

Abstract

This investigation was carried out during two successive seasons (2001/2002 and 2002/2003) on three citrus rootstocks, namely, sour orange (*C. Aurantium*), Volkamer lemon (*C. volkameriana*) and Cleopatra mandarin (*C. reshni Hort.exa. Tanaka*) to study the effect of two bio-fertilizers (*Azotobacter chroococcum* and *Azospirillum brasilense*) and two soil growing media (sand + peat moss and sand + compost) on the germinability of seeds of these rootstocks, as well as on the growth of transplants and budded seedlings.

- Germination percentage of seeds germinated on medium consisted of sand plus peat moss and inoculated by *Azotobacter* was better than those germinated in sand plus compost. Sour orange rootstock gave the highest percentage of seed germination.

- Post emergence damping off and albinosis percentages of seeds inoculated by a mixture of the two inocula and germinated on medium consisted of sand + compost were the best in this respect. Cleopatra mandarin was superior in case of wilting and albinosis percentage.

- Seedlings inoculated by *Azotobacter* and /or *Azospirillum* produced the highest values of growth parameters .

- Results revealed that leaf mineral contents (macro and micro elements) as well as total carbohydrates and total indoles of seedlings inoculated by *Azoto.chro.* and /or *Azospirillum* and grown on sand+ compost were higher than those of seedlings grown on sand + peat moss at budding and after budding with valencia orange scion.

- Vegetative growth parameters of valencia orange scion increased when rootstocks were grown on sand + compost inoculated by a mixture of *Azotobacter* and *Azospirillum* .

- It could be concluded that, inoculation by *Azotobacter* or *Azospirillum* in the presence of sand plus peat moss as growing medium is recommended for citrus seed germination. However, the use of compost and inoculation by a mixture of the two above mentioned bio-fertilizers is promising for obtaining healthy and cheaper budlings.

Key words: Bio-fertilization, *Azotobacter*, *Azospirillum*, citrus rootstocks, sour orange, volkamer lemon, Cleopatra mandarin, growing media, seed germination, growth parameters and leaf chemical composition.

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