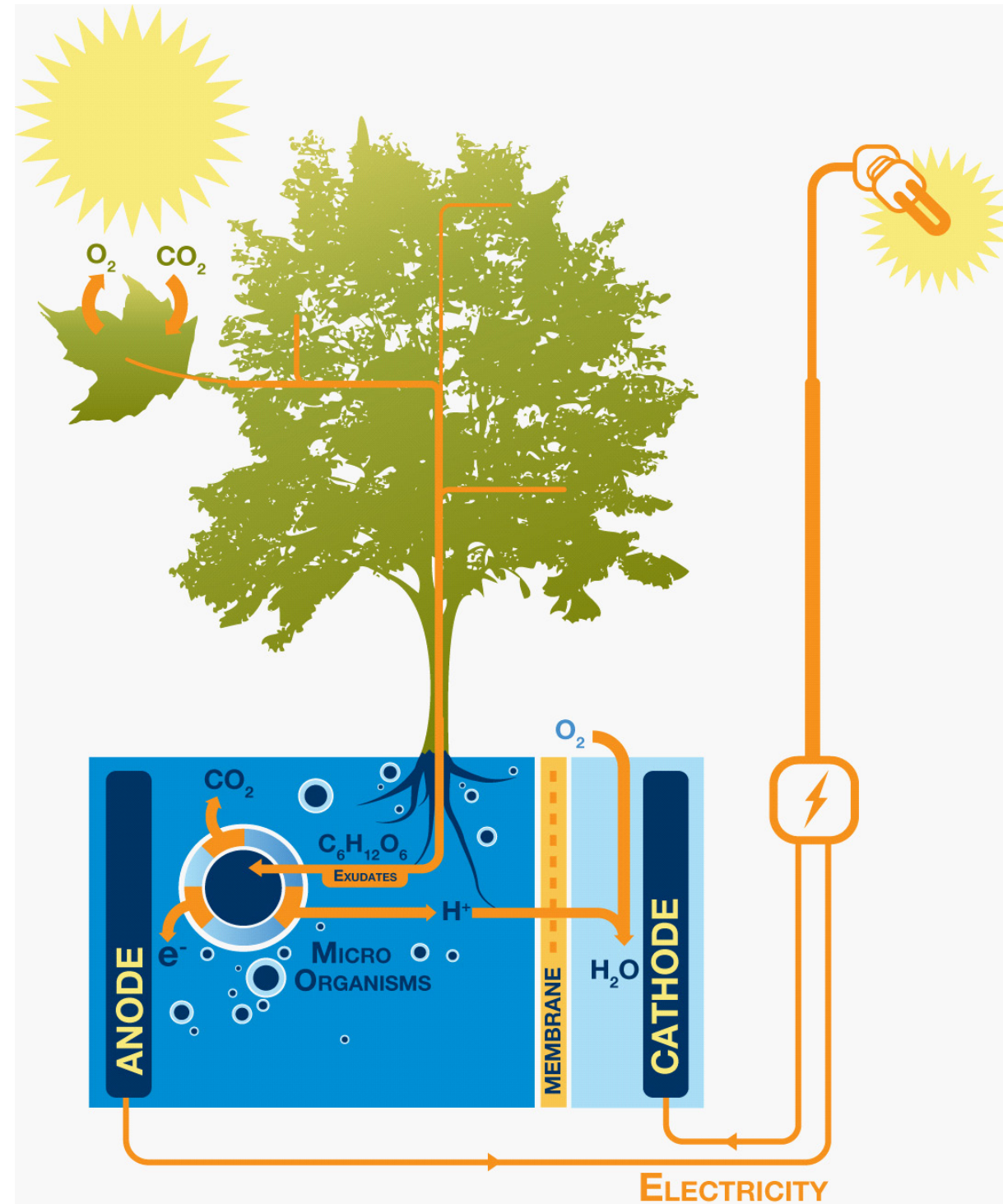


Genetic variation in exudation in tomato

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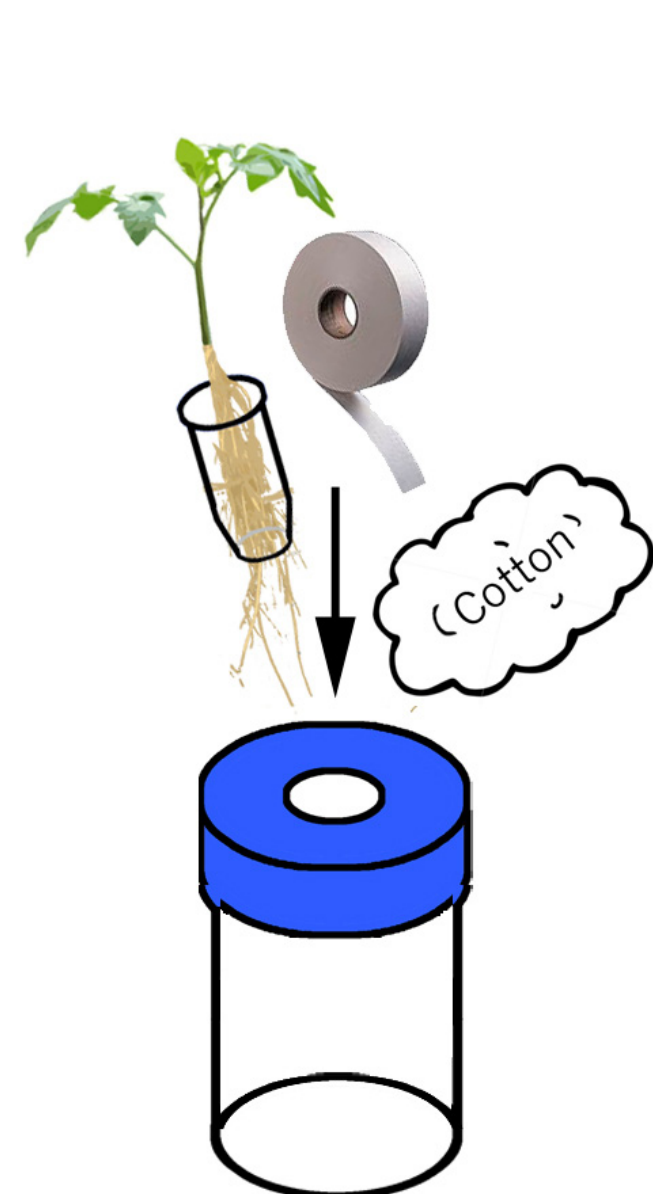
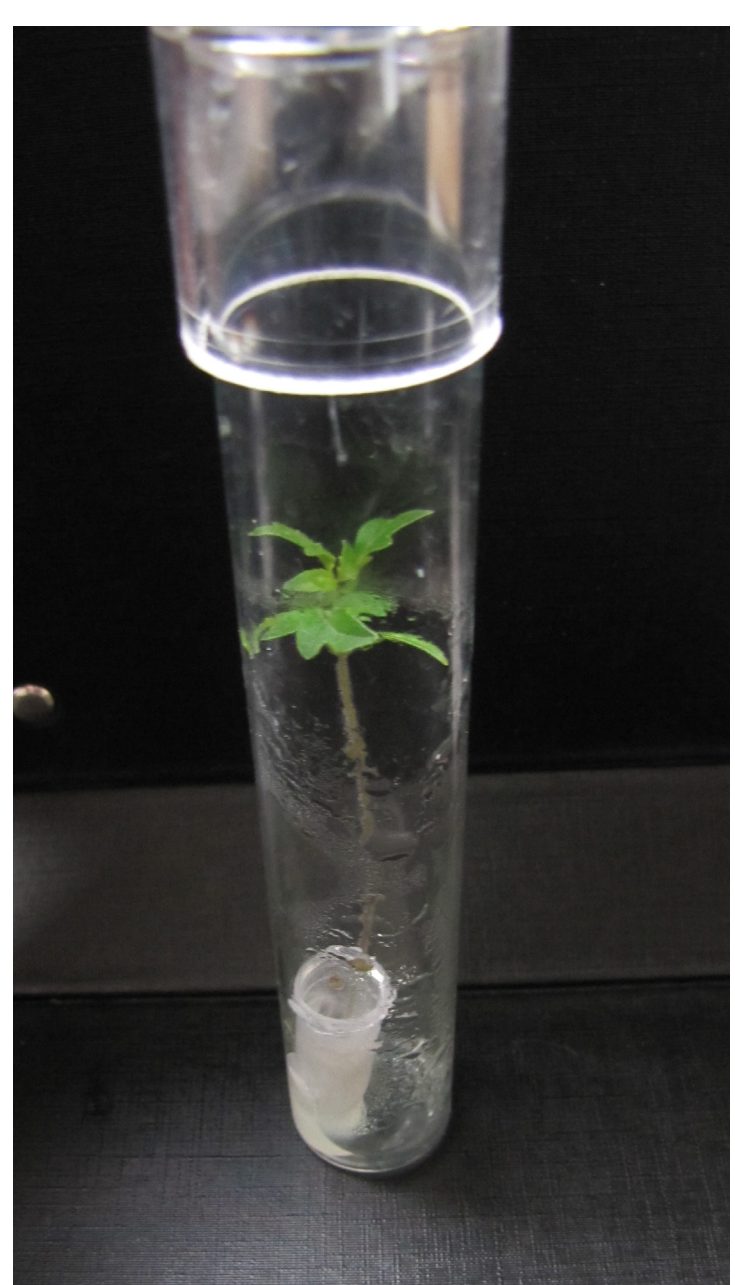
Introduction

In Plant Microbial Fuel Cells (Plant-MFC) rhizodeposits are converted into electricity by anaerobic bacteria. Currently, root exudation is a limiting factor in Plant-MFC functioning. Exploiting genetic variation could lead to increased root exudation. However, quantitative study of exudation is hampered by bacterial breakdown of exudates in the root zone.

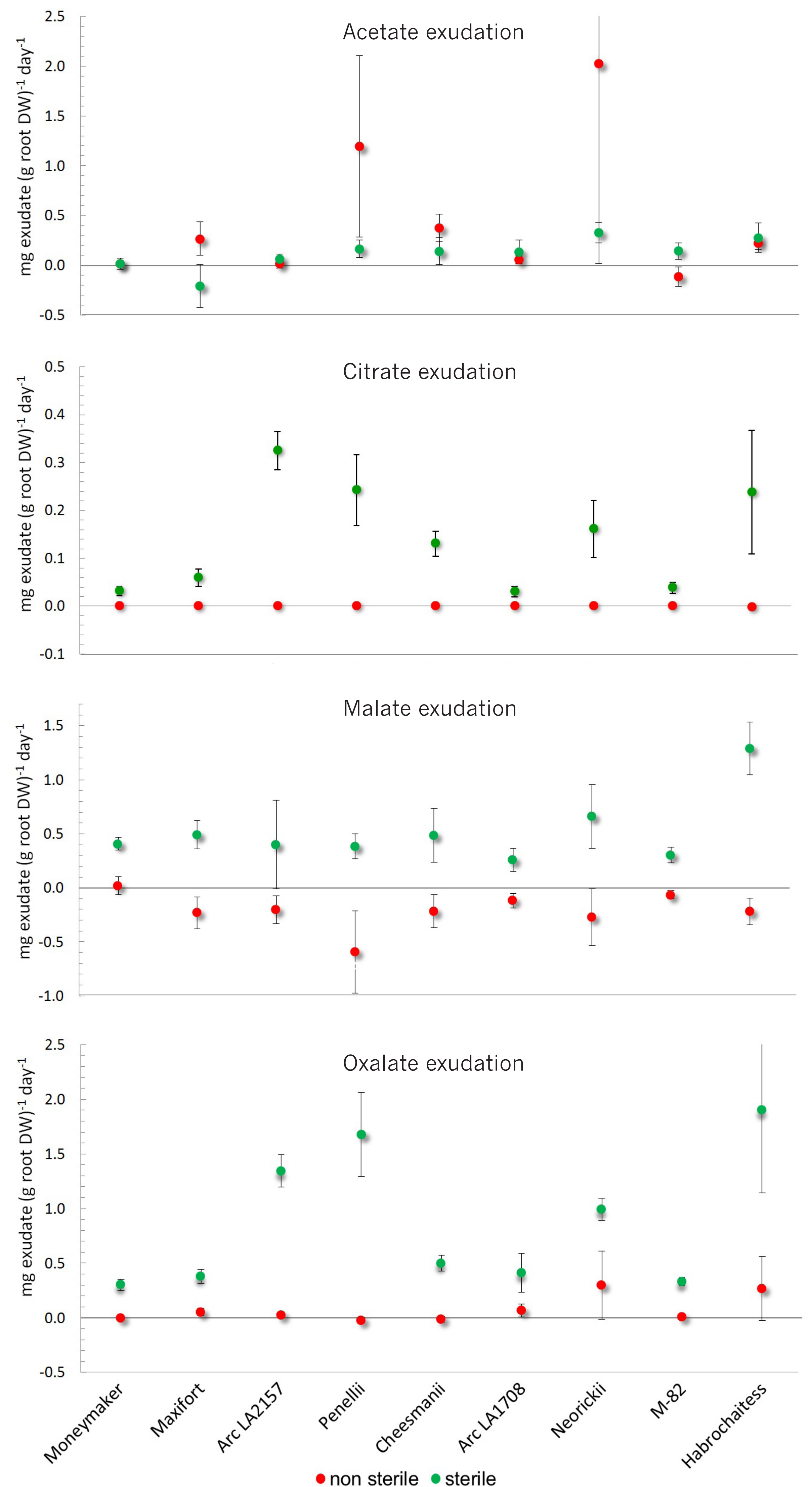
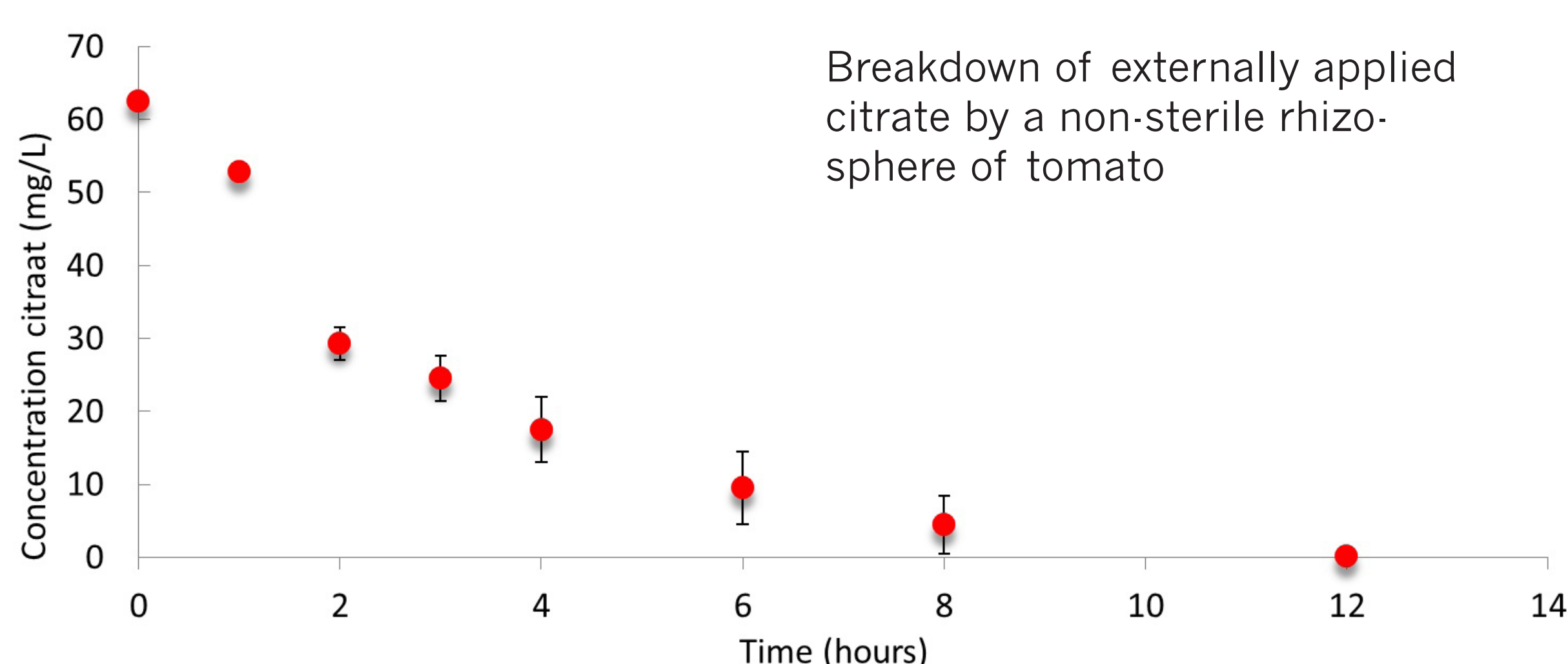


Method

A new system was developed that allows to grow tomato and rice plants with sterile roots systems for over nine weeks, while the shoot is exposed to normal greenhouse conditions. A genetically diverse test set of five wild and three commercial tomato genotypes was screened for exudation of organic acids. Exudation was measured using HPLC.



Results



Conclusion

- In a non-sterile rhizosphere, there is rapid breakdown of exudates.
- This breakdown was minimized in the newly developed sterile system.
- We showed that there are considerable differences in exudation between tomato cultivars.
- This creates new possibilities in terms of breeding for reduced or increased exudation.