

Interactive effects of spray quality, air induction, and herbicide mode of action on weed control

Wolf, T.M.^{1*}, Sapsford, K.², Holm, F.A.², Hall, L.³, Van Acker, R.⁴

¹Agriculture & Agri-Food Canada, Saskatoon Research Centre, Saskatoon, SK; ²Department of Plant Sciences, University of Saskatchewan, Saskatoon, SK; ³Alberta Agriculture, Food, and Rural Development, Edmonton, AB; ⁴Department of Plant Science, University of Manitoba, Winnipeg, MB.

* ph. 306-956-7635, fax: 306-956-7247, email: wolft@agr.gc.ca

ABSTRACT

Experiments were conducted to evaluate the relative importance of herbicide rate (full label rate and either 0.75 or 0.5 x), spray quality (medium, coarse, and very coarse), and air-induction (with or without) on post-emergent weed control using 8 different modes of action (Groups 1, 2, 4, 6, 8, 9, 10, and 22) on broadleaf and grassy weeds. A total of 90 experiments were conducted over three years in Manitoba, Saskatchewan, and Alberta. Analyses of variance were conducted on weed control, and the frequency of significant effects was tabulated for each variable. Herbicide rate was the most important determinant of weed control, having significant effects in 49% of cases (63% for grasses, 44% for broadleaves). Spray Quality had a significant effect on weed control 21% of the time (34% and 17% for grasses and broadleaf weeds, respectively). Air induction had relatively minor effects, being significant in only 15% of cases for both grasses and broadleaves. On grasses, Group 2 products were less sensitive to herbicide rate, spray quality, and air-induction than Group 1 products. On broadleaves, Group 2 and 4 products were among the least sensitive to spray quality. Group 9 was sensitive to herbicide rate and spray quality, although overall control rarely dropped below 80%. In contrast, Group 10 was less sensitive to these variables but overall levels of control were below those of Group 9.