

THE EFFECT OF TILLERING BEHAVIOUR ON YIELD DETERMINATION OF DIFFERENT RICE VARIETIES UNDER CONTROLLED AND FIELD CONDITIONS

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A tiller is a specialized seed-bearing branch that grows independently of its mother stem. Rice tillering is an important agronomic trait that determines the rice grain yield, and the tiller pattern varies with the genotype. Though the tiller number has a positive relationship with the yield, a high number of tillers is not always advantageous as it leads to smaller panicle size, reduction in grain setting, and high rates of tiller abortion. Hence, the number of tillers and tillering patterns are important traits to be considered in breeding for high-yielding rice varieties. This research was focused on the tillering behaviour of traditional and improved *indica* varieties, temperate *japonica* varieties, and an AUS-type variety representing different rice germplasms under plant house and open field conditions. The tiller buds were observed at the fourth leaf stage in longitudinal stem base sections under light microscopy. Under both conditions, the normal tillering behaviour deviated in some varieties. The time taken to reach the maximum number of tillers of a rice plant demonstrates a sigmoid curve. However, H4, *Suduheenati*, Bg 251, and Bg 23-3290 had deviated patterns under both conditions. Nipponbare and Koshihikari were taken the least time to bloom under both conditions. The abortion rate of tillers was higher under open-field conditions compared to plant house conditions. In conclusion, these results will help to select potential candidates for breeding new rice varieties bearing only productive tillers which could lead to high production while saving space and all the other resources.

Keywords: Tillering, Tiller abortion, Tillering pattern, Yield maturity