Inducibility of resistance in tomatoes against *Phytophthora infestans* by plant strengtheners

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Introduction

Induced resistance through plant strengtheners (PS) could be part of alternative strategies for the control of late blight, of tomatoes caused by *Phytophthora infestans*. Most tests of PS have been done under standard conditions and there is little information on interactions that might occur among different products.

Results

- BABA reduced disease on all varieties significantly while effects were variety specific for Quality (Fig 2).
- There were no effects of soil amendment on the reaction of Matina. In 2 out of 3 experiments, Quality and Ausma both reduced plant susceptibility significantly (Fig 3).
- Adult plants of the cv. Philovita fertilized with Biofeed basis were more resistant than when fertilized with horn meal. The use of Quality enhanced this effect (Fig 4).

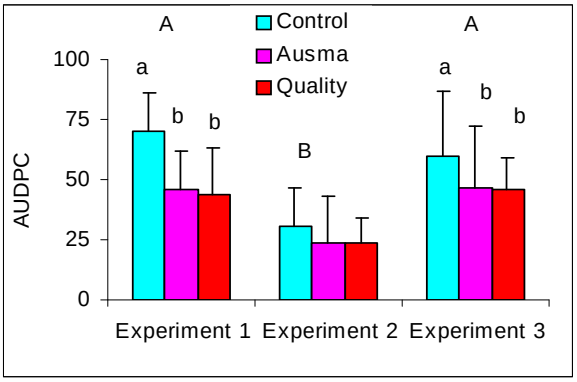

Fig 3. Late blight severity (AUDPC) on cv. Matina grown in field soil in glasshouse conditions. Different upper case letters indicate significant differences among experiments, lower case letters indicate effects of PS within experiment (P≤0.05, LSD).

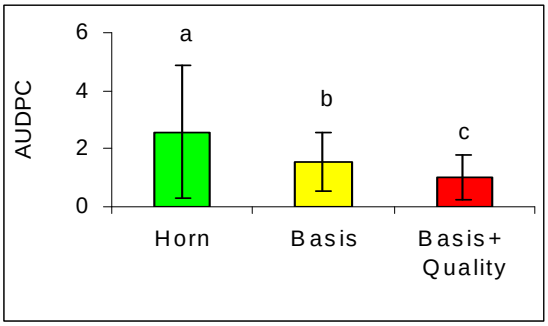

Fig 4. Disease severity on adult container grown plants of Philovita fertilized with Biofeed basis or Horn meal. Additional effect of Quality. Error bars= ±SD. Different letters indicate significant differences (P≤0.05, Tukey).

Control

Induced with Quality

Fig. 1. The two first lateral leaflets of the youngest leaves were inoculated with 20µl drops of a solution of $5*10^4$ sporangia ml^{-1}.

Methods

The effects of PS Quality (Agro Bio products) were tested on detached leaves of young plants (Fig. 1) of 8 tomato cultivars grown in standard soil in the glasshouse. In a second experiment, effects of Quality and another PS, Ausma were tested on cv. Matina grown in an organic field soil and fertilized with horn meal or Biofeed basis.

The effects of Biofeed basis with or without Quality were compared to horn meal application on container grown adult plants of cv. Philovita from a plastic tunnel.

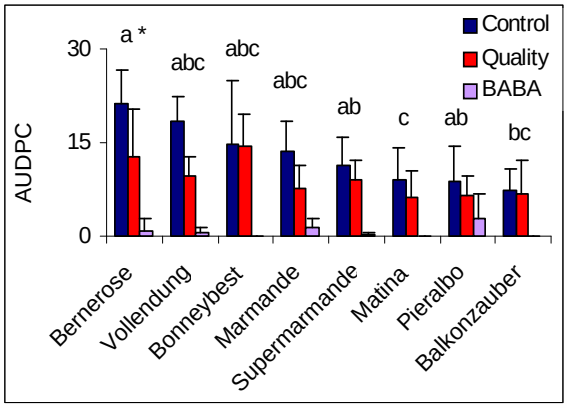

Fig 2. Area under the disease progress curve (AUDPC) on 8 tomato cultivars grown in standard soil and treated with water, Quality, or BABA. Significant differences among tomato cultivars are marked with different letters above the bars (P≤0.05, Tukey-Kramer). Significant effects of Quality are marked with *. Effects of BABA were all significant.

Discussion and Conclusion

Quality reduced the susceptibility of tomatoes independent of plant age, growth substrate or fertilizer used.

In an additional unrepeated experiment using PEN and 12 varieties, all cultivars were induced with no cultivar interactions. If these results hold true, then Quality and PEN might trigger different interactions by the plants.

➔ The variety specific effects of Quality indicate that there might be genetic effects that could be explored by breeders.

➔ Exploitation of the underlying mechanisms triggered by PS and possible synergistic effects of these could contribute to better resistance in the future.

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