

Yield and quality of soybean (*Glycine max* (L.) Merrill) as influenced by integrated weed management

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ABSTRACT

The seed and straw yields and protein and oil content of soybean crop was found to be significantly affected by different weed control treatments and was significantly superior in case of weed free check (37.51, and 48.18/ ha, respectively), while it was observed to be significantly lowest in unweeded control(19.56 and 30.84q/ha, respectively). Among the integrated weed control treatments, Imazethapyr (EPOE) @ 0.075 kg a.i./ha + one Hoeing at 30 DAS was found to be significantly superior in case of seed and straw yields (32.04 and 44.84q/ha, respectively) over the other integrated weed control treatments under study. Among the chemical weed control treatments, application of Quizalofop ethyl@ 0.05 kg a.i./ha recorded the lowest seed and straw yield (24.37 and 35.73 q/ha, respectively).

Key words : Integrated weed management, Yield, Quality and Soybean

INTRODUCTION

Soybean [*Glycine max* (L.) Merrill] is one of the important pulse and oilseed crops of India. It is of paramount importance in human and animal nutrition, as it is a major source of edible vegetable oil and high quality protein food. It contains about 40 per cent quality protein, 23 per cent carbohydrates and 20 per cent cholesterol free oil. Soybean is mainly grown in rainy (*Kharif*) season due to which weed growth remains a serious problem. Among the various factors responsible for low productivity of soybean, weed infestation during early stages of crop growth is one of the major factors which results in a loss to the extent of 79 per cent (Reddy *et al.*, 1990).

Herbicides in isolation, however, are unable to obtain complete weed control because of their selective kill. Their use can be made more effective if supplemented with hand weeding or hoeing. Recent investigations have revealed that Imidazolinones group of herbicides is very effective in controlling the weeds in soybean (e.g. Imazethapyr). A judicious combination of chemicals and cultural methods of weed control would not only reduce the expenditure on herbicides but would benefit the crop timely by providing proper aeration and conservation of moisture. A judicious combination of chemical and cultural weed control would certainly prove to be effective for controlling weeds in soybean.

MATERIALS AND METHODS

A field experiment to study "Effect of integrated weed management on yield and quality of Soybean [*Glycine max* L. Merrill]" was conducted during *Kharif*,

2008 at Agronomy farm, College of Agriculture, Pune-5. The experiment was laid out in Randomized Block Design with ten treatments replicated thrice. The different treatments comprised of Weedy check (T_1), while among the mechanical methods the treatments comprised of two hand weedings at 30 and 45 DAS (T_2), two hoeings at 30 and 45 DAS (T_3), one HW at 30 DAS + one hoeing at 45 DAS (T_4). The chemical methods of weed control comprised of the treatments fluchloralin (PPI) @ 1 kg a.i./ha (T_5), pendimethalin (PE) @ 1 kg a.i./ha (T_7) and pursuit (EPOE) @ 100 g a.i./ha (T_9). The integrated methods of weed control comprised of the treatments fluchloralin (PPI) @ 1 kg a.i./ha + one HW at 30 DAS (T_6), pendimethalin (PE) @ 1 kg a.i./ha + one HW at 30 DAS (T_8) and pursuit (EPOE) @ 100 g a.i./ha + one HW at 45 DAS (T_{10}). The gross and net plot sizes were 4.8 x 4.2 m² and 4.2 x 3.6 m², respectively. The soil of the experimental field was clay in texture, with medium in available nitrogen, medium in available phosphorus and rich in available potassium. The soil was slightly alkaline in reaction with pH of 7.6. The experimental crop was sown by dibbling at 30 x 10 cm² spacing on 28th June, 2008.

RESULTS AND DISCUSSION

The results obtained from the present investigation have been discussed in the following sub heads:

Seed yield :

The results of the study indicate that the maximum seed yield (37.51q/ha) was obtained with weed free check and was significantly superior over rest of the weed control treatments. Among the IWM treatments for weed

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