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[\[Full-text PDF \(918K\) \]](#) [\[References \]](#)**Influence of Leaf Nitrogen Content on Grain Weight at Early Ripening Period and Relationship between Root Respiration and Leaf Area per Spikelet of Rice Plant**

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Abstract:

The same seedlings of three rice cultivars were transplanted into both paddy fields, experimental fields of Tottori University (Koyama) and skillful farmer's field (Hojo), and given their respective manuring practice. Hojo plants kept a high level nitrogen content in leaves (LN%) until harvest time because the amount of nitrogen fertilizer in Hojo was two to three times greater. The weight of whole brown rice of Hojo plants at 15 days after the full heading date (FHD) was lighter than that of Koyama rice plants. The causes of this different in brown rice weight were studied on concerning factors, leaf area per spikelet (F/spikelet), LN% and ammonium concentration in brown rice. The relationship between F/spikelet and increasing rate of weight of whole brown rice had a positive correlation throughout the grain filling period. At 15 days after FHD, the correlation between LN% and the weight of whole brown rice was negative comparing among plants of F/spikelet levels. The weight of whole brown rice at 15 and 30 days after FHD showed a highly negative correlation with the ammonium concentration in the brown rice which was closely related to LN%. Therefore, it seemed that the grain filling of Hojo plants was delayed by the ammonium concentration in brown rice increased due to excessive high LN% at the early ripening period. The F/spikelet supporting the increase of grain filling had high correlation with LN%, and the relation between F/spikelet and root respiratory rate was highly positive. Therefore, the amount of F/spikelet was sustained with a high root respiratory rate, supported by root nitrogen and sugar content, throughout the ripening period.

Keywords:

Ammonium concentration, Grain filling, Grain weight, Leaf area, Nitrogen content, Rice, Root respiration

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