Effect of Packaging Type and Charcoal Desiccant Material on the Quality of Soybean (Glycine Max (L.) Merrill) Seeds during Storage Period

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ABSTRACT

The limited availability of New Superior Varieties (NSV) has become a constraint in meeting soybean seed demands in the field. Seed storage is a critical stage that affects seed viability and vigor. Due to their high protein and fat content, soybean seeds are prone to quality deterioration if not stored optimally. Therefore, appropriate packaging and the use of desiccants are essential to maintain safe seed moisture levels during storage. This study aimed to determine the effect of packaging types and charcoal desiccant materials on the quality of soybean seeds (Glycine max L. Merrill) during the storage period. The research was conducted from January to April 2025 at the Seed Processing Laboratory, Politeknik Negeri Jember. A factorial Completely Randomized Design (CRD) was used with two treatment factors and three replications. The first factor was packaging type (polyethylene plastic and aluminum foil), and the second factor was desiccant material (rice husk charcoal, bamboo charcoal, and coconut shell charcoal). Data were analyzed using ANOVA, followed by LSD and DMRT tests at a 5% significance level. The results showed that the interaction between packaging types and charcoal desiccant materials had a highly significant effect on all observed seed quality parameters during storage. The treatment combination of K2D3 (aluminum foil packaging and coconut shell charcoal desiccant) produced the best results with moisture content of 8.0%, germination rate of 92.2%, seedling growth rate of 29.7%, seedling uniformity of 87.7%, and electrical conductivity of 19.0 $\mu S \cdot cm^{-1} \cdot g^{-1}$.

Key word: soybean seeds, strorage, packaging, desiccant, charcoal