

Study on the effect of various post emergence herbicides on wheat (*Triticum aestivum* L.) cv. GW 322 under middle Gujarat conditions

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ABSTRACT

A field experiment was carried out during the *rabi* season of 2006-07 at College Agronomy Farm, B.A. College of Agriculture, Anand Agricultural University, Anand. The experiment was laid out in Randomized Block Design consisting of ten treatments. The data revealed that isoproturon @ 0.750 kg ha⁻¹ applied at 35 DAS gave the least weeds dry weight as well as minimum number of weed population. As far as yield was concerned wheat yield was found maximum (5655 kg ha⁻¹) under hand weeding treatment, followed by post emergence application of isoproturon @ 0.750 kg ha⁻¹ (5456 kg ha⁻¹) and metsulfuron methyl @ 4 g ha⁻¹ (5220 kg ha⁻¹) applied at 35 DAS. Higher grain yield was recorded under the isoproturon @ 0.750 kg ha⁻¹ due to better weed control efficiency and higher crop dry matter production.

Key words : Wheat, Post-emergence herbicide, Weed control in wheat

INTRODUCTION

In wheat growing bowl of the country, infestations of grassy weeds like little seed canary grass (*Phalaris minor*), wild oats (*Avena* spp.) and broad leaf weeds like *Chenopodium album*, *Chenopodium murale*, *Amaranthus spinosus* and *Rumex dentate* are increasing at an alarming rate. Weed compete with plant for light, moisture, nutrients and space which are limited. Weeds is a major limiting factor in successful crop production and cause huge yield losses which, however depend upon type and intensity of weed flora, duration of crop weed competition, various soil factors and agro-climatic conditions prevailing under a particular region. The severe crop weeds competition results in reduction of yield. Isoproturon has been recommended for the control of grassy weeds in wheat. However, the herbicide causes deformities when it is not used at right time and dose. Hence, there is a need to look for alternate effective herbicides to control of broad leaf weeds in wheat. The present study was therefore, under taken to evaluate the efficiency of isoproturon and other newly developed herbicides for weed control. Metsulfuron is also found effective against many broad leaf weeds.

MATERIALS AND METHODS

An investigation was carried out during *rabi* season of 2006-2007 at College Agronomy Farm, Anand Agricultural University, Anand (Gujarat). The soil of experimental field had pH 7.7, Available N 230.90 kg ha⁻¹, available P₂O₅ 74 kg ha⁻¹ and available K₂O is 289 kg ha⁻¹. Wheat variety GW-322 was drilled using seed rate of 120 kg ha⁻¹, with recommended package of practices. The experiment was laid out in Randomized Block Design

with ten treatment combinations *viz.*, W₁ (Sulfosulfuron @ 15 g ha⁻¹ + surfactant 0.5 % as POE), W₂ (Metsulfuron methyl @ 4 g ha⁻¹ as POE), W₃ (2, 4 D (Na salt) @ 500 g ha⁻¹ as POE), W₄ (Isoproturon @ 0.5 kg ha⁻¹ + Urea 0.5 % + ZnSO₄ 0.5 % as POE), W₅ (Isoproturon 0.750 kg ha⁻¹ as POE), W₆ (2, 4-D (Ethyl ester) 0.750 kg ha⁻¹ as POE), W₇ (Metsulfuron methyl @ 4 g ha⁻¹ + 2 4 D (Na salt) @ 500 g ha⁻¹ as POE), W₈ (Isoproturon 0.750 kg ha⁻¹ + 2, 4 D (Na salt) @ 500 g ha⁻¹ as POE), W₉ (Hand weeding (at 25 and 50 DAS) and W₁₀ (weedy check). Spraying of all the herbicides was done at 35 DAS using knapsack sprayer in a spray volume of 650 liter water ha⁻¹. Weed count and weed dry weights were recorded with the help of random quadrates at 30 and 60 DAS as well as at harvest. Number of weeds and dry weight of weeds were subjected to square root transformation prior to statistical analysis.

RESULTS AND DISCUSSION

The results obtained from the present investigation are presented below:

Effect on weeds:

The dominant weed species in weed check were: *C. album*, *C. murale*, *Cyperus rotundus*, *Cynodon dactylon* and *Melilotus indica*. All the treatments resulted in significant decrease in total number of weeds and their dry weight as compared to weedy check (Table1). The data in Table 2 clearly indicated that maximum number of weeds and total dry weight was recorded under the treatment weedy check, because of the higher infestation of weeds with crop for growth factor. Post emergence application of isoproturon @ 0.750 kg / ha effective in