

Optimalisasi Mutu Benih Cabai (*Capsicum frutescens* L.) Melalui Seed Priming (*Spirulina platensis*) Pada Kondisi Cekaman Kekeringan
*Optimizing Chili Seed Quality (*Capsicum frutescens* L.) Through Seed Priming (*Spirulina platensis*) Under Drought Stress Conditions*
Supervised by: Moch. Rosyadi Adnan, S.Si., M.Sc.

Nuning Atuilah
Study Program of Seed Production Technique
Department of Agricultural Production

ABSTRACT

*Drought stress is the main abiotic factor limiting the germination and early growth of chili plants (*Capsicum frutescens* L.) because it can reduce the physiological quality of seeds. Seed priming using microalgae is effective in increasing the resistance of chili seeds to the physiological quality of chili seeds under drought stress conditions simulated with Polyethylene Glycol (PEG 6000). The study was arranged using a non-factorial Completely Randomized Design (CRD) and one-way ANOVA statistical analysis using the Tukey test at the 5% level using GraphPad Prism 10. The research parameters observed included germination, vigor index, maximum growth potential, growth speed and simultaneity, plumule and radicle length, and T-50 germination value. The results showed that *S. platensis* seed priming was consistently able to increase seed tolerance to drought stress, as indicated by improvements in physiological quality parameters compared to seeds only treated with PEG stress. A 24-hour soaking period provided the most effective response compared to a 48-hour soaking period. Thus, seed priming using the microalgae *Spirulina platensis* has the potential to improve the physiological quality and tolerance of chili seeds to drought stress, making it worthy of development as an applicable and environmentally friendly pre-planting technology.*

Keywords: *Drought stress, PEG 6000, Seed priming, *Spirulina platensis*, physiological quality of chili seeds*