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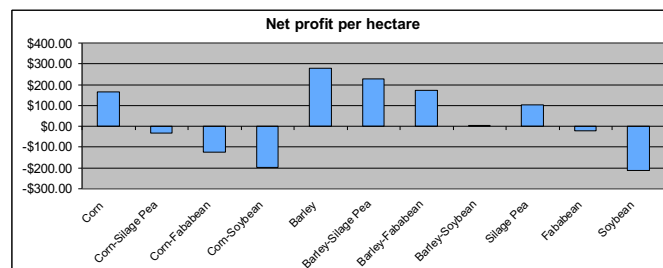
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Pulses with Corn or Barley for Silage

The objective of this project was to demonstrate various silage options, biomass yield, and feed quality analysis when mono cropping or intercropping soybean, fababean, silage pea, barley and corn. These crops were seeded as a mono-crop as well as intercropping the corn and barley with each pulse crop. A Saskatchewan Ministry of Agriculture forage specialist assisted us with optimum seeding rates and harvest dates in both mono-crops and inter-crops.

Dry matter biomass production from the cereal mono-crops of corn and barley was significantly higher than the cereal/pulse mixture and pulse mono-crops. Although intercropped biomass yields decreased when seeded with both cereals the corn intercropped with pulses was significantly lower in all cases when compared to the barley pulse mixtures. Observations taken during the growing season show the corn was shorter and sometimes below the crop canopy when intercropped with a pulse, indicating the corn did not compete well with pulses as compared to barley. Plant densities show the corn mono-crop seeded at 30,000 kernels/acre had on average five times the plant density as corn seeded at 15,000 kernels/acre in a pulse intercrop system. Fababean grown as a mono-crop or intercropped with corn and/or barley resulted in the highest protein levels. However, when looking at %TDN the data shows there is no benefit to growing barley or corn with either soybeans, silage peas, or fababeans.

For a producer looking to maximize yield and protein in their silage program, the best option may not be the most economical. In 2017, the highest net profit per hectare, when factoring in the cost of seed and fertilizer applied to each crop, was barley alone at \$279.99/ha (based on a greenfeed dry matter price of \$95 per tonne and does not account for premiums that may be paid for protein or TDN). Although corn resulted in the highest yield it was fourth best when looking at net profit per hectare due to high fertilizer cost and a seed cost over three times as much as barley. In terms of pulses, the net profit when intercropped with corn was negative, but showed positive income when intercropped with barley, as barley-silage pea intercrop was the second highest net profit followed by barley-fababean. This was the only fababean crop to performed well yielding 3712 kg/ha with a net profit of \$171.90/ha, even though mono-cropped fababean had the highest protein content and may be sold into premium markets.



Even though we were unable to see significant benefits to intercropping due to the drought, we would expect to see pulses contribute more to biomass and feed quality in a more typical year. It would be beneficial to show the effects of each intercrop on biomass yield and feed quality under moderate and optimum growing conditions, so accurate economic impacts can be determined. Including these crops as an intercrop for silage in the drier regions of southwest Saskatchewan certainly comes with a certain level of risk. With more options available to producers they will be able to make a more informed choice to maximize both yield and protein in their silage program. As well, research could be done to evaluate various seeding ratios of each intercrop combination, or evaluating cross seeding, precision seeding, row spacing, herbicide options and cropping rotations, to evaluate their effects on production.

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