

**EFFECT OF GERMINATION, WEED GROWTH,
SEEDLING VIGOUR OF RICE PLANT IN DIFFERENT
SEED RATES UNDER ANAEROBIC CONDITION**

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ABSTRACT

Water is one of the important factors in rice cultivation. Weed initiation mainly affected on plant growth, number of panicle, no of seeds per panicle and percentage of filled grain in rice cultivation. Nowadays paddy harvest is dependent on unfavorable flooding and weed growth. Thus an urgent need to improve crop establishment techniques in anaerobic condition to improve crop yield. This experiment was conducted at Rice Research and Development Institute, Batalagoda to study the effect of germination ability and seed rate on seedling vigor, weed growth and yield of rice under anaerobic conditions. The experiment one was conducted to evaluate the germination ability of eight rice varieties with two treatments such as maintain 8cm water level (T1); normal paddy field condition (T2) arranged in Randomized Complete Block Design with three replicates. The experiment two was comprised with two treatments namely: maintain 8cm water level (T1); normal paddy field condition (T2), three seeding rate with 60kg/ha (SR1); 80Kg/ha (SR2); 100kg/ha (SR3) and three rice varieties Bg 366(V1); Bg 352(V2); Bg 96-741(V3) to evaluate effect of weed growth and seed rate for rice yield in anaerobic conditions under direct seeding method. Three replicates were arranged in Split Pot Design for the experiment two. The maintained water level was 8cm for 40 days from direct seeding day of paddy. Eight centimeter water level was maintained forty days from direct seeding day of paddy. Weed management of treatment one was not done in experiment 2 but weed management was done by manually and mechanically in treatment two. All other management practices were same for the W1 and W2. Germination percentage under anaerobic conditions, seedling height of paddy was taken in experiment 1. Weed growth of plots, chlorophyll content of leaves, panicle initiation of paddy, 50% heading and yield and yield components were recorded at the harvesting stage. Water and plant yield content in W2 was significantly low ($P < 0.0001$) throughout the growing season in comparison to W1. However, seedling height was not significantly different ($P < 0.152$) among treatments. There is a significant effect ($P < 0.0001$) with weed growth and T1. Finally weed growth of rice, seed rate and anaerobic germination were affected for the yield of three rice varieties.

Key words; anaerobic germination, direct seeding method, seed rate.