CAPS (*Carbon Capture for Seed Priming using Spirulina*): Potensi Biostimulan Mikroalga Berbasis Limbah Cair Tebu Sebagai Agen *Seed Priming* Pada Benih Tomat (*Solanum lycopersicum*)
(CAPS (Carbon Capture for Seed Priming using Spirulina): Potential of Microalgae Biostimulant Based on Surgance Liquid Waste as a Seed Priming Agent of Tomato Seeds (Solanum lycopersicum))
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ABSTRACT

Spirulina platensis, a microalgae that can thrive in agricultural waste such as liquid sugarcane waste. Spirulina sp. contains various growth hormones that have the potential as seed priming agents. Seed priming is a technique used to improve the physiological quality of seeds. The biopriming method can utilize microalgae biomass due to its high nutrient and hormone content, which plays a crucial role in the seed germination process. This study aims to determine the effect of seed priming with Spirulina platensis biomass based on liquid sugarcane waste on tomato seeds. The study was conducted from May to August 2024 at the Seed Technology Laboratory, Jember State Polytechnic. The research method used was a factorial Completely Randomized Design, which included biomass concentration (0, 30, 45, and 60%) and soaking time (1, 2, and 3 hours). Analysis of variance using the Bonferroni post-hoc test at the 5% level using GraphPad Prism version 5.01. The results of the study showed an increase in several germination parameters such as Mean Germination Time, vigor index, plumule length, and normal sprout dry weight. This shows that the microalgae biomass Spirulina platensis cultivated on sugarcane wastewater-based media is able to improve the physiological quality of tomato seeds, so it can be one of the environmentally friendly seed invigoration techniques.

Keywords*: Biostimulant, Seed priming, Spirulina platensis, Sugar Liquid Waste, Tomato*