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Effect of weed management practices on weed flora, density, weed control efficiency and yield of soybean under agro-climatic situation of Chhattisgarh

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ABSTRACT

A field experiment was conducted during the rainy season of 2004 at the Instructional cum Research Farm, Indira Gandhi Krishi Vishwavidyalya, Raipur (C.G.) to study the performance of herbicides for weed dynamics in soybean under agro-climatic situation of Chhattisgarh state. The soybean variety JS-335 was grown as test crop. The experiment consisted fourteen weed management practices with three replications. In the experimental field, *Cynotis axillaries, Brachiaria ramosa, Cyperus rotundus, Echinochloa colona, Phyllanthus niruri* were the dominant weeds and were found throughout the crop growth period. The weed dry matter accumulation was significantly highest in unweeded check. Application of metribuzin attributed to their effective weed killing capacity during the early crop growth period and supplementation of imazethapyr at 22 DAS to metribuzin treatments further helped in weed control by reducing weed population and dry matter accumulation. Seed yield and stalk yield was maximum under metribuzin 300 g ha^{-1} fb quizalofop 50 g ha^{-1}. Maximum weed index were noticed under unweeded control where as minimum weed index were registered under metribuzin 300 g ha^{-1} fb quizalofop 80 g ha^{-1}. The maximum weed control efficiency was recorded under metribuzin 300 g ha^{-1} fb quizalofop 50 g ha^{-1}, which was followed by hand weeding and imazethapyr 80 g ha^{-1} fb quizalofop 50 g ha^{-1}.

Key words : Weed flora, Weed density, Weed control efficiency and yield of soybean, Weed management practice

INTRODUCTION

Soybean (*Glycine max L.*) is a major *Kharif* oilseed crop grown mainly in sandy loam to clay loam soils in Chhattisgarh which, by virtue of their water holding capacity, do not turn up in working condition, hindering the timely weeding and intercultural operation. Weed flush come at the same time in almost all the *Kharif* crops, which also restrict the availability of manpower for weeding operation in this crop. Intermittent rains during *Kharif* season leads to heavy infestation resulting in 35-80 % loss in yield (Billore *et al.*, 1999). Meena and Jadan (2009) reported that application of herbicide significantly reduced the weed density and its dry biomass at 30 and 60 DAS. The maximum weed control efficiency of 82.3 % at 30 DAS and 88.2 % at 60 DAS was recorded in hand weeding twice at 20 and 40 DAS followed by clomazone ethyl (1.0 kgh^{-1}) + HW once (81.5%) at 30 DAS and quizalofop ethyl (50 kgh^{-1}) + chlorimuron ethyl (9 gha^{-1}) (83.9%) at 60 DAS manual weeding in the best option for weed control but due to intermittent rains it is delayed and same times becomes very costly. Herbicides are effective only to certain group of weeds and for a limited period, Hence, as attempt was made to find out the effect of different weedicides like metribuzin, chlorimuron, imazethapyr, quizalofop and fenoxaprop on weed dry weight and weed control efficiency of soybean.

MATERIALS AND METHODS

The field experiment was conducted during *Kharif* season of 2004 at the Instructional Farm, Indira Gandhi Krishi Vishwavidyalya, Raipur (C.G.). The soil of experimental field was clayey in texture (Vertisol). The chemical composition of field soil was pH 7.14, electrical conductivity 0.17 dsm^{-1}, available N 217.35 kg ha^{-1}, available P_2O_5 14.10 kg $ha^{-1}$and available K_2O 365.27 kg ha^{-1}. The experiment was laid out in Randomized Block Design of with three replications consisted of fourteen weed management practices *viz.*, the treatments metribuzin @ 300 g ha^{-1} as (PE), imazethapyr @ 80 g ha^{-1} (PE), metribuzin @ 300 g ha^{-1} (PE) fb quizalofop @ 50 g ha^{-1} (POE), metribuzin @ 300 g ha^{-1} (PE) fb fenoxaprop @ 80 g ha^{-1} (POE), imazethapyr @ 80 g ha^{-1} (PE) fb fenoxaprop @ 80 g ha^{-1} (POE), imazethapyr @ 80 g ha^{-1} (PE) fb quizalofop @ 50 g ha^{-1} (POE), chlorimuron @ 4 g ha^{-1} (POE), chlorimuron @ 4 g ha^{-1} + fenoxaprop @ 80 g ha^{-1} (POE), chlorimuron @ 4 g ha^{-1} + quizalofop @ 50 g ha^{-1} (POE), fenoxaprop @ 80 g ha^{-1} (POE), quizalofop @ 50 g ha^{-1} (POE), hand weeding at 40 DAS, hoeing at 40 DAS and unweeded control. The soybean variety 'JS-335' was taken as test crop. The crop was sown during first week of July. The fertilizers N, P_2O_5 and K_2O were applied @ 20, 50 and 20 kg ha^{-1}, respectively.

RESULTS AND DISCUSSION

The results obtained from the present investigation as well as relevant discussion have been presented under following heads:

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