



Influence of straw on grain quality parameters of the rice variety Bg 359 under different water regimes

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Fertilizer and irrigation are the most effective inputs in rice cultivation which always benefits the crop when they are in optimal conditions. The unavailability of those inputs to the plant may affect the final grain yield as well as the consumer acceptance on quality. This study investigated the grain quality attributes such as milling (brown rice % (BR), total milled rice % (TMR) and head grain % (HG), physical thousand grain mass (TGM), grain hardness (RG), and grain dimensions) nutritional (ash and protein content), cooking and eating (gelatinization temperature/GT) of rice grown under different water and fertilizer management practices. Variety Bg 359 was established and replicated, thrice in a split plot having two different water regimes (No water stress (W₁) and water stress at heading (W₂) as the main factor. Nitrogen (N) phosphorous (P) potassium (K) and straw (S) were introduced in different combinations as sub plot factor at the rate of 130, 45, 30 and 5000 kg/ha respectively in four fertilizer management practices (N+P (F1), N+P+K (F2), N+P+K+S (F3) and N+P+S (F4). BR% and TMR% did not show significant (P>0.05) difference between treatments. Inclusion of straw with K in to the soil has favorable effect on HG% when there was water stress. Hardness (RG) of rice grains were significantly differing with treatments (p≤0.05). When the water level was managed throughout the growth fertilizer combination with N, P and K (F2) recorded the lowest hardness. There was no significant difference (P>0.05) in grain dimension when it is specific to rice varieties. Protein content of F1 treatment (N and P) was significantly (p<0.05) low and inclusion of straw with K (F3 treatment) in to the soil has favorable effect on protein content at both W1 and W2 water regimes. There was a significant (p≤0.05) difference between treatments in ash content. Straw has significantly fewer effects on the increase of ash content. Water stress seems favorable to increase ash content in K managed fields. No significant (P>0.05) results were observed in GT between treatments where it is specific to rice varieties as grain dimension. The results of study reveal that addition of straw for K with N and P needs to manage water during cultivation for required rice grain quality.