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Photosynthetic Characteristics of Highbush Blueberry Blueberry in Phytotron

[Naoko Kameari](#)¹⁾, [Naomi Horiuchi](#)¹⁾, [Sakae Suzuki](#)¹⁾, [Hiroo Koike](#)

1) Graduate School of Agriculture, Tokyo University of Agriculture

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Photosynthetic characteristics measured with the leaves of ‘Weymouth’ (*Vaccinium corymbosum* L.) and ‘Tifblue’ rabbiteye blueberry (*V. corymbosum* L.) in a phytotron were compared with regard to their responses to light intensity ($\mu\text{mol}\cdot\text{m}^{-2}\cdot\text{s}^{-1}$) and temperature (15-35°C). As temperature increased, photosynthetic rates of both cultivars increased. Photosynthetic rates of ‘Weymouth’ were higher than those of ‘Tifblue’ under low temperature conditions (15-20°C). However, the photosynthetic rates measured under high temperature conditions (25-35°C) were similar between the two cultivars. ‘Weymouth’ showed higher transpiration rates and lower water use efficiency than ‘Tifblue’ under high temperature conditions.

'Tifblue'. Furthermore, photosynthetic characteristics of 'Blueray' h high temperature conditions (28 and 35°C) were similar to those of temperature conditions. These findings show that photosynthetic characteristics could be related to the suitability of highbush blueberries to cool conditions tolerance and drought resistance of rabbiteye blueberries. WUE values at temperature >35°C and high light intensity >1,000 $\mu\text{mol}\cdot\text{m}^{-2}\cdot\text{s}^{-1}$ could be used for evaluating and selecting blueberry plants with heat tolerance. Transpiration rate increased at high temperature and high light intensity, which suggests that it is necessary to control light intensity under 1,000 $\mu\text{mol}\cdot\text{m}^{-2}\cdot\text{s}^{-1}$, a light intensity that is useful for preventing water loss of the plants.

Key Words: [interspecific difference](#), [light intensity](#), [temperature](#), [transpiration](#), [water use efficiency](#)

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