

ON-FARM EVALUATION OF PEOLA – AN INTERCROP OF PEAS AND CANOLA



on-farm network

When peas and canola are grown together in the same field at the same time as an intercrop, it often over yields – the yield produced by the intercrop is greater than the yield produced by the monocrop grown on the same total land area.

MPSG's On-Farm Network collaborator, Brent VanKoughnet, of Agri-Skills Inc., has been testing this practice on his farm for two years. The trial investigates the agronomic and economic implications of intercropping peas and canola with three different nitrogen fertilizer rates compared to monocropping peas or canola.

Certified Agassiz peas and 5525 CL canola (BrettYoung) were seeded on May 10th at Carman, Manitoba with the seeding and nitrogen (N) fertilizer rates listed in Table 1. The field had a base fertilizer blend (20lbs N, 35 lbs P₂O₅, 10 lbs K₂O and 15 lbs S

Table 1. Pea and canola seeding rates and additional N fertilizer rates

Cropping System	Seeding Rate		Additional N fertilizer
	Canola	Pea	
	lbs/ac		lbs N/ac
Canola	5	0	105
Peola 0N	3	110	0
Peola 30N	3	110	30
Peola 60N	3	110	60
Peas	0	180	0

Table 2. Partial and total yield with land equivalency ratio (LER) for pea and canola cropping system

Cropping System	Canola	Pea	Total	Canola	Pea	Total
	bu/ac			LER		
Canola	44.5	0	44.5	1.00	0	1.00
Peola 0N	22.9	24.7	47.6	0.51	0.64	1.16
Peola 30N	29.3	17.7	47.0	0.66	0.46	1.12
Peola 60N	33.0	13.2	46.2	0.74	0.34	1.09
Peas	0	38.5	38.5	0	1.00	1.00

per acre) banded before seeding, and all herbicide and fungicide applications were consistent across the trial. All treatments were direct harvested on August 31st.

2016 RESULTS

Similar to results from 2015, over yielding occurred for all pea-canola intercrop treatments based on the Land Equivalency Ratio (LER) found in Table 2. The LER is a measure of how much land would be required to achieve intercrop yields with crops grown in monoculture. When the LER is greater than one, the intercrop is more productive than the monocrop. The highest LER occurred for the pea-canola intercrop with no additional N fertilizer added (Peola 0N), producing a total yield of 47.6 bu/ac. This is compared to a monocrop yield of canola at 44.5 bu/ac and peas at 38.5 bu/ac.

Although there is little difference between total yield for all pea-canola intercrop treatments, we see the proportion of peas and canola change as the N fertilizer rates change. There is a higher proportion of peas to

Table 3. Economic analysis of pea and canola cropping system based on seed and N fertilizer cost

Cropping System	Cost of Production†	Income	
		Gross‡	Net
Canola	\$111	\$445	\$335
Peola 0N	\$53	\$402	\$349
Peola 30N	\$69	\$417	\$348
Peola 60N	\$85	\$423	\$338
Peas	\$33	\$269	\$236

† Cost of production is based on estimates found in MAFRD Guidelines: Crop Production Costs (2016).

‡ Canola market price of \$10/bu. Pea market price of \$7/bu.

canola when there is no additional N fertilizer added. When the N fertilizer rate increases, the productivity of peas is decreased and we see a higher proportion of canola to peas indicated by the partial LERs in Table 2.

An economic analysis was performed taking into account only the costs that would differ between each cropping system – seed costs and N fertilizer costs. In Table 3, the pea-canola intercrop was the most profitable when no additional N fertilizer was added. ■