ABSTRAK

Rice plants (*Oryza sativa* L.) are food crops that are widely cultivated in Asia, especially Indonesia. Rice production has decreased from 2022 to 2023. The main problem faced is the length of time required for seeds to germinate. Germination of rice seeds has its own characteristics, namely the after-ripening factor. One way to break dormancy in the after-ripening phenomenon is by soaking using Potassium Nitrate (KNO_3). Light affects plant growth, reproduction, and yield through photosynthesis. By applying the use of KNO_3 and light in the germination process and growth of rice seed sprouts, it is hoped that it can accelerate the provision of rice seeds so that it will accelerate the harvest period. The purpose of this study was to determine the effect of the length of KNO_3 soaking and different light colors on breaking rice seed dormancy. This research was conducted at the Seed Research Team Mini Laboratory. Kuta Blang Village, Banda Sakti District, Lhokseumawe City and the Agroecology Laboratory of the Faculty of Agriculture, Reulet Village, Muara Batu District, North Aceh Regency, in October 2024. This study used an experimental method with a factorial split plot design (RPT) consisting of 2 plots with 3 replications. . The main plot is the immersion of Potassium Nitrate (KNO_3) with different immersion times (K) consisting of 3 levels, namely control, 12 hours, 18 hours. The subplot is the light color treatment (W) consisting of 4 levels, namely treatment with white, treatment with red, treatment with blue, and treatment without light. The results showed that the immersion time had a significant to very significant effect on the variables of maximum growth potential, germination power, vigor index, growth simultaneity, growth speed, normal sprout root length, normal sprout length. Light treatment has a very significant effect on the vigor index variables and growth simultaneity. And there is a very significant interaction on the vigor index variables.

Keywords: germinator, LED, viability, vigor