



## ***Interactive comment on “Use of rare earth oxides as tracers to identify sediment source areas for agricultural hillslopes” by C. Deasy and J. N. Quinton***

**Anonymous Referee #1**

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In general, the paper is well structured and written. Introduction is fairly comprehensive, methods are correct, and data interpretation and discussion are appropriate. However, more detailed methods and procedures are needed to facilitate better understanding of the experiment results.

Table 1, is the runoff duration in hours correct? The duration seems too long.

Section 2 Methods: present average slope steepness for each slope segment (top slope, middle slope, and lower slope), as it has significant impact on measured soil loss rates. Is the entire slope segment tagged with REO? Is there any measurement on the spray uniformity, such as by collecting spraying solution or sampling soils after

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spraying? How about REO interception by wheat canopy? Describe the statistical method used in the data test and analysis.

P200L22, elaborate on how the depletion rate (%) and soil loss rate (kg/ha) are estimated here. You may need to include the supplemental materials here.

Section 3.2.2. 1<sup>st</sup> paragraph, discuss why more soil erosion occurred in the top slope. Is the top segment steeper? If the whole hillslope has uniform slope, the soil loss rate, in principle, should increase downslope as runoff concentrates.

Section 3.2.3. 1<sup>st</sup> paragraph, stated strong endorsement of the spraying method, but lack of strong experimental support. ‘Visual’ judgment is not strong enough. Measurements by directly collecting spraying solution or soil samples following spraying would be preferred.

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Interactive comment on Solid Earth Discuss., 2, 195, 2010.

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