

[P3] Abiotic Stress for Crop Production

Thu. Sep 9, 2021 12:15 PM - 2:00 PM Room 3 (Poster) (Abiotic Stress for Crop Production)

1:15 PM - 2:00 PM

[P3-02] Selection of Transcripts Relating to Chlorophyll Content of Rice Seedlings at Low Temperature Using RNA-Sequencing Data

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The seedlings of an *indica* rice cultivar, Kasalath, showed chlorosis symptoms at 18°C; although the leaves of a *japonica* cultivar, Arroz da Terra, remained green at 18°C. In this study, transcripts relating to the chlorophyll content of rice seedlings at 18°C were investigated using RNA sequencing (RNA-seq) data. Differential expression analysis revealed that the expression levels of photosynthetic genes were repressed in Kasalath seedlings at 18°C compared to the seedlings grown at 25°C. However, stress-responsive genes were expressed at higher levels at 18°C than at 25°C in the Kasalath seedlings. Furthermore, the transcripts whose expression levels were related to chlorophyll content were statistically selected using the RNA-seq data of 21 F₂ plants derived from a cross between Arroz da Terra and Kasalath. For the regression models, frequently selected genes included photosynthetic and stress responsive genes. The expression levels of the photosynthetic genes in the high-frequently selected genes had significant positive correlations with chlorophyll content in 95 F₂ plants at 18°C. Contrastingly, the expression levels of stress-responsive genes had significantly negative correlations with chlorophyll content, suggesting that low temperature-sensitive lines expressed more stress-responsive genes than tolerant lines at 18°C.