

Factsheet: Production Management Strategies to Improve Field Pea Root Health



Objective:

Aphanomyces euteiches is an important disease of field pea which is caused by a complex of root pathogens. The objective of this project was to demonstrate an effective management strategy to improve pea root health in aphanomyces contaminated soils.

Methodology:

The demonstration will be set up as a randomized complete block design (RCBD) with four replicates and three treatments at Scott and Melfort, SK in 2018. Soil samples for residual nutrients and aphanomyces spore levels were conducted at both locations in the spring. The treatments compared different management strategies to limit the effect of aphanomyces on pea root growth and development.

Treatments:

1. Conventional management strategy ^a
2. Enhanced management strategy ^b
3. Intensive management strategy ^c

^a **Conventional:** PRE-seed glyphosate; starter fertilizer (N, P, K); liquid inoculant; no seed treatment; no fungicide application of phosphite salts

^b **Enhanced:** PRE-seed glyphosate/ trifluralin; starter fertilizer (N, P, K); granular inoculant; seed treatment; fungicide of phosphite salts

^c **Intensive:** PRE-seed glyphosate/ trifluralin; starter fertilizer (N, P, K, S); granular inoculant; seed treatment; fungicide of phosphite salts; foliar nutrient application

Key Findings:

- The intensive management strategy included an application of phosphite salt fungicide and foliar nutrient application to result in a 9 bu ac⁻¹ increase compared to the conventional management strategy.
- The additional costs of the phosphite salt fungicide and foliar nutrient resulted in a lower net gain when compared to the conventional strategy.
- The application of the phosphite salt fungicide and foliar nutrient did result in lower disease pressure on the plant foliage and roots.
- Overall, the increase of the yield does not pay for the additional cost of the extra applications.
- While there may not be an economical benefit, the increase in plant foliage and root health shows that the application of a phosphite salt fungicide and foliar nutrient may have environmental benefits.

The full report is available on www.warc.ca. This project was funded by the Agricultural Demonstration of Practices and Technologies (ADOPT) initiative under the Canada-Saskatchewan Growing Forward 2 bi-lateral agreement

- These benefits could possibly decrease aphanomyces spore levels, therefore creating good soil health for future years.
- There may be non-grossing benefits such as reduced spore load, resulting in a less severe infestation in future years and overall good soil health.
- Despite the test site being tested positive for Aphanomyces, there was little disease symptoms present in Melfort, SK. This is likely due to the dry conditions throughout the study period, which in turn provided non-ideal conditions for Aphanomyces growth.
- In Melfort, all three management levels resulted in similar yields and protein levels.
- If the environment was more conducive to Aphanomyces development in Melfort in the earlier parts of the growing season, we would have expected the treatments to result in large differences.
- Therefore, we recommend that this demonstration be tried again. This will allow us to see if results will remain the same under a potentially different climate.

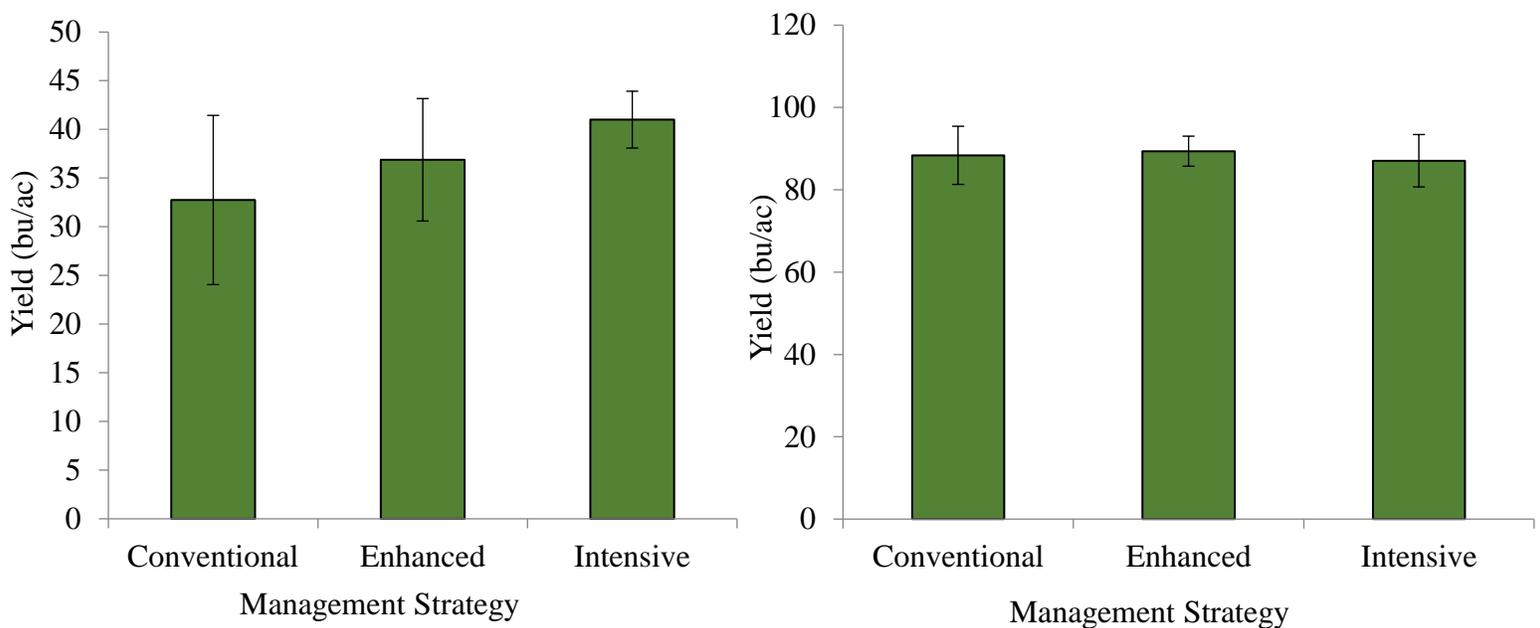


Figure 1: Average yield response to three different management strategies at Scott, SK (left) and Melfort, SK (right) in 2018

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