

Interactive comment on “A comparison of methods for determining field evapotranspiration: photosynthesis system, sap flow, and eddy covariance” by Z. Zhang et al.

Anonymous Referee #2

Received and published: 16 January 2014

It's a good paper that the authors have done lots of excellent work. In general, it's difficult for us to compare the results of different measurements of different scales. However, in this paper photosynthesis system, sap flow and eddy covariance at different scales for measuring evapotranspiration were carried out carefully in field. And some reasonable upscaling approaches, which would be the good references for other researchers, were presented. In addition, the authors applied the upscaling results and gave a fraction of transpiration to evapotranspiration at flower and bolling stages, i.e. mulched drip irrigation is obvious beneficial for saving water.

Since lots of complex work was done in the research, I have a few questions or sug-

C7309

gestions about the analysis process: 1. For sap flow gauges, the representative plants with averaged height and leaf area index were selected. So, are there any differences of the plants between wide-row and narrow row that may have different soil water content, and the differences of the plants growing under various salinities in filed? 2. For upscaling approach 6, you considered the leaf area and stem diameter in the function. However, why the plant height is not involved? If plants have the same leaf area, stem diameters but different plant heights, they may have different canopy structures which have effects on transpiration. 3. It's interesting that the fraction of transpiration to evapotranspiration was quantitative defined at flower and bolling stages in this paper. I think the plastic film may have more meaning for the young plant with small leaf area and the comparison between mulch drip irrigation and food irrigation would be more significant. 4. I also have a little confusion about the title. The results of upscaling approaches were used to obtain the fraction of transpiration to evapotranspiration. However, these contents were not reflected in the title.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 10, 14131, 2013.

C7310