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An Evaluation of Different Herbicides on Four Species of Narrow-Leaf and Broad-Leaf Weeds

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ABSTRACT

For the maintenance of a healthy environment it is essential to reduce the use of herbicides and to develop sustainable agricultural practice.This study has been done to assess effects of the herbicides Glyphosate and Nicosulfuron on weed control.The experiment was conducted in 2011 as a factorial in a completely randomized design in the Laboratory School of Agriculture. The test treatments under evaluation were:Glyphosate (Randap) with values of 0, 0 /125, 0/25, 0/5, 2 and 3L and Nicosulfuron (Samsun), with values0, 0 /125, 0/25, 0/5, 2 and 3 L on four weeds;*Sinapis arvansis*, *Chenopodium mural, Amaranthus retroflexus* and *Avena ludoviciana.*Measurements for the characteristics of density, dry weight, EWRC and weed height were taken and analyzed. The results showed that consumption amounts of herbicide on the measured traits of weed were significant. The characteristics of density and height were the most affected by herbicide. Analysis of the measured characteristics showed that herbicides were most effective on the weeds *Sinapis arvansis* and *Avenaludovicina.*

KEYWORDS: Herbicide, rate, Weed.

INTRODUCTION

Weeds are unwanted plants that grow out of place among main crops. They can also be defined as plants whose implications are as yet unknown. All green plants need light water and nutrients to grow.Weeds are commonly found growing on cultivated farmland giving rise to competition with crops Materials required by the growth of weeds are the same as those that are essential for crop growth. Therefore, a presence of weeds leads to reduced growth and yield of crops. This effect can be minimized if one or more factors are limited in a growth medium (4).

The chemical method of weed control is the most commonly used, but it causes problems such as increased reliance on herbicides and the potential development of weed resistance to herbicides and pesticides and the pollution of water and soil (Zand, 2004). Pigweed is reported to reduce the yield of crops due to competition to the extent that one plant in a 25 cm row can reduce yields of corn and soybean, by 15 and 32%,respectively (11). Pigweed in fields of potatoes, onions, corn, tomato, pepper and sugar beet produces intense competition. The growth of weeds on farms affects many crops especially, sugar beet, corn, soybean, potatoes, and fruit orchards.(10). Wild oat seed is the most important weed to attack fields,as the seeds fall before the main crop has reached maturity. The most common weeds in fields of peas is wild mustard seed. Itis considered as the most common weed in these fields and can cause a 65% loss of performance in fields of peas, the weed can occur at a rate of 30 plants per square meter. The major areas of its occurrence are Golestan, Mazandaran, Bushehr, Kurdistan, Tehran, Ilam, Khuzestan and Kermanshah. Research has shown that annual and perennial weeds may be an effectively controlled by herbicides such as sulfonylurea (5). According to research the herbicides Nicosulfuron, ReemSulfuron, Fura Sulfuronare all very effective on narrow leaf and broad leaf weeds, as well as perennial weeds in corn plants (3, 2). Aspragv and colleagues (1999) demonstrated that the herbicides Nicosulfuron and Prymsulfuron on Covak grass weed control of grasses were 84 and 80 percent effective respectively. Aoslyman and Bourne (1993) tested the effects of the herbicides Atrazine, Mtosulfuron, ReemSulfuron on pigweed and reported much success. chimi (2007) In a study on the herbicides Dyoron and Sencor to control weeds in canola crops, showed that these herbicides were effective in the control of wild mustard and *Malva spp.* Baghestani and colleagues (2007) reported that the herbicides Aultyma and Nicosulfuron Raknt rl were noteffective on a range of broad-leaved weeds. Better weed control can be achieved by mixing herbicides. Randap systemic herbicide and the plant through the roots into Simplest moving to the area and its growth will stop.The visible effects of this herbicide on annual plants and perennial plants, usually appears after 4-2 days orafter 10 days following foliar applications. The herbicides have been used to control weeds *Sorghum halepense*, *Xanthium spp*, pigweed, chicken, *Cirsium spp*, nightshade, silver leaf, tail fox, bird claws and *Cyprus spp.* Rashed and colleagues reported that the current herbicides most widely used around the world are forms of Glyphosate. According to the survey, assessment of herbicides according to the type of crop and weed flora of the region seems to be necessary for most weeds. Therefore, it is necessary to test herbicides made from the two herbicides Nicosulfuron and Glyphosate on broad-leaved and narrow leaved weeds.

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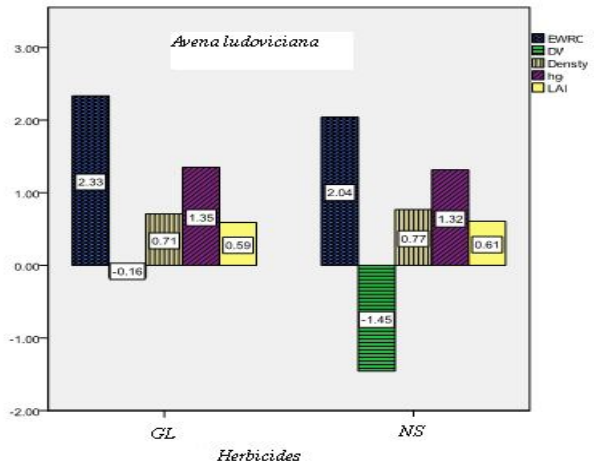
MATERIALS AND METHODS

Tests were done in the summer of 2011 in the Department of Agriculture, Shoushtar unit. Geographical location of the test was 13 ° 35' latitude and 22 ° 42' with a height of 132 meters above sea level. The region had a 30-year average rainfall of 230 mm, 78 and 20 percent average humidity and test run average temperatures were 42 ° C. The experiment was a factorial in a completely randomized design with three replications and 12 treatments. For this purpose, the pots(diameter 15 cm and 20 cm depth) were filled with good soil (1 part sand, 2 parts soil and 1 part leaves).Then 10 seeds were germinated in each pot at the proper depth and after emergence of true leaves they were thinned to 5 plants per pot. Pots in the laboratory were kept in a condition of 16 hoursof light and 8 hours of dark. The plants were watered according to demand. The weed control treatments consisted of herbicide at each product's recommended amount, as follows:Glyphosate (Randap) at doses of 0, 0/125,0/25,0/5, 2 and 3 liters and Nicosulfuron (Samson) with doses of 0, 0 /125, 0/25, 0/5, 2 and 3 liters were used. Step 4-leaf weeds in were sprayed with a fan nozzle sprayer (N8001) with a movable rail MATABI (model output of 250 liters per hectare), and the injection pressure 200 Kpa. Data for analysis of variance was performed by SPSS software and MATATC.

RESULTS AND DISCUSSION

Avena loduviciana: The smaller the significance level test of 0/05for any two factors (type of herbicide and herbicide rate) was equal to the mean vector. This means that there wassignificant difference between the mean vectors of the five measured traits according to the type of herbicide on wild oat weed. The vector averages of the five measured traits in wild oat were different, not identical. Significant difference between the mean vectors of the five measured traits on wild oat was evident. The vector averages of the five measured traits at different rates on wild oat weed were not the same.

Graf 1: The vector averages of the five measured traits in wild oat were different



Then, for each agent and each dependent variable, analyses of variance were presented. If any tests had a significance level of less than 0/05it showed that on average the dependent variable wasat the desired operating level. If there was no significant difference between the desired variables in the group under consideration it was rejected with 95% confidence. Given the significant level, the results were as follows:

Types of herbicides

Significant differences between the averages of the EWRC components, according to the type of herbicide. Average wild oat weed component in the EWRC was not identical in all the various herbicide treatments. Significant differences between the mean dry weights of the componentsaccording to the type of herbicide. Average dry weights of the components were not the same. Significant difference between the average densities of components according to the type of herbicide. The average density of components was not the same on wild oat for all the various herbicide treatments.

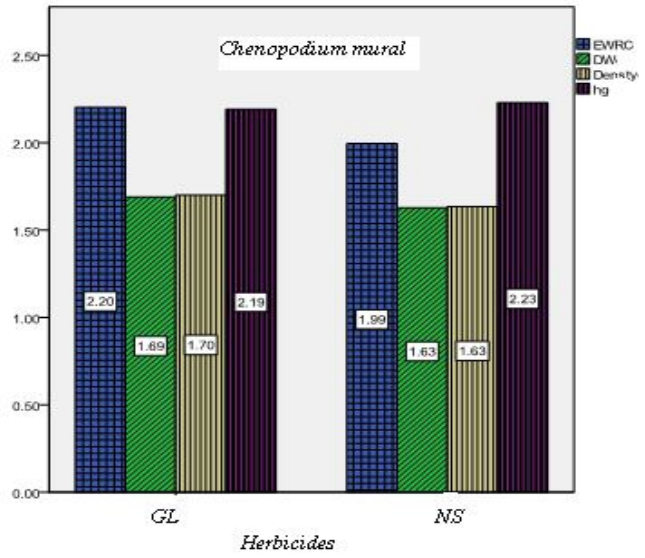
Amount of herbicides

Significant difference between the average rates of herbicide on the component EWRC was evident. EWRC averages on wild oat from the different rates of herbicide treatment were not the same. Significant difference between the mean dry weightsfrom the different rate of herbicide treatment was evident. Average dry weightsfrom the different rates of herbicide treatment were not the same. Significant difference between the average densities of components was evidently due to the amount of herbicide used. The average density of components in wild oat from the different rates of herbicide treatment was not the same. Significant difference between the amounts of herbicide on the average height was evident. Average height of wild oat from the different rates of herbicide treatment was not the same. Significant difference between the average leaf area index from the different amounts of herbicides was evident. The average leaf area index in wild oat from the different rates of herbicide was not the same. Dependent variables Average EWRC, dry

weight, density, height and leaf area index at the various operating levels of the herbicide were not the same. Effects of the two herbicides were compared taking the dependent variables separately. If any test of significance was at a level less than 0/05, it was taken that the average level of the dependent variable was the same. If there was no significant difference between the desired variable in the group under consideration it was rejected with 95% confidence. Given the level of significance, for example, the average amount of herbicide in wild oat EWRC 1 and 2 (i.e., herbicide levels 0 and 0.125) are significantly different.

Chenopodium mural: Equality was the mean vector of the response variables of different types of herbicides and herbicide rates. According to the test significance level of 0 / 05 if it was smaller, for both factors (type of herbicide and herbicide rate),that was taken as equal to the mean vector. That is, significant difference between the mean vectors of the four measured traits in the weed, shows the type of herbicide. The vector average of four plant traits LAMBSQUARTERS with different herbicides, was not the same. Significant difference between the mean vectors of four attributes to measure the amounts of herbicide on weed plant was evident. The vector average of the four measured plant traits at different herbicide rates LAMBSQUARTERS were not identical. Average measured plant traits on the LAMBSQUARTERS chart was based on the type of herbicide.

Graf 2: The vector average of four plant traits LAMBSQUARTERS with different herbicides



Types of herbicides

Significant difference between types of herbicide on the EWRC average was evident. The average effect of herbicide on the different weed components showed results for EWRC as not identical. There was significant difference between the mean dry weight attribute and the type of herbicide. Average dry weight of the components in the plant, showed difference from the various amounts of herbicide.

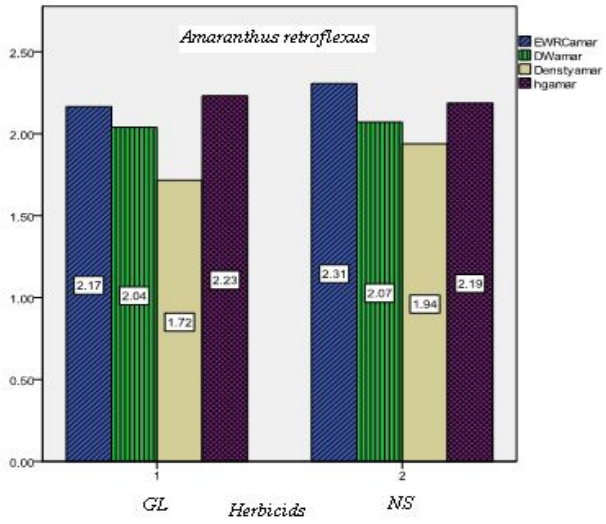
Amounts of herbicide

There was significant difference between the average amounts of herbicide on EWRC. The average results of EWRC from the different rates of herbicide were not the same. Significant difference between the mean dry weightsfrom the different amount of herbicide was evident. Average dry weight from the different amounts of herbicide was not the same.

Significant difference between the average densitiesfrom the different amounts of herbicide was evident. The average density of plant components from the different rates of herbicide was not the same. Significant difference between the amounts of herbicides on the average height was evident. Average height was not the same from the different levels of herbicide.

***Amaranthus retroflexus*:** According to test the significance level of smaller than 0 / 05 for both factors, (type of herbicide and herbicide rate) equals the mean vector. The significant difference between the mean vectors of four attributes on pigweed was the type of herbicide. The significant difference between the mean vectors of four attributes of pigweed was due the amount of herbicide.

Graf 3. The mean vectors of four attributes on pigweed was the type of herbicide



Types of herbicides

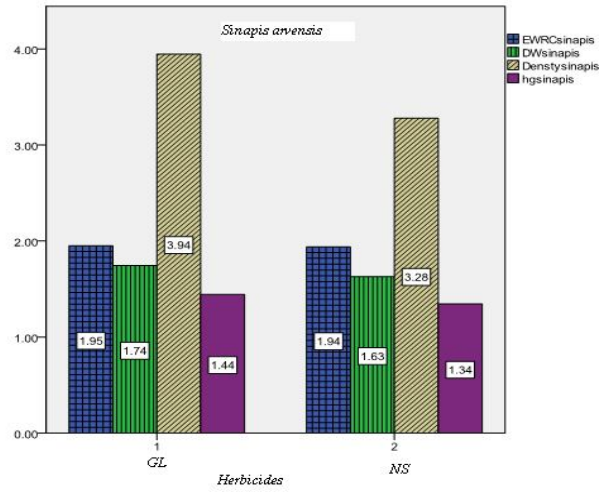
Significant difference between the average densitiesfrom the type of herbicide was evident. The average densitiesfrom the different herbicides were not the same.

Amounts of herbicide

Significant difference between the average densitiesfrom amounts of herbicide was evident. The average density was different at different levels of herbicide. Significant difference between the mean dry weightsfrom amounts of herbicides was evident. Average dry weight from the different levels of herbicides was not the same. Significant difference between the average densitiesfrom the different amount of herbicide was evident. The average density from the different levels of herbicide was not the same. Significant difference between the amounts of herbicides on the average heights was evident. Average height was the same at the different levels of herbicide.

Sinapis arvansis: According to test the significance level of smaller than 0 / 05 for both factors (type of herbicide and herbicide rate) equals to the mean vector. The significant differences between the mean vectors, of the four characters of wild mustard are affected type of herbicide. The significant difference between the mean vectors of the four attributes of herbicide is the wild mustard.

Graf 4. The four characters of wild mustard are affected type of herbicide



Types of herbicide

Significant difference between the mean dry weights from the type of herbicide was evident. Average dry weight of the weed components was not the same from both herbicides. Significant difference was evident between the average densities of plant components according to the type of herbicide. The average density of weed components from the different herbicides was not the same. Significant difference was evident between the average heights according to the type of herbicide. Average height of the weed component was different according to the type of herbicide.

Amount of herbicide

Significant difference between the average amounts of herbicide was evident on EWRC. EWRC averages were not the same at different amounts of herbicide. Significant difference was evident between the mean dry weights according to the amount of herbicide. Average dry weights were not the same according to different rates of herbicide.

Significant difference was evident between the average densities according to amounts of herbicide. The average density of components in wild mustard weed was not the same from the different rates of herbicide. Significant difference was evident between the amounts of herbicides on average height. Average heights were not the same from different rates of herbicide.

REFERENCES

-Baghestani, M. A. Zand, E. soufizadeh, S. Eskandari, A. Pure Azar,R. Veysi, M. Nassizadeh, N.2006. *Efficacy evaluation of some duol purpose Herbicide to control weeds in maize (Zea mays L.) Crop protection 26(2007)939-942.*

- Buhler, D. D.1991. *Early preplant atrazine and metolachlor in conservation tillage corn (zea mays). weed technol, 5.pp: 66-71*

-Buhler. D. D. Stoletenberg, D. E. Becher, R. L. and. *Gunsolus G.L.1994. perennial weed population after 14 years of variable tillage and cropping fractices. Weed sci. 42:205-209*

- Khwaja Ali, M. 1366, the Agriculture Vmbany. Publications Isfahan University Jihad. Page 251.

. Nassizadeh, N.2006. *Efficacy evaluation of some duol purpose Herbicide to controlweeds in maize (Zea mays L.) Crop protection 26(2007)939-942.*

-Osullivan, j. r. and Bouw, w. c. 1993. *Reduced rate of post emergence herbicides for weed control in sweet corn (zea mays). Weed technology. Page 995-1000.*

-Rashed, M. H. Rahimian, H., and building, 0.1372 M weeds and their control. Mashhad University Jihad 0.575-page publication.

-*Shimi,p.&poorazar,R.& Jamili,M.&Bagherai-Torshiz,N2006.Evaluating clopyralid as a broud leaf herbicide in canola field of Iran,pak.J.weed sci.Res.12(4):307-311.*

-Sparague.C.L.,fasier,A.L.,Penner,D,1999.*iddentifying Acetoacate Synthase inhibitors for potential control of Quackgrass(Elytrigiarepens) and Canada thistle(crisiumarvense) in corn(zeamayse).weed thrchnol.13,5*4

- Thehero, or 0.1375. Colored flora of Iran (11 vol.) Research Institute of Forests and Pastures.

- Vfabkhsh, k. And Rashed, M., H. 0.1374. The effect of different control methods on weed competition and yield components in corn yield, characteristics of patients physiologic MS Thesis. Ferdowsi University of Mashhad.

- Zand, 1. H. Rahimian., As. Small.. C. Khlqany., K. Mousavi VAK. Ramezani 0.1383. Ecology of weeds (management applications). Translation - The Mashhad University Jihad.