ABSTRACT TITLE: *Aeromonas media* in compost amendments contributes to the suppression of *Pythium ultimum* in cress

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INTRODUCTION AND AIM

- Soil-borne diseases such as damping-off caused by *Pythium ultimum* (Pu) are responsible for high yield losses in organic vegetable production and are difficult to control.
- Compost amendments can improve survival and growth of plants in infested soils.
- Not all composts are equally disease suppressive and little is known about the microbial species directly involved in disease suppression.

The aim of this study was to:

- Evaluate the suppressiveness of different composts.
- Analyze the microbial population from suppressive Vs. non-suppressive compost.

MATERIAL METHODS

- Cress was grown in a standard peat substrate amended with either coconut fiber (conducive control) or composts differing in their disease suppressive abilities (Comp1/Comp2) in presence of increasing concentrations of *Pythium ultimum* grown on millet (0-4g/l substrate).
- Bacteria were isolated from the rhizoplane and the most abundant species determined by Maldi-Tof MS.
- The most abundant bacterial species isolated from protected plants was added to the substrates to evaluate its role in disease suppression.

RESULTS

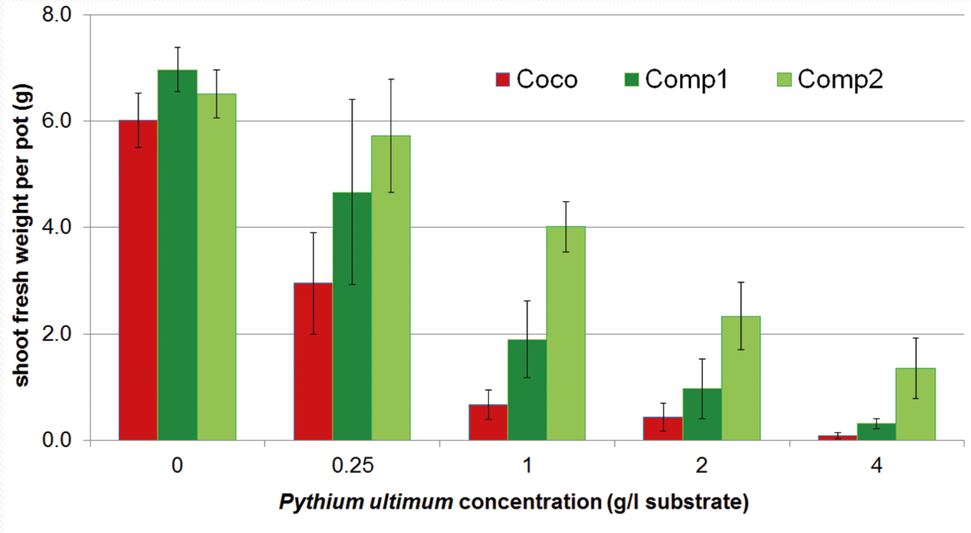

Figure 1. Suppression of damping-off of cress by compost amendments.

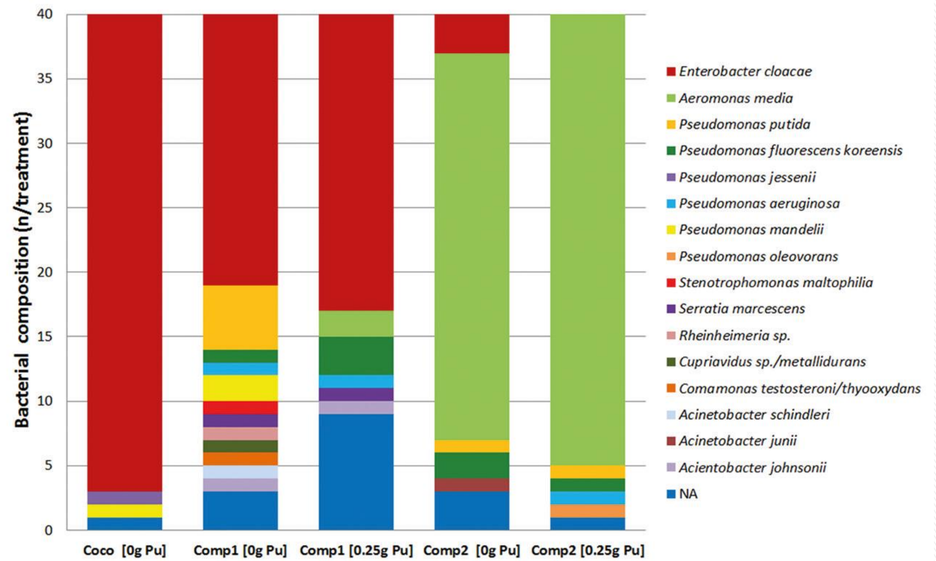

Figure. 2. Bacterial composition of cress rhizoplane in function of disease suppression. MALDI-TOF MS analysis of the most abundant rhizoplane bacterial isolates.

Figure 3a. Illustration of the Cress-*Pythium ultimum* system. Cress grown in standard peat substrate amended with either coconut fiber (above) or compost (below).

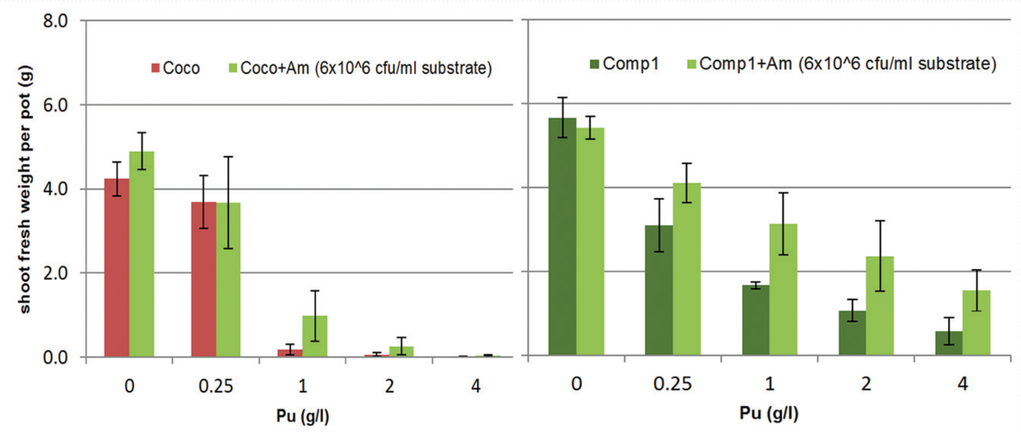

Fig. 3b. Effect of addition of *Aeromonas media* (Am) to standard peat substrate amended with either coconut fiber ("Coco", left) or compost ("Comp1", right).

CONCLUSION

- Comp1 and Comp2 differed in suppression of damping-off (Fig. 1).
- The bacterial composition was essentially different with *Aeromonas media* being the main species present in the highly suppressive compost whereas *Enterobacter cloacae* was the dominating species in the less suppressive compost as well as in the conducive control (Fig. 2).
- Addition of *Aeromonas media* improved suppressiveness against *P. ultimum* of less suppressive compost to the level of the highly suppressive compost (Fig. 3b).

Conclusion

- The presence of *Aeromonas media* in composts contributes to disease suppression at least in this particular test system.