

ABSTRACT

Weeds are one of the major constraints in rice cultivation because they compete with crops for nutrients, water, light, and growing space, thereby reducing rice productivity. *Leptochloa chinensis* is one of the dominant weed species found in rice fields and is difficult to control due to its high competitiveness and adaptability. The continuous use of synthetic herbicides may cause environmental pollution and herbicide resistance; therefore, environmentally friendly alternatives such as plant-based bioherbicides are needed. This study aimed to determine the effects of cogon grass (*Imperata cylindrica*) and purple nutsedge (*Cyperus rotundus*) extracts on the growth of *Leptochloa chinensis* and to identify the most effective concentration for suppressing its growth. The experiment was conducted from April to June 2026 at the Screen House and Plant Pest and Disease Laboratory, Faculty of Agriculture, Malikussaleh University. A non-factorial Randomized Block Design (RBD) was employed in two separate experiments using cogon grass and purple nutsedge extracts. Each experiment consisted of five treatment levels (0, 100, 200, 300, and 400 g/L) with five replications. Observed variables included weed height, leaf number, tiller number, weed mortality percentage, fresh weight, and dry weight. Data were analyzed using Analysis of Variance (ANOVA), followed by Duncan's Multiple Range Test (DMRT) at the 5% significance level. The results showed that both cogon grass and purple nutsedge extracts significantly suppressed the growth of *Leptochloa chinensis*. Higher extract concentrations reduced weed height, leaf number, tiller number, fresh weight, and dry weight while increasing weed mortality. The 400 g/L concentration of purple nutsedge extract showed the strongest inhibitory effect on most observed parameters, whereas cogon grass extract at concentrations of 100–400 g/L also effectively suppressed weed growth and, in several parameters, resulted in 100% weed mortality by the end of the observation period.

Keywords: allelopathy, bioherbicide, *Imperata cylindrica*, *Cyperus rotundus*, *Leptochloa chinensis*.