

研究报告

# 长三角地区大棚避雨栽培下不同生态适应型葡萄的光合特性

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**摘要** 研究了长江三角洲地区大棚避雨覆盖栽培下葡萄光合生理生态特性的变化规律. 结果表明, 不论是晴天还是阴天, 避雨覆盖都显著削弱了大棚内的光合有效辐射 (PF<sub>D</sub>), 但对气温 ( $T_a$ )、大气水汽压 ( $V_p$ ) 和蒸腾速率 ( $T_r$ ) 无明显影响. 避雨覆盖栽培使美人指与藤稔葡萄品种的叶片厚度分别下降了28.6%和18.4%、比叶鲜重分别下降了13.1%和11.6%、叶片总叶绿素(Chl)含量与表观量子效率(AQY)略有增加, 但Chla、Chlb含量及Chla/Chlb比值与对照无显著差异. 晴天时, 避雨覆盖栽培使美人指和藤稔品种的净光合速率( $P_n$ )日均值分别下降18.7%和13.1%、 $P_n$ 日积分值分别下降17.2%和11.9%、水分利用效率(WUE)分别下降26%和36.9%、气孔导度( $G_s$ )则分别增加76.8%和100.8%; 阴天时, 避雨覆盖栽培使美人指和藤稔品种的 $P_n$ 日均值分别下降48.7%和33.5%、 $P_n$ 日积分值分别下降34.0%和29.8%、WUE分别下降69.2%和67.7%、 $G_s$ 分别增加178.0%和85.1%. 美人指品种的生理、光合指标的变幅比藤稔品种大, 且阴天条件下差异更显著, 表明两品种的生态适应性有明显差异.

**关键词** [长江三角洲地区](#) [葡萄](#) [大棚避雨栽培](#) [光合特性](#)

分类号

## Photosynthetic characteristics of grapevine varieties with different ecological adaptabilities grown in a rain-shelter plastic greenhouse in the Yangtze River Delta region

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### Abstract

The study with two grapevine varieties Manicure Finger and Fujiminori grown in a rain-shelter plastic greenhouse in the Yangtze River Delta region showed that in the greenhouse, the photon flux density (PF<sub>D</sub>) decreased greatly, while air temperature ( $T_a$ ), vapor pressure ( $V_p$ ) and transpiration rate ( $T_r$ ) had little changes, no matter in sunny or cloudy days. The leaf thickness and fresh weight per cm<sup>2</sup> of the two varieties decreased by 28.6% and 18.4%, and 13.1% and 11.6%, respectively, total chlorophyll content and apparent quantum yield (AQY) had a slight increase, but chlorophyll a and b contents and chlorophyll a/b ratio had no obvious difference with the open-air cultivation (CK). In sunny days, the diurnal mean value of net photosynthetic rate  $P_n$ , diurnal integral value of  $P_n$ , and water use efficiency (WUE) of Manicure Finger and Fujiminori decreased by 18.7% and 13.1%, 17.2% and 11.9%, and 26.0% and 36.9%, but stomatal conductance ( $G_s$ ) increased by 76.8% and 100.8%, respectively, while in cloudy days, the corresponding values of above mentioned parameters were decreased by 48.7% and 33.5%, 34.0% and 29.8%, and 69.2% and 67.7%, and increased by 178.0% and 85.1%, respectively. The variation extents of the parameters were larger for Manicure Finger than for Fujiminori, especially in cloudy days, indicating the great differences of ecological adaptability between these two grapevine varieties.

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