

## SUMMARY

Soybean (*Glycine max* (L) Merr.) is the third most popular food crop commodity after rice and corn. Soybean production in Indonesia has been decreasing every year. The decline in national soybean production in the last five years was due to biotic and abiotic stresses. This research focuses on abiotic stress, especially salinity, which affects the growth and production of soybeans. The use of saline soils for soybean plantations is increasing due to the conversion of agricultural land to housing and industry. The existence of land conversion makes the use of marginal land as agricultural land. Marginal or suboptimal land has a low fertility rate. One of the marginal land that is widely used by farmers is saline land. The use of soybean varieties that are tolerant to salinity is the main solution to this problem. Efforts to obtain soybean plants that are tolerant to salinity can be carried out efficiently if there is an initial selection method which, among other things, can be carried out through molecular tests using certain genetic markers. One of the genetic markers that can be used is the QS08064 SCAR marker.

The aim of this study was to evaluate the presence of the SCAR marker QS08064 on soybean var. Demas 1, Slamet, Malika and Deja 2, to determine the physiological response of soybean var. Demas 1, Slamet, Malika and Deja 2 on salinity conditions, and knowing which varieties are salinity tolerant based on phenotypic data. The research was conducted from October to June 2023. The method used is experimental and exploratory. Experimental research was carried out using a split plot design with salinity as the main plot and soybean varieties as subplots. This study used 0 mM and 120 mM salinity treatments with 6 soybean varieties. Each treatment combination was repeated three times so that there were 36 experimental units. Phenotypic characters observed included plant height, number of leaves, stem diameter, chlorophyll content, root length, and seed weight. While the exploratory research was the detection of the QS08064 SCAR marker on the tested variety which was carried out by PCR technique using a pair of specific primers. The forward primer sequence is 5'-ACGTAAGTGGTTGAAGGCGTT-3', while the reverse primer sequence is 5'-GGGCAAGGGATATGAAAA-3'. The phenotypic data obtained from the experimental study were analyzed by means of variance with an error rate of 5%, while the molecular data were analyzed descriptively.

The results of this study show that the four soybean varieties, i.e. Demas 1, Slamet, Malika, and Deja 2 do not contain the SCAR QS08064 marker. In addition all four varieties experienced decrease in plant height, stem diameter, number of leaves and seed weight under saline conditions. Among the four varieties, Malika tends to have the lowest seed weight loss which is similar to that Grobogan, the salinity tolerant check.

**Keywords:** *marker assisted selection, salinity, SCAR QS08064, soybean*