

Impact of different concentrations of gibberellic acid on the growth and yield of rice (*Oryza sativa* L.) under Low Country Dry Zone of Sri Lanka

D. W. N. Madhushika¹, S. L. Nawarathna¹, M. H. U. Siriwardena², K. H. C. H. Kumara²

¹*Department of Agro Technology, University of Colombo Institute of AgroTechnology and Rural Sciences, Hambantota, Sri Lanka*

²*Rice Research Station, Department of Agriculture, Ambalantota, Sri Lanka*

This study focuses on identifying the optimal gibberellic acid concentration to enhance rice productivity in semi-arid conditions while identifying the impact of different concentrations of gibberellic acid on growth and yield of rice. Growth regulators, such as gibberellic acid, play a crucial role in optimizing crop growth, improving yield and mitigating the effect of environmental stress. This experiment was conducted at the rice research station in *Ambalantota* during the “*Yala*” season in 2024. The experiment utilized the At362 rice variety. The experimental design was randomized complete block design (RCBD) with four replicates, and included six gibberellic acid treatments (0 ppm, 25 ppm, 50 ppm, 75 ppm, 100 ppm, 125 ppm). In this experiment, 15 ml of gibberellic acid solution was applied to the plant. This application was done four weeks after planting. The plant was separated before application. Results indicated significant differences in plant growth parameters and yield components with the 75 ppm treatment producing the highest plant height (104.09 cm), number of tillers (7.6), and number of filled grain panicles (76.27) leading to optimal grain yield (20.60 g). Conversely, higher concentrations (100 ppm, and 125 ppm) negatively affected these parameters, resulting in reduced performance, particularly in yield. The findings highlight gibberellic acid potential as a vital plant hormone in enhancing rice growth and yield, particularly under challenging climatic conditions.

Keywords: *Dry zone, Gibberellic acid, Growth, Rice, Yield*