

## ABSTRACT

### DETERMINATION OF HERBICIDE USE STRATEGIES AT EFFECTIVE MINIMUM DOSES FOR CONTROLLING GRASS WEEDS IN WHEAT

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The aim of this study is to determine the effective minimum doses of some herbicides against important weed species *Lolium perenne*, *Alopecurus myosuroides*, *Phalaris minor* and *Avena fatua*. With this purpose first the minimum doses providing satisfactory effect (ED<sub>90</sub>) of three different herbicides with different mode of actions, Pinoxaden (Axial 45 EC), Pyroxsulam + Cloquintocet-mexyl (Perun 75 WG) and Propoxycarbazone-sodium (Attribute super 20 WG) were determined. Some studies were carried out as pot experiments under greenhouse and others under field conditions. Pot experiments were carried out under conditions with or without concurrence with wheat. Herbicides were applied at 4-6 doses. At the end of the experiments dose-response curves as well as ED<sub>90</sub> values were determined via weed dry weights. In addition survey studies were conducted to determine the abundance and density of weed species used in the studies in Aydin province of Turkey.

Results showed that weed sensitivity to herbicide was lower when grown under competitive conditions. However, weed sensitivity was quite higher when grown under competitive conditions. Weed growth was suppressed by 50-90 %, solely by wheat competition. Under these conditions only 20-60 % of the herbicide doses were enough for an adequate control. Field experiments conducted on fields infested with *P. minor* showed that effective doses were variable depending on weed density. However, an effect over 90 % was obtained by recommended dose in most cases. The 75 % doses provided over 80 % effect depending on experiment. Results of the survey studies showed that weeds concerned in these

studies had frequencies between 46 and 55 % in wheat fields of Aydin province of Turkey.

Results of all studies suggested that weed species used in these studies are quite abundant in wheat growing areas in Aydin province of Turkey and therefore they are required to be effectively controlled. In the case of chemical weed control it was found that wheat competition supports the effect of herbicides. Field experiments showed that high wheat and less weed density allow a usage of herbicides in lower doses than recommended. However, reduced doses should be avoided under conditions where wheat density is low and weeds have high densities.

**Key words:** Wheat, grass weeds, herbicide, *Lolium perenne*, *Alopecurus myosuroides*, *Phalaris minor* and *Avena fatua*, Pinoxaden (Axial), Pyroxulam + Cloquintocet-mexyl (Perun) ve Propoxycarbazone-sodium (Attribute süper)