

Hydrol. Earth Syst. Sci. Discuss., referee comment RC1
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Comment on hess-2022-392

Anonymous Referee #1

Referee comment on "An Experimental Investigation of Precipitation Utilization of plants in Arid Regions" by Yiben Cheng et al., Hydrol. Earth Syst. Sci. Discuss.,
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This study investigates the potential of leaf water uptake of Tamarisc in an arid region in China by i) evaluation of reverse sapflow measured in shoots, branches and stems; and ii) by weighting leaf mass before and after drying, prior and post precipitation events, and using the difference in weight as a proxy for leaf water uptake. The results are promising; the manuscript, however, lacks some structure and consistency.

Along with the annotations and comments I made throughout the manuscript, I want to point out some key aspects where improvement is needed.

- The authors consider two conditions under which water can be taken up by the leaves. These are i) uptake of water when relative humidity is greater than a certain threshold, and ii) uptake of water when precipitation occurs. These 2 processes are not mutually exclusive, given that i) during precipitation, the relative humidity normally is at high levels, and ii) during high relative humidity conditions without precipitation, droplets of water might still occur on leaves and mimic the presence of precipitation. This raises the question whether distinguishing these 2 conditions is meaningful in the first place. Like the authors, I agree that isolating the 2 conditions is good practice, but throughout the manuscript this distinguishment is not consistent and sometimes confusing (multiple terms describing similar things are used + the structure of the manuscripts does not always reflect this distinguishment). I would like to see clear results where leaf water uptake is occurring under the two conditions, which allows meaningful interpretation and comparison.

- The discussion part could benefit from some additions, I made some suggestions in the manuscript. Also, in the results section the authors already discuss, try to keep results and discussion separate. I have a feeling that key results should be highlighted more in the text and that headlines could be more specific. I would change the order of the presented results. In particular, I would put figure 7 and the corresponding section very early in the results, because it shows nicely a lot of key findings. I would consider to stick at either RH or VPD, or make it more clear why you need both.

- I would like to read a more distinct paragraph on the potential mechanisms leading to leaf water uptake. I'm sure there is lots of research on the subject. You do have it in the manuscript, but it is short and not really describing the mechanisms or theory behind.

Please also note the supplement to this comment:

<https://hess.copernicus.org/preprints/hess-2022-392/hess-2022-392-RC1-supplement.pdf>