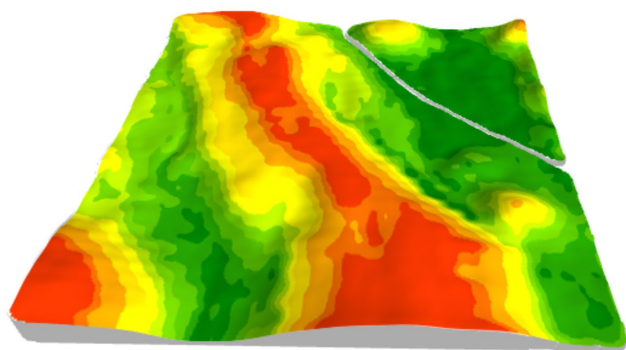


## CASE STUDY 3: INTERCROPPING WITH SWAT MAPS

In 2019, Croft Farms Ltd. near Melfort, Saskatchewan, Canada, seeded the field illustrated in Figure 1 to Maple peas and Clearfield canola (Figure 2). Phosphate was included to provide some starter nutrition. The peas were inoculated with rhizobia to fix their own nitrogen. In this region of northeastern Saskatchewan, peas tend to yield best on well drained, upper landscape positions (SWAT zones 1-4 in this field) and canola can yield better in lower landscape positions (zones 6-10). By leveraging the farm's VR capability and the strengths of each crop, the relative density of peas was decreased from zone 1 to 10 (layer 1), while canola was increased (layer 2).

### APPLICATION SUMMARY

Zone	Area Acres	Yield Goal bu/ac	Layer 1	Layer 2	Layer 3
			Peas 1	Canola 2	Phos
1	18.9	50	110	2.4	65
2	9.4	55	105	2.4	65
3	12.9	60	100	2.4	65
4	14.1	65	95	2.6	60
5	14.7	70	95	2.6	60
6	14.6	70	90	2.6	60
7	16.7	70	90	2.8	55
8	15.8	70	85	3	55
9	19.4	60	75	3.3	50
10	24.2	50	65	3.6	50
	160.7	61.3	88.9	2.8	57.6



**Figure 1.** Pea-Canola intercrop prescription targeting canola dominant population in wet lower landscape positions.

Some benefits of a pea-canola intercrop include:

- Nitrogen fixation in peas reduce synthetic nitrogen requirements.
- Better harvestability compared to monocrop peas.
- Plant diversity.
- Potentially better land use efficiency (higher combined yields than individual monocrops).

Considerations:

- Grain separation and cleaning after harvest adds significant time and cost.
- Selecting the right species is important for weed control. Peas and Clearfield canola offer several options, which is why it is a popular intercropping option.
- If the peas do not survive in parts of the field, nitrogen fertilizer may be needed to maintain yield potential of the canola, adding logistical complexity.
- Disease is still a concern in a high rainfall environment. There are intercrop options such as flax-chickpea that have shown potential to reduce disease transfer and require less fungicide.



**Figure 2.** Pea-Canola intercrop.