

## **AGR1511: Optimum Seeding Rate, Row Spacing, and Disease Management in Faba Bean Varieties**

Faba bean is a pulse crop with great potential for expanded production in Western Canada due to its resistance to *Aphanomyces* root rot, its high nitrogen fixing capacity, and its high seed protein content which is desirable for a growing plant protein market. Despite its potential, there is limited acreage of faba bean in western Canada. There is a lack of current information on best management practices as current agronomic recommendations were established 30 to 40 years ago. These recommendations may no longer be valid as cultivars and crop management practices have vastly changed. To address these issues, a series of experiments were conducted at numerous locations across Saskatchewan with the following objectives:

1. Determine the economic optimum seeding rate for faba bean cultivars with varying seed size
2. Determine the impact of fungicide application timing on faba bean seed yield
3. Determine the best agronomic practices in different soil zones of Saskatchewan

The research project employed a two-pronged approach, with the basic agronomic research that addresses objectives 1 and 2 conducted by the University of Saskatchewan and the North East Agricultural Research Foundation in Melfort. Objective 3 was addressed by experiments conducted at the University of Saskatchewan and the Agri-ARM sites across Saskatchewan (Scott, Outlook, Indian Head, Melfort, and Swift Current).

Experiments were conducted at Saskatoon and Melfort from 2015-2017 to determine optimum seeding rates for different seed sizes of faba beans (Objective 1). The cultivars evaluated were: CDC SSNS-1 (small-seeded tannin), CDC Snowdrop (small-seeded low-tannin), and FB9-4 (large-seeded tannin). Seeding rates evaluated ranged from 5-100 seeds  $m^{-2}$ . Objective 2 was addressed by experiments at the same locations and time-periods in which four fungicides (Bravo<sup>®</sup>, Priaxor<sup>®</sup>, Propulse<sup>®</sup>, and Vertisan<sup>®</sup>) were evaluated at different application timings (10% flowering, 50% flowering, and 10 + 50% flowering) in two faba bean cultivars (CDC SSNS-1 and CDC Snowdrop). Objective 3 was addressed with seeding rate experiments conducted on one cultivar only (CDC Snowdrop) using the same range of seeding rates as experiments in Objective 1. Additionally, the effect of the previously mentioned four fungicides were evaluated at 10% and 50% flowering on CDC Snowdrop in separate experiments. In total, there were 20 site-years of data for each experiment in Objective 3.

Varieties of different seed size responded similarly to seeding rate; therefore, there is no need to change seeding rate recommendations for larger seed cultivars. Based on the data from all the experiments conducted, producers should strive for a minimum density of 20-30 plants  $m^{-2}$ . This should be easily obtained by using the current recommended seeding rate of 45 seeds  $m^{-2}$ . Fungicide application reduced disease severity in many situations; however, it rarely provided a yield response. Priaxor<sup>®</sup> or Propulse<sup>®</sup> provided a 10% yield increase compared to the untreated check in only 10% of the trials.