

**PATTERNS OF CROSS-RESISTANCE TO ACCASE-INHIBITOR HERBICIDES IN WINTER
WILD OAT (*AVENA LUDOVICIANA*) POPULATIONS**

Sasanfar H.R.¹; Zand E.²; Baghestani M.A.²; Rastgoo M.¹

¹ *College of Agriculture, Ferdowsi University of Mashhad, Iran;* ² *Iranian Research Institute of Plant Protection, Tehran, Iran*
(sasanfar@live.com)

The level of resistance and patterns of cross-resistance to clodinafop-propargyl, sethoxydim and pinoxaden were examined in 12 putative resistant and one susceptible population of winter wild oat (*Avena ludoviciana* Durieu.) collected from Iran. The responses of biomass, plant survival, and coleoptiles to the increasing dosages of the three herbicides were determined in whole-plant and seed bioassays, respectively.

In whole-plant bioassay, all 8 putative resistant populations were indeed confirmed resistant to clodinafop-propargyl with resistance ratios ranging 3.1 to >34.1 or 2.57 to >50.6 for biomass and survival data, respectively. Most clodinafop-resistant populations exhibited low levels of cross-resistance to sethoxydim. On the other hand, two highly sethoxydim resistant populations, F2 and ES4, (with R/S: ~12) were slightly resistant to clodinafop-propargyl. Four of 12 populations (F2, S2, S4 and ES4) always showed high cross-resistance to pinoxaden with ED₅₀ values 12.4- to 27.8-fold greater than the susceptible population. M2, a highly clodinafop-propargyl resistant population, was more sensitive to pinoxaden than the susceptible population suggesting some evidence for the negative cross-resistance to the herbicide. Overall, there was a close similarity between the results of the bioassay and those observed in whole-plant experiment.

Keywords: *Avena ludoviciana*, Herbicide resistance, Resistance ratio, Seed bioassay, Whole-plant assay.