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Examining the Effectiveness of the best Herbicide on weed Management of Lepyrodiclis (*Lepyrodiclis holosteoides* L.)

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ABSTRACT: A factorial experiment was conducted in a completely randomized design with four repetitions in order to determine the proper herbicide for the purposes of lepyrodiclis controlling. The examined herbicides included Total, Atlantis, Bromicide, and Duplosan Super with surfactant (5cc per 1 L) consumption and without consuming it. The result of examining the effect of the type of the herbicide on EWRC trait indicated that Bromicide herbicide, with and without surfactant consumption, has maximum effect on managing weeds with a 76 percentage control over them. Moreover the use of Bromicide can significantly affect the amount of the wet matter of the weeds. Examining the dry matter of the weeds specified that like Bromicide, Duplosan super, with and without surfactant consumption, significantly affects controlling the dry matter of weeds. The results of the application of the relevant herbicides specified that Bromicide significantly affects control over wet and dry substances of lepyrodiclis along with surfactant consumption.

Key words: Weeds, Bromicide, surfactant, dry matter

INTRODUCTION

One of the ways of increasing agricultural products is preventing the losses caused by the weeds. The amount of damage to the agricultural products made by the weeds has determined to be 45 percent (Rahimiyan, 1996). Many weeds play host to pests and diseases and so they are considered agents which spread the pests and diseases within the field. The existence of weeds makes harvesting the crops difficult as well. Creeping weeds such as cleavers (*Galium aparine*), black bindweed (*Polygonum convolvulus*), and *Vicia villosa* attach themselves to the grains and lead to verse and eventually a decrease in the plant's performance (Foster *et al.* 1998). The narrow leaf weeds (50 percent) and broad leaf weeds (50 percent) competing with wheat during its growth period increases the product's performance by 25 percent (Appleby 1992). Fast growth rate and the aggression of weeds leads to the essential food being absorbed by them rather than by the crops (Gill *et al.,* 2000). Nitrogen, phosphorous, and potassium are the most crucial nutrition for the plants and nitrogen is more important the other two elements (Zimdahl, 1999). The weeds need nutrients and the ratio of absorbing nutrients by them is similar to the crops or sometimes even more while nutrients obviously promote the crops' growth (Maghsoudi, 2006). A research specified that when the bed was prepared in the fall to cultivate sugar beet seeds, weeds such as tumbleweed (*Amaranthus retroflexus* L.) and field bindweed (*Convolvulus arvensis* L.) germinated sooner since the conditions were suited to it as well however estimating the performance at the end of the season made it clear that the terraces which had their beds prepared in the fall had higher performances in comparison with the common spring method (Maghsoudi 2006). The resistance of weeds to herbicides is increasing in an alarming rate due to the massive effect the weeds have on reducing the performances of crops while biotypes resistant to herbicides are appearing in species which were previously sensitive to the herbicide (Zand and Baghestani, 2002). The herbicides can sometimes sufficiently control the weeds in lower doses than what was prescribed (Kudsk and Streibig, 2002). Baker, Percival, Judy and colleagues are amongst researchers who examined the decreased toxic effects of herbicides (Judy *et al.,* 1991; Percival & Baker., 1991). Using optimal doses has been widely used in that past recent years. Chhokar *et al.* (2006) indicated that using high doses of Sulfosulfuron, Metribuzin, and Flufenacet herbicides leads to damage to the crops cultivated after wheat. Numerous efforts have been made to examine the effect of herbicide dose reduction on the competition between the crop and the weed in crops such as barley (Richards & Davies, 1991; Salonen, 1992; Christensen, 1993), winter wheat (Richards & Davies, 1991; Lemerle *et al.,* 1996; Brain *et al.,* 1999), and spring wheat (Salonen, 1992) in line with cultivation researches based on plant performance and controlling the weed, economical analysis has been conducted along with reducing herbicide dosage in barley.

Brain *et al.* (1998) have also presented suggestions to use different ratios of herbicides and their varied effects on controlling weeds under different conditions and in different locations and expressed that it is sometimes necessary to use more herbicides for specific species.

MATERIALS AND METHODS

A factorial experiment was conducted in a completely randomized design with four repetitions in order to determine the proper herbicide for the purposes of controlling Lepyrodiclis to prevent soil toxicity. The examined herbicides included Total, Atlantis, Bromicide, and Duplosan Super (with 5cc per 1 L) surfactant consumption and without consuming it. Each pot contained 10 plants and a Matabi sprayer was used to apply the treatment in 6 to 8- leaf stage. After 3 weeks of spraying the plants with herbicides the number of the live plants of each pot was written down and were calculated as a percentage of the total number of the weeds within the pot (in order to determine the vitality percentage) and at the end of the 4th weak the plants were removed from the soil surface and they were weighed in a 72- degree oven for 48 hours after being dried. The examined traits include examining the effect of the type of herbicide on EWRC, the amount of the wet matter of the weeds and the amount of the dry matter of the weeds. SAS and EXCEL software were used to analyze the data and draw the graphs in this project.

RESULTS AND DISCUSSION

Examining the analysis of the data and drawing their tables (Table 1) specified that the selected herbicide has a significant effect on the fresh weight and dry weight of the weed seedlings which is consistent with the results obtained from the studies conducted by Zand *et al.* (2002), Zand *et al.* (2007) and Zand *et al.* (2008). This difference regarding the weed dry weight is in 1% probability level and regarding the dry weed weight is in 5% probability level.

Table 1: Variance analysis for EWRC, weed dry weight and weed fresh weight (mean square).

Treatments	df	EWRC	Weeds dryweight	Weedsfresh weight
Herbicide	7	32.86**	0.006*	0.073**

Based on Fig. 1 there is a significant difference between the herbicide treatments which was spotted in the terminated plants through a visual evaluation based on EWRC Table. Comparison between mean values with regard to the dry weight percentage in comparison with the controls (without herbicide) four weeks after spraying with herbicide indicated a significant difference between the percentage of weed control in terminated plants after four weeks in comparison with their percentage before they were sprayed this was done based on a visual evaluations on the basis of EWRC. Application of Bromicide with and without surfactant was efficient among the herbicides in managing the weeds with a 76- percentage control over them this was consistent with the researches of Narimani and Baghestani (2002) and Zand *et al.* (2008).

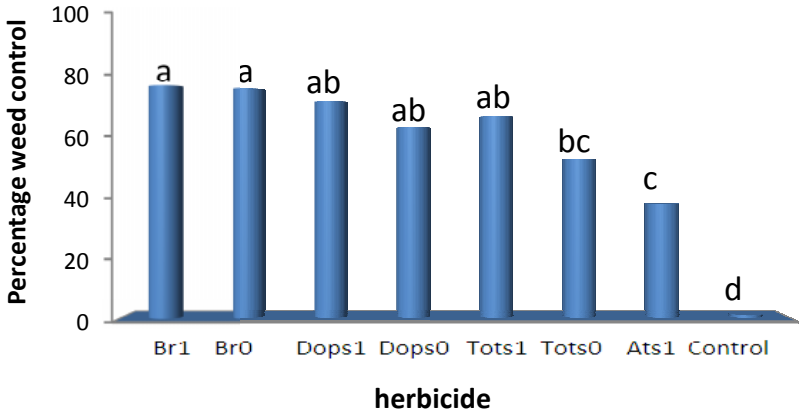

Fig. 1. Comparing the terminated weeds through visual evaluation based on EWRC Table between 8 experimental treatments.

Examining the fresh weight of the seedlings after applying the treatment indicated that the control has the greatest seedling fresh weight (41 g/pod) without being controlled by the herbicide and the Bromicide treatment with surfactant had the least amount of weed wet matter (15 g/pod) with a significant difference in comparison with the control. Total herbicide was the least effective among the herbicides and the conducted experiments have approved the results obtained from it (Zand *et al.*, 2007).

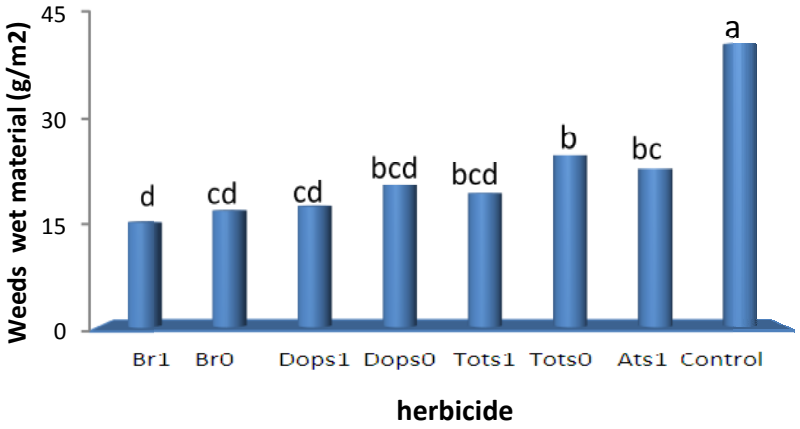

Fig. 2. Comparing the fresh weight of the weeds among eight experimental treatments.

It is clear that using Bromicide with and without surfactant and Duplosan super with and without surfactant, and Total with surfactant in this study lead to lower dry matter of the weeds compared to other herbicides(in Fig. 3). According to the results obtained in Fig. 2 we can consider that the application of Bromicide with surfactant effective on managing lrpyrodiclis. "Total" herbicide (metsulfuron methyl + sulfosulfuron), which belongs to the Sulfonylureic family and is considered an acetolactate synthase (ALS) inhibitor or an acetohydroxy acid synthase (AHAS) has the least amount of effect on managing lepyrodiclis.

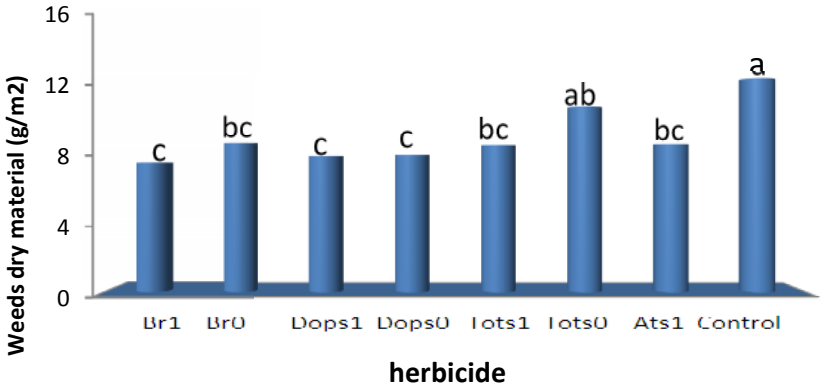

Fig. 3. Comparing the dry weight of the weeds among eight experimental treatments.

CONCLUSION

Carrying out roper operations for controlling the weeds requires thorough and precise understanding of the plant, cultivation management systems and many environmental parameters affect the weed controlling operations (Rashed Mohassel *et al.*, 1996). It is clear that using Bromicide with and without surfactant and Duplosan super with and without surfactant, and Total with surfactant were the best weed control treatments based on the results of percentage of live plants, dry and fresh weight of weed after application of herbicides against lepyrodiclis. On the other hand application of surfactant in this study was not meaningful effect on efficiency of herbicides.

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