

Assays of *in vitro* pollen germination of *Actinidia deliciosa* (A.Chev.) C. F. Liang & A. R. Ferguson

Mariana Neves, José Marques, Filomena Morgado, Renato Silva, João Martins, Jorge Canhoto

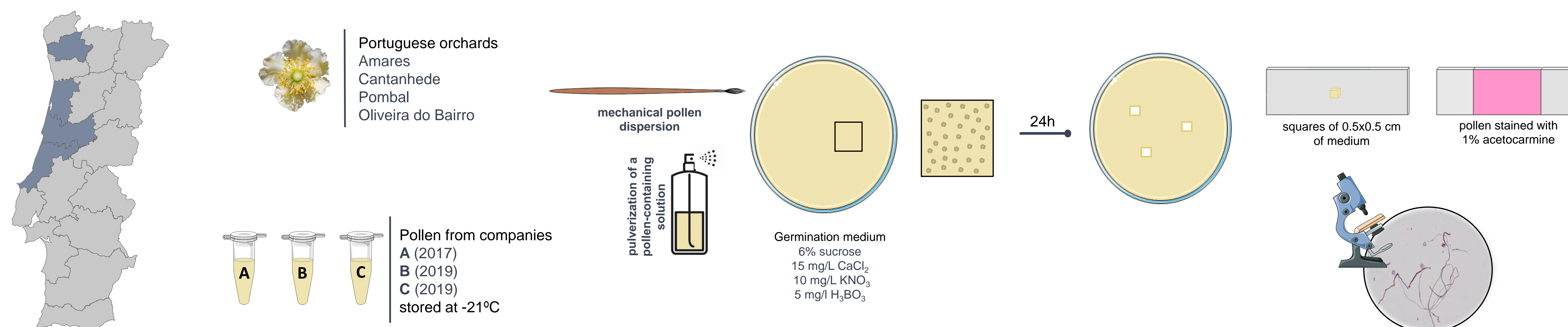
Centre for Functional Ecology, Department of Life Sciences, University of Coimbra, 3000-456 Coimbra, Portugal

mariananevespt@gmail.com



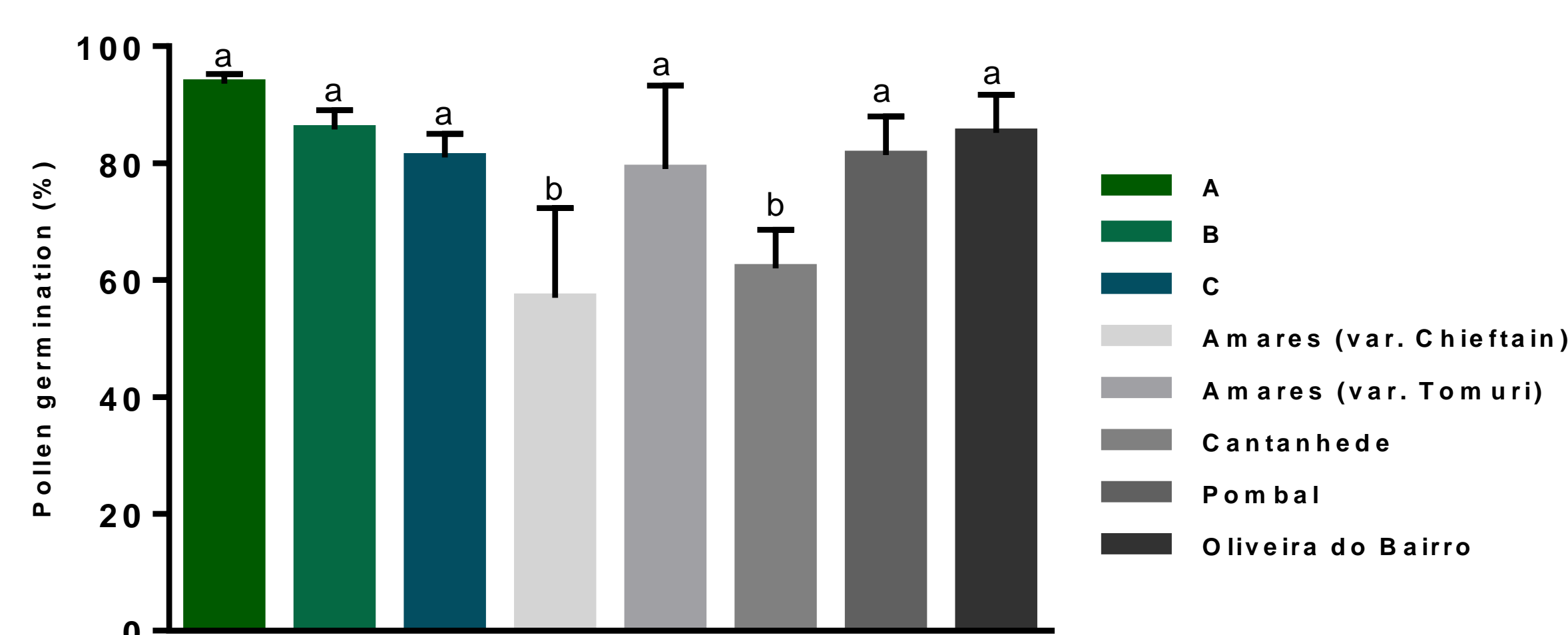
Actinidia deliciosa (kiwi), is a woody vine largely cultivated in Portugal due to its edible fruits, the kiwifruit or Chinese gooseberry. Being a dioecious species, pollination occurs naturally when male plants are mixed among the female ones or when artificial pollination is carried out. In this last situation, farmers buy the pollen or use pollen themselves collect. Pollen quality must be evaluated and effective methods of pollination and conservation developed. In the field, artificial pollination can be achieved through mechanical pollen dispersion or pulverization of a pollen-containing solution. A simple way to assess pollen effectiveness is to perform *in vitro* germination. In this regard, pollen from three companies, here named (A, B and C) as well as pollen from Portuguese orchards were analysed. The ability of these pollen samples to germinate was tested and different ways to conserve it analysed.

MATERIAL & METHODS



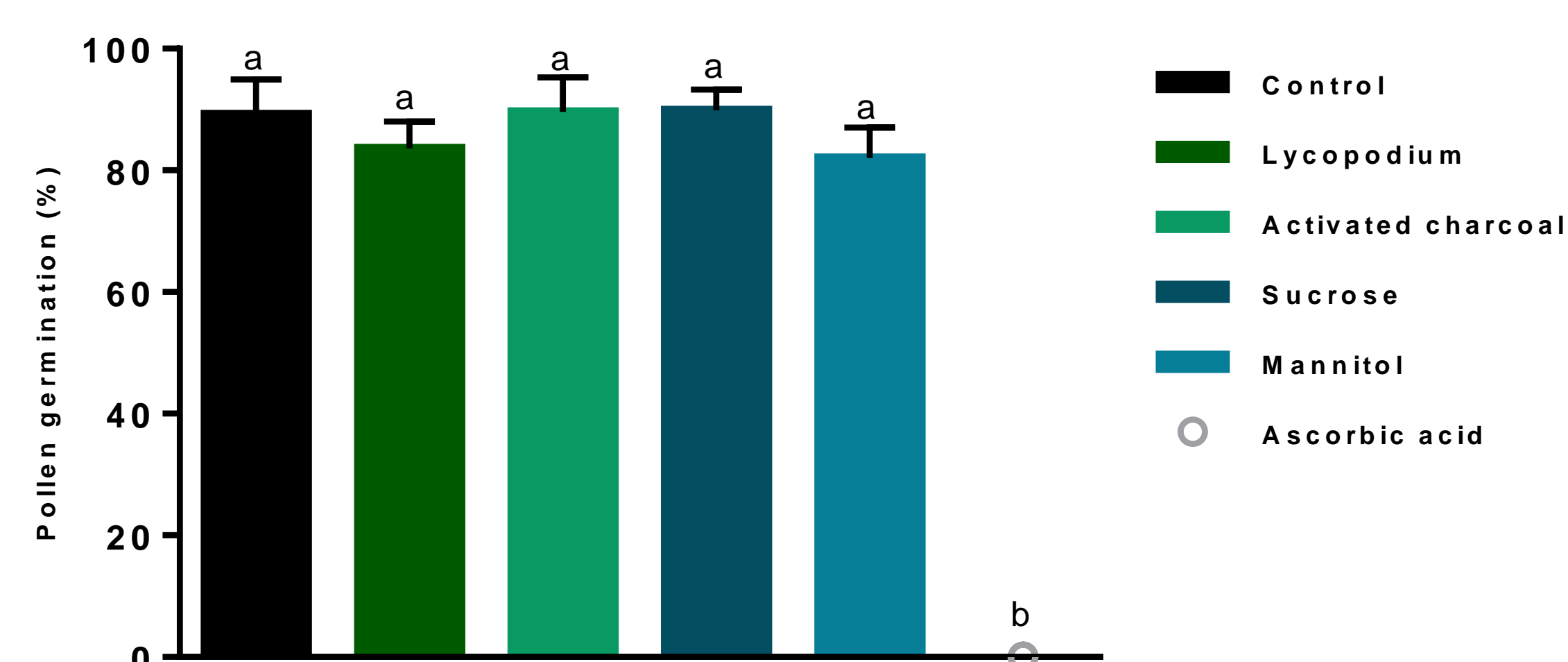
RESULTS

Pollen viability from different origins



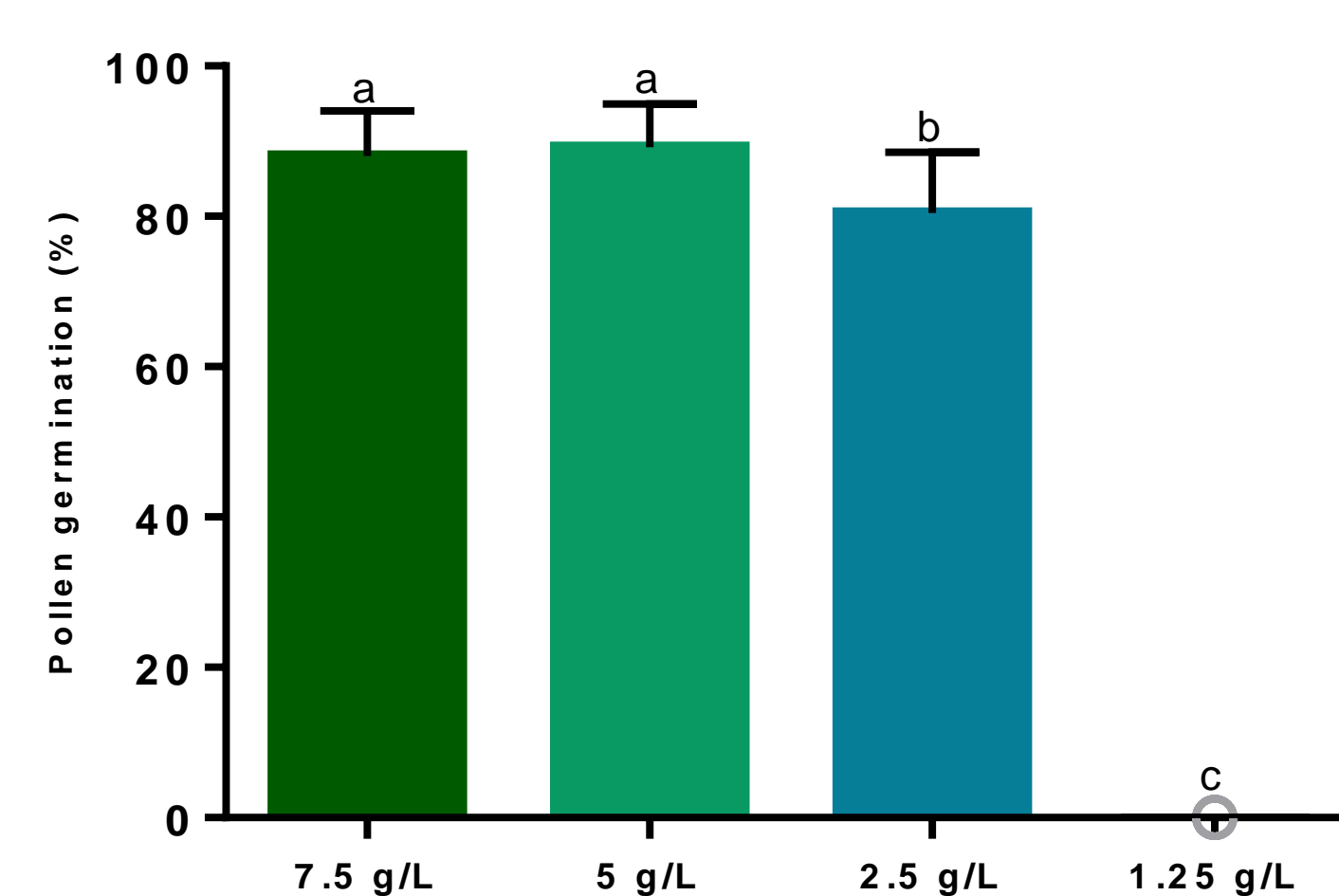
Pollen viability from different origins. Pollen was mechanically dispersed in germination medium. The first three samples represent pollen from three companies and the other samples are from Portuguese orchards. Means were statistically compared using one-way ANOVA followed by a Tukey's test (different superscript letters indicate significant differences at $p < 0.05$).

Effect of different compounds on pollen germination

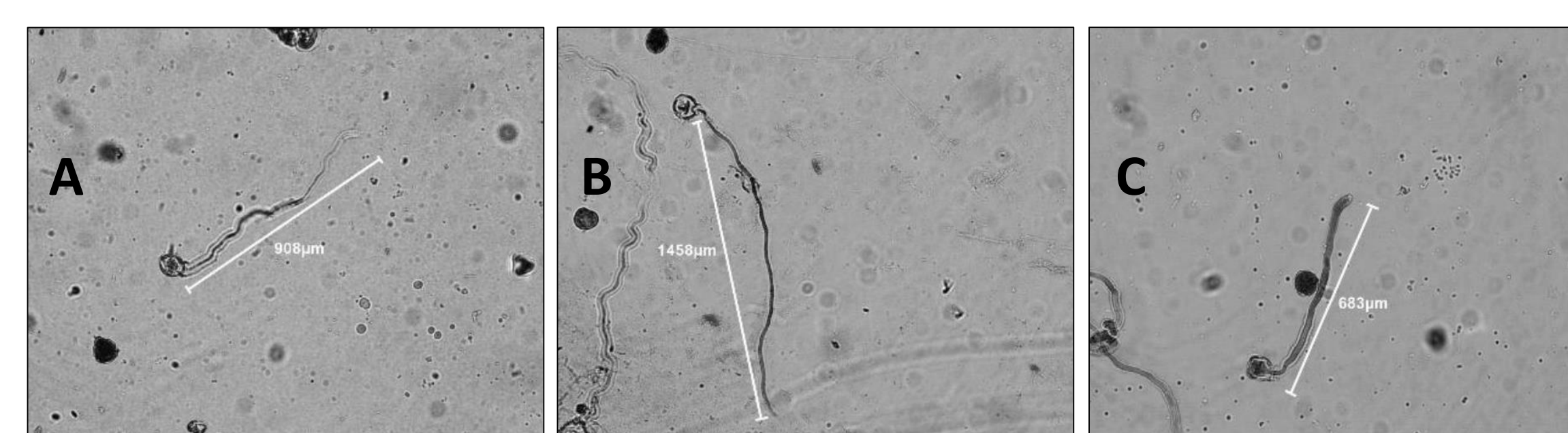


Effect of different compounds on pollen germination after a 24h period. A pollen-containing solution (5 g/L) with each compound (ratio 1/2) was pulverized in germination medium. Means were statistically compared using one-way ANOVA followed by a Tukey's test (different superscript letters indicate significant differences at $p < 0.05$).

Effect of different pollen densities on germination



Effect of different densities on pollen germination after a 24h period. A pollen-containing solution (7.5-1.25 g/L) was pulverized in germination medium. Means were statistically compared using one-way ANOVA followed by a Tukey's test (different superscript letters indicate significant differences at $p < 0.05$).



Optical microscope observations (x20) of germinated pollen after a 24h period. (A) Pollen without any hormonal/compound application. (B) Pollen with hormonal application of BAP+GA₃ (1 mg/L each). (C) Pollen with hormonal application of GA₃ (1 mg/L).

CONCLUDING REMARKS

- ✓ Pollen bought from companies (A, B and C) and pollen from orchards had similar viability, with germination rates around 90%.
- ✓ Only pollen from two orchards (Cantanhede and Amares) displayed lower germination percentages (around 60%).
- ✓ Pollen germination was inhibited by ascorbic acid.
- ✓ The presence of hormones stimulates pollen germination as well as contributes to a higher length of pollen tube.
- ✓ A lower pollen density seems to be a limiting factor for an efficient germination.
- ✓ Pollen can be kept at -20 °C without loss of its germination potential.