Canola Seeding Rate and Survivability

Canola farmers are challenged with the rising cost of inputs, with seed cost comprising one of the most significant expenses. Recommendations have been updated over the years to use the seed size (thousand seed weight, TSW) of canola seed lots to adjust seeding rates with the aim of achieving the optimal plant density for maximized productivity. Seeding rate tools have been developed to help with this calculation. The calculation includes an adjustment for estimated survivability, which is the proportion of seeds that emerge and develop to maturity. It is recommended to factor 60% survivability of canola seed; however, producer experience and previous research have shown this value can range widely. Survivability can depend on many factors including soil and weather conditions, equipment, and management practices which vary by field and farm. Thus, uncertainty remains in the estimation of survivability, and so we may be missing the mark when calculating optimal seeding rates to achieve agronomic and economic goals.

For reference, seeding density for InVigor RATE packaged canola seed (10 acres per bag) is 10-11 seeds per sq. ft., assuming canola seed survivability is 60%, to target the recommended plant density of 5-7 plants per sq. ft. The table below shows how seeding density and survivability influence the resulting plant density in the field:

Seeding density (seeds per sq. ft.)	Survivability				
	60%	70%	80%	90%	100%
	Plant density (plants per sq. ft.)				
6	3.6	4.2	4.8	5.4	6.0
7	4.2	4.9	5.6	6.3	7.0
8	4.8	5.6	6.4	7.2	8.0
9	5.4	6.3	7.2	8.1	9.0
10	6.0	7.0	8.0	9.0	10
11	6.6	7.7	8.8	9.9	11

Objective:

The objective of this field scale trial is to determine:
1. the range of canola survivability rates on commercial farms and
2. the optimal seeding rate to achieve adequate plant densities and maximize yield under various management, soil and weather conditions in Saskatchewan.

Project Overview:

Cooperators will implement a replicated field-scale trial comparing several seeding rates in a canola field of their choice, using their own equipment and otherwise normal practices. An agronomist or trial manager will provide support throughout the season, including setting up the trial and collecting data. Statistical analysis of the data will be conducted following harvest, and a report with your results including economic analysis will be provided. Data from all on-farm trials will also be pooled to examine the results across different management, soil, and weather conditions. Results from all trials will be publicly available, however individual farm data will be kept anonymous, apart from the location of the trial (nearest town or R.M.). Collaborators will be invited to join a network of producers who are conducting on-farm research through field tours and a year-end wrap up meeting. This program is available to members in good standing.

Study Design:

Three different canola seeding densities will be compared:
1. 6-7 seeds per sq. ft
2. 8-9 seeds per sq. ft
3. 10-11 seeds per sq. ft

Seeding rates will be calculated using the TSW of the canola seed lot for each trial individually. The three seeding densities will be replicated four times, for a total of 12 strips, and randomly arranged within blocks in the field. Apart from seeding rate, all strips must be managed the same agronomically including seeding speed, seeding date, variety, seeding depth and pesticide application. Variable rate (VR) fertilizer application can be used. An example randomized field plan is shown below. An alternate layout may be approved.

	Block 1			Block 2			Block 3			Block 4		
	1	2	3	2	1	3	1	3	2	3	1	2
Treatment	6-7 seeds/ft²	8-9 seeds/ft²	10-11 seeds/ft²	8-9 seeds/ft²	6-7 seeds/ft²	10-11 seeds/ft²	6-7 seeds/ft²	10-11 seeds/ft²	8-9 seeds/ft²	10-11 seeds/ft²	6-7 seeds/ft²	8-9 seeds/ft²

Data Collection:

Agronomists or trial managers will help the cooperator seed the trial according to the protocol and will complete the following in-season data collection.
- Spring soil sample
- Plant density at emergence, 2-4 leaf stage, and post-harvest
- Yield – weighed separately for each treatment strip using weigh wagon or grain cart scale
- Harvest samples for each treatment strip
- Regularly scouting for treatment differences in weed pressure, flowering, maturity, disease pressure, plant health, or plant structure
- Management data
- Weather data

For more information or to participate in the program contact:

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