## EFFECTIVENESS OF ALLELOPATHIC PINE LEAVES EXTRACT (Pinus merkusii) ON THE GROWTH, MORTALITY, AND PHYTOTOXICITY OF PURPLE NUTSEDGE (Cyperus rotundus L.) AND BILLYGOAT WEED (Ageratum conyzoides L.)

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## ABSTRACT

Pine leaves extract has allelopathic compounds, namely terpenoids such as monoterpenes  $\alpha$ -pinene and  $\beta$ -pinene and phenolic compounds, these compounds are toxic to teki weeds and bandotan. This study aims to determine the effect of pine leaves extract (Pinus merkusii) application of various concentrations on the growth, mortality, and phytotoxicity of purple nutsedge and billygoat weed. This research was conducted from November 2024 to January 2025 at the Plant Protection Laboratory and Greenhouse, Faculty of Agriculture, UPN "Veteran" Yogyakarta. This study used a Completely Randomized Design (CRD) with a Split Plot Design as the main plot, namely the type of purple nutsedge and billygoat weed, while the sub plot was the concentration of pine leaves extract consisting of 2800 ppm, 3000 ppm, and 3200 ppm. Observation parameters include weed height, weed root length, weed wet weight, weed dry weight, weed growth rate, percentage of mortality weed and phytotoxicity. Data analysis using Variance Analysis (ANOVA) at the  $\alpha = 5\%$  level followed by the Duncan Multiple Range Test (DMRT) at the 5% level. Application of pine leaves extract at a concentration of 3200 ppm is the best concentration and gives a significantly different effect than other treatments in controlling the growth, mortality, and phytotoxicity of purple nutsedge and billygoat weed. The growth of billygoat weeds was more suppressed than that of nutsedge.

**Keywords**: Pine Leaves Extract, Bioherbicide, Allelopathy, Purple Nutsedge, Billygoat Weed.