Evaluation of contrasting forage pea cultivars in mixtures with cereals for green feed production in Saskatchewan

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SPG Contributions	Project Status	Duration/Timeline of Project (Year to Year)	Co-funders	Total Project Cost
$84,079.00	Completed	November 2015 – March 2019	Saskatchewan Ministry of Agriculture – Agriculture Development Fund (ADF)	$376,529.00

Project Description

To test different forage pea cultivars in mixtures with forage oat and barley for greenfeed production; to determine optimum proportion of foragae pea in pea-barley or pea-oat mixture for greenfeed production; to determine animal preference, feed digesability, and feed intake of pea-cereal mixtures; to determine forage pea N fixation rate in pea-cereal mixtures with or without N fertilizer; to conduct cost analysis of cereal-pea forage mixtures in comparison to barley and oat greenfeed production.

Outcome

A two-year field experiment was conducted using forage pea cultivars 'CDC Horizon' and '40-10' in mixtures with 'CDC Maverick' barley or 'CDC Haymaker' oat. Pea-cereal mixtures had better lodging resistance than the monoculture peas. Even though total amount of biological N fixation (BNF) was not high, a significant proportion of biological N fixation was transferred from pea to barley and oat in the mixtures. In general, the pea-barley mixtures and barley monoculture showed better economic return than the other mixtures and pea monocultures at the three study sites. The majority of pea-barley/pea-oat mixtures were sufficient to meet minimum crude protein requirements of beef cows at different gestation periods. Based on animal feeding trial, inclusion of pea hay within cereal hays will likely increase the nutrient density of the forage (increased starch and crude protein) and increase dry matter intake. However, beneficial effects on nutrient digestibility are dependent on the cereal grain type with positive effects for barley and negative effects for oat. Harvesting pea hay at the mid to late stages will maximize DM yield/ha (dry matter yield per hectare).

Research Objective

OBJECTIVE 1
To test different forage pea cultivars in mixtures with forage oat and barley for greenfeed production.

OBJECTIVE 4
To determine forage pea N fixation rate in pea-cereal mixtures with or without N fertilizer.

OBJECTIVE 2
To determine optimum proportion of foragae pea in pea-barley or pea-oat mixture for greenfeed production.

OBJECTIVE 5
To conduct cost analysis of cereal-pea forage mixtures in comparison to barley and oat greenfeed production.

OBJECTIVE 3
To determine animal preference, feed digesability, and feed intake of pea-cereal mixtures.