

## Nutrient uptake and yield of Soybean (*Glycine max* (L.)) as influenced by Clomazone-pendimethalin readymix

A.C. SURYA PRABHA AND M. SENTHIVELU

See end of article for authors' affiliations

Correspondence to :  
A.C. Surya Prabha  
Department of Soil Science and  
Agriculture Chemistry,  
TNAU, COIMBATORE,  
(T.N.) INDIA

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### ABSTRACT

A field experiment was conducted to study the nutrient uptake and yield of soybean as influenced by clomazone-pendimethalin readymix. 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 study revealed that clomazone-pendimethalin readymix at 2.0 lit ha<sup>-1</sup> recorded the highest plant height and crop DMP and thus resulted in the highest uptake of nutrients (N,P and K) by the soybean. Clomazone-pendimethalin readymix at 2.0 lit ha<sup>-1</sup> registered the highest grain yield.

**Key words :** Soybean, Clomazone-pendimethalin readymix, Uptake and yield.

Soybean (*Glycine max* (L.) Merrill) a potentially high yielding crop, plays a great role in boosting oil seed production of India. It occupies third place among the nine oil seed crops of India. Soybean represents nearly 50 per cent of global oil seed production, 28 per cent of global vegetable and marine oil supply and 58 per cent of global protein meal supply (Singh and Bhan, 2002). Soybean contains 40 per cent protein and 20 per cent oil. It has got world wide acceptance because of the protein rich nature and termed as "Global bean" by the agricultural scientists (Xavier Paul Raj, 2002). The initial slow growth of soybean with lateral spread, offers severe infestation of a large number of weeds which reduces the yield to an extent of 40 to 60 per cent (Bhan *et al.*, 1999). The effective control of weeds can help in improving the productivity of soybean. In the recent past, number of herbicides and herbicide combinations are being developed in order to achieve broader spectrum of weed control. Clomazone, a new pre-emergence herbicide introduced for soybean crop, control annual and broad leaved weeds effectively (Govindra Singh *et al.*, 2001). Pendimethalin is a selective pre-emergence dinitroaniline herbicide used for the control of grasses and annual broad leaved weeds. In view of the above the present study was conducted to study the nutrient uptake and yield of soybean as influenced by clomazone-pendimethalin readymix.

### MATERIALS AND METHODS

A field experiment was conducted in Eastern Block of Agricultural College and Research Institute, Tamil

Nadu Agricultural University, Coimbatore, during January - April, 2002. The crop selected for the study was soybean and the variety was CO 2 under irrigated conditions. A readymix formulation of Clomazone and Pendimethalin supplied by FMC India Pvt. Ltd, Bangalore was used for the study. The experiment was carried out in a Randomized Block Design with three replications. The treatments included nine doses of clomazone-pendimethalin readymix compared with clomazone (50 EC), pendimethalin (30 EC), hand weeding twice and unweeded control. The herbicide doses upto 6 lit ha<sup>-1</sup> was applied to evaluate residues at 2X (double the recommended) and 4X levels. The herbicides selected for the study were sprayed at the calculated quantities on the third day after sowing on the soil surface using a hand operated knapsack sprayer.

The soil of the experimental field was clay loam with a pH of 7.8 and EC 0.34 dS m<sup>-1</sup>. The KMnO<sub>4</sub>-N, Olsen's-P and NH<sub>4</sub>OAC-K status indicated that the soil was low in available N (252 kg ha<sup>-1</sup>), medium in available P<sub>2</sub>O<sub>5</sub> (20 kg ha<sup>-1</sup>) and high in available K<sub>2</sub>O (410 kg ha<sup>-1</sup>). Growth attributes of soybean like, plant height, DMP were recorded at 20, 40 and 60 DAS. The plant samples collected at 20, 40 and 60 DAS for dry matter estimation were used for plant analyses. Based on the content of nutrients and dry matter yield the uptake of nutrients was computed.

### RESULTS AND DISCUSSION

#### Nitrogen uptake

The different weed control treatments significantly affected N uptake by crop. The N uptake by crop increased with crop growth and was highest at 60 DAS. At 20 DAS, the highest N uptake of 3.98 kg ha<sup>-1</sup> was