Fusarium Seed Infection Surveillance Project

2023 Interim Report

March 2023: Lacombe AB - Alberta Seed Processors (ASP) is releasing an interim report on Fusarium graminearum seed infection as part of Alberta's fusarium head blight management.

As part of the federal government's Canadian Agricultural Partnership (CAP), ASP launched a 3-year project in the fall of 2020 to study fusarium seed infection in Alberta to better understand how farmers can manage, control and prevent the devastating disease. Project funding has now expired, making this report funding wholly by Alberta Seed Processors.

The project's success results from collaboration with value chain partners. ASP is collaborating with three Alberta seed labs, including SGS Canada, Seed Check Technologies and 20/20 Seed Labs, to gather data. Dr. Michael Harding, Research Scientist - Plant and Bee Health Surveillance Section of Alberta Agriculture and Irrigation reviewed the data and created maps. Alberta Wheat & Barley Commissions supplied further agronomic and management input to the project.

"This project directly aligns with ASP's goals of supporting agriculture in Alberta by constantly improving the services and capacity of our seed and grain processors so we can ensure the agricultural value chain has an opportunity for the best outcomes possible through identifying possible limiting factors," says Monica Klaas, ASP's General Manager.

For more information regarding this project please contact info@seedprocessors.ca.

2023 INTERIM FUSARIUM SEED INFECTION REPORT

DATE: MARCH 2023

This report covers seed tested between September 1, 2022, and December 31, 2022, assumes the seed was produced in the 2022 crop year and is destined for seed purposes in 2023.

METHODOLOGY:

Data was collected from three Alberta-based seed testing labs and was amalgamated into one database. The data includes seed testing results for both farm-saved and pedigreed seed. The data is catalogued as per postal code, and grouped according to the municipality.

HOW TO UTILIZE THE DATA:

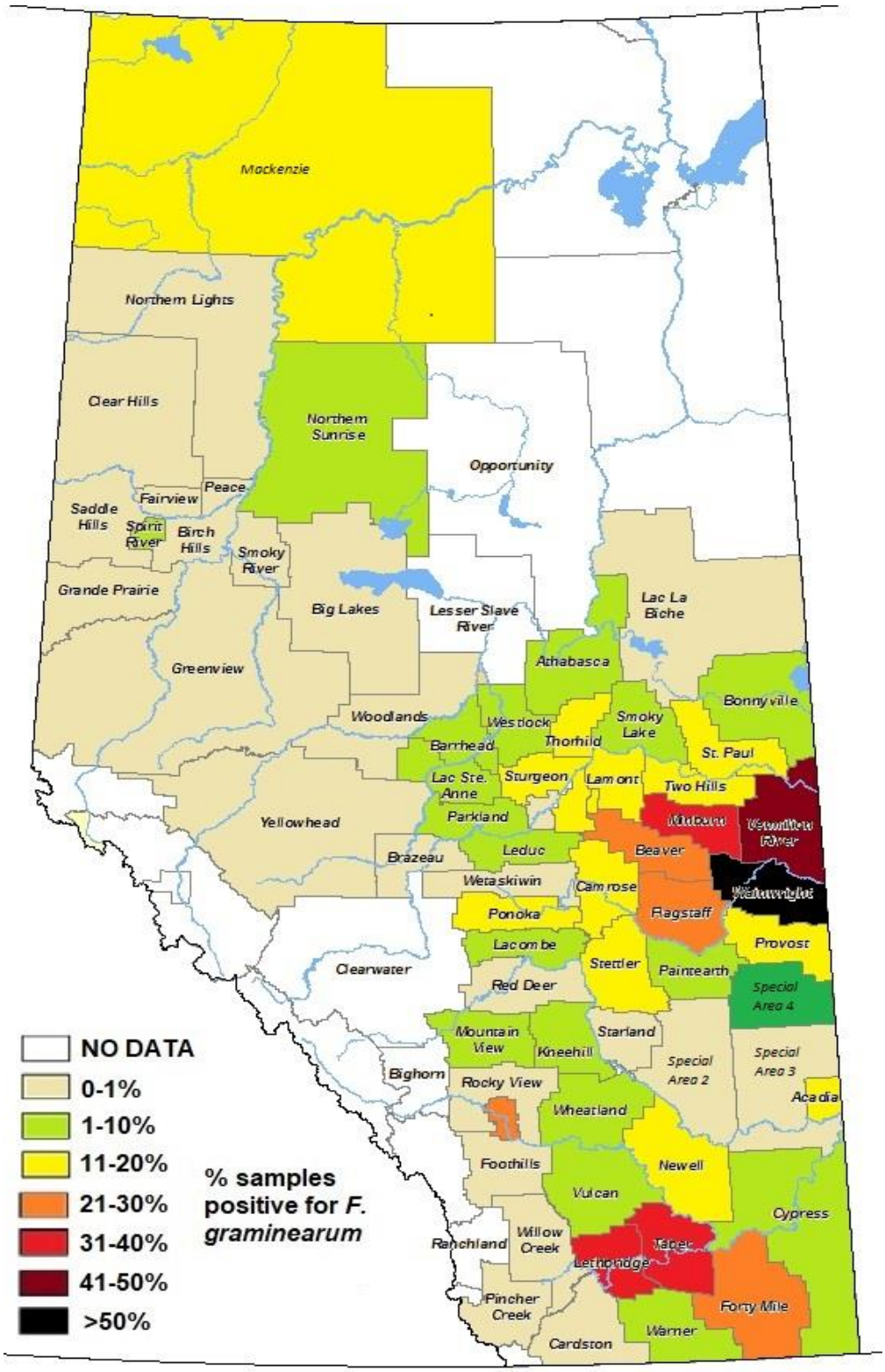
Understanding pathogen sources is foundational in integrated pest management (IPM). Fusarium head blight (FHB) infection, caused by *Fusarium graminearum* (Fg), comes from two basic sources: wind-blown spores from crop residues such as stubble and stover/stalks, and infected seed. This project documents detections of Fg seed infection and does not attempt to measure or quantify the risk of FHB from crop residues. It can be assumed that where there is seed infection, there is field residue infection. Therefore, we assume that in the areas with elevated incidence of Fg, the pathogen is established in the crop residues in that local area or field. These areas should enlist elevated for FHB management practices.

Sample location is reported based on the postal code to which the sample results were sent. As a result, the second assumption is that the samples tested were produced in the municipalities that the corresponding results were sent to. However, this may not be the case and therefore some sample results may be sourced from a different municipality depending on field location. For example, the map shows samples within urban municipalities- i.e.: samples tagged to Calgary or Edmonton. This means the seed sample results were sent to a postal code within those city limits but does not necessarily mean the seed was produced within city limits. Additionally, although it is assumed the grain tested will be used for seed in the future, this cannot be quantitatively confirmed.

Despite these assumptions and limitations, the map can be used as a general guide, in conjunction with other FHB management tools such as the Fusarium Head Blight Environmental Risk Map https://agriculture.alberta.ca/acis/m#!fusarium, to help producers evaluate risk and plan for appropriate management responses. For example, in or near areas of higher disease incidence, growers are advised to participate in as many preventative FHB management activities as possible or warranted based on the risk of infection. Management activities could include using long, diverse crop rotations (2–3-year break from host crops such as wheat and corn), utilizing seed genetics with the best varietal resistance to FHB, using seed with low or no Fg infection determined through seed testing, considering use of a seed treatment with 'Fusarium' on the label, regular field scouting, and foliar spray protection when warranted. FHB management can be found at: https://www.alberta.ca/fusarium-head-blight-best-management-practices.aspx

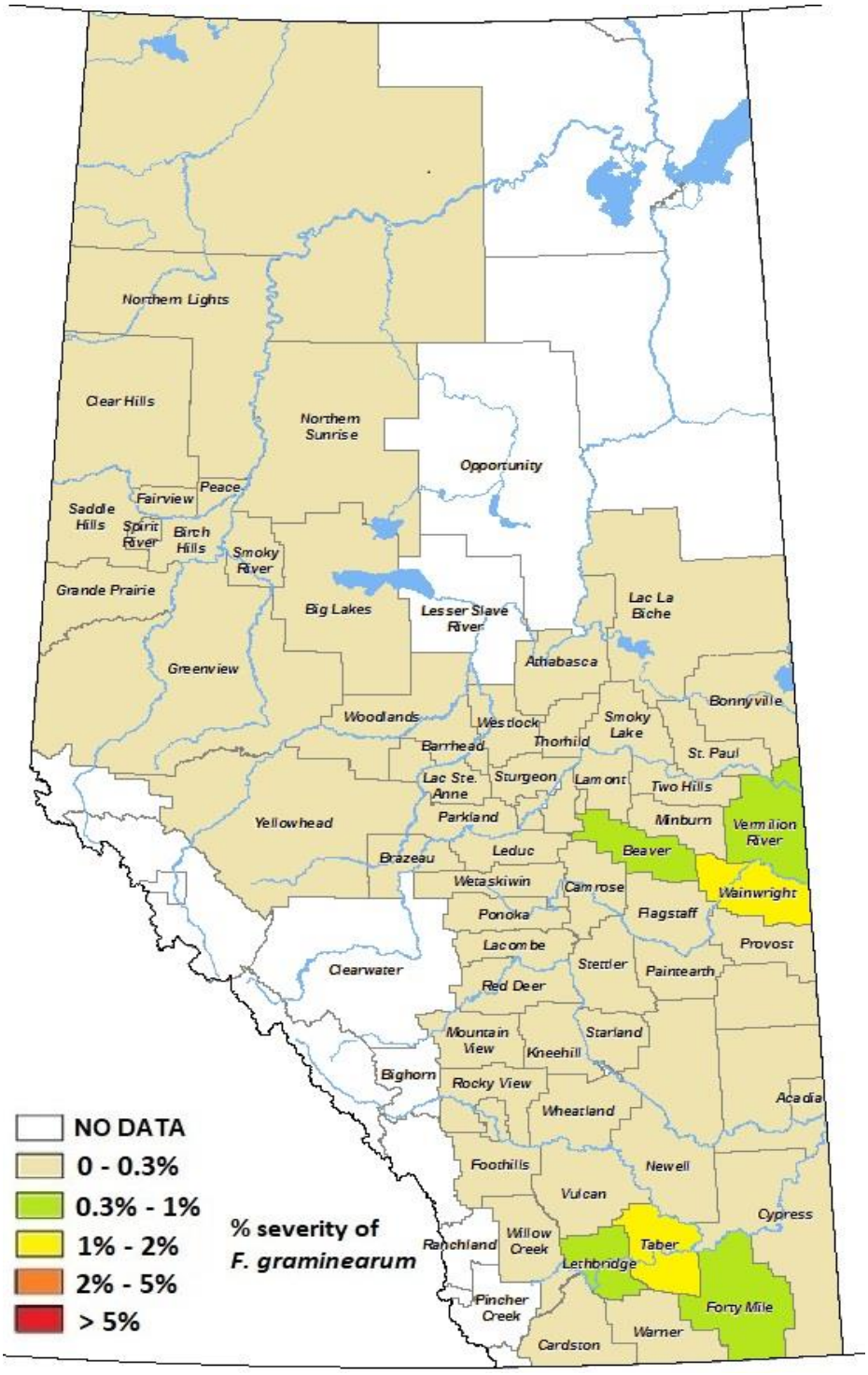
ALBERTA SEED PROCESSORS

Prevalence (% samples positive) for all cereals



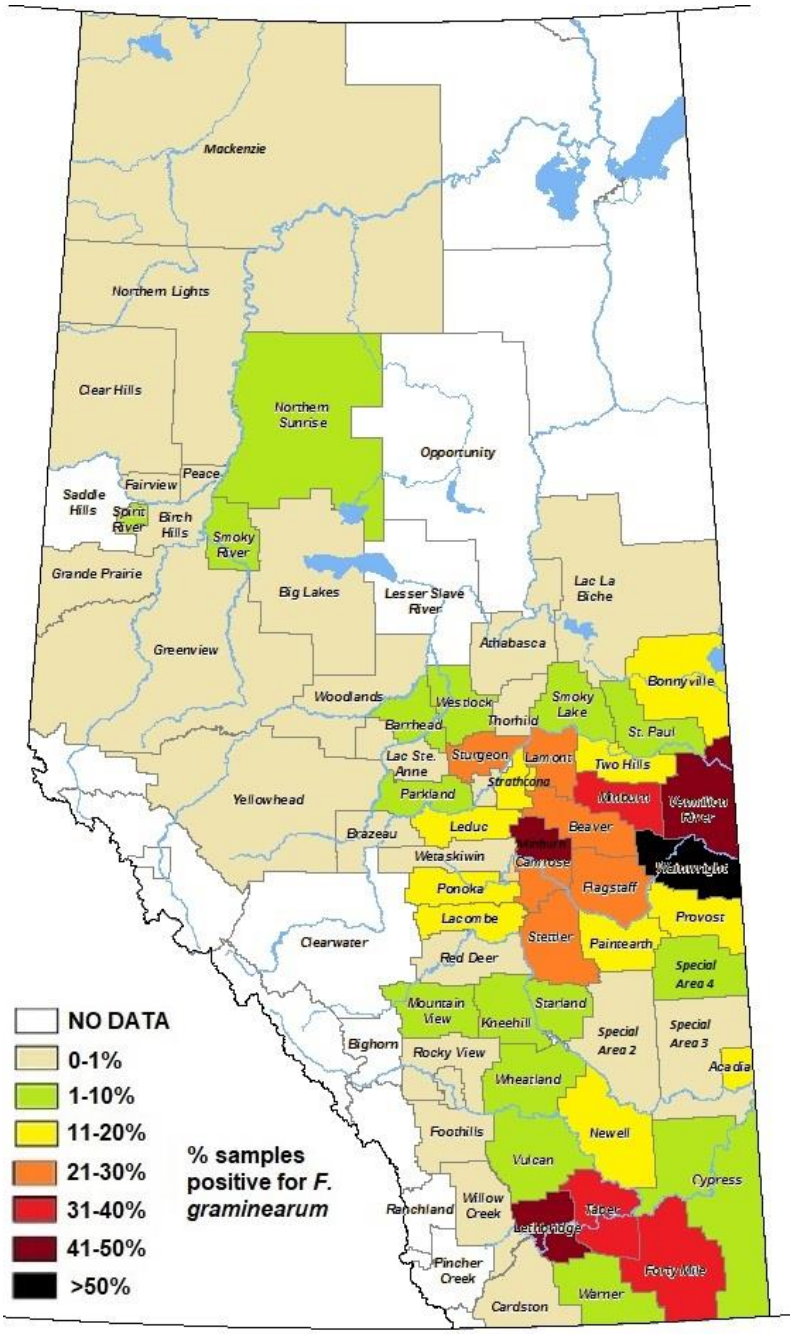
Infection Severity for all Cereals

This map is showing infection levels are relatively low, with higher intensity of infection trending to areas with increased historic infection levels, high corn acreage, irrigated acres and regions with higher moisture conditions during flowering.



Prevalence (% samples positive) for Wheat Samples Only

Note: As wheat is more susceptible to Fusarium infection than other cereal crops, data for wheat samples only were aggregated, which shows the incidence of infection despite environmental conditions that were not conducive to fusarium. The takeaway message: every year there is a threat of fusarium infection: always have a management plan!



Infection Severity for Wheat Only

This map is showing that even though wheat samples tested had the presence of fusarium, infection levels are relatively low, with higher intensity of infection trending areas with increased historic infection levels, high corn acreage, irrigated acres and regions with higher moisture conditions during flowering.