



Elicitor induced defence responses against bacterial soft rot in *Zantedeschia*

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Introduction

Soft rot in flower bulbs causes economic losses up to eight million Euros per year. Bulbous ornamentals such as Hyacinthus, Dahlia, Iris, Muscari, Freesia and *Zantedeschia* can be infected.

Soft rot in *Zantedeschia* (calla lily) is caused by *Pectobacterium carotovorum* subsp. *carotovorum* (Figure 1 A-C).

Material & Methods

Two commercial elicitors and two pure compounds were tested for their efficacy in reducing disease development by induced resistance. *Zantedeschia* plants were grown at 18-20°C and sprayed every 10 days (2.5 ml/plant; 6 replicates per treatment). The experiment was performed twice (in 2012 and 2013).

Treatments:

- Salicylic acid (SA; 2.8, 28 and 56 mg/l)
- Argicin Plus (0.2, 2.0, 4.0 ml/l)
- Experimental Product B (10, 100 and 200 mg/l)
- Jasmonic acid (0.22 and 1.12 g/l)
- Water (control)

Measurements after 4-6 applications:

- SA content in leaves using LCMS (1 mixed sample/treatment)
- *In vitro* lesion development on leaf disks (2 cm Ø; 4 disks per plant) after artificial wounding, inoculation with *Pectobacterium* (10^6 CFU/ml, 10 µl per leaf disk), and 2 days incubation at 23°C
- *In vivo* disease development at 18-20°C after inoculation with *Pectobacterium* (10^9 CFU/ml).

Results

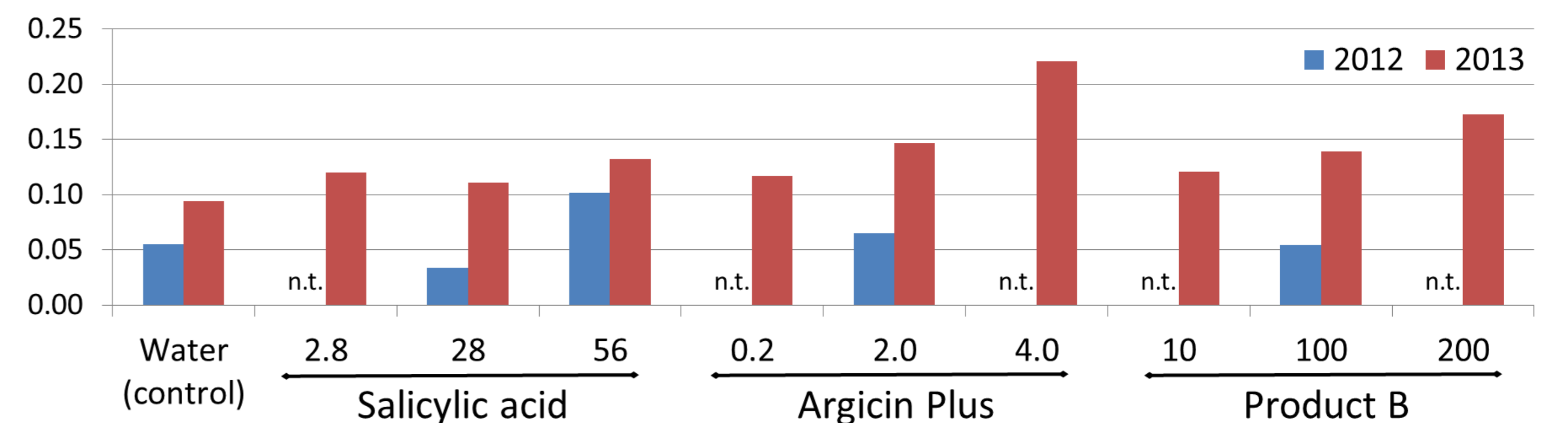


Figure 2: Salicylic acid content in leaves ($\mu\text{g/g}$ fresh weight) after spraying treatments in 2012 and 2013 (n.t. = not tested).

Lesion development on leaf discs (Figure 1D) showed no significant effects of treatments on reduction of leaf tissue maceration in 2012. In 2013, all treatments with Argicin Plus and Product B showed reduction of macerated tissue compared to the control treatment.

Disease development

(*in vivo*) was minimal with no differences between treatments, except for the jasmonic acid treatment which showed phytotoxicity (stunting and chlorosis of the leaves, Figure 3).



Figure 3: Phytotoxic effects induced by jasmonic acid.

Conclusion

Results were inconsistent between years. In 2013, a negative correlation occurred between SA content in leaves and *in vitro* lesion development induced by Argicin Plus and Product B. The experiment will be repeated in 2014.



Figure 1: Soft rot by *Pectobacterium* in *Zantedeschia* bulb (A), leaf (B), stems (C) and *in vitro* lesion development on leaf discs (D).

