The authors provide a compelling case demonstrating the differential response of plant water consumption to rainwater uptake for dominant tree species (Hippophae rhamnoides and Populus davidiana) in the semiarid Loess Plateau. I appreciated that the study used multiple indicators such as plant physiology (leaf water potential) and root morphology, sap flow and rainwater uptake proportion to comprehensively address this topic. This study suggested that H. rhamnoides and P. davidiana exhibited sensitive and insensitive response to rainfall pulses, respectively, which provides insights into suitable plantation species selection. While, I have three small questions that I don't understand, could you please answer them if it's convenient?

Response: Thanks for these meaningful suggestions; the detailed answer to these questions can be observed the response to specific question as follows.

(1) line 189-190 I haven't figured out the relationship between Eqs 4 and 5. What does PAP mean?

Response: Corrected. In response to this meaningful suggestion, the PAP has been corrected to RUP, and the revised Equations can be observed as follows:

"The RRS uptake proportion (RUP, %) after a recent rainfall pulse for plant was calculated as the proportion of rainwater in plant stem as follows (Cheng et al., 2006):

$$\delta^{18}\mathrm{O}\,(\mathrm{D})_{\mathrm{p}} = RUP \times \delta^{18}\mathrm{O}\,(\mathrm{D})_{\mathrm{rain}} + (1 - RUP) \times \delta^{18}\mathrm{O}\,(\mathrm{D})_{\mathrm{swb}} \quad (5)$$

$$RUP = (\delta^{18}\mathrm{O}(\mathrm{D})_{\mathrm{p}} - \delta^{18}\mathrm{O}(\mathrm{D})_{\mathrm{swb}})/(\delta^{18}\mathrm{O}(\mathrm{D})_{\mathrm{swa}} - \delta^{18}\mathrm{O}(\mathrm{D})_{\mathrm{swb}}) \times 100\% \quad (6)$$

where $\delta^{18}\mathrm{O}(\mathrm{D})_{\mathrm{rain}}$ and $\delta^{18}\mathrm{O}(\mathrm{D})_{\mathrm{p}}$ are the isotopic values for rainwater and plant stem after rainfall, respectively; $\delta^{18}\mathrm{O}(\mathrm{D})_{\mathrm{swb}}$ and $\delta^{18}\mathrm{O}(\mathrm{D})_{\mathrm{swa}}$ are the isotopic values of soil water immediately before and after rainfall, respectively. The Eq. (6) is derived through the linear mixing model for water isotopic value in plant stem after rainfall in Eq. (5). The RUP was the average value calculated in Eq. (6) based on δ^{18}O and δD, respectively, for specific plant species in each plot."

(2) line 190 This study calculated RUP using D and 18O, respectively. Are the results of these two stable isotopes consistent?

Response: Added and Clarified. Thanks for this meaningful suggestion, the relative sentence has been added in the revised manuscript in "**2.6 Statistical analysis**" section as follows: "The RUP was the average value calculated in Equation (6) based on δ^{18}O and δD, respectively, for specific plant species in each plot."

Indeed, the result of RUP calculated using $\delta^{18}O$ and δD have the similar result in Equation (6). There are two reasons that can illustrate these results.

Firstly, the two studied plant species did not exhibited xerophytic or halophytic characteristic, which may cause water isotopic value fraction during water source uptake by these two plantation species. We also revised these two sentences in "**2.6 Statistical analysis**" section as follows: "No fractionation was considered during water source uptake by these plant roots because none of the plants exhibited xerophytic or halophytic characteristics. Ellsworth and Williams (2007) and Moore and Semmens (2008) suggested that a water stable isotope fractionation generally occurred during root uptake by xerophytic or halophytic plants."

Secondly, the water sources from three different soil layers calculated through MixSIR program (Moore and Semmens, 2008) also using both the $\delta^{18}O$ and δD. And the result of water sources from rainwater recharged water after recent rainfall event, and the water sources from three soil layers were combined to analysis the water source variation response of these two plantation species. The relative sentences can be observed in "**2.6 Statistical analysis**" section as follows: "In addition to RUP, the water uptake proportions from different soil layers were calculated on the first day after a rainfall event using the MixSIR program, to complement the analysis of plant water source variations in response to rainfall pulses. The RUP method only calculated the proportion of recent rainwater in the plant stem and did not include soil water before the recent rainfall event (Gebauer and Ehleringer, 2000; Cheng et al., 2006). The water taken up from different soil layers by the plant is a mixture of soil water before the recent rainfall event and the recent rainwater."

References:

Gebauer, R. L. E., and Ehleringer, J. R.: Water and nitrogen uptake patterns following moisture pulses in a cold desert community, Ecology, 81, 1415-1424, 2000.

Cheng, X. L., An, S. Q., Li, B., Chen, J. Q., Lin, G. H., Liu, Y. H., Luo, Y. Q., and Liu, S. R.: Summer rain pulse size and rainwater uptake by three dominant desert plants in a desertified grassland ecosystem in northwestern China, Plant Ecol, 184, 1-12, 2006.

Ellsworth, P. Z., and Williams, D. G.: Hydrogen isotope fractionation during water uptake by woody xerophytes, Plant Soil, 291, 93-107, 10.1007/s11104-006-9177-1, 2007.

Moore, J. W., and Semmens, B. X.: Incorporating uncertainty and prior information into stable isotope mixing models, Ecol Lett, 11, 470-480, 10.1111/j.1461-0248.2008.01163.x, 2008.

(3) The study calculated the use of precipitation by plants after five rainfall events. I guess the use of precipitation by plants depends not only on the magnitude of the rainfall, but also on the antecedent soil water condition. How do you consider the potential impact that differences in antecedent soil water conditions may have on the results?

Response: Clarified. Thanks for this meaningful suggestion. This study mainly focused on the influence of rainwater recharged soil water to plant transpiration after rainfall pulses. Theoretically, the rainfall amount, plant physiological adjustment, and antecedent soil water condition may influence the rainwater recharged soil water uptake proportion (RUP,%) for plant.

In the present study, the antecedent soil water content did not significantly influenced RUP for these two studied plantation species in either pure or mixed plantation types ($P>0.05$). In addition, the physiological adjustment ($\Psi_{pd}-\Psi_m$, difference between predawn and midday leaf water potential) significantly influenced the relative response of daily normalized sap flow (SF_R) for these species in pure and mixed plantations. These results also suggest that the physiological adjustment regulated the water absorb or consumption for these species in water limited regions.