Cluster 2 – Progress Report for the Cluster 2 Science Advisory Body

1. CLUSTER PROJECT DETAILS

Project number: AIP-131114 Activity A16
Name of Project: Improving Agronomic Practice / Managing Herbicide Resistant Weeds in Pulses with Alternative Modes of Action
Project research period: Jan. 1, 2015 to Dec. 31, 2015
Period covered by this report: Jan. 1, 2015 to Dec. 31, 2015
Principal investigator and research collaborators: Dr. Hugh Beckie

NON-CONFIDENTIAL ABSTRACT/SUMMARY

Field surveys on the Canadian Prairies have indicated that 37% of annually-cropped land is affected by herbicide-resistant weeds, totaling 9.9 million hectare (ha). The rate of introduction of herbicides with new modes of action has slowed dramatically in the last two decades and they will continue to be infrequently commercialized in the short- to medium-term. Pulse crops are highly reliant on Group 2 (ALS inhibitor) herbicides. Resistance to these herbicides is prevalent in broadleaf weeds such as kochia, wild mustard, and cleavers. Also, alternative modes of action for controlling wild oat are required. Experiments conducted at the Scott Research Farm (Dark Brown Soil Zone) and near Rosthern (Black Soil Zone) in 2015 investigated the use of herbicides and herbicide combinations with alternative modes of action (eg. Group 3, 6, 14, and 15) in lentils and field peas. At Scott, lentils tolerated fall and spring applications of pyroxasulfone at rates up to 400 g ai ha^{-1}. Fall applications were superior in controlling wild oats than spring applications due to the dry spring. Pyroxasulfone is soil applied and requires moisture for activation. Injury to Maxim lentil from POST-application of fluthiacet-methyl was reduced by applying at the three-node stage of lentil, compared to the six- or nine- node stage. Fall applied flumioxazin resulted in good control of narrow-leaved hawksbeard and early spring germinated kochia in lentils. Combining ethafluralin with a low rate of propyzamide in the fall resulted in excellent control of wild oats and kochia in lentils. PRE-applications of sulfentrazone or clomazone followed by POST-applications of Viper (imazamox + bentazon) were effective in suppressing or controlling cleavers in field peas in the Black Soil Zone. Most of the experiments will be repeated in 2016.