

**PHYTOTOXICITY AND RESIDUAL EFFECTS OF  
SOME HERBICIDES ON WHEAT  
PLANTATIONS**

By

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## ABSTRACT

**Hoda Abd Elnaby Abd Elgawad Elattar: Phytotoxicity and Residual Effects of some Herbicides on Wheat Plantations. Unpublished Ph.D. Thesis, Department of Plant Protection, Faculty of Agriculture, Ain Shams University, 2018.**

Weeds infestation is one of the most important factors that impose a great threat to wheat yield and is highly reducing yield. In order to alleviate the weeds infestation in wheat (*Triticum aestivum*), the present study was conducted on wheat cultivations during season 2013/14 and 2014/15 to evaluate phytotoxicity effects of some herbicides on wheat, effectiveness of these herbicides on weed control in wheat crop, the estimated residues in wheat plants and yield and quality of wheat after treatment by herbicides. The field experiment was carried out in Agricultural experimental station of Etay El-barod, El-Beheira, using randomized complete block design (RCBD) with four replicates for each treatment and unweeded check, having two rates of both herbicides recommended and double recommended rates (R, 2R). Treatments comprised of post-emergence application of pyroxsulam, flumetsulam+florasulam, tribenuron-methyl, diclofop-methyl and tralkoxydim. The results indicated that biological parameters of wheat (plant height, growth stage and percentage of density) were increased with all herbicides used compared to unweeded check. Tribenuron-methyl and flumetsulam + florasulam treatments did not cause any visible phytotoxicity, whilst pyroxsulam, diclofop-methyl and tralkoxydim treatments recorded low indexes of phytotoxicity on wheat plants and disappeared completely after 8 weeks after application (WAA), compared to unweeded check. Results promised that all herbicides treatments decreased weed density and weed height, and had a strong influence on the growth stage of weeds in terms of stunted growth or very slow growth of weeds compared to unweeded check. Herbicide treatments achieved the highest weed control expressed

in lowest fresh weight after 56 days from application for broadleaved, grassy and total weeds, also in lowest seedheads of grassy weeds. The visual estimation control percentage showed that all herbicide treatments gave excellent control on broadleaved and grassy weeds after 2, 4 and 8 weeks after application. The utilized herbicides degraded rapidly in wheat plant without side effect on biological characters of wheat. Residue analysis of the utilized herbicides indicated that wheat grains at harvest day were free from herbicide residues and were safe for human consumption. Considering yield attributes and quality, herbicide treatments caused an excellent increase in yield attributes (spike length, biological and grain yield) and yield quality (weight of 1000 grains, total carbohydrates, crude protein and starch content) compared to unweeded check in both seasons. The maximum average grain yield (Ard/fed) of 2013/14 and 2014/15 seasons was recorded with pyroxsulam herbicides, percentage increase by 31.85 % over unweeded check.

**Key words:** wheat, weeds, herbicides, phytotoxicity, weeds control effectiveness, residue of herbicides, yield attributes, yield quality

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