

ABSTRACT

Rice (*Oryza sativa* L.) is a major food crop that plays a strategic role in sustaining life human. A key challenge in rice cultivation is the widespread use of older varieties that have low tolerance to biotic and abiotic stresses such as drought, waterlogging, salinity, and extreme temperatures and are susceptible to pest and disease attacks. These conditions can lead to reduced yields or even crop failure. Efforts to address these issues involve the use of high-yielding varieties that possess high yield potential, good adaptability, and resistance to pests and diseases. Quality varieties have been proven to increase rice crop productivity and are one of the key technologies in modern cultivation systems. The objective of this study is to determine the growth differences among irrigated rice varieties (*Oryza sativa* L.) that exhibit the best growth and possess good adaptability under the agroecosystem conditions of Tapanuli Tengah Regency. The study was conducted using a non-factorial randomized block design (RBD) with three replications; the treatments consisted of 10 Quality rice varieties. This resulted in 30 experimental units. From each experimental unit, four sample plants were collected per plot. The results showed that the variety had no significant effect on plant height at 20, 40, and 60 days after sowing (DAS); however, the variety had a highly significant effect on the number of tillers at 60 DAS, leaf area at 20, 40, and 60 DAS, and flowering time. The Siporang variety exhibited good vegetative growth with the highest plant height of 116.16 cm at 60 days after sowing, while the Inpari 43 variety produced the highest number of tillers, namely 48.58 tillers per clump at 60 days after sowing.

Keywords: Agroecosystem, Number of Tillers, Leaf Area, Plant Height, Flowering Time, Quality Varieties