

## Effect Of Rate And Time Of Atrazine Application On Grain Yield Of Forage Sorghum Cultivars

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### ABSTRACT

A field experiment was carried out at Experimental research farm, JNKVV, Jabalpur during Kharif 1999 and 2000. Twenty-one treatments consisted of seven weed control treatments and three varieties were evaluated to assess the tolerance of sorghum cultivars to different doses of atrazine and other weed control treatments. The results revealed that all the three cultivars showed greater tolerance to atrazine (0.5 kg/ha) either applied at 10 or 20 days after emergence or as pre emergence with 0.25 kg/ha. The highest weed control efficiency of 93.5% was recorded under weed free treatment followed by atrazine 0.50 kg/ha applied at 20 DAE (91.05%). Grain yield increased significantly under all the weed control treatments over weedy check. All the methods of weed control reduced the weed population as well as their weed biomass.

**Key words :** Effect of rate and time of Atrazine application on grain yield.

### INTRODUCTION

Forage sorghum [*Sorghum bicolor* (L.) Moench] is one of the most important fodder crop of Kharif season. The major constraint in the production of sorghum seed is the infestation of fast growing weeds during the early stage of crop growth. Though, the cultural and mechanical methods of controlling the weeds, are still in practice, which involves high input cost, non availability of labour and continuous moist field conditions during rainy season, farmers are compelled to look forward for alternate chemical method for harvesting maximum seed yield. Keeping in view the practical importance of herbicides in controlling the weeds for getting quality seed of fodder sorghum, the present investigation was carried out to evaluate the sensitivity of forage sorghum cultivars to rate and time of atrazine application.

### MATERIALS AND METHODS

A field investigation was carried out at Experimental Research Farm, J. N. Krishi Vishwa Vidyalaya, Jabalpur during Kharif 1999 and 2000 to evaluate the sensitivity of forage sorghum cultivars (JS-20, J-6 and HC-136) to different doses and application time of atrazine (0.25 and 0.50 a.i. kg/ha as pre and post emergence). Experiment consisted of twenty-one treatment combinations including seven weed control treatments and three varieties (Table 1). The experiment was laid out in a Randomized Block

Design with three replications. All the recommended package of practices was adopted for growing crop. A uniform dose of 40 kg N, 40 kg P<sub>2</sub>O<sub>5</sub> and 20 kg K<sub>2</sub>O/ha was applied as basal and remaining 40 Kg N was given in two equal splits at 30 and 60 days after sowing. Atrazine was applied as pre-emergence (just after sowing) and as post emergence at 10 and 20 days after emergence of crop. During post emergence application, care was taken to protect the crop plants by directed spraying of herbicide in between rows. Observations pertaining to population and dry weight of weeds as well as seed yield were recorded at harvest of the crop. Weed control efficiency and weed index were calculated as per the formula suggested by Gill and Kumar (1969).

### RESULTS AND DISCUSSION

The experimental field comprised broad-leaved weeds viz., *Commelina benghalensis*, *Digeria arvensis*, *Trianthema portulacastrum*, *Amarantus viridis*, grassy weeds viz., *Echinochloa colonum*, *Echinichloa crusgalli*, *Cynodon dactylon*, *Digitaria* spp. and sedges like *Cyperus rotundus*, *Cyperus irria* were the common weed flora of the area. Among them, *Echinochloa*, *Cyperus*, *Commelina* and *Cynodon* were the most predominating weeds grown throughout the crop growth period. Results reveal that all the varieties under study showed greater resistance to all the combinations of dose and application time of atrazine. However, atrazine at 0.5 kg/ha as pre and post emergence of crop (20 DAE) established its effectiveness on existing weed flora. Lower level (0.25 kg/ha) of atrazine either

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