

Yield response of soybean genotypes to different planting dates in Mozambique

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Abstract Soybean [*Glycine max* (L.) Merr.] plays a significant role in Mozambican agriculture where the demand is high for poultry feed and export. Four soybean genotypes, namely H7, 427/5/7, Ocepara-4 and IAC-6 and five planting dates were tested in two Districts of Manica and Tete Provinces (at Sussundenga Research Station and Agronomic Post of Ntengo Umodzi, Angonia) in Mozambique. Crop of November to December performed significantly better than the late planted ones. In Angonia, at Ntengo Umodzi Agronomic Post, the highest yield was obtained with the old Brazilian variety IAC-6 (1,163 kg ha⁻¹) while the genotype H7 from South China University, with 3,683 kg ha⁻¹, and the variety 427/5/7 with 3,217 kg ha⁻¹ produced significantly ($p < 0.05$) high yields in Sussundenga at Sussundenga Research Station. Preliminary results in both sites showed that delaying planting for one month after December reduces yield by more than 50%. This was attributed to the sensitivity of the varieties to day length. On the other hand, plants are greatly affected by moisture stress due to shortage of water at flowering particularly for crops planted under rainfed condition in late January. To get high yields soybean varieties sensitive to day length should be planted from early November to late December. Soybeans planted from January and beyond will result in significant yield reduction getting losses up to 80%.

Key words: Day length, *Glycine max*, moisture stress

Introduction

Soybean [*Glycine max* (L.) Merr.] plays a significant role in Mozambican agriculture where the demand is high for poultry feed and export. Best fit varieties have been evaluated and some found to be highly adaptive to desired environments. However, there is a need to evaluate agronomic practices that enhance the productivity of available varieties. Therefore, the evaluation of improved agronomic practices such as the correct planting period is an important issue. The objective of this study was to evaluate and determine the best planting dates in relation to yield and other agronomic characteristics of four soybean varieties.

Materials and Methods

Four soybean genotypes, namely H7, 427/5/7, Ocepara-4 and IAC-6 and 5 planting dates (November, 10 and 30; December, 20; January, 10 and 30) were tested in two sites (Sussundenga and Angonia). The trial was laid down using a randomized complete block design with four replications.

Crop spacing was 60 cm x 5 cm and one seed per hole resulting in 333,000 plants ha⁻¹. All plots were fertilised with 100 kg ha⁻¹ of compound 23:24:0. The general characteristics of the varieties are presented in Table 1.

Results and Discussion

Results from all seasons showed that crops established from November to December performed well compared to late planted ones. IAC-6 (1,163 kg ha⁻¹) in Angonia site, H7 (3,683 kg ha⁻¹) and 427/5/7 (3,217 kg ha⁻¹) in Sussundenga produced significantly ($p < 0.05$) high yields. Overall results showed that delaying planting in 30 days from December reduces yield by more than 50% (Figs. 1 and 2, Table 2). This is because the varieties used are sensitive to day length. On the other hand, plants are greatly affected by moisture stress due to shortage of water at flowering particularly crops planted under rainfed condition in late January. These results were in accordance with Boahen (2008) findings in Ruace, Gurue District of Mozambique.

Table 1. General information of varieties used in the experiment.

Variety	Origin	Yield (kg ha ⁻¹)	Adaptation in Mozambique
Ocephara-4, IAC-6	IITA & Brazil	2,500	R4, R7
427/5/7	IITA	2,800	R4, R7
H7	China	3,000	R4, R5, R7 and R10

Conclusion

To get high yields soybean varieties sensitive to day length should be planted from early November to late December. Soybeans planted from January and beyond will result in significant yield reduction getting losses up to 80% due to reasons presented above. There is also an urgent need to research for selection of new varieties that

could grow well beyond January provided sufficient water is supplied through irrigation.

Reference

Boahen, S.K. 2008. Overview of the Legume Project. International Institute of Tropical Agriculture (IITA), Nampula.