



Pea oat intercrop has potential

CATEGORY [agronomy](#) | May 7, 2020

Intercropping may be beneficial when the desired crop is field pea, with potential contributions to weed suppression and reductions in lodging. There was no indication of a yield advantage to intercropping peas and oats. If profitability can be derived from reductions in in-crop herbicide use, reductions in pesticide use, or for payment on oat and pea quality factors, pea-oat intercropping may become more economically viable in some circumstances.

A pea and oat intercrop was trialed by six regional research farms at Swift Current (WCA), Indian Head (IHARF), Outlook (ICDC), Redvers SERF), Melfort (NARF), and Prince Albert (CLC), Saskatchewan in 2019.

The trial consisted of eight plots at each location. The first five plots were seeded to intercrops of peas and oats. These intercrops were compared to a sixth plot of monoculture oats and to a seventh and eighth plot of monoculture peas. The seventh plot of peas was weeded by hand and the eighth plot was not weeded.

The seeding rate of peas for all plots was set to achieve 8 plants/ft² (80 plants/metre²). The intercrop oat seeding rate started with a target of 2.5 plants/ft² increasing to 12.5 plants/ft².

Pea and Oat Seeding Rate All Locations

	Pea Seeding Rate (lbs./ac)	Pea Seeding Rate (bu./ac)*	Oat Plants Per Square Metre	Oat Seeding Rate (lbs./ac)	Oat Seeding Rate (bu./ac)*
Intercrop 25	90	1.5	25	11	0.32
Intercrop 50	90	1.5	50	21	0.62
Intercrop 75	90	1.5	75	32	0.94
Intercrop 100	90	1.5	100	43	1.26
Intercrop 125	90	1.5	125	53	1.56
Oat	90	1.5	200	85	2.5
Pea (weeded)	90	1.5	0	0	0
Pea	90	1.5	0	0	0

Shaw et al. 2020

The trial at CLC did not establish successfully. Peas did not establish well at ICDC or NARF, due to dry soil conditions. The trial at NARF was terminated before grain harvest.

Pea height decreased with intercrop

Peas predictably decreased in height as the seeding rate for oats increased at most locations. However, overall pea height was not dramatically reduced. On average, peas in the intercrops were 2.5 inches shorter (6.5cm) than the un-weeded peas and 3 inches (7.5cm) shorter than the peas weeded by hand. Oat height did not vary greatly between the treatments at any location, and there was no obvious link between oat height and oat seeding rate.

Lower dry weed

There was some indication that weed biomass decreased as the intercrop oat seeding rate increased. At most locations, the intercrop plots had less dry weed biomass than the pea mono-crop plots. The data indicates that pea-oat intercropping may play a role in reducing the need for in-crop weed control, particularly if the most desired crop is pea.

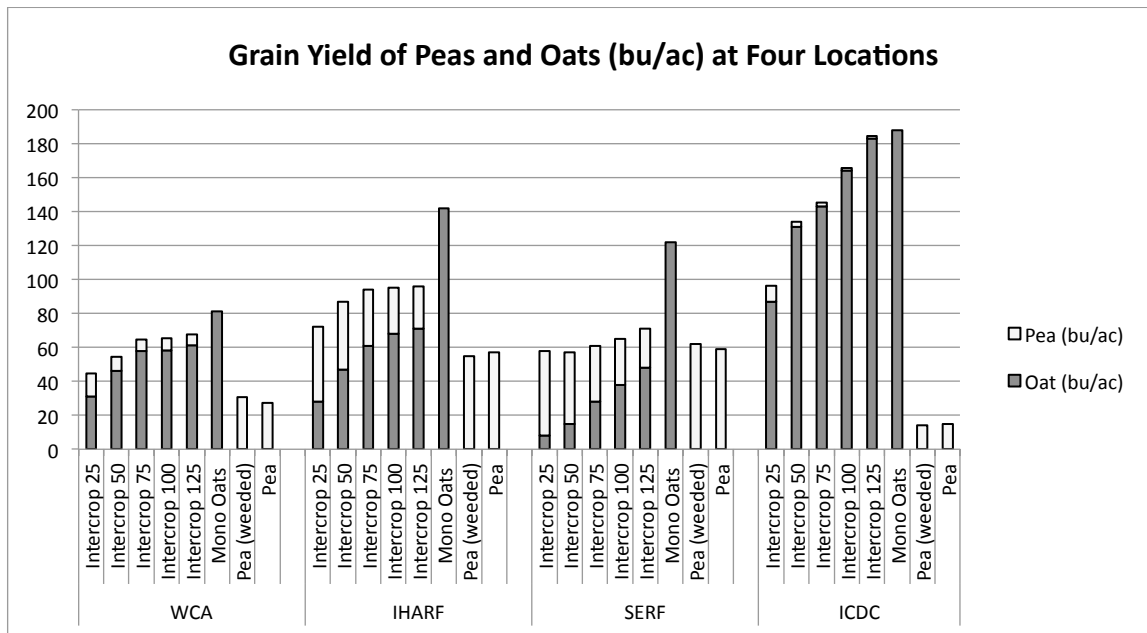
Lodging reduced

Lodging data was obtained at WCA and SERF. There was a strong indication that intercropping can play a role in reducing lodging in pea crops.

Grain yield varied

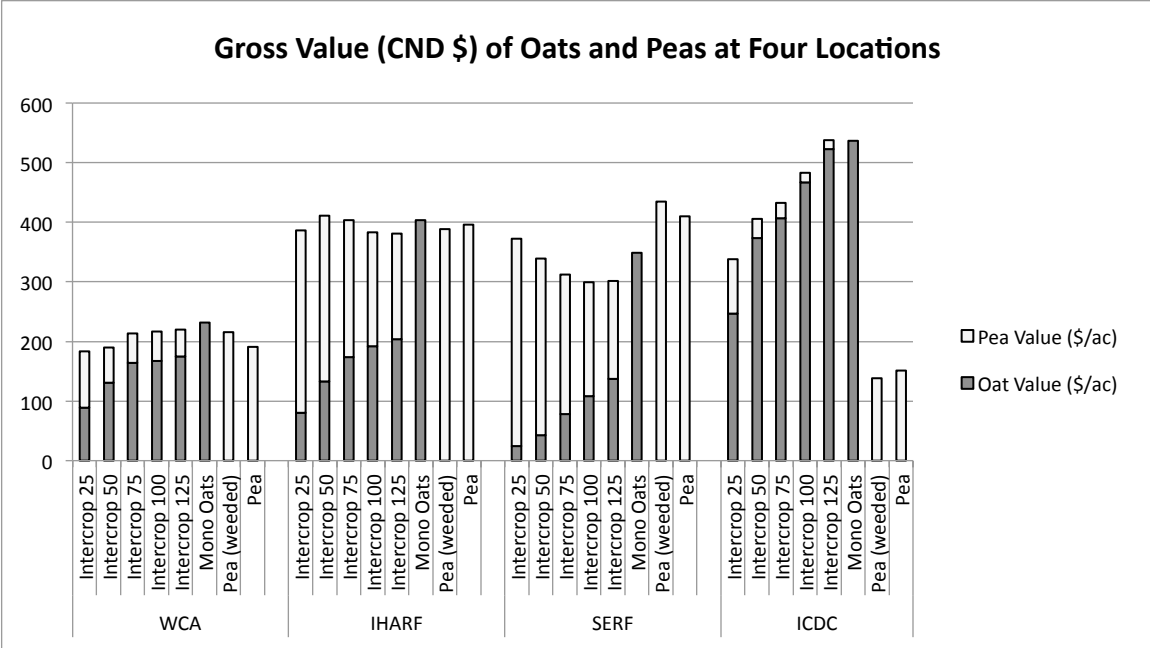
Pea yield and the ratio of peas to oats in the intercrops were affected by a rainy and cold harvest across much of Saskatchewan in 2019. At WCA, pea yield was reduced due to dry conditions earlier in the season, whereas at ICDC, the later harvest resulted in many rotten and shattered peas. These scant pea harvests were not economical to separate. At SERF, heavy bird predation on the oat portion of the intercrops also altered results.

Of all the research sites, IHARF managed to harvest peas and oats in proportions that reflect the intentions of intercropping.



Gross Crop Value and Economic Assessment

Calculations of gross crop value were based on a long-term average price of \$7/bu. for peas and \$2.85/bu. for oats. Only IHARF, where oat and pea intercropping was successfully established, reflects the true value of intercropping. At IHARF, the gross value of Intercrop 50 and Intercrop 75 exceeded that of either the monoculture oat crop or weeded pea crop.



In this demonstration, about one-half the normal rate of nitrogen was applied to the intercrops, resulting in a cost savings of about \$18/ac compared to monocrop oats. The estimated cost of separation using rotary screens was \$15-25/acre depending on yield. However, the precise economic outcome of adopting a pea-oat intercrop approach was not determined due to variables that could not be controlled in these trials.

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Lana Shaw, Garry Hnatowich, Jessica Pratchler, Robin Brown, and Chris Holzapfel, Brian Nybo. Pea Oat Intercrop Demonstration. ADOPT.

http://www.wheatlandconservation.ca/files/Oat_Pea_Intercrop_2019_Group_Report_Sask_Oat.pdf