

Significance of zinc nutrition in improving growth rates and pattern of zinc accumulation in panicles at different stages of diversified rice (*Oryza sativa* L.) genotypes

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One hundred and thirty diverse rice germplasm lines were examined for leaf and seed zinc (Zn) content. A significant and wide genetic variability was observed for leaf and seed zinc levels. Based on Z-distribution analysis, 22 contrasting genotypes were selected. In this experiment, besides Zn content in leaf and seed, several growth parameters were also recorded to study the genetic variability in growth and productivity. The results showed that leaf area and total dry matter (TDM) showed positive relationship, indicating the contribution of leaf area for its increase in TDM (g/pl). Net assimilation rate (NAR) (g/cm²) did not contribute to the extent observed variability in TDM. A positive relationship was observed between total leaf Zn and TDM. Some of the genotypes showed more TDM with higher total leaf Zn (mg/100g dry weight) per plant indicating total Zn acquisition by plant and this might have influenced the growth rate. Total seed Zn (mg/100g) increased the seed yield significantly but not the seed Zn per unit weight of seed. Higher seed Zn levels might positively influence cell metabolic activities and hence, improved grain growth and development was observed. An attempt was also made to identify the contrasting genotypes differing in Zn status to examine genetic variability in seed Zn levels of panicle development. The seed Zn levels increased at milky stage subsequently, it was reduced during late stages of grain filling period. This could be due to variation in duration of transport of Zn to developing grains.

Key words : Genetic variability, Growth parameters, Total dry matter, Net assimilation rate, Rice germplasm, Leaf Zn, Seed Zn, Total Zn

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