

Supplementary materials

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No rainfall treatment before rainfall(NR_{Pre}); No rainfall treatment after rainfall(NR_{Post}); Half rainfall treatment before rainfall(HR_{Pre}); Half rainfall treatment after rainfall(HR_{Post}); Natural rainfall treatment before rainfall(AR_{Pre}); Natural rainfall treatment after rainfall(AR_{Post}); Double rainfall treatment before rainfall(DR_{Pre}); Double rainfall treatment after rainfall(DR_{Post}).

Table S1. Conditions of the study plot

Species	<i>Platycladus orientalis</i>
Origin	Pure plantation
Sample plot Area (m ²)	40×40
Ground slope	10°
Density (number/hm ²)	1250
Average tree age (a)	60
Average DBH (cm)	20.9
Average Tree Height (m)	10.7
Thickness of soil layer (cm)	80
Canopy density (%)	76.9
Leaf area index	3.84

Table S2. Precipitation event information

No.	date (year/month/day)	Precipitation(mm)
a	2021/8/9	16.2
b	2021/8/14	7.4
c	2021/8/19	20.2
d	2021/8/23	50.8
e	2021/9/4	62.2

f	2021/9/14	8.2
g	2021/9/19	45.2

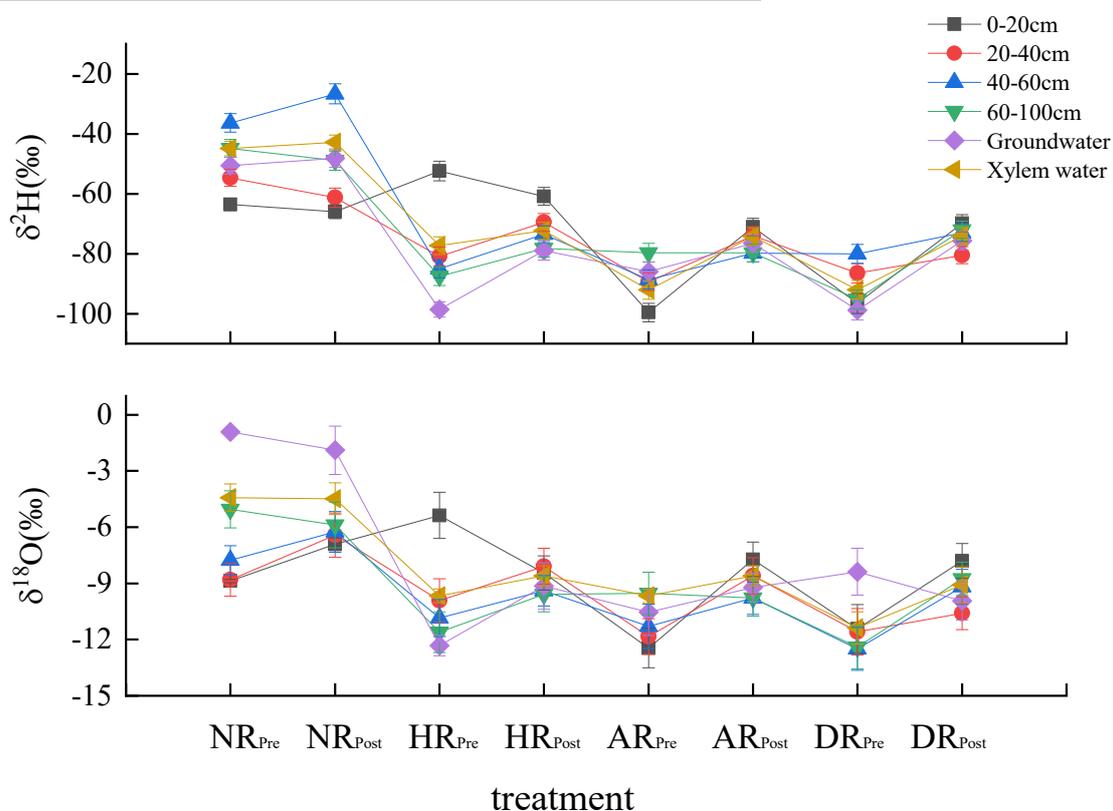


Figure S1. Isotopic composition of different water sources before and after rainfall. No rainfall treatment before rainfall(NR_{Pre}); No rainfall treatment after rainfall(NR_{Post}); Half rainfall treatment before rainfall(HR_{Pre}); Half rainfall treatment after rainfall(HR_{Post}); Natural rainfall treatment before rainfall(AR_{Pre}); Natural rainfall treatment after rainfall(AR_{Post}); Double rainfall treatment before rainfall(DR_{Pre}); Double rainfall treatment after rainfall(DR_{Post}).

Method: Spectral pollution identification and correction

Specific contamination curve was individually fitted for the specific analyzer.

For the analyzer we possess (DLT-100, LGR, USA), the curves for $\delta^2\text{H}$ and $\delta^{18}\text{O}$ are as follows:

For $\delta^2\text{H}$:

$$\delta^2\text{H} = 0.0456x^3 - 0.3527x^2 + 1.9293x + 1.8095 \quad (R^2=0.994)$$

For $\delta^{18}\text{O}$:

$$\delta^{18}\text{O} = 0.0175x^3 - 0.0383x^2 + 0.3907x + 0.5291 \quad (R^2=0.992)$$

where x is the natural logarithm of the methanol concentration in the measured samples.

To fit the curve, solution containing analytically or chromatographically pure methanol and deionized water (with known isotope signature) was prepared. The methanol concentration in the solution was set with a gradient of 0 ppm, 10 ppm, 20 ppm, 50 ppm, 80 ppm, 100 ppm, 200 ppm, 300 ppm, 400 ppm, 500 ppm, 600 ppm, 700 ppm, 800 ppm, 900 ppm and, 1000ppm. Then, the samples were analyzed by the analyzer (DLT-100, LGR, USA). The raw data from the analyzer was post processed by the LWIA-Post

Analysis software and the methanol concentration for each sample was analyzed by the LWIA-SCI (the results were shown as NB metric). The isotope signature deviation caused by methanol contamination was defined as the difference between the true value and the measured value of the samples. Then the curves were fitted by analyzing the correlation between the natural logarithm of the NB metric and the isotope signature deviation (for $\delta^2\text{H}$ and $\delta^{18}\text{O}$, separately). The method explained above was provided by LGR.