ABSTRACT

OPTIMIZATION OF CHEMICAL CONTROL OF TROUBLE SOME BROADLEAF WEEDS in WHEAT GROWING AREAS

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The purpose of this study was to determine the effective minimum rates of three herbicides (tribenuron-methyl, dicamba+triasulfuron and 2,4-D amin) with different modes of action for the control of some important broadleaf weeds (*Matricaria chamomilla* L., *Melilotus officinalis* (L.) Desr., *Sinapis arvensis* L. and *Galium tricornutum* Dandy) in wheat growing areas and to optimize the performance of these rates for practical use. In order to optimize the use of herbicides, the effects of spray volume and water quality on the herbicide performance were assessed. Furthermore the influences of nozzle type and some additives were evaluated. Results showed that herbicides applied in 20 l/da water volume provided in most cases maximum weed control. Nozzle type (cone or flat fan) did not generally change the performance of ED_{50}, ED_{90}, and recommended rates of herbicides significantly. Additives improved herbicide efficacy significantly in most cases. In general satisfactory weed control was obtained by the combinations of ED_{90} doses with ammonium-sulphate fertilizer or Innogard 309 that were comparable to the weed control levels obtained with recommended herbicide doses. Among the investigated herbicides and weeds, 2,4-D amine was ineffective for the control of *M. chamomilla*. Effect of tribenuron-methyl and 2,4-D amine was lower for *G. tricornutum* control, but efficiency of dicamba+triasulfuron was increased with addition of AS fertilizer or Innogard 309. These results show that additives are the most important factors influencing the practical use of effective minimum herbicide rates in both pot and field experiments. These doses could be effectively used in the practice by considering weed species sensitivity against an herbicide, by using appropriate spray volume, and water quality. Consequently, it can be concluded that use of herbicides in wheat growing areas could be optimized considering all investigated factors.

Key words: Wheat, Weed, Herbicide Optimization, Spray Volume, Nozzle Type, Additives, Ammonium Sulphate, Innogard 309