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Bioefficacy of clomazone-pendimethalin readymix in soybean (*Glycine max* L. Merrill.)

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ABSTRACT

A field experiment was conducted to study the bioefficacy of clomazone-pendimethalin readymix in soybean. The treatments constituted clomazone-pendimethalin readymix at different doses compared with recommended doses of clomazone and pendimethalin as well as farmers practice of hand weeding twice and unweeded control. The weed observations viz., species wise weed count, total weed population, weed DMP and nutrient removal, yield and yield parameters were observed to evaluate the bioefficacy. The dominant weed flora in the field were *Cynodon dactylon, Cyperus rotundus, Digera arvensis, Trianthema portulacastrum.* Clomazone-pendimethalin readymix at 2.0 lit ha^{-1} remained as optimal dose in controlling the weeds effectively and recorded the highest plant height and resulted in highest nutrient uptake and registered the highest grain yield.

Key words: Soybean, Clomazone-pendimethalin readymix, Weed control efficiency, Yield.

Soybean has been proclaimed as the miracle crop as it plays a greater role in boosting protein and oil production in India. It occupies third place among the major oil seeds crops and Madhya Pradesh leads in area (3.5 m ha) and production (2.96 m tonnes) among the major states (Singh and Bhan, 2002). Weed infestation in soybean is one of the main constraints which limits the crop yield. A yield reduction of 20 to 77 per cent was reported in soybean due to weed competition (Kurchania *et al*., 2001). Chemical control of weeds using herbicides appears to be the viable alternative to increase the yield of soybean. In the recent past, number of herbicides and herbicide combinations are being developed in order to achieve broader spectrum of weed control. Application of pre-emergence herbicides was found to be effective in controlling weeds in soybean (Rapparini *et al*. 2000). Clomazone is a selective pre-emergence herbicide used for weed control in soybean. Pendimethalin, a selective dinitroaniline herbicide is a pre-emergence herbicide used for the control of grasses and annual broad leaved weeds. In view of the above the present investigation was taken up to study the bioefficacy of clomazone-pendimethalin readymix in soybean.

MATERIALS AND METHODS

A field experiment was conducted in Eastern Block of Agricultural College and Research Institute, Coimbatore during June -September, 2002 to study the bioefficacy of clomazone-pendimethalin readymix in soybean. The crop selected for the study was soybean, variety CO 2 under irrigated conditions. The experiment was conducted in a RBD, with the treatments replicated thrice. The treatments constituted 6 doses of clomazone-pendimethalin readymix compared with clomazone (50 EC), pendimethalin (30 EC), hand weeding twice and unweeded control. The herbicide doses upto 8.0 lit ha^{-1} was applied to evaluate residues at 2X (double the recommended) and 4X levels.

The soil of the experimental field was clay loam in texture with a pH 7.1 and EC 0.31 dS m^{-1}. The $KMnO_4$-N, Olsen P and NH_4OAC-K were low (196.0 kg ha^{-1}), medium (20.0 kg ha^{-1}) and medium (237.0 kg ha^{-1}), respectively. The species wise weed count was taken on 20, 40 and 60 DAS. The observation of weeds viz., species wise weed count, total weed population, weed DMP, yield and yield parameters were observed.

RESULTS AND DISCUSSION

The dominant weed flora in the field were *Cynodon dactylon, Cyperun rotundus, Digera arvensis, Trianathema portulacastrum* and *Datura metal.*

Total weed population

The total weed population was significantly reduced by the various weed control practices. At 20 DAS, clomazone-pendimethalin readymix at 8.0 lit ha^{-1} recorded the least total weed population (44 plants m^{-2}) which was followed by clomazone-pendimethalin readymix at 6.0 lit ha^{-1}. At 40 and 60 DAS clomazone-pendimethalin readymix at 8.0 lit ha^{-1} recorded the least total weed population followed by hand weeding twice