

SUPPRESSIVENESS TO SOILBORNE PATHOGENS IN POTTED VEGETABLES OF COMPOSTS FROM DIFFERENT ORIGINS

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The composting process and the type and nature of wastes and raw materials influence the maturity, quality and suppressiveness of composts. Variability in disease suppression also depends on the pathosystem, on soil or substrate type, on chemical-physical conditions, like pH and moisture, and on the microbial component of compost.

The aim of this research was to evaluate the suppressiveness of composts, originated from green wastes and/or municipal biowastes, and produced by different composting plants located in Europe.

The composts were tested against soil-borne pathogens in greenhouse (Fig. 1) on potted plants: *Pythium ultimum*/cucumber, *Rhizoctonia solani*/bean.

Composts were blended with a peat substrate at different dosages (1, 10, 20 and 50 vol./vol.) 14 days before seeding or transplanting. *P. ultimum* and *R. solani* were mixed into the substrate at 0.5 and 1 g of wheat kernels L⁻¹ 7 days before seeding. Seeds of cucumber and bean were sown into 2 L pots in greenhouse. The number of alive plants was counted and above ground biomass was weighed 30 days after seeding.



Figure 1 - Suppressive trials carried out on potted plants in greenhouse.

Figure 2 - Control of *Pythium ultimum* by different composts on potted cucumber plants.

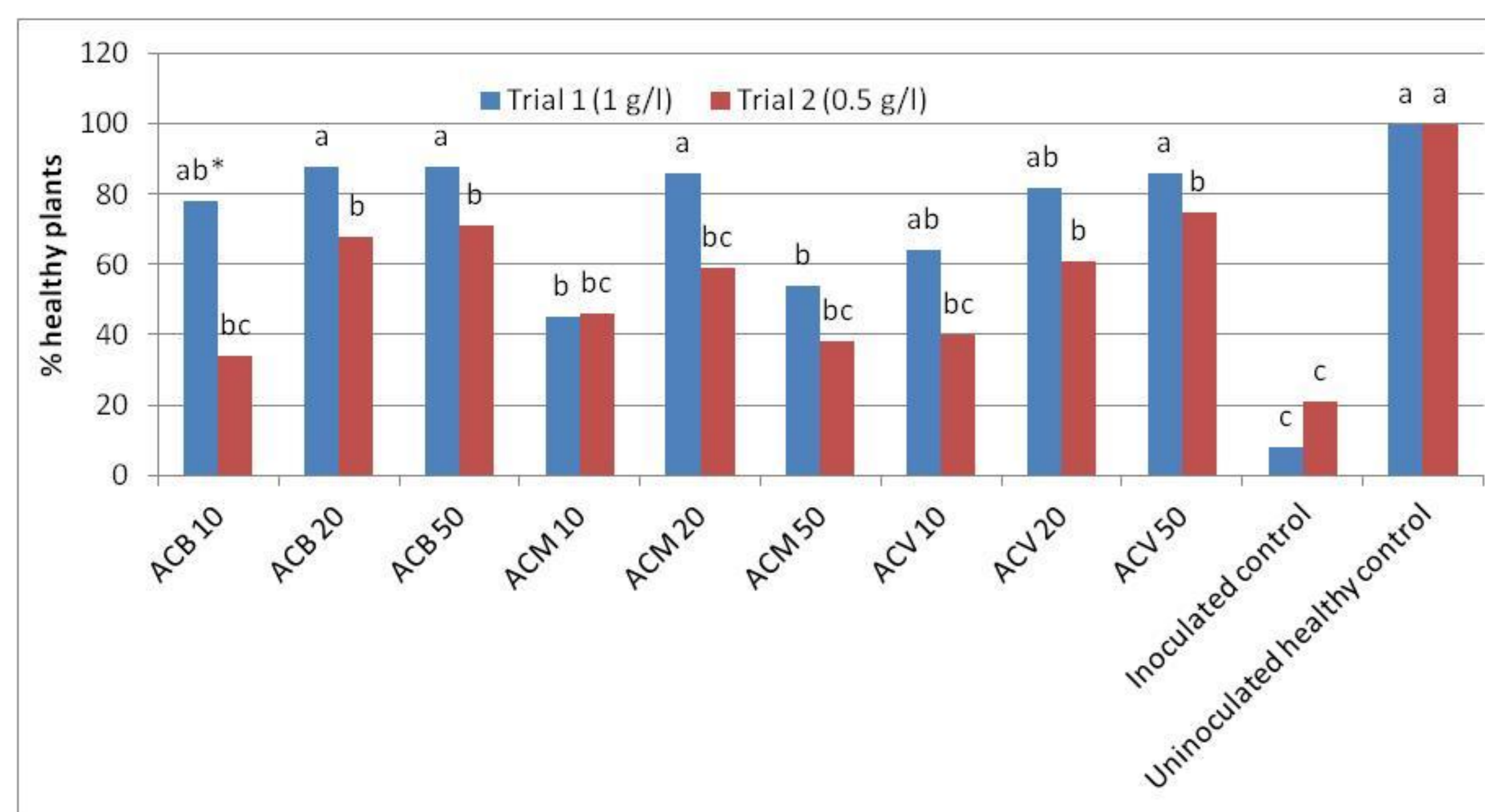
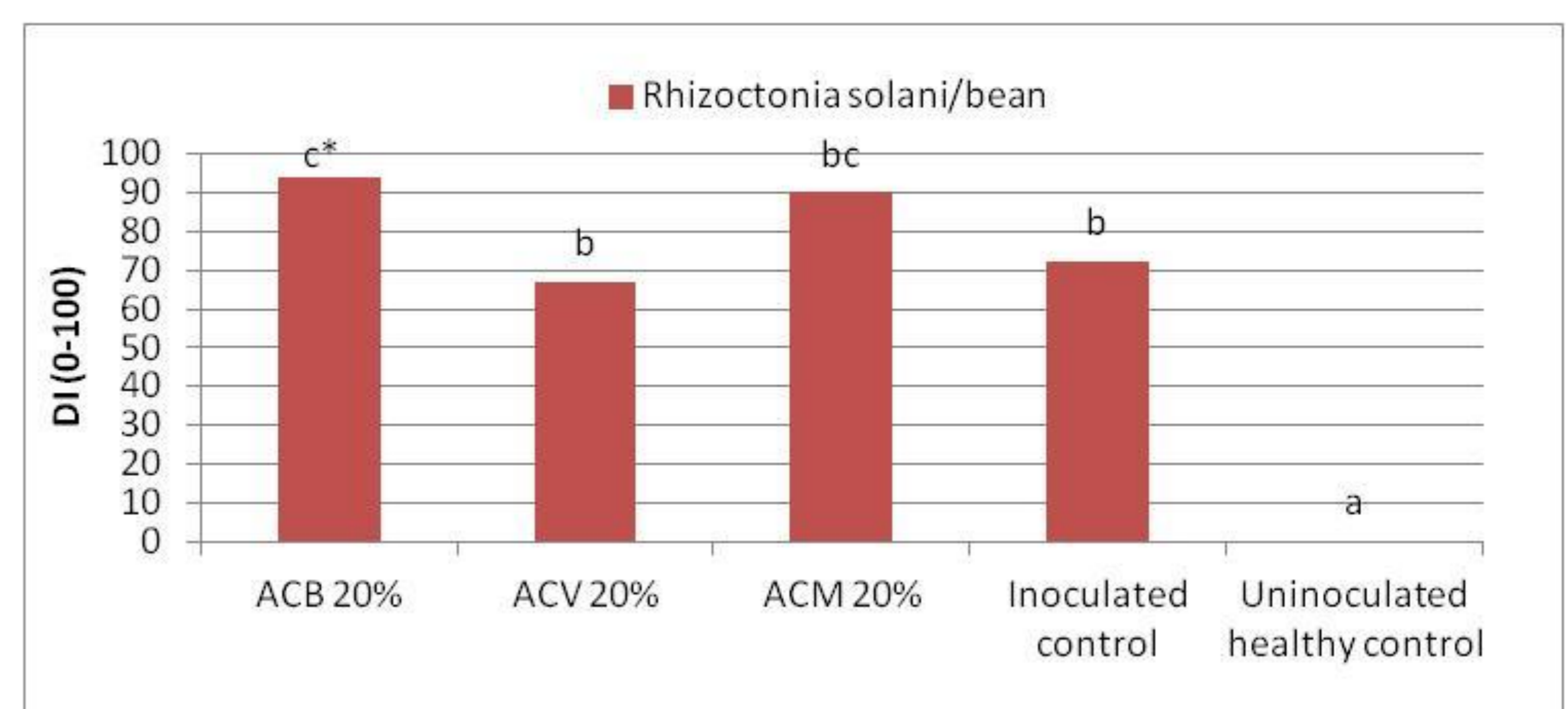


Figure 3 - Control of *Rhizoctonia solani* by different composts on potted basil and bean plants.



* Tukey's HSD test (P < 0.05) within each trial

ACB = compost from 1/3 of green wastes plus 2/3 of digestate from municipal biowastes, in a windrow composting system in open area.

ACM = compost from 1/3 of green wastes and 2/3 of municipal biowastes, in a in vessel composting system.

ACV = compost from green wastes, in a windrow composting system in open area.

Municipal compost produced from digestate of municipal wastes (ACB) generally showed to control diseases caused *P. ultimum* better than a traditional municipal compost (ACM) (Fig. 2). Moreover, traditional municipal compost (ACM), showed to be more phytotoxic when applied at high dosages (50% v/v).

Green compost (ACV) reduced diseases caused by *P. ultimum* and was not phytotoxic when applied at high dosages (50% v/v) (Fig. 2).

In the case of *R. solani* on bean, one municipal compost (ACB) increased the disease, while no effect were observed by green compost and by the other municipal compost (ACM) (Fig. 3).

The use of compost can be a suitable strategy for controlling soil-borne diseases on vegetable crops, but results depends on type of composts, application rates and soilborne pathogens.