Effect of seeding rate and seed size on lentil diseases, weeds, yields and profitability

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SPG Contributions	Project Status	Duration/Timeline of Project (Year to Year)	Co-funders	Total Project Cost
$32,019.00	Completed	April 2013 – March 2017	Western Grain Research Foundation; Agriculture and Agri-Food Canada	$276,330.00

Project Description

To determine the interaction of disease control methods (fungicide) with seeding rate in different lentil seed size classes on plant diseases and yield in lentil; to determine the effect of seeding rate (plant population) in different seed size classes lentil; to determine the effect of seeding rate (plant population) and row spacing on seed yield and plant disease in lentil.

Outcome

Research was conducted at multiple locations in Saskatchewan over four years between 2013 and 2016 to develop seeding rate recommendations for different seed size classes of lentil that take into account plant diseases, lodging, competition, yield, and economic return. The majority of lentil classes do not require any changes to the current seeding rate recommendation. Target plant populations of 144, 133, 124, and 128 plants/m2, or seeding rates of 48.3, 82.5, 47.2, and 82.3 kg seed/ha, were the most profitable for extra small red, large red, small green, and medium green lentil classes, respectively. These target plant populations are very close to the 120-130 plants/m2 populations already targeted by growers.

Small red and large green lentil classes are exceptions to the trend observed in the majority of lentil classes. The seeding rates of small red and large green lentil should be increased above the current recommendation to maximize yield and profit. Small red lentil was most profitable when seeded at a target plant population of 250 plants/m2, which amounted to approximately 111.1 kg seed/ha, or double the current recommended seeding rate. Large green lentil was most profitable when targeting a plant population of 170 plants/m2, which amounted to approximately 107.7 kg seed/ha, or 1.4x the current recommended seeding rate.

This study gives mounting evidence that seeding rates for small red and large green lentils should be increased when used with aggressive fungicide regimes, and that narrow row spacing's can be used to optimize lentil yield.

Research Objective

OBJECTIVE 1
To determine the interaction of disease control methods (fungicide) with seeding rate in different lentil seed size classes on plant diseases and yield in lentil,

OBJECTIVE 2
To determine the effect of seeding rate (plant population) in different seed size classes lentil.

OBJECTIVE 3
To determine the effect of seeding rate (plant population) and row spacing on seed yield and plant disease in lentil.