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Performance of different herbicide in weed growth of chickpea (*Cicer arietinum* L.)

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ABSTRACT

An experiment was conducted during winter (*Rabi*) seasons of 2005-06 and 2006-07 to study the response of weeds on chickpea (*cicer arietinum* L.) to various seed rate (75, 100 and 125 kg ha^{-1}), row spacing (30 and 45 cm) and weed management practices (weedy check, two hand weeding at 30 and 45 DAS, pre-emergence application of pendimethalin @ 0.5 kg a.i. ha^{-1} with one hand weeding at 30 DAS and application of metribuzin @ 250gm a.i. ha^{-1} with one hand weeding at 30 DAS). The combination of seed rate 100 kg ha^{-1}, row spacing 45 cm and pendimethalin @ 0.5 kg ha^{-1}+ one hand weeding at 30 DAS reduced total weed density and weed dry matter (g/m^{-2}) at various stages of crop growth during both the years.

Key words : Chickpea, Weed, Herbicide, Weed management, Metribuzin, Pendi methalin

INTRODUCTION

Among the winter season pulses, chickpea (*Cicer arientinum* L.) is the most important crop accounting for 51% of total area and 54% of total production of all winter pulses production in the country was 13.11 million tones from 22.23 million hectare area with an average yield 600-650 kg ha^{-1}(Ali and Kumar, 2007). India produces 68% and 75% of total production of chickpea in world and Asia, respectively. *Chenopodium album* as the most dominating weed in chickpea and caused maximum reduction in the grain yield Malik *et al*. (1988). Out of several factors responsible for low productivity of chickpea, losses caused due to weeds are of the most important which averaged out to be 94.7% (Ali, 1993). Row spacing 30 cm reduced weeds dry weight of chickpea in comparison to 45 cm row spacing. Wider row spacing 45 are produced significantly higher grain yield than narrow row spacing 30 cm Singh *et al*. (2003).

Seed rate, row spacing and weed management practices are of considerable importance, as these affect availability of moisture, nutrient and sun –light influence, growth and yield of plants. It has been established that magnitude of losses due to different types of weeds flora is vary considerably. The major weeds were reported as *Chenopodium album*. *Melilotus indica* L., *Mililotus alba* L., *Cyprus rotundus* which posed competition for growth resources and have been found to reduce the yield of chickpea crop to the extent of 63 per cent (Tewari and Tewari, 2002). In order to manage the weed problem, importance of herbicide has already been recognized. The present experiment practices were planned and conducted to work out optimum seed rate, row spacing and weed management practices for effective weed control on chickpea.

MATERIALS AND METHODS

The experiment was conducted during the winter seasons of 2005-06 at Crop Research Centre of Sardar Vallabh Bhai Patel University of Agriculture and Technology, Meerut (U.P). The field study was planned and laid out in split plot design with 6 main plots (combination of 3 seed and 2 row spacing) and 4 sub plots (weed managements options). Chickpea was sown in the second fortnight of November and was harvested in the second fortnight of March. The experimental soil was low in organic carbon and medium in available P and K. During crop growth total amount of rainfall received was 11.67 mm in 2005-06 and 65.7mm in 2006-07. Maximum and minimum temperature ranges were 31.15^{0}C and 30.06^{0}C and 3.01^{0}C and 3^{0}C, respectively. Chickpea variety Sadbhawana was planted by pora method. Soil of the experimental site has been classified as sandy loam. Field was drained and leveled. Soil samples were collected from 10 different places in the experimental field as to draw a representative composite homogenous sample for determining the phsico-chemical properties of the soil. A basal dose of 25 kg nitrogen through urea and 60 kg single super phosphate and 25 kg $ZnSO_4$ was applied uniformly to all plots. The height of 5 plants were measured from ground surface to the top of the main shoot at 30, 60, 90, DAS and at harvest. The value was averaged and expressed as height/plant (cm). The number of branches

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