

Development of genetically improved field pea varieties and germplasm for the Canadian pulse industry, and evaluation of flavor, physicochemical and functional characteristics in high protein pea breeding lines

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SPG Contributions	Project Status	Duration/Timeline of Project (Year to Year)	Co-funders	Total Project Cost
\$70,467.00	Active	April 2018 – March 2023	Agriculture and Agri-Food Canada; Alberta Pulse Growers Commission; Manitoba Pulse and Soybean Growers; Alberta Agriculture & Forestry; University of Alberta	\$2,776,828.00

Project Description

To improve the yield and general productivity of field pea varieties of the market classes of yellow, green, marrowfat, maple and orange pea; to develop varieties or breeding materials adapted to different arable regions for Canadian pulse industry; to improve protein content of yellow and green pea cultivars by conventional breeding based on the breeding materials developed in the Agriculture and Agri-Food Canada (AAFC) breeding program with the ultimate goal to develop field pea varieties with improved protein content; to investigate amino acid and starch profiles of the high protein breeding materials developed early, and to improve resistant starch; to characterize the genetic basis, metabolic pathways of pea protein and starch syntheses in field peas; to examine the physicochemical composition, protein quality and digestibility, and amino acid composition of new highprotein (HP) pea cultivars; to evaluate potential correlations with perceived tastes and flavours identified by a trained sensory panel and chemical analysis using GC-MS; to develop and evaluate prototype products containing HP pea fractions and to promote commercialization of HP pea cultivars.

Outcome

Research Objective

OBJECTIVE 1

To improve the yield and general productivity of field pea varieties of the market classes of yellow, green, marrowfat, maple and orange pea.

OBJECTIVE 4

To investigate amino acid and starch profiles of the high protein breeding materials developed early, and to improve resistant starch.

OBJECTIVE 7

To evaluate potential correlations with perceived tastes and flavours identified by a trained sensory panel and chemical analysis using GC-MS.

OBJECTIVE 2

To develop varieties or breeding materials adapted to different arable regions for Canadian pulse industry.

OBJECTIVE 5

To characterize the genetic basis, metabolic pathways of pea protein and starch syntheses in field peas.

OBJECTIVE 8

To develop and evaluate prototype products containing HP pea fractions and to promote commercialization of HP pea cultivars.

OBJECTIVE 3

To improve protein content of yellow and green pea cultivars by conventional breeding based on the breeding materials developed in the Agriculture and Agri-Food Canada (AAFC) breeding program with the ultimate goal to develop field pea varieties with improved protein content.

OBJECTIVE 6

To examine the physicochemical composition, protein quality and digestibility, and amino acid composition of new highprotein (HP) pea cultivars.