

# **EFFICIENCY OF SOME HERBICIDES USED ON WHEAT CROP AND THEIR SIDE EFFECTS**

By

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# Contents

## ACKNOWLEDGMENT

<b>1. INTRODUCTION.....</b>	<b>1</b>
<b>2. REVIEW OF LITERATURE.....</b>	<b>4</b>
<b>2.1. Chemical weed control in wheat.....</b>	<b>4</b>
2.1.1 Efficiency of tribenuron-methyl formulations .....	4
2.1.2 Efficiency of clodinafop-propargyl formulations.....	12
<b>2.2. Effect of Chemical weed control on agronomic traits of wheat .....</b>	<b>28</b>
2.2.1 Effect of tribenuron-methyl formulations .....	28
2.2.2 Effect of clodinafop-propargyl formulations .....	32
<b>2.3. Side effects of herbicides on Albino-Rats.....</b>	<b>39</b>
<b>3. MATERIALS AND METHODS.....</b>	<b>49</b>
3.1. Fields experiments.....	49
3.2. Laboratory studies.....	56
3.2.1 Side effects of herbicides on Albino-Rats.....	56
3.2.1.1 Test animals .....	56
3.2.1.2 Treated Diet.....	56
3.2.1.3 Experimental procedures .....	57
3.2.1.4 Histopathological study .....	58
<b>4. RESULTS AND DISCUSSION.....</b>	<b>61</b>
<b>4.1. Field studies.....</b>	<b>61</b>
4.1.1 Efficiency of tribenuron-methyl formulations in controlling broad-leaved weeds in wheat field .....	61

4.1.2	Effect of tribenuron-methyl formulations on agronomic traits of wheat crop.....	82
4.1.3	Efficiency of clodinafop-propargyl formulations in controlling narrow-leaved weeds in wheat field.....	88
4.1.4	Effect of clodinafop-propargy formulations on agronomic traits of wheat crop.....	109
<b>4.2.</b>	<b>Laboratory studies.....</b>	<b>116</b>
4.2.1	Side effects of herbicides on Albino-Rats.....	116
4.2.2	General observations.....	117
4.2.3	Organ weights .....	130
4.2.4	Histopathological Section .....	138
<b>5.</b>	<b>English Summary .....</b>	<b>147</b>
<b>6.</b>	<b>References .....</b>	<b>155</b>
	<b>ARABIC SUMMARY.....</b>	

## **List of Tables**

<b>Table (1):</b> list of the tested herbicides.....	52
<b>Table (2):</b> Density and biomass of the annual broad-leaved weeds in the experimental wheat field, during 2009-2010 and 2010-2011 seasons.....	62
<b>Table (3):</b> Effect of tribenuron-methyl formulations and hand weeding on average fresh weight ( $\text{gm}^{-2}$ ) of broad-leaved weeds in wheat field (c.v.Sakha 93) during 2009-2010 and 2010-2011 seasons, 60 days after sowing .....	66
<b>Table (4):</b> Effect of tribenuron-methyl formulations and hand weeding on average dry weight ( $\text{gm}^{-2}$ ) of broad-leaved weeds in wheat field (c.v.Sakha 93) during 2009-2010 and 2010-2011 seasons, 60 days after sowing .....	69
<b>Table (5):</b> Effect of tribenuron-methyl formulations and hand weeding on average fresh weight( $\text{gm}^{-2}$ ) of broad-leaved weeds in wheat field (c.v.Sakha 93) during 2009-2010 and 2010-2011 seasons, 75 days after sowing.....	71
<b>Table (6):</b> Effect of tribenuron-methyl formulations and hand weeding on average dry weight ( $\text{gm}^{-2}$ ) of broad-leaved weeds in wheat field (c.v.Sakha 93) during 2009-2010 and 2010-2011 seasons, 75days after sowing .....	73
<b>Table (7):</b> Effect of tribenuron-methyl formulations and hand weeding on average fresh weight ( $\text{gm}^{-2}$ ) of broad-leaved weeds in wheat field (c.v.Sakha 93) during 2009-2010 and 2010-2011 seasons, 90 days after sowing .....	75
<b>Table (8):</b> Effect of tribenuron-methyl formulations and hand weeding on average dry weight ( $\text{gm}^{-2}$ ) of broad-leaved weeds in wheat field (c.v.Sakha 93) during 2009-2010 and 2010-2011 seasons, 90 days after sowing .....	77

<b>Table (9):</b> Effect of tribenuron-methyl formulations and hand-weeding on some agronomic traits of wheat crop (c.v.Sakha 93) during 2009-2010 and 2010-2011 seasons.....	83
<b>Table (10):</b> Effect of tribenuron-methyl formulations and hand-weeding on some biological parameters as well as grain and straw yields of wheat crop 2009-2010 and 2010-2011 seasons.....	85
<b>Table (11):</b> Density and biomass of the annual narrow(grassy)-leaved weeds in the experimental wheat fields, during 2009 -2010 and 2010-2011 seasons.....	90
<b>Table (12):</b> Effect of clodinafop-propargyl formulations and hand weeding on average fresh weight ( $\text{gm}^{-2}$ ) of narrow-leaved weeds in wheat field (c.v.Sakha 93) during 2009-2010 and 2010-2011 seasons, 60 days after sowing .....	94
<b>Table (13):</b> Effect of clodinafop-propargyl formulations and hand weeding on average dry weight ( $\text{gm}^{-2}$ ) of narrow-leaved weeds in wheat field (c.v.Sakha 93) during 2009-2010 and 2010-2011 seasons,60 days after sowing .....	96
<b>Table (14):</b> Effect of clodinafop-propargyl formulations and hand weeding on average fresh weight ( $\text{gm}^{-2}$ ) of narrow-leaved weeds in wheat field (c.v.Sakha 93) during 2009-2010 and 2010-2011 seasons, 75 days after sowing.....	98
<b>Table (15):</b> Effect of clodinafop-propargyl formulations and hand weeding on average dry weight ( $\text{gm}^{-2}$ ) of narrow-leaved weeds in wheat field (c.v.Sakha 93) during 2009-2010 and 2010-2011 seasons, 75days after sowing .....	100
<b>Table (16):</b> Effect of clodinafop-propargyl formulations and hand weeding on average fresh weight ( $\text{gm}^{-2}$ ) of narrow-leaved weeds in wheat field (c.v.Sakha 93) during 2009-2010 and 2010-2011 seasons, 90 days after sowing .....	102

<b>Table (17):</b> Effect of clodinafop-propargyl formulations and hand weeding on average dry weight( $\text{gm}^{-2}$ ) of narrow-leaved weeds in wheat field (c.v.Sakha 93) during 2009-2010 and 2010-2011 seasons, 90 days after sowing.....	105
<b>Table (18):</b> Effect of clodinafop-propargyl formulations and hand weeding on some agronomic traits of wheat crop (c.v.Sakha 93) during 2009-2010 and 2010-2011 seasons .....	111
<b>Table (19):</b> Effect of clodinafop-propargyl formulations and hand weeding on some biological parameters as well as grain and straw yields of wheat crop(c.v.Sakha 93) during 2009-2010 and 2010-2011 seasons .....	112
<b>Table (20):</b> Effect of different concentrations of tribenuron-methyl on body weight gain in male and female albino rats after feeding on treated diet for 28 weeks.....	118
<b>Table (21):</b> Simple Correlations (r) between the animal body weight and the concentration of tribenuron-methyl in the treated diet.....	122
<b>Table (22):</b> Simple Correlations (r) between the exposure time and the animal body weight of tribenuron-methyl in the treated diet.....	123
<b>Table (23):</b> Effect of different concentrations of clodinafop-propargyl on body weight gain in male and female albino rats after feeding on treated diet for 28 weeks .....	125
<b>Table (24):</b> Simple Correlations (r) between the animal body weight and the concentration of clodinafop-propargyl in the treated diet .....	128
<b>Table (25):</b> Simple Correlations (r) between the exposure time and the animal body weight of clodinafop-propargyl in the treated diet .....	129



<b>Table (26):</b> Effect of different concentrations of tribenuron-methyl on relative organs weight of male and female albino rats.....	132
<b>Table (27):</b> Effect of different concentrations of tribenuron-methyl on relative organs weight of male and female albino rats.....	133
<b>Table (28):</b> Effect of different concentrations of clodinafop-propargyl on relative organs weight of male and female albino rats.....	136
<b>Table (29):</b> Effect of different concentrations of clodinafop-propargyl on relative organs weight of male and female albino rats.....	137

## List of Figures

<b>Fig.1:</b> Design of the long feeding experiment showing the number of rats used.....	59
<b>Fig.2:</b> Effect of tribenuron-methyl at different concentrations on body weight gain in male rats.....	119
<b>Fig.3:</b> Effect of tribenuron-methyl at different concentrations on body weight gain in female rats.....	119
<b>Fig.4:</b> Effect of clodinafop-propargyl at different concentrations on body weight gain in male rats .....	126
<b>Fig.5:</b> Effect of clodinafop-propargyl at different concentrations on body weight gain in female rats .....	126
<b>Fig. 6(A):</b> Photomicrographs of a section of control rat liver showing cords of normal hepatocytes .....	140-141
<b>Fig.6 (B):</b> Photomicrographs of liver specimen of rats treated with tribenuron-methyl after 180 days to 4500 ppm.....	140-141
<b>Fig.6(C):</b> Photomicrographs of liver specimen of rats treated with tribenuron-methyl after 180 days to 1500 ppm.....	140-141
<b>Fig.6 (D):</b> Photomicrographs of liver specimen of rats treated with tribenuron-methyl after 180 days to 500 ppm...	140-141
<b>Fig. 7(A):</b> Photomicrographs of a section of control rat liver showing cords of normal hepatocytes .....	142-143
<b>Fig.7 (B):</b> Photomicrographs of liver specimen of rats treated with clodinafop-propargyl after 180 days to 900 ppm .....	142-143
<b>Fig.7(C):</b> Photomicrographs of liver specimen of rats treated with clodinafop-propargyl after 180 days to 300 ppm ....	142-143
<b>Fig.7(D):</b> Photomicrographs of liver specimen of rats treated with clodinafop propargyl after 180 days to 100 ppm ....	142-143

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# 1. INTRODUCTION

Wheat is one of the most important cereal crops in Egypt, either as a staple food grain for human or as a major source of straw fodder for animal feeding. Wheat production is not sufficient to our needs in Egypt. Therefore, improving cultural practices for wheat production is essential to enhance wheat production. The area cultivated with wheat in Egypt increased to 1.350 million hectares in 2012 season compared to 1.280 million hectares in 2011 season (**Anonymous, 2012**).

Weeds are major agricultural pests that can adverse crops if not properly controlled or managed. These weeds compete with crop plants for nutrients, water content, space, light and many other growth factors which not only reduce crop yield but also deteriorate quality of farm production and thereby reduce its market value (**Cheema and Akhtar, 2005; and Grichar, 2006**).

Narrow (grassy) and broad-leaved weeds dominated in wheat fields represent very serious problem which may increase rapidly and cause losses in wheat yield ranged from 20 - 50 % depending on many factors particularly weed species (**Rao, 1983; Bhan *at al.*, 1985; Al-Marasafy *et al.*, 2001; Ahmad and Shaikh, 2003; El-Khanagry and Sbaban, 2005; Dangwal *et al.*, 2010**).

**Govindra and Singh (2005) and Hesammi (2011)** reported that the mixed population of *Avena ludoviciana*, *Phalaris minor* and *Chenopodium album* caused 44 to 66% reductions in wheat grain yield in weed infested plots, respectively.

Chemical weed control plays an important role in improving the plant growth and productivity of wheat. Previous reports demonstrated that many pre-emergence and post-emergence herbicides are effective in controlling annual narrow (grassy) and broad-leaved weeds in wheat fields with excellent selectivity (**Martin *et al.*, 1990; Warshney and Singh, 1990; Helalia, 1993; Jarwar *et al.*, 1999; Singh and Singh, 2002; Salama, 2004; El-Khanagry and Shaban, 2005**). **Duke and Lydon (1987)** reported that chemical control methods are usually easy, highly effective, most economical approaches and proved to be more effective than mechanical methods.

The present study was conducted to evaluate the efficiency of some herbicides for controlling weeds in wheat and their effects on wheat grain yield and its components during the two successive seasons 2009-2010 and 2010-2011.

The chronic toxicity of the tested herbicides against albino rats was also studied. This includes: general observations, body weights of rats for seven months, organs weights and

histopathological examinations of treated rats in relation to untreated ones.

## 2. Review of Literature

### 2.1. Chemical weed control in wheat.

#### 2.1.1 Efficiency of tribenuron-methyl formulations.

The sulfonylurea herbicides are widely used to control broad-leaved weeds in wheat fields. It inhibited the enzyme acetolactate synthetase (ALS). Many researchers have reported that herbicide treatments gave satisfactory control of weeds in wheat (**Ray, 1984**).

**Fayed (1992) and Fayed *et al.* (1993)** found that chemical weed control treatments reduced weeds dry weight and decreased weeds population  $m^{-2}$  comparing to untreated. The minimum dry weight of *Rumex dentatus* was noticed with applying Brominal. While, the minimum dry weight of *Beta vulgaris*, *Chenopodium murale*, *Medicago hispida*, *Lolium temulentum* and *Rumex dentatus* was observed with the application of Granstar. The decreased dry weight of weeds may be due to the effectiveness of Brominal and Granstar as post-planting herbicides on different weed species as well as the long acting effect of the herbicides.

**Khan and Haq (1995)** determined the effects of several new herbicides as post-emergence sprays on weed control and yield in wheat including tribenuron (Express 75 % DF) and 2,4-D. They found that tribenuron 75% DF was also very effective