

Chickpeas have been the highest profit grain crop on a per acre basis in Saskatchewan since their introduction. The lack of consistent terminal stress in the dark brown and black soil zones has limited the expansion of this crop into the southeast region and many other parts of Saskatchewan. Intercropping may be one method to induce terminal stress. However, intercropping is difficult on a commercial level due to many factors such as grain separation, timing of harvest and weed control among others. A chickpea flax intercrop may be feasible on a commercial scale in Saskatchewan because seeding, weed control, harvest timing, and grain separation are all manageable operations in that system.

The trial was conducted at the AAFC Scott Research Farm in the 2015 growing season. The experiment was arranged as a randomized complete block design with four replicates and 10 treatments:

Trt #	Description
1	Desi (30 seeds m ⁻²) + Flax (40 kg/ha)
2	Desi (40 seeds m ⁻²) + Flax (40 kg/ha)
3	Desi (50 seeds m ⁻²) + Flax (40 kg/ha)
4	Kabuli(30 seeds m ⁻²) + Flax (40 kg/ha)
5	Kabuli (40 seeds m ⁻²) + Flax (40 kg/ha)
6	Kabuli (50 seeds m ⁻²) + Flax (40 kg/ha)
7	Kabuli (40 seeds m ⁻²)
8	Desi (40 seeds m ⁻²)
9	Flax (56 kg/ha)
10	Flax (56 kg/ha) + 60 kg/ha of Nitrogen

There was a significant effect of treatment on both chickpea (P <.0001) and flax yield (P = 0.0057). There was a general trend of increasing yield by more than 100 % in the desi variety relative to the kabuli variety at all seeding rates in the intercropped (Figure 1). The superior yielding of desi in an intercrop may be because of better competition with companion crops. A study by Azar et al. (2013) found maximum grain yield (122.16 g/m²) was obtained from the treatment of one row of barley and one row of desi chickpea, compared with other treatments, including one row of barley and one row of kabuli chickpea.

However, when in a monocrop setting, kabuli yielded 33 % higher than the desi (Figure 1). Flax yield in the monocrop setting was higher (18 %) for treatment with additional N relative with the treatment with no N. Flax yield was greatest when intercropped with kabuli compared to with desi (Figure 1). The increase in flax

yield with kabuli may be attributed to its excellent potential to fix nitrogen, resulting in a high contribution of fixed N to the flax (Saskatchewan Pulse Growers, 2016). Flax intercropped with desi resulted in a lower yield compared to with kabuli, because desi is a good nitrogen fixer but is less productive in adverse environmental conditions (Saskatchewan Pulse Growers, 2016).

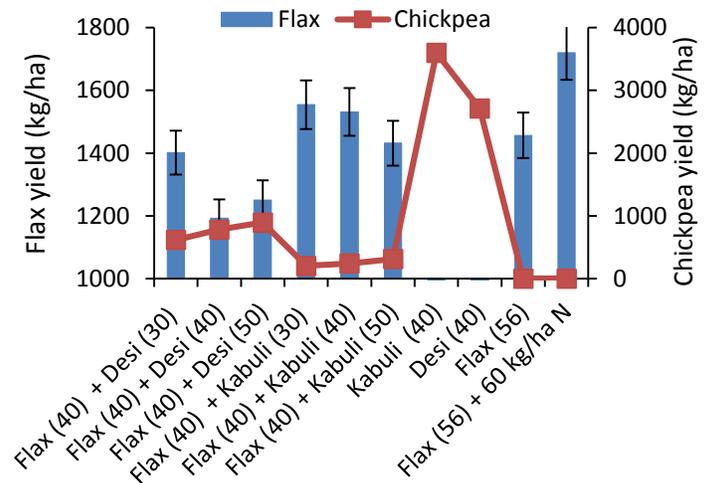


Figure 1. Treatment effects on flax (*columns*) and chickpea (*line*) yield (kg/ha) for the 2015 growing season at Scott.

Overall, flax yield was the greatest when grown alone with N applications. However, flax intercropped with kabuli resulted in similar yields but the added benefit of this intercrop is that, farmers may benefit from two profitable crops rather than a single crop. Based on this demonstration and due to the fact this is the first successful year, further studies are needed to be able to make recommendations to producers around NW SK. Read the full report at: <http://www.westernappliedresearch.com/research/warc-annual-reports/2015/>

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