General comments
The authors have responded adequately to my previous comments. I still have a few remaining questions and remarks

In the following our response to the reviewer's comment is written in blue.

There is still a problem with figures 4 and 6 (and figures in the appendix) and the labeling of the cycles. The authors mix up the label numbering in the table, the figure and the text and then they even use two different numbering scales: one going from -1 to 8 and one going from 0 to 9.

We carefully check that all the cycles starts at 0 and ends to 9. There was indeed one error, in the revised version L487 (corrected).
We found otherwise that all the figures are consistent (green= left irrigation, orange= right irrigation).

The time lapse inversion is defined at line 354: '(2) time-lapse inversion (difference inversion) where the difference in resistivity is inverted between a given survey and a background survey (in this case, the background survey is the previous one). In this study, we used the second approach, which allowed filtering of systematic noise and highlights variations (as a percentage of differences) between two times.' Looking more in detail at the figure 5 and figures A2-A10, I got confused what was used now as background in the difference inversion. These figures seem to suggest that the background was the inversion just before the start of the irrigation in a cycle and that the same background was used for all difference inversions during a cycle.

The reviewer is right. We used a background constrainst inversion. When we only had two times difference inversion and background inversion are similar. Sentence corrected.

Blue areas would then be regions where the soil is wetted and red areas where it dries. This must be clarified as it also influences the interpretation of the difference inversions a lot.

We agree with the reviewer suggestion and added a sentence: "*The application of background constraint inversion, as illustrated in Figure 5bc, leads to an interpretation suggesting that the blue regions correspond to areas where the soil is wet, whereas the red regions correspond to areas where the soil is drying.*"

Furthermore, it must be discussed whether the increases in resistivity that are observed just after an irrigation event are artefacts or not. It is hard to assume that root water uptake during such a short time after an irrigation event would lead to such large resistivity changes.

We partially agree with the reviewer comment. Although the time elapsed after irrigation is relatively short, it's crucial to consider that the observed changes are relative to the background time, which exceeds 4 hours. Nonetheless, we have tempered our interpretation by incorporating the following statement: "*Positive alterations in resistivity observed immediately after the irrigation event may potentially be artifacts stemming from strong gradient in resistivity* *induced by the irrigation.*"

Figure 1 and its discussion: Make clear that for the wet soil, the water potentials are higher, so shift the potentials on the graph to the left.

Ok done

The purpose of the two lower diagrams should be to make clear that:
1) under dry soil conditions, the main part of the potential drop occurs in the soil-to-root part of the trajectory whereas in wet soil conditions, the main part of the potential drop is in the plant part of the trajectory. You could also include that when the transpiration rate is lower, that then the potential drop in the plant is lower than when the transpiration rate is higher. Your figure makes this clear.

Sentence added *"In dry soil conditions, the primary part of the potential drop happens within the soil-to-root connection, while in wet soil conditions, the main portion of the potential drop is in the plant section."*

2) when the soil is dry, the uptake is more uniform along the root system whereas when the soil is wet, the uptake is more from the parts in the root system where the resistance to flow to the collar is lower and these parts are closer to the root collar. This is not illustrated in this figure. Making the electrical analogue, I think you could do this by playing with the size of the resistor of the soil-to-root resistance. In wet conditions, you make it smaller than the resistors in the plant and in dry soil conditions, you make it much larger. Then it should be clear from the electrical analogue that the path from the upper soil to the collar experiences much less resistance than the path from the tip of the root. You could illustrate that by showing a larger flux Q in the top than in the bottom. For the dry conditions, the electrical analogue should show that the resistance to flow is similar for the top and the bottom (the soil resistance is the main component and the difference in plant resistance for top and bottom does not play such an important role anymore).
I suppose the difference between the electrical flow and the water flow is that the ratio of the resistance to flow in the root system for axial to radial flow is much larger for electrical current than for water flow. Plant tissues have evolved and adapted to have a small axial resistance to water flow. But, this does not mean that axial resistance to electric flow is similarly small.

The reviewer's suggestion is interesting. Nevertheless we think that conveying the idea of the electrical analogue at a single root scale according to the soil conditions is a bit tricky. Just like in Couvreur 2012 Fig. 1, our conceptual figure only aimed to show the hydraulic analogue. At the current state of the art it is difficult to draw conclusion on the electrical one as we tried to demonstrate in this article.

Detailed comments:

Ln 162: 'As the soil conductance gs is linked by the relationship between the transpiration rate over the Δψsoil, for the same evaporation rate, gs is increasing when the soil dries out.' I am not following the reasoning here. The soil conductance should decrease when the soil dries out. Therefore, for a lower water content and the same transpiration, delta pis_soil should become larger (in absolute value).

The reviewer is right. Sentence rephrased.

Ln 164: 'For a constant soil conductance, when the evaporation rate is increasing the gs increase. The same occurs for the root conductance gr. The root axial water flow rates Qx (L3T−1) and root radial water flow rates Qr 165 (L3T−1) can be solved analytically by solving the system of equations of Ohm's and Kirchhoff's laws 166 (Couvreur et al., 2012)' Check this because I think this is not correct.

We removed part the first part of the sentence ("*For a constant soil conductance, when the evaporation rate is increasing the gs increase. The same occurs for the root conductance gr.*") as this statement needs much more carefull attention and we invite the reader to read details in previous works (Doussan et al., 1999, Manoli et al., 2014 and Couvreur et al., 2012 and Cai et al., 2022).

Ln 385: 'which is the same of the soil mixture in the rhizotron': Reformulate

Sentence rephrased: "*The rhizotron soil mixture porosity was assumed to be equal to 0.55*"

Ln 396: What is ‚partaerial'?

Corrected – we meant aerial part.

Ln 440: according to the numbering in table 1, in cycle number 3, water is still applied in all the holes on the left side.

Corrected (cycle 4 instead of 3).

Ln 453 figure 4: This figure is not yet fully consistent. In pannel a there are 10 bars corresponding with 10 applications. But, according to table 1, there should be 12 applications. The last two applications mentioned in table 1 are not included in the bar chart.

Figure 4 and table are now consistent.

The location of the bars on the x-axis do not match with the timing of the peaks in the bottom part. Therefore, the colors in the bar chart do not match with the colors in the chart below. For instance, the last bar is orange and the last peak is green. Second, the numbering of the cycles in the bar chart is not consistent with that in the table. For instance, the black bar with cycle number 5 in the figure actually corresponds to an application that is not numbered in the table.

Corrected.

Ln 479: The cycle numbers do not match with what is in the table or the figures.

Now the cycles number matches.

Probably the reviewer was confused because the table gives the **irrigation time** while the figures gives the **ERT survey time**. We improve the table legend to make it clear.
For figure 5 for instance:
Table 1 indicates that the **irrigation time** that starts cycle 7 is: 2022-06-29 13:45.
In Fig. 5, background time (a) 2022-06-29 9:30 is then located in cycle 6, while b and c are located in cycle 7 (as stated in the figure legend).

(a) Background (-4h) = 2022-06-29 9:30	(b) Just After Irrig. (+0h15) = 2022-06-29 14:15	(c) 6 days after Irrig = 2022-07-05 16:35

Figure 5: Spatial distribution of the resistivity (in Ωm) and changes (in %) in ER obtained by a time-lapse inversion between cycle 6 and 7 following partial left irrigation of the rhizotron.

Ln 482: 'The soil CSD is not shown as it is always pinpointed to the location of the injection electrode' This sentence, I did not understand fully since in Figure 7, the soil CSDs are shown. I suppose you mean that the center of mass of the soil CSD is not shown?

Corrected thanks.

Ln 512: 'The most significant negative changes in averaged water content are attributable to the triggered irrigation, leading to a ΔΘ (change in water content) of -0.1. Conversely, positive changes primarily result from transpiration, with a maximum value located at +0.1.' This is confusing. I would associate a positive delta theta with an increase in theta and therefore would associate irrigation with a positive delta_theta and transpiration with a negative delta_theta. This is opposite to what is written here.

Corrected thanks.

Ln 552: may encourages should be may encourage.

Corrected.

Ln 567: There is a reference to figure 9 but there is no figure 9.

Corrected to fig. 8.