

EFFECTIVENESS OF REDUCED HERBICIDAL DOSAGE AND INTERCROPPING SPATIAL PATTERN AS A WEED CONTROL OPTION

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ABSTRACT

Weeds are causing daunting challenges to communal farmers in Zimbabwe and the available control options are very expensive to them. A 3 x 5 factorial in a completely randomized block design with three replicates was laid to establish the most effective reduced alachlor dosages rate and maize-sugar beans intercropping spatial pattern in controlling weeds. Alachlor dosage had five levels, which were 100%, 75%, 50%, 25%, and 0% of the full-label application rate, and intercropping spatial pattern had three levels, which were no intercropping, one row of sugar beans between rows of maize, and two rows of sugar beans between rows of maize. Weed density per unit area was obtained at a three week interval from crop emergency, up until week nine. Maize grain yield was also obtained at harvest. The data were analyzed using M-STAT C statistical package for variance at $p = 0.05$. The results showed that at three weeks after crop emergency, alachlor dosage was statistically significant ($p = 0.05$) at controlling the weeds. At six weeks after crop emergency, plots without alachlor recorded higher weed densities, as compared to two rows of sugar-beans between two rows of maize. Nine weeks after crop emergency, weed densities were inversely proportional to the amount of the alachlor used; that is it decreased as the dosage approached 100% of the full-label application rate. Both the alachlor dosage and the intercropping had a statically insignificant effect on the maize grain yield. Reduced alachlor dosage rates of 75%, 50%, and 25% of full-label application rates can control weeds effectively for the first three weeks after crop emergency. Maize-sugar-bean intercropping can start to suppress weeds as from six weeks after crop emergency. It can be noted that farmers may reduce alachlor dosage to as low as 25% of the full-label application rate, with two rows of sugar beans between maize rows, as this can be a cheaper option when using this herbicide.

Keywords: Weed; Reduced Alachlor Dosage; Intercropping; Weed Density; Control

INTRODUCTION

Crop production is the major primary source of livelihoods in the communal Zimbabwe. The communal people obtained food and cash from selling their agricultural produce, so they need a good production system that leads to high yields and that will leave the farmers with a surplus to sell. However, the production system is mainly constrained by inadequate plant nutrition, diseases and pests, and weed infestation, among others. Excessive weed infestation has been noted to present a daunting challenge to crop production in the communal farming sector of Zimbabwe (Chivinge, 1984). Weed control in the smallholder farming sector is one of the most labor demanding activities, taking about three weeding cycles per growing season (Chui, Kuhumbwa, & Kusewa., 1997).