In line 320, the author concluded that the low transpiration in September resulted from the soil drought. I would like to inquire whether the authors have taken into account the possibility that transpiration declines in the late growing season, even with normal soil moisture availability.

Reply

We believed that it is unlikely that the transpiration of *Populus simonii* declines in the late growing season when the soil water availability is normal in this study area. The experimental plots were located on sandy land with >95% soil sand content in a semi-arid region. In the 2021 growing season, the average soil volumetric water content at 0-200 cm depth in the three plots was from 0.031 to 0.033 cm^3 cm^{-3}. As a fast-growing tree with high canopy transpiration demands, the growth of *P. simonii* was strictly restricted by soil water conditions.

To provide possible evidence, we calculated the transpiration of *P. simonii* for the 2022 growing season (May-September) (unpublished data). As shown in Fig S1 below, the soil water availability was not low (high REW) in each plot in September 2022. However total September transpiration of *P. simonii* in each plot was not reduced by the late growing season and even reached the highest in the ND and SD plots. In addition, the lowest transpiration of *P. simonii* in June 2022 was likely related to low soil water availability, with total precipitation in June of only 14.0 mm, much lower than the multi-year average of 52.2 mm (2003-2022). Moreover, in late June 2022, defoliation of *P. simonii* was observed in the three plots.

Besides, the transpiration of *P. simonii* was also affected by meteorological factors such as photosynthetically active radiation (PAR), vapor pressure deficit (VPD), and air temperature (T_a). In general, PAR, VPD, and T_a decreased in the late growing season compared to July-August, which may somewhat affect the transpiration of *P. simonii*. Therefore, in the later revision, it may be more accurate for us to revise the statement here as "In other words, the high relative contribution proportion of deep soil water during severe soil drought conditions did not increase the absolute water use. Meanwhile, severe soil drought decreased shallow and middle soil water use. Therefore, low soil water availability greatly limited *P. simonii* transpiration".

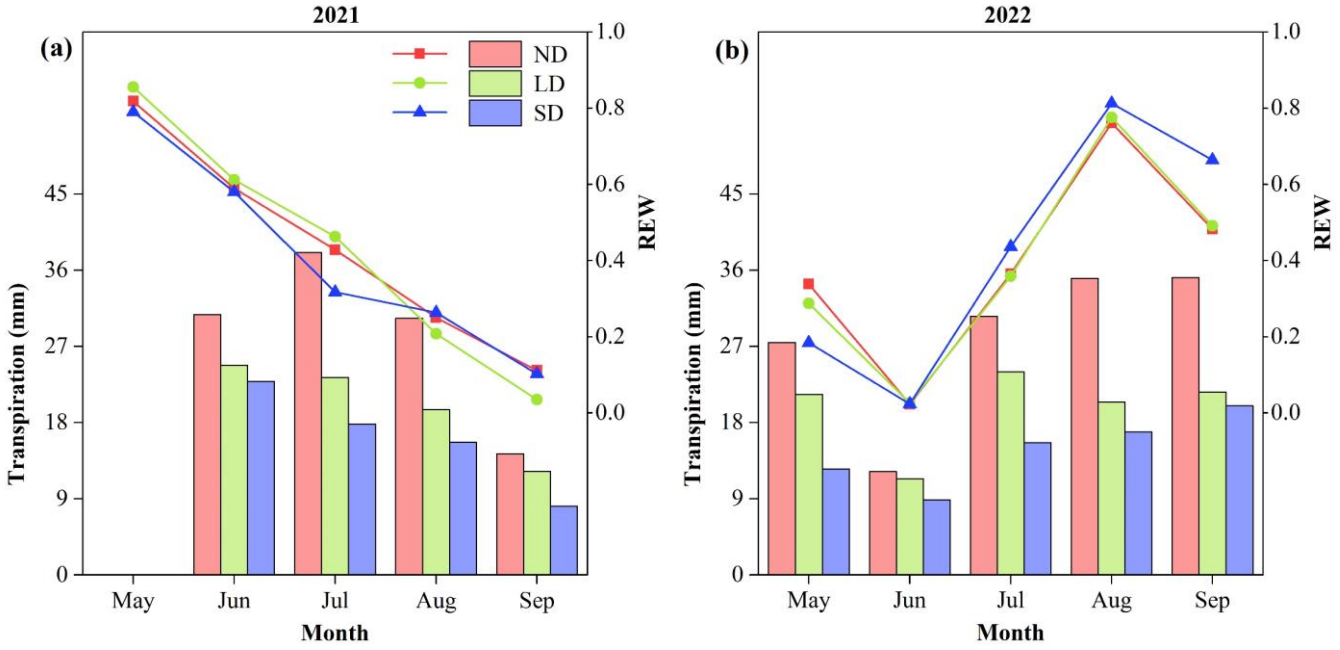

Figure S1: Monthly total transpiration and mean REW (relative extractable water) during 2021 (a) and 2022 (b) growing seasons in the three plots. ND, LD, and SD indicate no, light, and severe degradation of *P. simonii*, respectively.