Project Title: 2022 Winter Canola Planting Date

Objective: To identify the optimum planting dates and varieties of winter canola to ensure winter survival and high yield potential in Northwest Montana

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Summary:

Six varieties of winter canola were planted at three planting dates: August 15th, September 1st, and September 15th of 2021. They were irrigated in the establishment year to establish a stand, then received only rainfed moisture, and were harvested on August 16th of 2022 (Table 1).

Yield was affected by planting date and canola variety. Canola planted on August 15 and Sep 1 yielded 61.1 bu/A and 70.3 bu/A, respectively, outyielding canola planted September 15 at 41.0 bu/A. The highest yielding variety was Mercedes, planted on 1st planting date at 77.9 bu/A, with seven other varieties being statistically equivalent within the August 15th and September 1st planting dates (Table 2, Figure 2). Between the August 15th and September 1st planting dates, Photosyntech Quartz, Rubisco Mercedes, and Rubisco PluraxCL were all within the top yielding varieties (Table 2).

Oil content is generally high for all varieties planted in the study, with oil content values ranging from 45.2% up to 48.2%. Oil content was affected by variety and closely reflects seed yield, with Rubisco Mercedes having the highest oil content at 48.2% (Table 3).

Canola survival rate during the overwinter period was affected by planting date. Canola planted on August 15th experienced a 20% stand reduction while September 1st had a stand reduction of 31%. However, Canola planted on September 15th resulted in significantly poorer survival with a 78.8% stand reduction observed during the overwintering period (Table 4).

Based on two seasons of results, planting dates between August 15th to September 1st would be optimum to establish winter canola in northwestern Montana. Repeated years of research on this study will strengthen results.

Table 1. Management information

Seeding date:	8/20, 9/3, 9/21	**Field Location:**	Y7
Julian date:	232, 246, 264	**Harvest date:**	8/16/22
Seeding rate:	18.4 plants/ft2	**Julian date:**	228
Previous crop:	Fallow	**Soil type:**	Silty Clay Loam
Herbicide:	None	**Tillage:**	Conventional
Insecticide:	Lambda-CY 5/24/22	**Soil residual nutrient (NO3-1, P, K lb/A):**	167-12-143-72S
Fungicide:	None	**Nutrient fertilizer applied (N, P2O5, K20 lb/A):**	Applied Spring 2022 100-42-37-20S

Table 2. Agronomic performance of the winter canola varieties based on planting date

Planting Date	Yield (bu/A)	Variety	Survival %	Yield (bu/A)
August 15	**61.1**	CP1022WC	**94.8**	58.7
		CP225WRR	82.5	50.8
		CP320WRR	**94.0**	59.3
		Photosyntech Quartz	74.5	**64.9**
		Rubisco Mercedes	**90.5**	**68.4**
		Rubisco PluraxCL	83.0	**64.4**
September 1	**70.3**	CP1022WC	77.5	**64.3**
		CP225WRR	79.3	62.0
		CP320WRR	82.0	**72.1**
		Photosyntech Quartz	76.3	**68.5**
		Rubisco Mercedes	**87.5**	**77.9**
		Rubisco PluraxCL	80.8	**76.8**
September 15	41.0	CP1022WC	6.3	7.9
		CP225WRR	21.0	50.7
		CP320WRR	26.8	**63.3**
		Photosyntech Quartz	4.3	5.9
		Rubisco Mercedes	24.0	41.3
		Rubisco PluraxCL	33.0	**76.9**
CV	**35.60**		**12.46**	**19.02**
LSD	**14.45**		**11.02**	**15.56**
Mean	**57.47**		**62.10**	**57.47**
PR>F	**<.0001**		**0.003**	**<.0001**

Bold = top performer; **Bolding** denotes equal value to highest or earliest value within a column based on LSD(0.05)

Table 3. Oil content by variety

Variety	Oil (%)
Rubisco Mercedes	**<u>48.2</u>**
Rubisco PluraxCL	**47.9**
Photosyntech Quartz	**47.5**
CP1022WC	46.5
CP320WRR	45.3
CP225WRR	45.2
CV	2.0
Mean	46.7
PR>F	<.0001

<u>Bold</u> = top performer; **Bolding** denotes equal value to highest or earliest value within a column based on LSD(0.05)

Table 4. Stand reduction by planting date

Treatment	Fall Stand plants/m^2	Spring Stand plants/m^2	% Stand Reduction
August 15	132.6	103.9* a	20.00 b
September 1	143.6	96.6 a	31.00 b
September 15	124.3	26.0 b	78.82 a
***Treatments denoted by different letters are significantly different at α=0.05**			

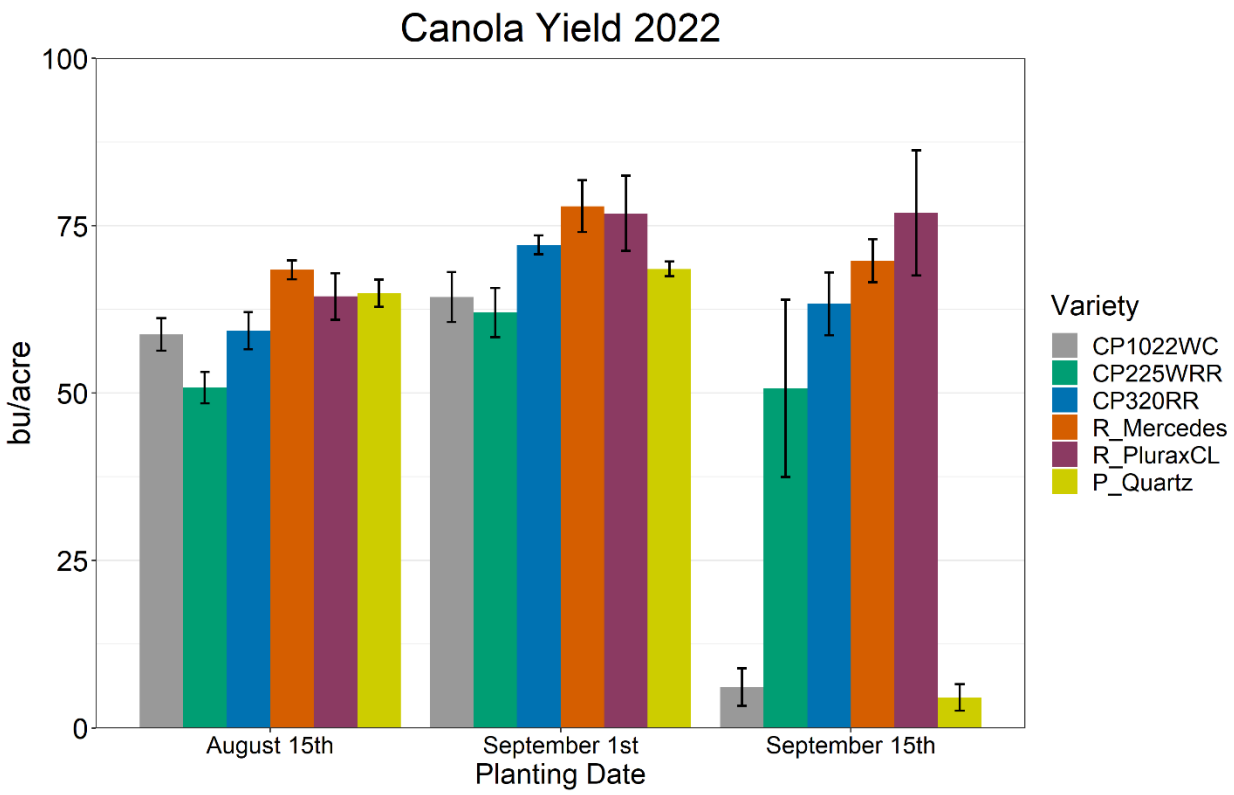

Figure 1. Winter canola yield by planting date