

Progress in Chemical Weed Control in Pulses in western Canada

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Pulse crops are an important contributor to the agricultural economy in the Canadian Prairie Provinces. Approximately four million hectares are seeded annually with lentil (*Lens culinaris* L.) and dry pea (*Pisum sativum* L.) being the most common pulses grown in this area. Soybean (*Glycine max* L.) area has been expanding rapidly over the past decade, with the province of Manitoba being the predominate producer. Chickpea (*Cicer arietinum* L.), fababean (*Vicia faba* L.), and dry bean (*Phaseolus vulgaris* L.) are produced as well but their combined area is usually less than 200,000 hectares. Pulses are generally poor competitors with weeds and are quite reliant on ALS-inhibiting herbicides (Group B) for weed control. Problem weeds in pulse crops that have evolved Group B resistance include kochia (*Bassia scoparia* (L.) A.J. Scott), wild mustard (*Sinapis arvensis* L.) and false cleavers (*Galium spurium* L.). Screening for alternative herbicide mechanisms of action has been ongoing since the inception of the Pesticide Minor Use Program in 2000. Sulfentrazone, a Group G herbicide, was one of the first herbicides introduced for use in chickpea and dry pea, particularly for the control of kochia. Other Group G herbicides that have been registered for use in pulses include saflufenacil and flumioxazin. Pyroxasulfone, a very long chain fatty acid inhibitor (Group K), has also been registered in pulses. Co-packs or mixes of the Group G herbicides combined with pyroxasulfone are also available to provide a broader spectrum of weed control in pulses. All of these herbicides are soil applied; thus, their efficacy is highly dependent on environmental conditions and soil characteristics. The concept of herbicide “layering”, the application of a PRE- soil herbicide followed by the application of a POST- herbicide with a different MOA, has been proven successful in controlling weeds such as false cleavers in field pea. PRE- applications of either ethafluralin, sulfentrazone, or clomazone (Group Q) followed by a POST- application of imazamox (Group B) and bentazon (Group C) provided higher levels of control of Group B resistant false cleavers in field pea than the PRE- or POST herbicide applied alone. The search for different mechanisms of action in pulses will continue; however, the success will be dependent on availability of new chemistries.