Transcriptome Revealed the Effect of Shading on Photosynthetic Pigment and Photosynthesis of Overwintering Tea Leaves

1. Environment Data of Tea Plant Growth

Statistical analysis was carried out on the growth environment data of tea plants during the whole experiment, including air temperature and humidity, soil temperature, and soil moisture. Air temperature includes tea plant canopy temperature (green), tea plant 1/2 times height temperature (blue), and tea plant two times height temperature (chartreuse). The lowest values of these three factors were -7.4℃, -6.9℃, and -7.0℃ on December 25, 2021, respectively. The highest values occurred on April 9, 2022, which were 17.0℃, 17.3℃, and 17.2℃, respectively. It can be seen from the air temperature curve that during the whole test period, the temperature was basically below 10℃, and it was below 0℃ for a long period, indicating that the tea plant was in low-temperature adversity, which was not suitable for tea plant growth and some physiological activities (Figure S1 A). Air humidity includes tea plant canopy humidity (pink), tea plant 1/2 times height humidity (orange), and tea plant two times height humidity (dark green). The lowest values of the three were 41.5%, 55.5%, and 38.1% on March 4, 2022, respectively. The highest values were found on March 25, 2022, which were 95.7%, 99.0%, and 96.6% respectively (Figure S1 B). The soil temperature includes the temperature at -20cm (brown) and -40cm (gray). Both of them had their lowest values on February 6, 2022, which were 1.5℃ and 2.8℃, respectively. The highest values were 12.7℃ and 11.7℃ on April 12 (Figure S1 C). Soil moisture included water at -20cm (dark blue) and -40cm (grayish green). Both of them had the lowest values on April 15, 2022, which were 19.0% and 30.1% respectively. -20cm showed the highest value of 25.9% on January 7, 2022, and -40cm showed the highest value of 37.4% on March 3, 2022 (Figure S1 D).

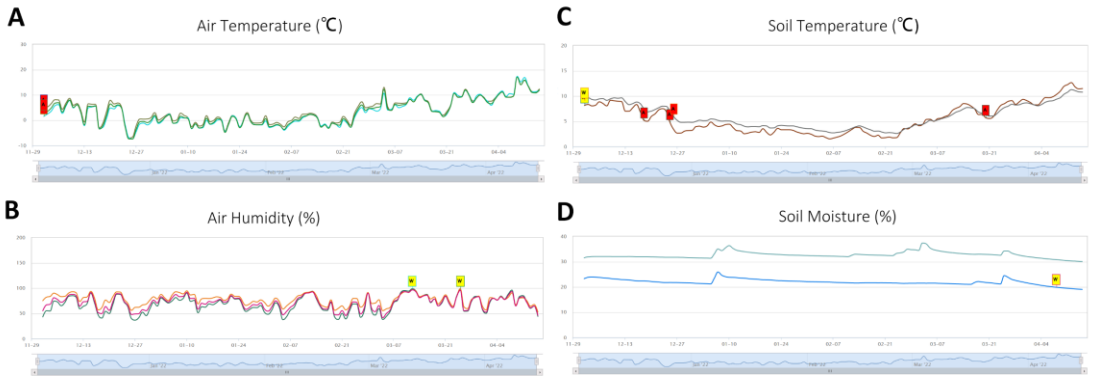

Figure S1 Environmental Parameters for tea plant growth, including A. Air Temperature (℃); B. Air Humidity (%); C. Soil Temperature (℃); D. Soil Moisture (%). In the figure, "W" represents exceeding the limit value, and "A" represents exceeding the limit value by 20%.

2. The Ratio of Different Photosynthetic Pigments

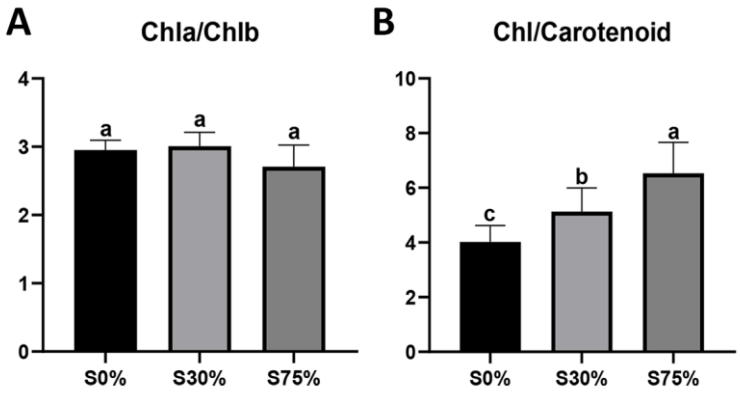

Figure S2 A. The ratio of chlorophyll a to chlorophyll b; B. The ratio of chlorophyll to carotenoids. (P-value <0.05), The Y-axis represents its ratio number.