

Interactive comment on “Consumptive water use associated with food waste: case study of fresh mango in Australia” by B. G. Ridoutt et al.

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The authors wish to thank the Reviewer for his thoughtful and constructive comments.

1. Regarding effective rainfall

We confirm that the USDA Soil Conservation Service Method was used in the CROP-WAT software to estimate effective rainfall. We will include this detail in the revised manuscript.

We also thank the reviewer for highlighting some of the weaknesses of this method and will plan to consider alternatives to the USDA Soil Conservation Service Method in future studies. Our ability to employ alternative methods in the present study was

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limited by not having access to farm-scale data covering such things as storm intensity, soil and slope conditions.

2. Regarding supplementary irrigation

The approach to product water footprinting employed in this research considered blue water to have been “consumed” where there was no verifiable return flow to the source of origin.

To illustrate this point, if a factory abstracts water from a river, uses that water, and then returns the used water to the same river, the volumetric impact on blue water resources would be the difference between inflow and outflow (obviously changes in water quality would also need to be considered).

On the other hand, if an agricultural enterprise applies excess irrigation water and there is no verifiable return flow to the source of origin, we consider the volumetric impact on blue water resources to be the total volume of irrigation water applied. In our view, product water footprinting should discourage the inefficient use of irrigation water in agriculture. If water footprinting is based on (nominal) crop ET calculations there is no incentive to reduce wasteful irrigation practices.

3. Regarding land-use impacts on blue water resources

The reviewer is correct in noting that the methodology used to estimate the effective use of rainfall by a (notional) forest (i.e. growing in the same location as the mango orchard) is not identical to that used for the mango orchards.

We did not use the CROPWAT model in relation to the (notional) forested ecosystem because we were uncertain about the relevant crop coefficients. We considered the generalized model of Zhang et al. (2001) to be adequate for our purposes. As noted by the Reviewer, any differences are likely to be minor and of no consequence to the conclusions reached.

4. Regarding minor comments

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We note the reviewer's comment about the term "intercepted" not being used with its usual hydrological meaning and we will correct this in the revised manuscript. We do not, however, find use of the term "loss" to be confusing because, in the context of Table 3, the meaning is self explanatory, i.e. ET as a percentage of precipitation, which is a loss from the local hydrological system.

5. Regarding page 5095, line 11

This is a typographical error to be corrected in the revised manuscript.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 6, 5085, 2009.

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