EFFECT OF POPULATION DENSITY ON THE GROWTH AND YIELD OF FIVE VARIETIES OF COTTON

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ABSTRACT

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The study was conducted to determine the effect of population density on the growth and yield of five varieties of cotton; to identify the most appropriate population density that is most suitable to cotton production; and identify the most suitable variety of cotton that will give the highest yield.

Split-plot in Randomized Complete Block Design was used in this study with five varieties of cotton as the main treatments and three population density as the sub-treatments.

Results showed that population density merely affect the growth and yield of cotton. Variety 2 (ACC-455) under population density 3 (26,666 plants per hectare) gave a better results in terms of leaf area index, number of square formed at flowering, number of bolls produced at maturity, fresh and dry weight of plant, number of harvested bolls , and seed cotton yield per hectare.

On the other hand, the tallest plant, number of branches and number of leaves was observed in higher population density in all varieties of cotton used. Results

revealed that higher yield of cotton can be obtained if they are planted at lower population density (26,666 plants per hectare). This might be due to lesser competition between plant for light, water and nutrients.

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INTRODUCTION

Plant density studies conducted in the past showed significant effects on seed cotton yield on late planted cotton. In Type I climate where cotton is generally planted late and with limited amount of water, cotton tend to grow short. It was felt that under the above growing conditions, seed cotton yield could be increased by putting in more plants per unit area.

Spacing, plant population to the hectare, and planting pattern, are all terms used by agriculturist to denote the density and spatial arrangement of crops in the field. The farmer has "spacing" almost completely under his control and he uses it to achieve easier management of the crop and ultimately, optimum yield per hectare. Spacing distances and planting pattern for cotton fall within the limit that may be expected of an annual crop of woody plants a few feet tall, grown in the row and handled with the range of implements normally available to the farmer.

Cotton is adaptable to wide variation in spacing. Yield per hectare vary with spacing, but the order of difference in yield between the widest and closest in general use is far less than found between the customarily extreme of time of planting or of insect control, or soil fertility.