Efficacy of some herbicides for controlling fine-leaved weeds in wheat fields.

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Abstract: The noxious incidence of undesirable plants, also known as weeds, is one of the major constraints to world agricultural production. Weeds are plants that under certain conditions cause economic and social harm to the farmers. Weeds have always been considered strong competitors of crop plants; and today, they form an inseparable part of agronomic systems and inflict losses on crop plants. To evaluate various herbicides for controlling weeds wild oat- in wheat fields, an experiment was conducted field to appraise the efficacy of herbicides against weed growth and their influence on growth and yield. Treatment consisted of Galant Super (Haloxyfop-R-methyl 10.8% EC), three concentrations of pesticides were used respectively (25%,50%,75%). Spraying was carried out using a back sprayer. Results showed that herbicide reduced weed population considerably .The most effective was with a concentration 75% reduced weed by 98.7%, and none of concentration the herbicides hurt the crop.

Introduction

The noxious incidence of undesirable plants, also known as weeds, is one of the major constraints to world agricultural production. Weeds are plants that under certain conditions cause economic and social harm to the farmers. Losses caused by weeds may be from 5 to 10 percent in the agriculture of developed countries, while losses can be up to 20 to 30 percent in developing or emerging countries, i.e., those that depend to a greater extent economically on their agricultural production (FOW). Looking at the global scenario the major contributors of crop loss are weeds, followed by animals and pathogens (Vats, 2015). Weeds compete with crop plants for nutrients, moisture, space, light, and many other growth factors. Such competition not only reduces crop yield but also de- teriorates the quality of farm produce and thereby reduces the market value of the produce (Marwat et al., 2013). For hundreds of years, the fight against weeds has been mainly based on controlling them using mechanical and agrotechnical methods (Adamczewski, 2000). A breakthrough took place when chemical plant protection agents were discovered (Adamczewski and Praczyk, 1999). Herbicides are a beneficial, very effective, and efficient means of controlling weeds (Azad et al., 1997). Herbicides are used to kill weeds and are still the largest product type accounting for 47.6 % of global pesticide sales followed by insecticide (29.4 %), fungicide (17.5 %), and others (5.5 %) (Vats, 2015). Several studies have been conducted to evaluate the effects of herbicides on weeds(Ahmad et al., 1993), observed that herbicide application and decreased the weeds significantly (Akhtar et al., 1991).

Materials and method

To evaluate various herbicides for weed control, the experiments were carried out in the research field of Omar Mukhtar University. This area has clay-limey soil with pH = 7.1 and Electrical Conductivity (EC) = 2. The treatments tested were sulfosulfuron(Galant Super (Haloxyfop-R-methyl 10.8% EC) + Linuron 50% WF (Table 1).the trial was exhibited by randomized complete block design (RCBD) with three replications having the net plot size for all treatments was 65 × 60 m, but for each treatment, the area designed was 13 × 20 m. Each

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plot or block was separated clearly by making paths (Dalga *et al.*, 2014), After the land preparation and seedbed operations, seeds were planted in plots 3x8 m. irrigations were applied as per crop water stages especially at tillering, booting, anthesis, and grain development stage. A back sprayer with a pressure of 2 to 2.5 bars was used to spray against weeds in the 3–4 leaf stage. And the experiment was repeated in time.

Statistical analysis

Statistical analyses were carried out by analysis of variance (ANOVA) using Minitab version 19 software. Statistical differences in differences in weeks and herbicide were analyzed by one-way (ANOVA), also between different concentrations and the number of dead plants. Differences were considered significant at p values ≤ 0.05 after which, Least Significant Difference (LSD) analysis was performed to determine whether there were statistically significant differences p values ≤ 0.05 between both different herbicide and different numbers of dead plants.

Results and discussion

The result levels of efficacy from Gallant Super 10.8% EC pesticide in wheat fields are presented in Table (1).

Data in Table (1) show the result of tested herbicide in different wheat fields.The values of the number of dead plants in Gallant Super 10.8% EC ranged from 72 to 119 in the first week. as well the number of dead plants ranged from 92 to 208 in the second week, in addition, the number of dead plants ranged from 162 to 217 in the third week, lastly, the number of dead plants ranged from 191 to 269 in the third week. The herbicide concentrations were from 75%, 50%, and 25%, respectively. where the highest plant death rate was recorded in the fourth week of the Gallant Super 10.8% EC, followed by an exterminator whose death rate was in the fourth week. Observe that the evidence, in both pesticides was the zero value at spraying with water only.

In general, as shown in figure (1) the results showed that there was a statistical difference among herbicide treatments. all tested the number of dead plants in the weeks there are significant differences between the number of dead plants and the weeks. From these results, we can conclude that herbicides were more significant in the number of dead plants in the fourth week than the third week and second week at ($p < 0.05$). The average concentrations of different in herbicide (Gallant Super 10.8% EC) in the number of dead plants were significant between different concentrations of herbicide illustrated in figure (2). Showed a significant concentration of 50 % significant between different concentrations in the number of dead plants at ($p < 0.05$).

Table (1)Effectiveness of an herbicide against fine-leaved weeds (number of dead weeds and water content of weeds after 1,2,3,4 week.

Pesticides	The rate of pesticide pplication/liter of water	Number of live weeds before spraying	First week		Second week		Third week		Fourth week	
			Number of dead plants	death percentage %	Number of ead plants	death percentage %	Number of ead plants	death percentage %	Number of lead plants	death ercentage %
Gallant Super %10.8 EC	%75	217	72	%33	208	%60	217	%85	217	%98
	%50	269	119	%46	166	%63	198	%74	269	%100
	%25	201	76	%39	93	%49	162	%82	191	%95
Control	Just spray with water	0	0	0	0	0	0	0	0	0

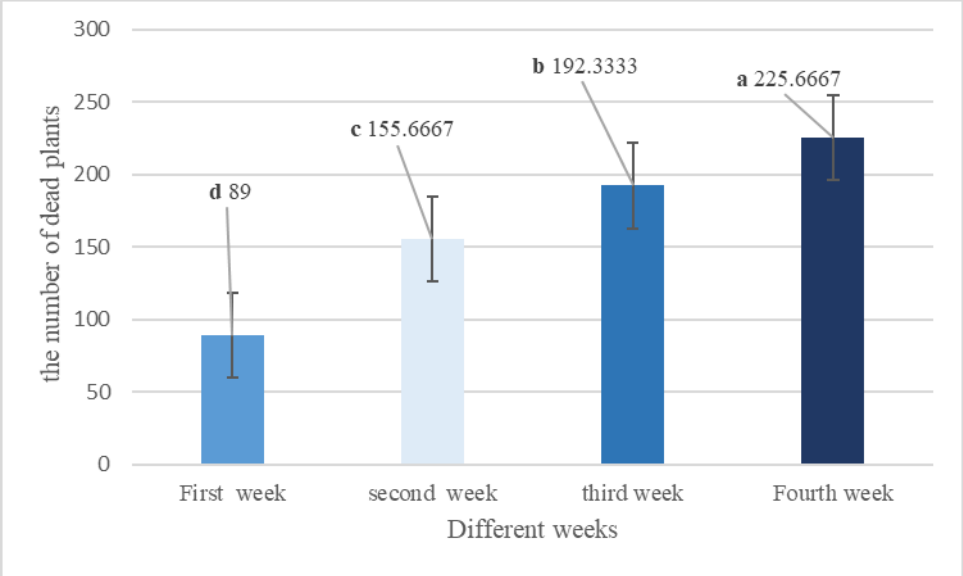

Figure (1) Analysis of variance of different weeks and the number of dead plants

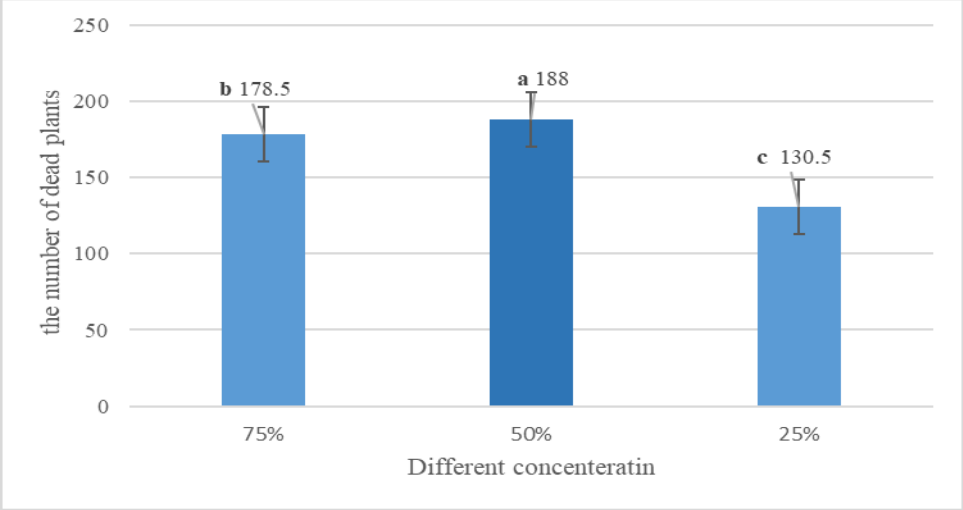

Figure (2) Analysis of variance of different concentrations and the number of dead plants

The results are shown in Table (2) showing the different concentrations of herbicides in the number of dead plants were significant differences in concentrations of 75% and 50 % in the fourth week than the first, the second, and the third week at ($p < 0.05$).

Table (2) Analysis of variance for different concentrations and study weeks using LSD

Concentration %	First week		Second week		Third week		Fourth week	
	Mean	Std error	Mean	Std error	Mean	Std error	Mean	Std error
75%	**k**72	± 0.42	**c** 208	± 0.55	**b**217	± 0.55	**b**217	± 0.55
50%	**h** 119	± 0.57	**f**166	± 0.56	**d** 198	± 0.54	**a**269	± 0.59
25%	**j**76	± 0.56	**i** 93	± 0.53	**g**162	± 0.58	**e** 191	± 0.57

*** The values of the same letter indicate that there were no significant differences between different regions at P > 0.05**

Data obtained indicated that the herbicidal treatments gave the minimum weed population، gave Gallant Super 10.8% EC. These findings are in harmony with those obtained by many researchers (Gherekhloo et al., 2016; Leverett, 2017). These findings are in harmony with those obtained by many researchers (Maxwell et al., 1990; Lehnhoff et al., 2013), who reported that the highest reduction in wild oat-leaved weeds according to herbicide efficacy. Where it was recorded during the fourth week that wild oat-leaved weeds decrease, and it was indicated that the use of herbs significantly reduces weeds with the regular use of the herbicide.

The high efficacy of Haloxyfop-R-methyl 10.8% EC herbicide on wild oat-leaved in this study was supported by many authors.

The efficiency of the tested Haloxyfop-R-methyl 10.8 ٪EC varied according to wild oat-leaved during weeks in the pesticide used . Such results are by those obtained by several researchers (Helalia, 1993; Abou-Donia et al., 1994; Zandb et al., 2007; Naseer-ud-Din et al،. (2011who demonstrated that Haloxyfop-R-methyl 10.8 ٪EC herbicide were more efficient، up-to-date, and time-saving and their efficacy against fine-leaved weeds is dependent upon herbicides used. Therefore, Therefore, we can conclude that Gallant Super 10.8% EC herbicides may be successfully used for controlling the fine-leaved weeds in wheat crops and increasing wheat grain yield.

The results are in conformation with those of investigators (Khaliq et al., 2003; Zand et al،. 2007a; Hamada et al., 2013)They concluded that chemical weed control significantly decreased weed population which ultimately resulted in increased wheat.

Conclusion

The results of evaluating various herbicides for weed control, The experiments were carried out in the research field of Omar Mukhtar University. Affirmed efficacy of Gallant Super herbicide 10.8% EC herbicide for controlling fine -leaved weeds in wheat fields. It is noteworthy that in the fourth week, the number of dead plants was more than the first week، as well as in the death rate.

فاعلية بعض مبيدات الاعشاب في مكافحة الحشائش رفيعة الاوراق في حقول القمح

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المستخلص: تعد الإصابة الضارة بالنباتات غير المرغوب فيها، والمعروفة أيضًا باسم الأعشاب الضارة، أحد القيود الرئيسية أمام الإنتاج الزراعي العالمي. الأعشاب الضارة هي نباتات تسبب في ظل ظروف معينة ضرراً اقتصادياً واجتماعيًا للمزارعين. لطالما اعتبرت الحشائش منافسًا قويًا لنباتات المحاصيل؛ واليوم، تشكل جزءًا لا يتجزأ من النظم الزراعية وتسبب خسائر في نباتات المحاصيل. من أجل تقييم مبيدات الأعشاب المختلفة لمكافحة حشائش الشوفان البري في حقول القمح، أجريت تجربة ميدانية لتقييم فاعلية مبيدات الأعشاب ضد نمو الحشائش وتأثيرها على النمو والإنتاجية. تكونت المعالجة من Galant Super (Haloxyfop-R-methyl 10.8% EC),واستخدمت ثلاثة تراكيز من المبيدات على التوالي(25٪، 50٪، 75٪). تم الرش باستخدام رشاشة ظهرية. أظهرت النتائج أن مبيدات الأعشاب قللت بشكل كبير من عدد الحشائش وكان الأكثر فاعلية تركيز 75٪ خفض الحشائش بنسبة 98.7٪ ولم تؤذي أي من المبيدات المحصول.

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