# Fungal Phytopathogen Evaluation Report

## Type: Spore trap

**To the attention of**

Name: MacDonald Farms
Address: 1848 Brown rd., NB

**Sample information**

Number: NOU-070821BG
Nature : Spore Trap
Methodology : M-ECA-EN-14-02
Sampling date : 2021-08-07
Received date : 2021-08-07
Analysis date : 2021-08-07
Report date: 2021-08-07 14:39
Sample condition when received : Satisfactory
Limit of detection : 4 tfp/ m3 - (Bedell)
Air volume : 225L - (Bedell)

In this report, you find two different tools to make the right decision

previous counts on previous reports

actual counts (today) spores/$m^3$

The proliferation risk assessment based on current and past meterological parameters

The day before weather-based risk

sampling day (today) weather-based risk

## Proliferation index

| Sample(s) | Debris | Molds and/or bacterias | | Quantity (PFT/m3) | | | Risk | |
|---|---|---|---|---|---|---|---|---|
| | | Identification | Associated disease | Previous | | Actual | Previous | Actual |
| Field T54 | 1 | Phytophthora infestans | Late blight | 0 | 0 | 4 |  |  |
| | | Alternaria solani | Early blight | 13 | 4 | 100 |  |  |
| | | Small Alternaria spores; Alternaria Alternata type | Brown Spot | 0 | 0 | 0 |  |  |
| | | Alternaria spp. | - | 0 | 0 | 4 |  |  |
| | | Botrytis cinerea | Grey mold | 53 | 13 | 160 |  |  |
| | | Fusarium spp. | Stem rot | 0 | 0 | 4 |  |  |
| | | oomycète | - | ND | NA | 13 | NA | NA |

**Weather-based risk assessment scale for the proliferation of each type of pathogen.**


In this report, you will find two different tools to make the right decision; the spore counts and the proliferation risk assessment based on current and past meteorological parameters.

**Caroline Gauvin,** ***Analyst***

## Guide d’interprétation

The debris scale is divided as follow :

- 0 : No debris.
- 1-2 : Low proportion of debris -> No (or weak) interference.
- 3-4 : Important proportion of debris -> Possible interference. Interpret with caution.
- 5 : Debris proportion too high -> Analysis is impossible. Inadequate sample.

## Definitions

**Phytophthora infestans:** Pathogen belonging to the Oomycetes family, Phytophthora infestans is the causal agent of the late blight of potato. It is responsible for massive destruction of crops, including a famine in Scotland and Ireland. This organism is usually found in potato crops and tomatoes. The first signs of infection may appear as early as May, usually in the more humid areas. This pathogen requires a relative humidity percentage higher than 90% and a cool temperature (16 ° C. At 20 ° C day and 10-15 ° C at night). The spores are very sensitive to UV rays. The time between the deposition of the spore on the plant and the formation of lesions is usually between 7 to 10 days.

**Alternaria spp.:** No definition

**Botrytis cinerea:** A. brassicae is capable of infecting most species of the Brassica family (rapeseed, cabbage, broccoli etc.). The first spots appear in almost 3 days and are mainly problematic at the start of the season. The pathogen develops when temperatures are moderate (around 16-28 ° C) and humidity is high for an extended period (9+ hrs). Early season innoculum is believed to come mainly from crop residues and volunteer shoots.

**Fusarium spp.:** Several species of Fusarium can attack potato plants and cause fusarium dry rot. The problems associated with this pathogen occur both in the field warehouse. The risk of developing the disease increases by growing potatoes in successive years in the same field and when temperatures are warm combined with frequent rainfall.

**oomycète:** Oomycetes are organisms halfway between fungi and algae. Being neither fungi nor plants, these organisms have particular life cycles and metabolic requirements. Several oomycete species are notorious plant pathogens and often need specifics host. Let us note among others Phytophthora infestans (potato), Peronospora destructor (onion and garlic), Plasmopara viticola (vine) and Pithium aphanidermatum (grasses) among the pest species of plants. These pseudo fungi generally need very humid conditions for a few hours to begin their development.

## Annexe

### Field T54

| Fungal Phytopathogen | Associated disease | 2021-06-07 | 2021-06-09 | 2021-06-11 | 2021-06-14 | 2021-06-16 | 2021-06-18 |
|---|---|---|---|---|---|---|---|
| Phytophthora infestans | Late blight | 0 | 0 | 0 | 0 | 0 | 0 |
| Alternaria solani | Early blight | 0 | 0 | 0 | 0 | 0 | 0 |
| Small Alternaria spores; Alternaria Alternata type | Brown Spot | 0 | 0 | 0 | 0 | 0 | 0 |
| Alternaria spp. | - | 4 | 0 | 4 | 0 | 0 | 0 |
| Botrytis cinerea | Grey mold | 0 | 0 | 0 | 0 | 0 | 0 |
| Fusarium spp. | stem rot | 0 | 0 | 0 | 0 | 0 | 0 |
| oomycète | - | NA | NA | NA | NA | NA | NA |
| **Fungal Phytopathogen** | **Associated disease** | **2021-06-21** | **2021-06-23** | **2021-06-25** | **2021-06-28** | **2021-07-01** | **2021-07-03** |
| Phytophthora infestans | Late blight | 0 | 0 | 0 | 0 | 0 | 0 |
| Alternaria solani | Early blight | 0 | 0 | 0 | 4 | 0 | 0 |
| Small Alternaria spores; Alternaria Alternata type | Brown Spot | 0 | 0 | 0 | 0 | 0 | 0 |
| Alternaria spp. | - | 0 | 0 | 0 | 0 | 0 | 0 |
| Botrytis cinerea | Grey mold | 0 | 0 | 0 | 0 | 0 | 0 |
| Fusarium spp. | stem rot | 0 | 0 | 0 | 0 | 0 | 0 |
| oomycète | - | NA | NA | NA | NA | NA | NA |
| **Fungal Phytopathogen** | **Associated disease** | **2021-07-05** | **2021-07-07** | **2021-07-10** | **2021-07-12** | **2021-07-14** | **2021-07-16** |
| Phytophthora infestans | Late blight | 0 | 0 | 0 | 0 | 0 | 0 |
| Alternaria solani | Early blight | 0 | 0 | 0 | 0 | 0 | 0 |
| Small Alternaria spores; Alternaria Alternata type | Brown Spot | 0 | 0 | 0 | 0 | 0 | 0 |
| Alternaria spp. | - | 0 | 0 | 0 | 0 | 0 | 0 |
| Botrytis cinerea | Grey mold | 0 | 27 | 0 | 0 | 0 | 0 |
| Fusarium spp. | stem rot | 0 | 0 | 0 | 0 | 0 | 0 |
| oomycète | - | NA | NA | NA | NA | NA | NA |

| Fungal Phytopathogen | Associated disease | 2021-07-19 | 2021-07-22 | 2021-07-23 | 2021-07-27 | 2021-07-28 | 2021-07-29 |
|---|---|---|---|---|---|---|---|
| Phytophthora infestans | Late blight | 0 | 0 | 0 | 0 | 0 | 0 |
| Alternaria solani | Early blight | 0 | 0 | 0 | 0 | 0 | 9 |
| Small Alternaria spores; Alternaria Alternata type | Brown Spot | 0 | 0 | 0 | 0 | 0 | 0 |
| Alternaria spp. | - | 0 | 0 | 0 | 0 | 0 | 0 |
| Botrytis cinerea | Grey mold | 0 | 0 | 0 | 0 | 0 | 0 |
| Fusarium spp. | stem rot | 0 | 0 | 0 | 0 | 0 | 0 |
| oomycète | - | NA | NA | NA | NA | NA | NA |

| Fungal Phytopathogen | Associated disease | 2021-08-03 | 2021-08-05 | 2021-08-07 |
|---|---|---|---|---|
| Phytophthora infestans | Late blight | 0 | 0 | 4 |
| Alternaria solani | Early blight | 11 | 17 | 100 |
| Small Alternaria spores; Alternaria Alternata type | Brown Spot | 11 | 0 | 0 |
| Alternaria spp. | - | 0 | 0 | 0 |
| Botrytis cinerea | Grey mold | 293 | 400 | 325 |
| Fusarium spp. | stem rot | 0 | 0 | 0 |
| oomycète | - | NA | NA | 0 |