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Effect of Pre and Post Emergence Herbicides to Weeds Control in Corn Field

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Abstract**—** *The aim of this comparative study was evaluation of pre and post emergence herbicides Effect to control weeds in corn field. Experiment was conducted as a randomized complete block design with three replications. The treatments included: no weed control, weed, complete mechanical control, Nicosulfuron herbicides (two liters per hectare) as pre- and Erradican 4 liters per hectare as post emergence. Some properties were studied such as the dry weight of weed species, plant height, seed number on the cob, seed yield, 1000seed weight, biological yield. Totally, result showed that application of herbicide led to reduction of damages caused by weeds, also, it was determined that using of Nicosulfuron+ Erradican had highest effect on weed control in compare to Nicosulfuron or Erradicanaplication. application of Nicosulfuron, Erradican, Nicosulfuron+ Erradican and complete mechanical control showed 45, 38, 58 and 84% seed yield increasing in compare to no weed control.*

Keywords— Corn, Herbicides, Weeds.

I. INTRODUCTION

Maize (*Zea mays* L.) being one of the most important cerealsof the world and has attained a commercial crop status and hasscope to increase the present maize yields. Selecting a preemergence (PRE) and postemergence (POST) herbicide program that has the greatest efficacy can be difficult for corn producers and is highly dependent on weed spectrum (Stewart *et al*., 2012). Management of weedsis considered to be an important factor for achieving higherproductivity. Due to increased cost and non-availability of manuallabour in required quantity timely for hand weeding, role ofherbicide is significant preposition herbicides not only controlthe weeds timely and effectively but also offer great scope forminimizing the cost of weed control irrespective of situation.Use of pre and post-emergence application of herbicides wouldmake herbicidal weed control more acceptable to farmers whichwill not change the existing agronomic practices but will allowfor complete control of weeds (Gower *et al*., 2002). Usage of pre-emergenceherbicides assumes greater importance in the view of theireffectiveness from initial stages. Pre-emergent application ofherbicides will control the weeds up to 25 days and after thatpost emergent application is given so that further growth ofweeds can also be controlled. Pre-emergence and post emergence herbicides will be an ideal means for controlling theweeds in view of economics and effectiveness in maize (Haji *et al*., 2012). The aim of this comparative study was evaluation of pre and post emergence herbicides Effect to control weeds in corn field.

II. MATERIAL AND METHODS

Experiment was conducted as a randomized complete block design with three replications. The treatments included: no weed control, weed, complete mechanical control, Nicosulfuronherbicides (two liters per hectare) as pre- and Erradican 4 liters per hectare as post emergence. 15 plots were used as experimental units with 6 cultivate lines and 5m length, 75cm placed between rows and between plots, Also 3 m was considered between blocks. S.C704 cultivar used at our study. Some properties were studied such as the dry weight of weed species, plant height, seed number on the cob, seed yield, 1000seed weight, biological yield.SAS statistical software was performed for analysisand by Duncan's multiple range test used at the level of 5% for mean comparisons.

III. RESULT AND DISCUSSION

Dry weight of weed species: The results showed that the treatments led to decreasing in dry weight of weed, application of Nicosulfuron,Erradican, Nicosulfuron+ Erradican and complete mechanical control showed 50, 42, 92 and 97% decreasing of weed dry weight in compare to no weed control. Also results showed that Nicosulfuron+ Erradican application led to 85 and 87% decreasing in compare to Nicosulfuron and Erradican, respectively.Singh*et al*., (2001) reported that while the weed management methods significantly reduced the intensity of weeds anddry matter, two manual weeding at 25 and 45 days aftersowing were found the mosteffective in reducing theintensity and dry matter accumulation of weeds

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over theother methods of the weed control.Fayed *et al*., (1983), who reported that application ofherbicide significantly decreased the fresh weight of totalwinter weeds in comparison to unweeded treatments.

Plant height: The results showed that the treatments led to an increase in plant height, application of Nicosulfuron,Erradican, Nicosulfuron+ Erradican and complete mechanical control showed 12, 9, 23 and 34% plant height increasing in compare to no weed control. Also results showed that Nicosulfuron+ Erradican application led to 9 and 12% increasing in compare to Nicosulfuron and Erradican, respectively.It is well known that weeds interfere with crop plants causing serious impacts either in the competition for light, water, nutrients and space or in the allelopathy (Heap, 2014).

Seed number on the cob: The results showed that the treatments led to an increase in seed number, application of Nicosulfuron,Erradican, Nicosulfuron+ Erradican and complete mechanical control showed 33, 31, 36 and 41% seed number increasing in compare to no weed control. Also results showed that Nicosulfuron+ Erradican application led to 2 and 3% increasing in compare to Nicosulfuron and Erradican, respectively.Faster growth of weeds is disadvantageous for light and hence photosynthesis needed for plants (Williams et al., 2010) through this light deprivation less energy is available to crop plant formetabolic production and hence growth, yield and itsquality of crops will be reduced. In addition, weedswith branched, vigorous root systems inhibit thedevelopment of crops through severe nutrition deprivation (Isik et al., 2006).

1000seed weight: The results showed that the treatments led to an increase in 1000seed weight, application of Nicosulfuron,Erradican, Nicosulfuron+ Erradican and complete mechanical control showed 25, 20, 33 and 49% 1000seed weight increasing in compare to no weed control. Also results showed that Nicosulfuron+ Erradican application led to 6 and 10% increasing in compare to Nicosulfuron and Erradican, respectively.Martin *et al*., (2001) concluded that the effect of crop competition on weed growth resulted in a conservative estimate of the critical period of weed control.

Seed yield: The results showed that the treatments led to an increase in seed yield, application of Nicosulfuron,Erradican, Nicosulfuron+ Erradican and complete mechanical control showed 45, 38, 58 and 84% seed yield increasing in compare to no weed control. Also results showed that Nicosulfuron+ Erradican application led to 9 and 14% increasing in compare to Nicosulfuron and Erradican, respectively.Whytok et a (1995) stated that the highest costof weed control in relation to the often small effects ofweed competition on yield suggest that herbicides are agood target for reducing the cost of inputs in crops, Similar observation was also reported by Tiwari andKurchania, (1993).

Biological yield: The results showed that the treatments led to an increase in biological yield, application of Nicosulfuron,Erradican, Nicosulfuron+ Erradican and complete mechanical control showed 36, 27, 50 and 62% biological yield increasing in compare to no weed control. Also results showed that Nicosulfuron+ Erradican application led to 9 and 18% increasing in compare to Nicosulfuron and Erradican, respectively.These results are in line with thoseobtained by Chauhan et al.,(2005), Saudy,(2004), Sharma andJain, (2002) and Sharma et al., (2002).

Totally, result showed that application of herbicide led to reduction of damages caused by weeds, also, it was determined that using of Nicosulfuron+ Erradican had highest effect on weed control in compare to Nicosulfuron or Erradicanaplication. application of Nicosulfuron, Erradican, Nicosulfuron+ Erradican and complete mechanical control showed 45, 38, 58 and 84% seed yield increasing in compare to no weed control.

Table.1: Means Comparison in Response to Treatments

	Dry weight of weed (g/plot)	Plant height (m)	Seed number on the cob	1000seed weight (g)	Seed yield (kg/ha)	Biological yield (kg/ha)
No weed control	180 a	1.80 d	600 d	124 e	7440 e	17325 e
Nicosulfuron	90 c	1.90 c	700 c	140 c	9800 c	22034 c
Erradican	105 b	1.85 cd	690 c	135 d	9315 d	20354 d
Nicosulfuron+ Erradican	15 d	2.10 b	721 b	150 b	10815 b	24348 b
Complete mechanical control	5 e	2.30 a	750.4 a	170 a	12756 a	26400 a

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