

Interactive comment on “Nitrate leaching from intensive organic farms to groundwater” by O. Dahan et al.

Anonymous Referee #2

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The paper presents compelling data on differences in nitrate leaching from organic and from conventional farming in greenhouse agriculture. Conclusions are based on a monitoring technology (VMS) and nitrate origin assignment by isotopes. Nitrate origin is assigned based on similar ^{15}N values in the upper part of the profile (5–7 m). However, conclusions would be more solid and reliable if also other N species (ammonium and nitrite) measured according to chapter 2 were reported and discussed, especially related to mobilization, uptake and transport within the soil and within the sampling port system. High $^{15}\text{N}\text{-NO}_3$ isotope values of 10–15 permil in the conventional profile below 7 m need to be discussed more thoroughly and be explained as without such a discussion a key hypothesis may be affected that no transformation of nitrate takes place: $^{15}\text{N}\text{-NO}_3$ values in the deeper part of the profile of 10–15 permil $\delta^{15}\text{N}\text{-NO}_3$

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would be consistent with denitrification. This is not necessarily the case, but data refuting this possibility and helping to constrain redox conditions are needed to support the hypothesis and conclusions.

There are (minor) differences in the irrigation regime (Fig. 2) and in the stratigraphic profile that need some comments.

Technical comments: To check: 'rely on' instead of relay. Peer-reviewed documents should replace reference to web content as this may change (see 9917, lines 5 and 23). Citation and references need revision: Israel Meteorological Service (p. 9919) and Israeli Water Authority, 2008) as well as (Weather 2011, page 9920) were not found in the reference list. A revision of summary and conclusions is recommended, specifically: 9927, l. 21: compared with, 9927, l. 22: sampling of, 9928, line 4: originate from, 9928, line 14: results in.

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