ABSTRACT

Rice (*Oryza sativa* L.) is the staple food of the Indonesian people. Aceh Province possesses a rich diversity of local rice varieties, one of which is the Sigunca line, considered important to develop and preserve. Water is a crucial factor in rice cultivation, especially during the flowering stage, thus varieties tolerant to water deficit are required. The experiment was conducted in the greenhouse of the Faculty of Agriculture, Universitas Malikussaleh, from March to July 2026, using a factorial randomized block design with three replications. Physiological traits were assessed using the Standard Evaluation System for Rice (IRRI, 2013), while yield components were analyzed with DMRT at the 0.05 significance level. Observed parameters included leaf color, leaf rolling, leaf drying, flag leaf angle, leaf senescence, 50% flowering age, maturity age, number of productive tillers, grains per hill, grain weight per hill, 100 grain weight, and yield (t/ha). Results indicated that Sigunca exhibits potential tolerance to water stress. Physiological responses included dark green leaves, leaf rolling folding (deep V-shape), leaf drying (up to 1/4 of leaf length in most leaves), erect flag leaf angle, and leaf senescence (one leaf remaining green at harvest). Water stress accelerated flowering and adjusted maturity but reduced productive tillers, grains per hill, grain weight, 100-grain weight, and overall yield (t/ha).

Keywords: Drought tolerance, leaf rolling, leaf senescence, rice productivity, water stress