

Interactive comment on “The effect of changes in rainfall on the response of the water table to a major alley farming experiment” by S. L. Noorduijn et al.

Anonymous Referee #1

Received and published: 12 July 2009

A first reaction:

The paper presents results from a very interesting 12 year alley farming experiment, and analyzes effects very important in the context of salinization in Australia. It covers both hydrological and biomass aspects of the experiment.

At present I worry that the paper may be regarded as not very well balanced - the analysis of the alley farming experiment has been split over two papers, and this paper seems to suffer from it. The paper (abstract, introduction and conclusions) presents conclusions based on analyses which are published in the other paper. Furthermore

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an analysis of changes in rainfall promised in the title is as yet missing.

A systematic analysis of the factors explaining groundwater depth variability is missing, and the presentation of the analysis of variance is non-systematic, and when and where presented not based on analyses in this paper. Groundwater monitoring itself is rather extensive, and in the future the experiment and papers analyzing it would probably benefit from more intensive measuring.

What the authors do present is an analysis of mean groundwater depth over part of the data (2000 onwards). This selection of part of the data (available from 1995) is based on groundwater table behaviour (up until 2000; down from 2000.) The conclusions they draw from this partial analysis seem to be in contrast with the results presented in the introduction - which are in the other paper. I worry that readers are left wondering which contributions and analyses are made in this paper.

In the current paper and based on this split in the data the trees seem to lower the groundwater table in the tree belt on average by 0.9 meter, but both in the abstract and in the introduction the authors conclude that -on average- there is no strong water table response. This aspect begs the question what water table response the authors would consider to be "strong", or perhaps sufficient. Obviously if the overall average effect is 0, but the effect below the trees is 0.9 m, the next question would be whether this lower groundwater table has an effect on the salt in the rootzone below the trees, and on the salt content in the alleys?

In this respect it would be interesting whether the alleys are used for farming. This is not clear from the text.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 6, 4563, 2009.

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