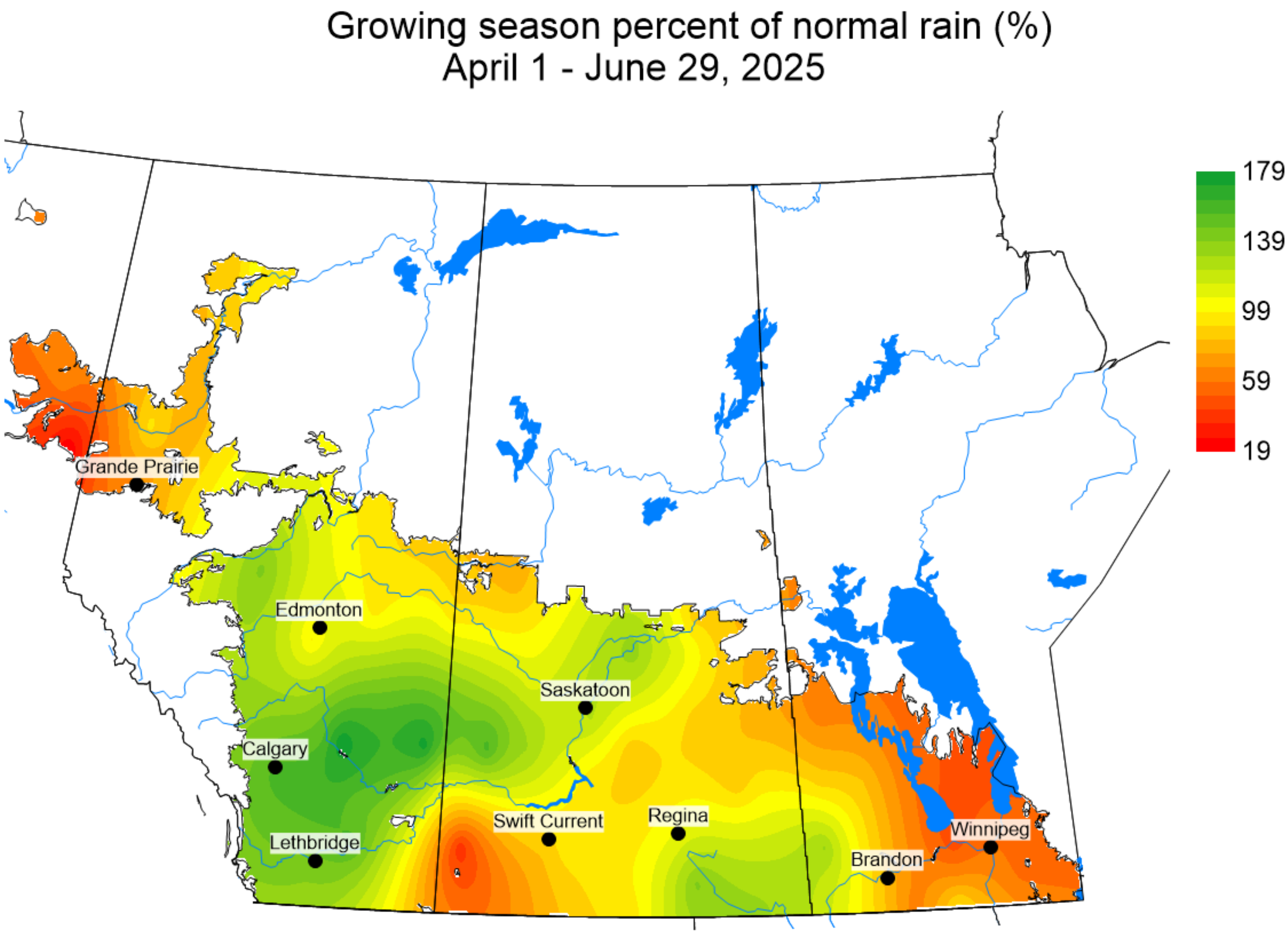


Figure 15. Growing season accumulated rainfall (mm) percent of normal, Prairie region April 1 – June 29, 2025.

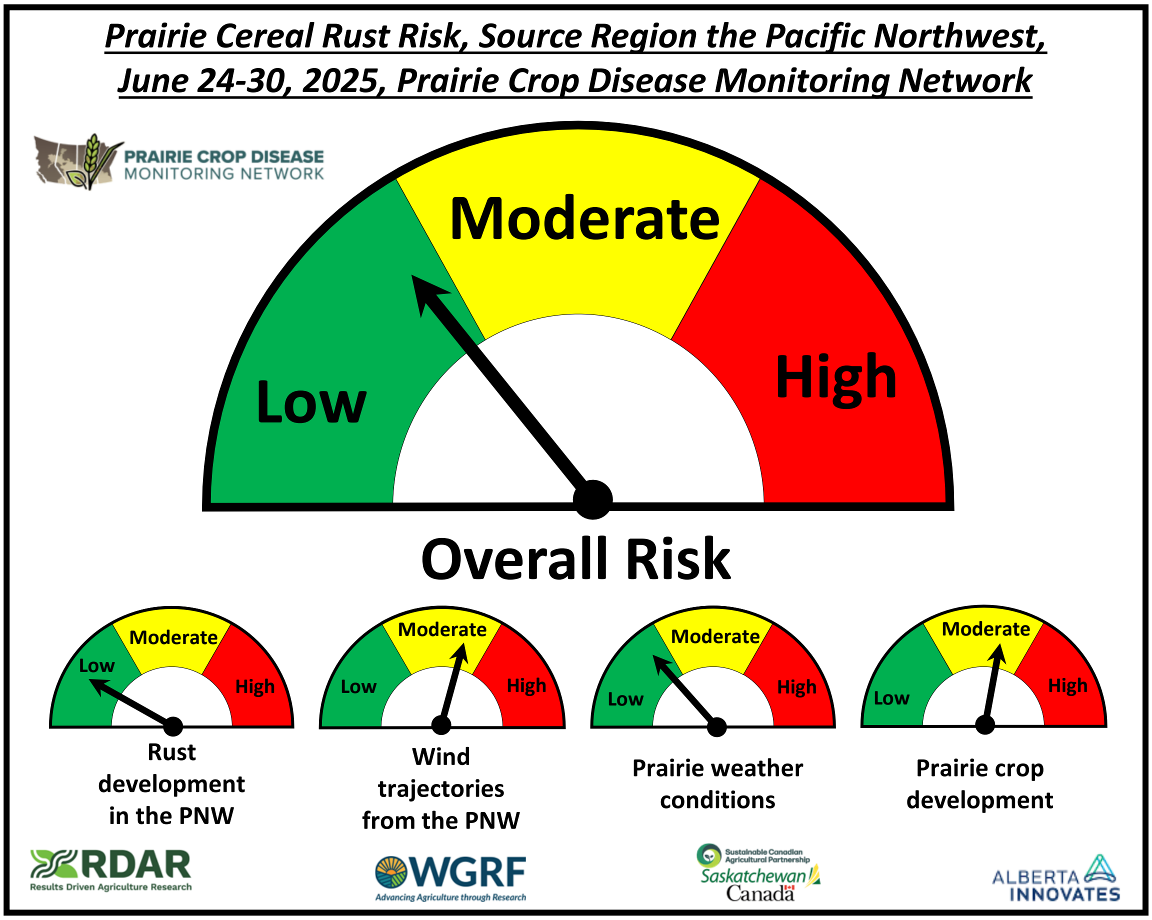


Figure 16. Prairie cereal risk speedometers for stripe rust from the Pacific Northwest, June 24-30, 2025.

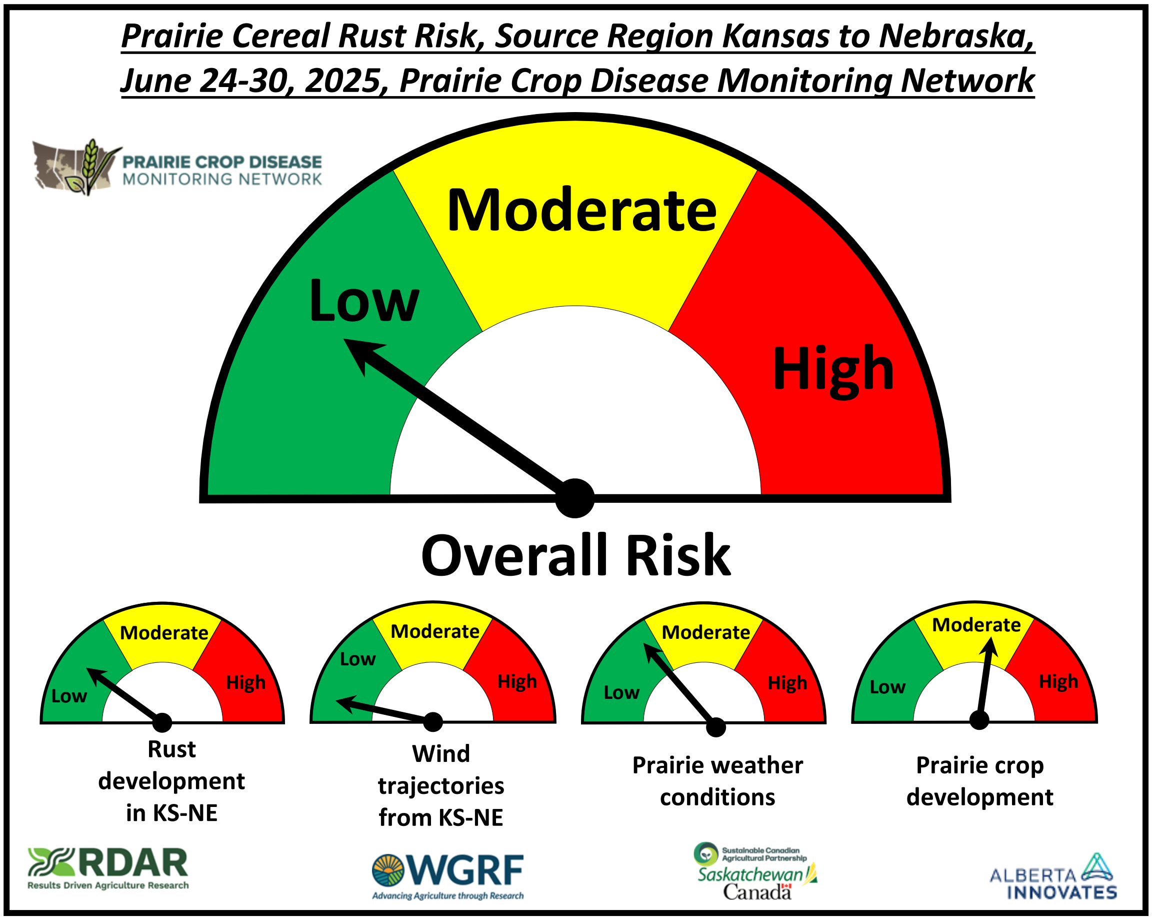


Figure. 17. Prairie cereal risk speedometers for stripe/leaf rust from the Kansas/Nebraska region, June 24-30, 2025.

Table 1. Reverse trajectory locations, arrival dates, and number of events, for reverse trajectory events originating from the Pacific Northwest region of the USA, June 24-June 30, 2025.

Location	Province	24-Jun-25	25-Jun-25	26-Jun-25	27-Jun-25	28-Jun-25	29-Jun-25	30-Jun-25	Total trajectories / location
BEISEKER	AB	0	1	1	1	1	1	1	**6**
LETHBRIDGE	AB	0	1	1	1	1	1	1	**6**
SELKIRK	MB	0	1	1	1	1	1	1	**6**
BRANDON	MB	0	0	1	1	1	1	1	**5**
CALGARY	AB	0	0	1	1	1	1	1	**5**
GAINSBOROUGH	SK	0	1	1	0	1	1	1	**5**
GRENFELL	SK	0	0	1	1	1	1	1	**5**
NAICAM	SK	0	0	1	1	1	1	1	**5**
NORTH BATTLEFORD	SK	0	0	1	1	1	1	1	**5**
OLDS	AB	0	0	1	1	1	1	1	**5**
RUSSELL	MB	0	0	1	1	1	1	1	**5**
SWAN RIVER	MB	0	0	1	1	1	1	1	**5**
TISDALE	SK	0	0	1	1	1	1	1	**5**
WATROUS	SK	0	0	1	1	1	1	1	**5**
WEYBURN	SK	0	0	1	1	1	1	1	**5**
ARBORG	MB	0	0	0	1	1	1	1	**4**
CARMAN	MB	0	1	1	0	0	1	1	**4**
DAUPHIN	MB	0	0	0	1	1	1	1	**4**
MEDICINE HAT	AB	0	1	1	1	1	0	0	**4**
PORTAGE	MB	0	0	1	1	0	1	1	**4**
REGINA	SK	0	0	1	0	1	1	1	**4**
VULCAN	AB	0	1	1	1	1	0	0	**4**
YORKTON	SK	0	0	0	1	1	1	1	**4**
EDMONTON	AB	0	0	1	1	1	0	0	**3**
KINDERSLEY	SK	0	0	1	1	1	0	0	**3**
LACOMBE	AB	0	0	1	1	1	0	0	**3**
MOOSE JAW	SK	0	0	1	1	1	0	0	**3**
PROVOST	AB	0	0	1	1	1	0	0	**3**
SASKATOON	SK	0	0	1	1	1	0	0	**3**
SEDGEWICK	AB	0	0	1	1	1	0	0	**3**
SWIFT CURRENT	SK	0	0	1	1	1	0	0	**3**
UNITY	SK	0	0	1	1	1	0	0	**3**
VEGREVILLE	AB	0	0	1	1	1	0	0	**3**
ANDREW	AB	0	0	1	0	1	0	0	**2**
GRANDE PRAIRIE	AB	0	0	0	0	1	0	0	**1**
Total trajectories per date		**0**	**7**	**31**	**30**	**33**	**21**	**21**	**143**

Table 2. Reverse trajectory locations, arrival dates, and number of events, for reverse trajectory events originating from Kansas and Nebraska, USA, June 24-June 30, 2025.									
Location	**Province**	**24-Jun-25**	**25-Jun-25**	**26-Jun-25**	**27-Jun-25**	**28-Jun-25**	**29-Jun-25**	**30-Jun-25**	**Total trajectories/ location**
CARMAN	MB	0	0	0	1	1	0	0	**2**
GAINSBOROUGH	SK	0	0	1	1	0	0	0	**2**
PORTAGE	MB	**0**	**0**	0	1	1	0	0	**2**
REGINA	SK	0	0	1	1	0	0	0	**2**
BRANDON	MB	0	0	0	1	0	0	0	**1**
GRENFELL	SK	0	0	1	0	0	0	0	**1**
NAICAM	SK	0	0	1	0	0	0	0	**1**
SASKATOON	SK	0	0	1	0	0	0	0	**1**
SELKIRK	MB	0	0	0	0	1	0	0	**1**
TISDALE	SK	**0**	**0**	0	1	0	0	0	**1**
WATROUS	SK	**0**	**0**	1	0	0	0	0	**1**
WEYBURN	SK	0	0	0	1	0	0	0	**1**
YORKTON	SK	0	0	1	0	0	0	0	**1**
Total trajectories per date		**0**	**0**	**7**	**7**	**3**	**0**	**0**	**17**

Table 3. Reverse trajectory locations, arrival dates, and number of events, for reverse trajectory events originating from Montana, USA, June 24-June 30, 2025.									
Location	**Province**	**24-Jun-25**	**25-Jun-25**	**26-Jun-25**	**27-Jun-25**	**28-Jun-25**	**29-Jun-25**	**30-Jun-25**	**Total trajectories/ location**
BRANDON	MB	0	1	1	1	1	1	1	**6**
CARMAN	MB	0	1	1	1	1	1	1	**6**
GAINSBOROUGH	SK	0	1	1	1	1	1	1	**6**
PORTAGE	MB	0	1	1	1	1	1	1	**6**
SELKIRK	MB	0	1	1	1	1	1	1	**6**
ARBORG	MB	0	0	1	1	1	1	1	**5**
SWAN RIVER	MB	0	0	1	1	1	1	1	**5**
SWIFT CURRENT	SK	1	1	1	1	1	0	0	**5**
TISDALE	SK	0	0	1	1	1	1	1	**5**
MEDICINE HAT	AB	0	1	1	1	1	0	0	**4**
MOOSE JAW	SK	1	0	1	1	1	0	0	**4**
WEYBURN	SK	0	1	1	1	1	0	0	**4**
DAUPHIN	MB	0	0	1	1	1	0	0	**3**
GRENFELL	SK	0	0	1	1	1	0	0	**3**
KINDERSLEY	SK	0	0	1	1	1	0	0	**3**
LETHBRIDGE	AB	0	0	1	1	1	0	0	**3**
NAICAM	SK	0	0	1	1	1	0	0	**3**
NORTH BATTLEFORD	SK	0	0	1	1	1	0	0	**3**
REGINA	SK	0	0	1	1	1	0	0	**3**
RUSSELL	MB	0	0	1	1	1	0	0	**3**
SASKATOON	SK	0	0	1	1	1	0	0	**3**
WATROUS	SK	0	0	1	1	1	0	0	**3**
YORKTON	SK	0	0	1	1	1	0	0	**3**
UNITY	SK	0	0	1	0	1	0	0	**2**
BEISEKER	AB	0	0	1	0	0	0	0	**1**
CALGARY	AB	0	0	1	0	0	0	0	**1**
PROVOST	AB	0	0	1	0	0	0	0	**1**
VULCAN	AB	0	0	1	0	0	0	0	**1**
Total trajectories per date		**2**	**8**	**28**	**23**	**24**	**8**	**8**	**101**