Winter Survival Results from Ralston Winter Canola Variety Trial

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Planting variety trials gives researchers the opportunity to compare varieties for various traits and characteristics beyond final yields. Six varieties of winter canola were planted in a variety trial near Ralston on August 31st into summer fallow using a HZ deep furrow drill. Individual plant measurements and stand counts were collected on October 27th and survival counts were taken on March 17th. The varieties included Phoenix, Mercedes, Claremore, Surefire, Griffin, and Plurax. The plant measurements consisted of crown height, crown width, canopy width, and leaf count. Leaf count was found to be significantly different for Griffin, while all other plant measurements did not differ significantly across varieties (Fig. 1). This was part of a larger research project across eastern Washington to assess winter canola plant sizes entering winter to better predict their winter survival probabilities. Claremore had a significantly higher winter survival rate and Mercedes had a significantly lower winter survival rate when compared across varieties (Fig. 2). However, final spring plant counts were not statistically different across the varieties (Fig. 3).

Staked canola plant near Ralston captured on March 17th after surviving winter.

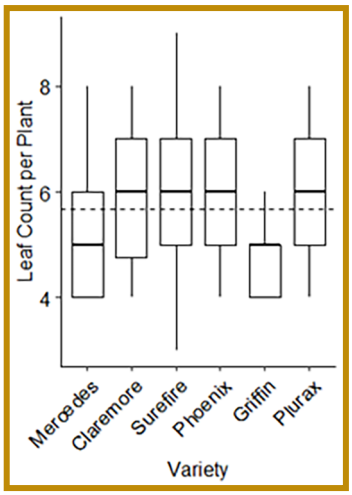

Figure 1. Graph showing that the leaf count for the Griffin variety was significantly lower than the other varieties. The dashed line represents the mean leaf count across varieties.

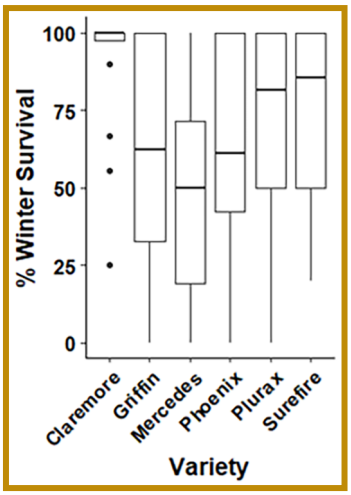

Figure 2. Claremore and Mercedes had significantly different winter survival percentages across varieties with Claremore being significantly higher and Mercedes being significantly lower.

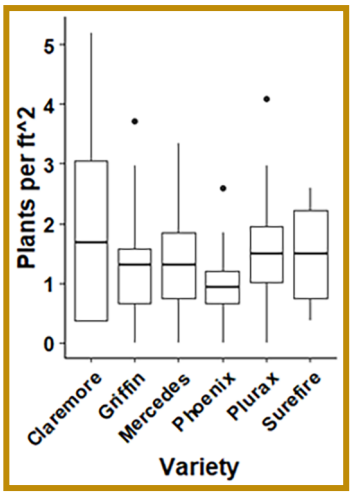

Figure 3. Spring plant counts were not statistically different across the six varieties of winter canola.

Canolage: Dual-Purpose Winter Canola

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Dual-purpose crop production is common in the wheat growing regions of the Southern Great plains and part of Australia. Dual-purpose crop production involves the utilization of the vegetative stage of an over winter grain crop as a

forage. The forage crop may be swathed or directly grazed for biomass harvest. The assessment of dual-purpose winter canola (canolage) has largely utilized swathing or mowing to 'simulate grazing'. However, the impacts of swathing are likely different than the impacts of grazing on the seed yield. From 2017 to 2020 we conducted three canolage trial involving live cattle rather than swathing. We believe these results are useful in understanding the impacts of grazing on yield as well as the potential for widespread canolage production in the inland Pacific Northwest. At two different locations and years, Dusty (2017) and Creston (2019), canola seeded in July successfully survived the winter and was harvested the following year. In Dusty during 2017, the severity of grazing was found to decrease canola seed yield (Table). At Dusty in 2018, the canola was seeded in May in the hopes of allowing for two grazing events. The early seeding ended with a killing drought in the fall of 2018 in the ungrazed canola and drought that reduced seed yields to 700 lbs/acre in the grazed canola. The fact that the grazed canola did not completely succumb to drought, while the ungrazed canola did, indicates that grazing had the effect of reducing water usage. Soil moisture probes supported this conclusion as the canola that was grazed had reduced fall moisture usage when compared with the ungrazed canola. The best approach to dual-purpose winter canola in the inland Pacific Northwest appears to be an early July planting and an August or September grazing. Future research will continue to assess the impacts of grazing on winter survival and seed yield in an attempt to optimize canolage production systems in the region.

	Treatments	Yield (lbs/a)	Grazing pressure
Dusty* 2017-2018	Pasture 1	2460	Heavy
	Pasture 2	2140	Severe
	Pasture 3	3320	Light
	Ungrazed	3380	None
Dusty 2019-2020**	Grazed	700	Severe
	Ungrazed	0	None
Creston***	Grazed	1820	Heavy
	Ungrazed	2840	None

*No replication

**May planting resulted in drought

***Replicated strips w/ commercial combine

Peaola Yield and Land Equivalence Ratio Experiments

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Peaola is the practice of inter cropping peas and canola in the same field at the same time. Intercropping is a common practice in many subsistence systems around the world but is not common in large scale commodity production in industrial agriculture. In recent years there has been a growing interest in the potential for oilseed legume intercropping in industrial agriculture. Research has been conducted in both Australia and Canada and found that legume-brassica systems have the potential to outperform the monoculture comparisons. Beginning in the fall of 2019 the researchers at WSU began establishing pea-canola (peaola) intercropping trials in the grain fallow region of E. Washington. An attempt to establish winter peaola was made at both Ralston and Davenport. However, due to low moisture only the site at Davenport was successfully established. The Davenport site consisted of three N fertilizer rates 0, 30, and 60 lbs/acre. In the spring of 2020 a single spring peaola trial was established near Colfax. At the Colfax site only one fertilizer rate was applied to the peaola. In order to compare intercropping systems to monoculture systems the land equivalence ratio (LER) is calculated. The land equivalence ratio is calculated by summing the relative yields of whatever crops are mixed into the intercrop. The relative yields are calculated using the following equations Relative Pea Yield = Intercropping Pea Yield / Monoculture Pea Yield and Relative Canola Yield = Intercropping Canola Yield / Monoculture Canola Yield. LER