

## **BRE1101: Weed Science and Herbicide Technologies for Pulse Crops**

Pulse crop production continues to expand in both traditional and non-traditional growing areas of the province and is now an integral part of the crop rotation in Saskatchewan. Weed competition remains one of the most significant limitations to successful pulse crop production. The overall objective of this project was to maintain capacity in the Department of Plant Sciences to address weed control issues specific to pulse crop production in Saskatchewan. The specific objectives of this project included:

1. To develop management guidelines for problematic weeds in pulses including herbicide resistant biotypes
2. To screen candidate herbicides for use in pulses
3. To generate data to support the registration of new herbicide uses for pulses through the PMRA User Requested Minor Use Label expansion program and to support the Provincial Minor Use Coordinator in their effort to achieve herbicide registrations for pulses
4. To develop re-cropping guidelines for pulse crops following the application of soil residual herbicides to rotational crops
5. To collaborate with CDC pulse crop breeders to improve the tolerance of pulse crop varieties to herbicides and to generate data to support herbicide registration

Nine comprehensive experiments were conducted in 2015 to address these objectives including two lentil, five field pea, one faba bean, and one chickpea trial. In the first lentil experiment, lentils demonstrated acceptable tolerance to fall applied flumioxazin, which provided suppression to control of winter annual weeds and early spring germinated kochia. In the second experiment, post-emergence fluthiacet-methyl caused initial visual chlorosis in lentils, which was exacerbated with the addition of Merge<sup>®</sup> adjuvant. The chlorosis was transient and did not result in lentil yield reductions under weed-free conditions. Studies that investigated the potential to control cleavers in field peas on black soils indicated that layering of PRE- soil applied herbicides in combination with a POST- application of Viper<sup>®</sup> generally resulted in additive or synergistic control of cleavers. Studies to investigate the impact of application timing of imidazolinone herbicides on field pea tolerance found that yellow flash (chlorosis) from Odyssey<sup>®</sup> application was transient and generally did not result in a yield reduction when applied before the six-node stage. The main effect of application beyond the six-node stage was a three to 12 day delay in maturity. In a separate study, 10 selections of field pea that survived high rates of Solo<sup>®</sup> herbicide in previous years were evaluated for relative tolerance to check cultivars (CDC Meadow and CDC Striker) at rates of 4X and 8X. None of the selections exhibited higher levels of tolerance or recovery to Solo<sup>®</sup> application than the check cultivars. In a faba bean desiccation study, Heat<sup>®</sup> was less effective in drying down straw and seed than Reglone<sup>®</sup>, and a Roundup<sup>®</sup>-Heat<sup>®</sup> tank-mix. None of the desiccants had a negative impact on seed yield, seed germination, or seed vigour (electrical conductivity). The chickpea study found that CDC Alma chickpeas demonstrated acceptable tolerance to both Focus<sup>®</sup> and Authority Supreme<sup>®</sup>.