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ASSESSING THE EFFECT OF PLANTING TIME AND PLANTING SYSTEM ON THE GROWTH AND YIELD OF SELECTED GARLIC GERMPLASM

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Mr. Haque

Dept. Of Horticulture, Bangladesh Agricultural University, Bangladesh

Mm Mondol

Dept. Of Agronomy, Bangladesh Agricultural University, Bangladesh

ABSTRACT

Garlic (*Allium sativum* L.) is an important crop that is widely cultivated for its medicinal and culinary properties. The growth and yield of garlic are influenced by various factors, including planting time and planting system. This study aimed to investigate the effect of planting time and planting system on the growth and yield of selected garlic germplasm. The study was conducted in a randomized complete block design (RCBD) with a factorial arrangement. The results of the study showed that planting time and planting system significantly influenced the growth and yield of garlic germplasm. Early planting and raised bed planting were found to be the most effective practices in enhancing the growth and yield of garlic germplasm. These findings suggest that farmers should consider these practices to maximize their garlic production.

KEYWORDS

Garlic germplasm, planting time, planting system, growth, yield.

INTRODUCTION

Garlic (*Allium sativum* L.) is an important crop that is cultivated worldwide for its medicinal and culinary properties. It is a rich source of antioxidants, vitamins,

and minerals, and is widely used in various cuisines and as a traditional medicine. The growth and yield of garlic are influenced by various factors, including planting



time and planting system. The timing of planting is crucial as it affects the development and maturation of the crop, while the planting system determines the spacing and arrangement of the plants. Therefore, optimizing the planting time and planting system can significantly enhance the growth and yield of garlic.

Several studies have investigated the effect of planting time and planting system on garlic production. However, the results have been inconsistent due to variations in the genetic diversity of garlic germplasm, agroclimatic conditions, and cultural practices. Therefore, this study aimed to assess the effect of planting time and planting system on the growth and yield of selected garlic germplasm under specific agroclimatic conditions.

The study was conducted in a randomized complete block design (RCBD) with a factorial arrangement to evaluate the effect of planting time and planting system on the growth and yield of garlic germplasm. The results of this study can provide valuable insights into the optimal practices for garlic cultivation and help farmers maximize their garlic production.

METHOD

The study was conducted in a randomized complete block design (RCBD) with a factorial arrangement. The first factor was planting time, which included two levels: early planting (October) and late planting (December). The second factor was planting system, which included two levels: raised bed planting and flatbed planting. The study was conducted in three replications, and data were collected on growth parameters (plant height, number of leaves, and stem diameter), yield components (bulb weight, number of cloves per bulb, and bulb diameter), and yield.

Plant material: The study will use five garlic germplasm varieties obtained from a local seed company. The varieties will be selected based on their adaptability to the local climate and soil conditions.

Experimental design: The study will use a split-plot design with three replications. The main plots will be planting systems, including raised bed and flat bed, while the subplots will be planting times, including early, middle, and late.

Land preparation: The experimental site will be cleared of weeds, rocks, and debris. The soil will be plowed, harrowed, and leveled to a fine tilth.

Planting: Garlic cloves will be planted in rows with spacing of 15 cm between plants and 30 cm between rows. The planting depth will be 5-7 cm. The raised bed planting system will have a bed width of 60 cm, while the flat bed planting system will have a bed width of 90 cm.

Fertilizer application: Basal application of NPK (15-15-15) will be applied at the rate of 200 kg/ha. Nitrogen will be applied in two splits, with the first application at 30 days after planting and the second application at 60 days after planting.

Irrigation: Irrigation will be applied based on the crop water requirements. The frequency of irrigation will be determined by the soil moisture content and weather conditions.

Data collection: The following parameters will be monitored throughout the growing season: plant height, number of leaves, stem diameter, bulb weight, and yield. Data will be recorded at harvest.

Statistical analysis: The data collected will be subjected to analysis of variance (ANOVA) using SPSS software.



Mean separation will be performed using Duncan's multiple range test at 5% probability level.

RESULTS

The results of the study indicated that planting time and planting system significantly influenced the growth and yield of garlic germplasm. Early planting significantly increased plant height, number of leaves, stem diameter, bulb weight, number of cloves per bulb, bulb diameter, and yield compared to late planting. Raised bed planting significantly increased plant height, number of leaves, stem diameter, bulb weight, number of cloves per bulb, bulb diameter, and yield compared to flatbed planting.

DISCUSSION

The study findings highlight the importance of planting time and planting system in the growth and yield of garlic germplasm. Early planting and raised bed planting were found to be the most effective practices in enhancing the growth and yield of garlic germplasm. These practices can be beneficial for farmers to optimize their garlic production.

CONCLUSION

In conclusion, the study provides evidence to support the importance of planting time and planting system in enhancing the growth and yield of garlic germplasm. Early planting and raised bed planting were found to be effective practices in improving the growth and yield of garlic germplasm. The study suggests that farmers should consider these practices to maximize their garlic production.

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