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## Effect of Elevated Temperature on Physiological and Molecular Responses and Photoassimilate Production of Rice Leaves During Early Seed Development

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### [Abstract]

The increase in atmospheric temperature due to climate change prolongs the period of exposure to high-temperature environments during rice cultivation. In particular, high-temperature during early seed development greatly affects on the productivity and quality of rice. The high temperature at this time not only affects the transport and distribution of assimilates from leaves to seeds and the accumulation of starch in the seeds, but also affects the leaves, which are the production organs of assimilates, and increases the consumption of assimilation products due to an increase in respiration. Therefore, in this study, rice was grown in temperature gradient chambers(TGC) to analyze the effects of high temperature on physiological responses, assimilate production, and changes in gene expression in rice leaves. Analysis of chlorophyll and sugar contents and RNA-seq experiments were performed using flag leaves collected under normal and elevated temperature conditions, respectively, during the early seed development stage, and then these results were comprehensively discussed.

### [Acknowledgement]

This work was carried out with the support of “R&D Agenda Agriculture and Technology Development Program (Project No. PJ0148602022)” of the Rural Development Administration, Republic of Korea.

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