

**CHARACTERIZATION AND CLARIFICATION OF LIMITING FACTORS
OF DIFFERENT RICE VARIETIES TO ENHANCE SOURCE SINK
BALANCE**

**J.W.E.I. Gunarathna¹, L.C. Silva², D.M.J.B. Senanayake²
U.G.A.I. Sirisena¹ and H.R.M.C. Rathnayaka²**

¹*Department of Plant Sciences, Faculty of Agriculture, Rajarata University
of Sri Lanka, Anuradhapura, Sri Lanka.*

²*Rice Research and Development Institute Bathalagoda, Ibbagamuva, Sri Lanka*

Rice production in Sri Lanka needs to be increased to fulfil the requirement of growing population. The yield potential of rice is determined by the source-sink relationship thus, it is important to identify the rice varieties having efficient sink-source balance. However, information on the sink-source balance of the existing rice varieties is limited. A field experiment was conducted during the 2019/2020 *Maha* season at Rice Research and Development Institute, *Bathalagoda*, to identify and clarify the limiting factors that influenced the sink source balance of available rice varieties. Fourteen commonly growing varieties were laid out in Randomized Complete Block Design and each variety was transplanted in 12 m² plots. Tiller wastage (TW), Chlorophyll content, Leaf area index (LAI), and canopy temperature (CT) were recorded. Among the tested varieties, Bw367 and At373 showed low TW and the highest was recorded in Bg358. However, the latter showed the highest number of tillers. The Bw367 showed higher chlorophyll content and LAI up to 10th week. The growing degree days for grain filling of Bg358 were rapidly increased from 1084.1 to 1223.5 showing the highest net accumulation rate. The highest stem remobilization was recorded in Bg352. Further, the net accumulation rate at late booting stage (7th week) was positively correlated with stem dry weight ($r^2=0.77$). The yield of Bg366, Bg94-1, Bg370 and Bw367 were 180.0, 165.0, 158.0 and 148.0 gm⁻², respectively. These results suggested that Bw367 has greater remobilization of stem and leaf, medium non-structural sugar partitioning of leaf & sheath and high NAR. Remobilization rate of the stem in Bg94-1 has to be improved to increase yield potential. Therefore, it is important to increase sugar partitioning of rice varieties through different approaches such as physiological and molecular approaches.

Key words: Remobilization, Rice varieties, Sink, Source, Sugar partitioning