

INTERCROP TRIAL RESULTS - 2020

Overview: Eight mixes were sown, their yields measured, and the land equivalent ratio comparison tool used.

Conclusion: Six of the eight intercrops were shown to yield more as an intercrop than as monocrops sown separately across an equivalent area of land. These mixes included faba bean and wheat, barley and peas, oats and peas, oats and crimson clover, wheat and red clover, and barley and red lentils. As seen from the yield graph below, peas did not emerge in this year's intercrop trial, nor did canola due to excess moisture. The C.V. value corresponding with the yield analysis is 60.3, thus results should not be considered reliable.

Seeding Date: May 20

Seeding Depth: 1.5 in.

Seeding Rate: variable/sq. ft.

Harvest Date: Oct. 05

Applications:

May 13: Glyphosate - 0.66 L/ac
Heat - 0.059 L/ac
Merge - 0.2 L/ac

May 20: Glyphosate - 0.66 L/ac
Heat - 0.035 L/ac
Merge - 0.2 L/ac

May 20: 13-33-0-15S - 100 lb/ac

July 14: G22 - 3 L/ac

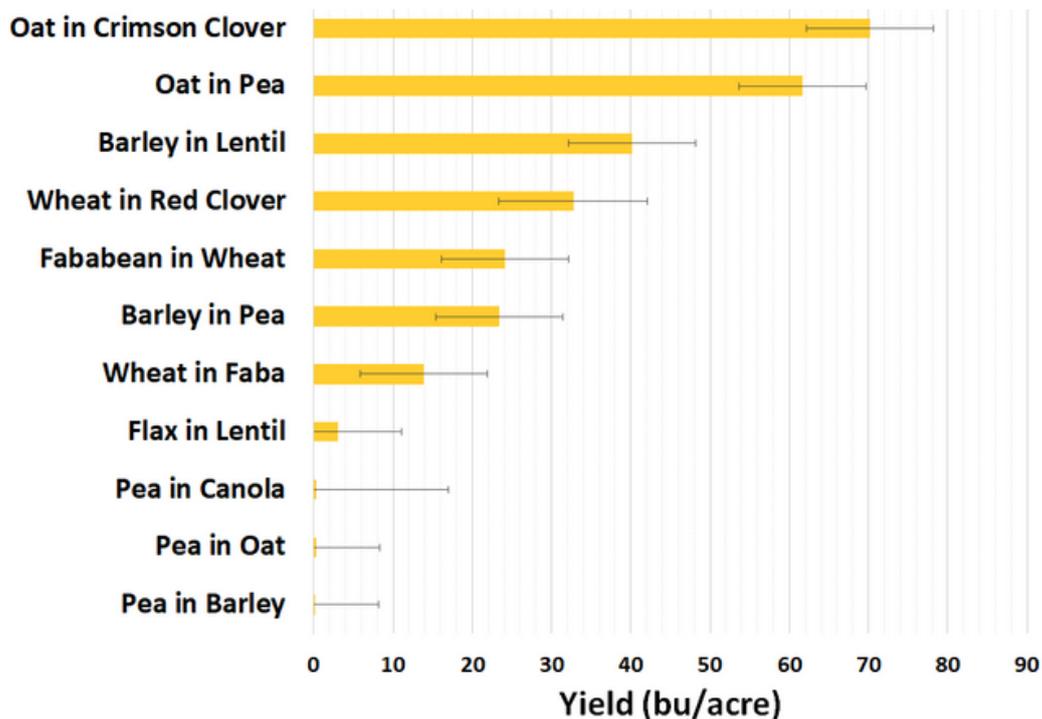
F18 - 0.5 L/ac

Microbolt (B) - 0.25 L/ac

Microbolt (Mo) - 14 g/ac

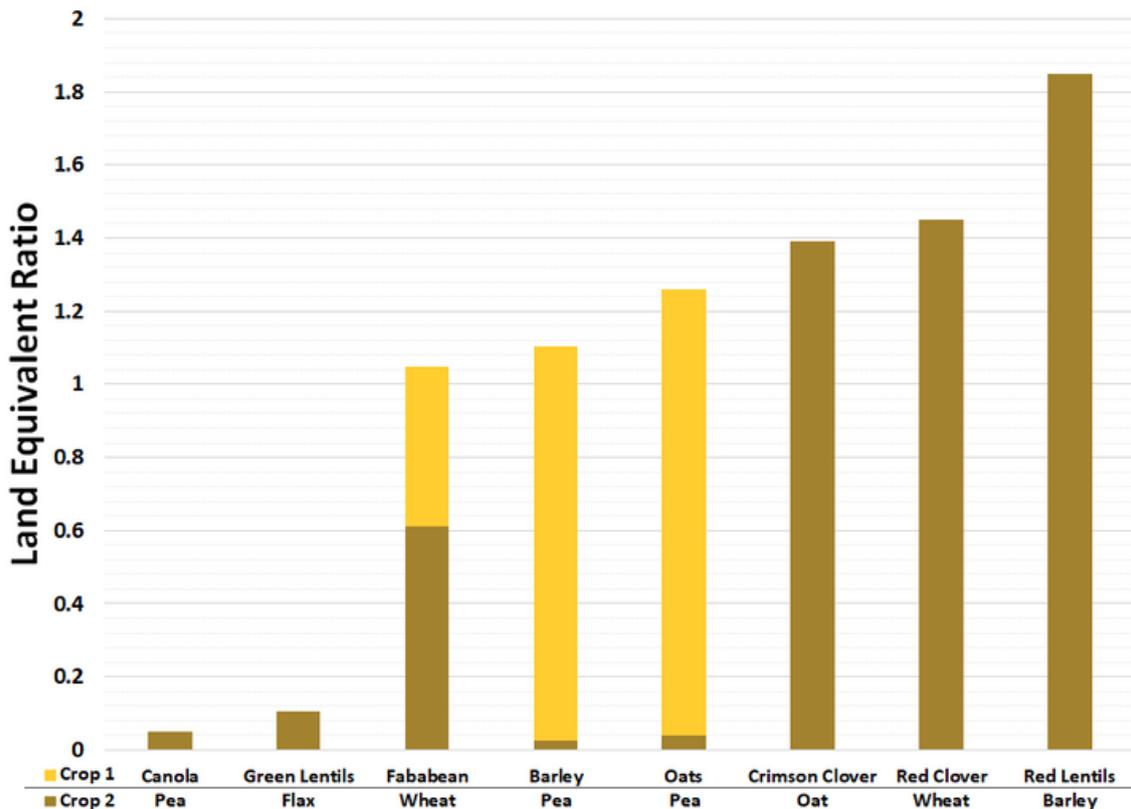
Seeding rate of crops under intercropping treatments

Intercrop Mix	Crop 1	Seeding rate lb ac ⁻¹ (% of monocrop rate)		Crop 2	Seeding rate (lb ac ⁻¹) (% of monocrop rate)
1	CWRS Wheat - AAC Brandon	90 (70%)	+	Faba Beans - Snowbird	172 (70%)
2	CWRS Wheat - AAC Brandon	129 (100%)	+	Red Clover	2 (50%)
3	Canola - CS2300	6 (75%)	+	Field Peas - AAC Lacombe	147 (75%)
4	Barley - AAC Connect	120 (80%)	+	Field Peas - AAC Lacombe	157 (80%)
5	Barley - AAC Connect	120 (80%)	+	Red Lentils - Redberry	48 (80%)
6	Flax - CDC Bethune	32 (80%)	+	Green Lentils - Greenland	50 (60%)
7	Oats - Nasser	125 (80%)	+	Field Peas - AAC Lacombe	157 (80%)
8	Oats - Nasser	156 (100%)	+	Crimson Clover	2 (50%)



coefficient of variation = 60.3; least square means differences were significant at 0.05

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Land Equivalent Ratio Equation:

$$\text{Land Equivalent Ratio (LER)} = \frac{\text{Intercrop 1 (yield } \frac{\text{bu}}{\text{acre}})}{\text{Monocrop 1 (yield } \frac{\text{bu}}{\text{acre}})} + \frac{\text{Intercrop 2 (yield } \frac{\text{bu}}{\text{acre}})}{\text{Monocrop 2 (yield } \frac{\text{bu}}{\text{acre}})}$$

Where Intercrop 1 and Intercrop 2 indicate the two components that comprise the single intercrop, and Monocrop 1 and Monocrop 2 represent those same components but sown individually/separate. If LER is greater than 1, the monocrops require greater total cropping area to achieve the same yields as the intercrop.

For example, the average monocrop yield of wheat and faba bean at the NPAPA farm in 2020 was 22.6 bu/ac and 55.7 bu/ac, respectively. The wheat and faba bean intercrop yielded 13.9 bu/ac of wheat and 24.5 bu/ac of faba bean. The LER is then: (13.9 bu/ac intercrop wheat)/(22.6 bu/ac monocrop wheat) + (24.5 bu/ac intercrop faba)/(55.7 bu/ac monocrop faba) = **1.05**. Thus, it would take 1.05 acres of sole cropping area split between the two monocrops to produce the same yield as 1 acre of intercropped area.

As the LER is based on yields from the NPAPA research farm in 2020, a year with very low yields throughout, the results shown here may not be indicative of a true intercrop vs. monocrop relationship. For example, the red lentils and barley intercrop LER is 1.8. This value may be an anomaly due to low barley reference yields, which caused an inflation of the number. Nevertheless, this study further exhibits the potential of intercrops and the possibility of increased profit and improved soil health.