

**APPLICATION OF HYDROGEN PEROXIDE ON RICE
(*Oryza sativa* L.) GROWTH AND YIELD
IN FLOODED LAND**

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Abstract

*Hydrogen Peroxide (H_2O_2) is beneficial for preventing decay as well as hypoxic and anoxic conditions in the roots of rice plants that are excessively waterlogged (flood stress). This study aims to examine the effect of H_2O_2 on the growth and yield of rice plants (*Oryza sativa* L.) in flooded conditions. The experiment was conducted in Sumber Jati Village, Silo, Jember (394 meters above sea level; average temperature 27°C-30°C) from August to December 2023. The experiment tested three levels of H_2O_2 doses: 0 l/ha (control), 75 l/ha, and 150 l/ha, applied to plots of 5 m x 8 m. The observed data included plant height (cm), number of productive tillers per clump (stem), panicle length (cm), number of grains per panicle (grains), weight of field dried grains (g), weight of filled grains (g), weight of empty grains (g), weight of grains per panicle (g) and weight of 1000 grains (g). The observation data were tested using the Kruskal-Wallis test (non-normal data) and the Paired Sample T-Test (normal data). The results showed that the application of 150 l/ha H_2O_2 had a significant effect on panicle length (30 cm), number of grains per panicle (166 grains), weight of field dried grains (75 g), weight of filled grains per clump (73 g), and weight of grains per panicle (4 g). Meanwhile, the highest weight of empty grain per clump was found in the control (2.9 g). H_2O_2 can release oxygen when decomposed, which can improve soil aeration. The increase in soil oxygen levels helps root development and plant growth, enhances nutrient absorption, improves soil aeration, and reduces oxidative stress.*

Keywords: flooding stress, hydrogen peroxide, root decaying