

ABSTRACT

Soybean (*Glycine max* (L.) Merr) is the main crop of potential food sources after rice and corn. Every year, the demand for soybeans as a food source in Indonesia continues to increase. One of the efforts that can be made to increase soybean production is the use of superior varieties. Superior varieties can be obtained by assembling new varieties through mutation breeding techniques. Many mutagens can be used to increase genetic diversity, such as ethyl methane sulfonate (EMS). EMS is an alkaline mutagen that can cause point mutations at the DNA level. This research aims to determine the effect of EMS on morphological and agronomic diversity in M.1.1.3 strains. This research was conducted with the research method of Randomized Complete Block Design (RCBD) non-factorial pattern. There were 4 populations tested, namely 0% population (E0 - control), 0.1% population (E1), 0.2% population (E2), and 0.3% population (E3). There were 4 treatments with 3 replications, resulting in 12 experimental units. Each experimental unit is a bed measuring 3 m x 2.7 m, the number of plants per experimental unit is 100 plants. Therefore, the total number of plants was 1200 plants, and 10 plants per plot were selected as samples. The results showed that EMS (Ethyl Methane Sulfonate) mutagen treatment caused changes in the morphology of soybean line M.1.1.3 in the M₂ generation. Morphological changes that occur are leaf color (chlorofil mutant), changes in leaf shape (leaflet mutant) and undeveloped rasim flower (undeveloped rasim flower). EMS (Ethyl Methane Sulfonate) mutagen treatment causes agronomic changes in soybean lines M.1.1.3 in the M₂ generation. Agronomic changes that occur are increasing plant height, accelerating flowering age and harvest age, increasing the number of productive branches and increasing the weight of 100 seeds per plant.

Keywords : EMS, Genetic Diversity, Mutation breeding, Soybean,