

USE OF SOME HERBICIDES IN CONTROLLING BROAD LEAF WEEDS IN WHEAT AND THE EFFECT ON THE CROP YIELD AND GROWTH

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ABSTRACT : A field experiment has been conducted in a wheat field situated in Iraq, Thiqr Governorate, Shatra District, during the cultivation winter season 2014-2015 using Randomized Complete Block design (RCB), in order to realize the effect of weed control in wheat crop with Spotlight 75 WDG and 2-4-D herbicides, the effect of this control in crop growth and yield, and the other field characteristics of Ebaa-99 wheat variety. Spotlight 75 WDG herbicide in 625 cm³/acre, along with 2-4-D herbicide in 300 cm³/acre, has been used. The two herbicides were sprayed in the 2-4 crop growth phase. Results have shown that spraying wheat with Spotlight 75 WDG herbicide has decreased broad leaf weeds and has increased crop yield in comparison with uncontrolled crop growth. Additionally, the two herbicides have shown similarity in effect as the spike height (cm) has increased with an average height 65 cm, foliation 19.83 cm², and the average of 7.75 branches (number of weeds calculated per single square meter). There appeared also significant differences in crop characteristics on one hand and crop ingredients on the other hand. Except for 1000 grain weight, no significant differences were reported in randomized weed control between herbicidal control, as the highest grain number in wheat ear has been 62.50 and 60.50 grains/spike. The average spike number has reached 129.5 and 114 respectively (m²) treated with Spotligh 75 WDG herbicide. Controlled cultivation has yielded average 48 grains, 129.3 spike m². Crop yield has reached highest average 262 g/m² treated with Spotlight 75 WDG, whereas 2-4-D herbicide has yielded 242 g/m². As for comparative weed control, it has reached lowest average, about 209.77 g/m².

Key words : Herbicides, broad leaf weeds, wheat growth, crop cultivation, Iraq agriculture.

INTRODUCTION

Common bread wheat, *Triticum aestivum*, is one of the most important grain crops cultivated in the world, as their cereals are a source of essential energy needed by human beings in their feeding. Being highly nutritive, bread wheat is high in protein and carbohydrates, with a reported average yield about 0.9 ton/hectare in Iraq and 2.5 tons/hectare in the world (Al-Obaidi, 2002). The cultivation of this crop encounters many problems including the contraction of broad leaf weeds. Chemical control of weeds with herbicides helps increase the crop yield, however, this control causes several healthy and environmental troubles. Al-Fahdawy (2009) maintained that controlling weeds in wheat crops has positively boosted ear per number/m² as well as grain number and the grain produced per ton/hectare. Weeds are considered the top pests encountered ever by field crops especially wheat, hence considered as the weakest against weeds if compared with other crops (Johnson, 2012). Moreover, there are other damages caused by the said weeds in cultivation affecting fauna and flora, and control costs, and therefore such losses are more far-reaching than those

caused by worms and nematodes; the losses amount to 41.6 whilst those caused by worms, insects, and nematodes amount to 27.1, 28.1 and 3.2% respectively (Al-Mimar and Ibrahim, 2011). Those weeds hit wheat crops gravely against basic development requirements including water, sunlight, and nutrients, particularly during the primary phase of wheat growth. Accordingly, wheat growth tends to be poor and this is likely to be followed by under-yield. To stop these weeds, chemical techniques are the easiest, cheapest, and handiest to control weed outbreak. Given their large economic returns and being highly efficient in weed control, herbicides have been in use for weed control in all over the world. Though there are relevant problems, relating to health and environment, herbicides have proven fruitful in crop yield with productivity as high as 50% (Lemerle *et al*, 2000, Montazeri *et al*, 2001 and Al-Akeedy, 2010). Certain studies previously conducted on wheat cultivation, such as that made by Al-Chalabi (2003), reported that leaving weeds grow in wheat for fifty days as long as crop cultivation has resulted in a concrete decrease in grain yield and crop production. Similarly, Habeeb *et al* (2005) suggested that weed development in