



The effect of microorganism application on organic seed production of broccoli and cauliflower cultivars grown in Sicily

BRESOV

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Background

With the F2F and Biodiversity Strategies the European Commission has set ambitious goals to transform the European Food System.

Aiming to reach 25% organically managed land, more organic seed must be produced. However, seed production in organic conditions faces several challenges (1).

Aim and Methods

The aim of the study was to assess whether the addition of trace elements and microorganisms improves seed yield and quality in organic brassica seed production. Six broccoli and two cauliflower cultivars were grown at an organic certified farm in Sicily. Two products from ITAKA Crop Solutions, Ammino Complex Extra (ACE) and 3KO (*mycorrhizae*, rhizosphere bacteria,



Trichoderma harzianum, *T. asperellum*, *T. atroviride*), were applied in two different doses (D1: 3KO 5 kg/Ha, ACE 80 Kg/ha and D2: 3KO 10 Kg/Ha, ACE 160 kg/Ha) and compared to a control w/o application (D0). Seed parameters such as seed harvest per sqm (g), Thousand Seed Weight (TSW) and seed germination were evaluated. The effects of genotypes and nutrition were analyzed for each parameter (ANOVA/Tukey's HSD, $P \leq 0.05$)

Results

Genotypes showed significant differences in produced seeds per sqm and TSW. The seed production per sqm ranged between 26.8 ± 17.8 g (cauliflower 'Palla di Neve') to 306 ± 78.9 g (broccoli 'Nostrale') per sqm. Taken all genotypes together, D2 yielded significantly more seeds per sqm compared to D0 (103.7 ± 93.9 g and 72.7 ± 69.1 g, respectively) (Fig. 1)

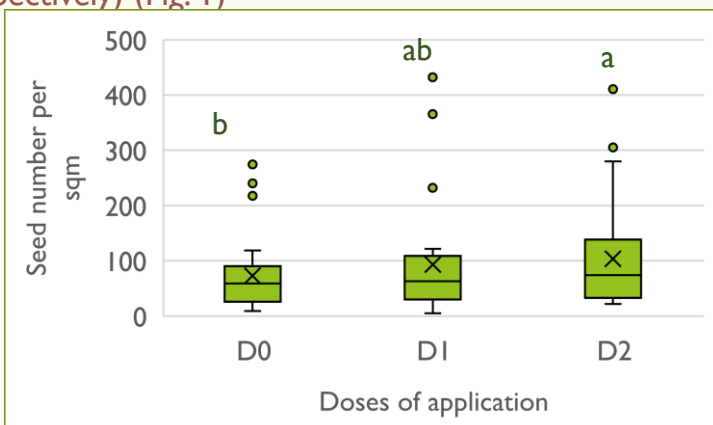


Fig. 1: Seed number per sqm in eight brassica cultivars grown with two different doses of microorganism application (D1,D2). D0: control.

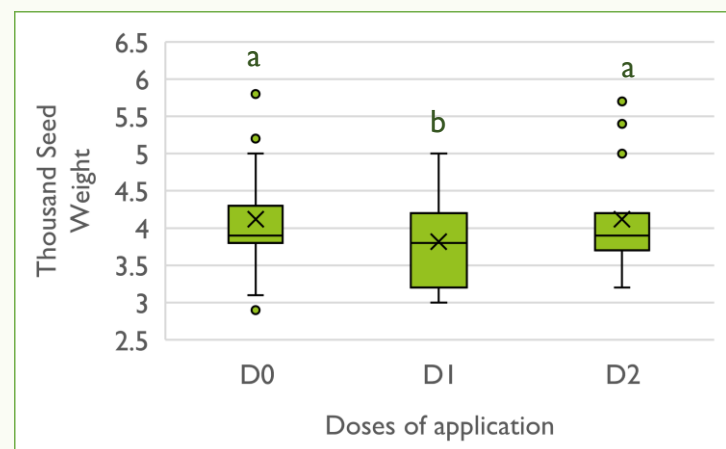
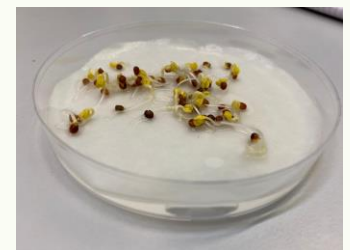


Fig. 2: Thousand Seed Weight of eight brassica cultivars grown with two different doses of microorganism application (D1,D2). D0: control.

TSW was significantly affected by genotypes, treatment and the interaction between both (data not shown). TSW was lower in D1 compared to D0 and D2 (Fig. 2).

Germinability (%) of the accessions grown at three different doses of fertilizer was high for all treatments (D0: 88%, D1: 90.3%, D2: 87%).



Conclusion

Our results indicate that, especially in marginal soils and extreme climatic conditions, the treatment with mycorrhiza and amino acids can positively affect organic seed production in brassica in organic conditions. The observed differences between genotypes in seed yield and the interaction of genotypes and nutrition on TSW highlight the importance of choosing suitable cultivars under suboptimal climatic conditions.

References

- 1) E.T. Lammerts van Bueren, P.C. Struik, E. Jacobsen (2003): Organic propagation of seed and planting material: an overview of problems and challenges for research, NJAS - Wageningen Journal of Life Sciences, Volume 51, Issue 3, 263-277.



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