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Quantifying rice spikelet sterility on Vietnamese cultivars (*Oryza sativa* L.) under high temperature and shading condition

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Abstract

During grain filling period, rice is affected by many environmental factors; including temperature, water, radiation and soil nutrition condition. In future climate, greater shading and heat tolerance will be required in rice. In this study, the effect of shading and high temperature on spikelet sterility was conducted on fourteen Vietnamese cultivars. Field experiments were studied in 2015 and 2016 to evaluate the response of Vietnamese cultivars under high temperature during grain filling stage. The high temperature and shading were applied by closing two sides of growth chamber and covered by a black cloth (50% reduced solar radiation) under the field condition after the first cultivar heading. The sterility increased significantly under high temperature and shading. The highest percentage sterile spiketlets was observed in 'Jasmine 85' (71.7%) under shading and in 'OM4900' (53.4%) under high temperature in 2015 and 2016, respectively. Among the treatments, the percentage of sterile spekelets in Vietnamese cultivars under shading was highest which was 54.9% and 41.8% in 2015 and 2016, respectively. Yield components reduced significantly in both of shading and high temperature. Corresponding with significantly decrease in yield components, the yield in high temperature and shading decreased strongly in both 2015 and 2016.

Keywords: High temperature, Shading, Sterile grains, Vietnamese cultivars.

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