

Interactive comment on “Impact of capillary rise and recirculation on crop yields” by Joop Kroes et al.

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Received and published: 9 August 2017

Authors are: Joop Kroes, Ivan Supit, Jos Van Dam, Paul Van Walsum, Martin Mulder, all from the Wageningen University, what is the proof of the high quality paper. Title is: “Impact of capillary rise and recirculation on crop yields”. I do not agree with the term “recirculation” here, much better would be “water retention”. The paper is describing of influence of soil water on grass, maize and potato yields in the Netherlands. The idea is to describe upward capillary rise and retention of percolating water and the crop yield. The main idea was published by Feddes et al (1978) in the book “Simulation of field water use and crop yield”. The authors are following the idea from this monograph, but with many new concepts and ideas. The starting point is the Richards equation with the sink term, including the root water uptake. The water is influencing the growth

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of crops. In the monograph of Feddes et al. (1978) crop yield is simulated by CROP model according to the concept of Cornelius Theo de Wit. The same concept is repeated in the following model called WOFOST (1986). I would suggest to add some remarks about CROP model which is still in use in many countries (Finland, Sweden, Poland, Italy), and model WOFOST is more complicated. The numerical experiments are important, but “a synthetic modelling option has been implemented to stop upward flow reaching the root zone without inhibiting percolation” and it is not logical and realistic. The fantasy of authors is too great here. The results are proper and the model is well implemented and validated. If the authors are stopping upward flow the yield of crops is greatly reduced, what it well presented. I agree with the conclusions. They write “we think that the quantification of upward flow on yield is a novelty”. Most of the conclusions may be accepted. The paper may be published after minor revision. The possible changes are indicated above.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2017-223>, 2017.

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