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Effect of different coir types on growth, leaf nutrient concentration and antioxidant activity of spinach

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The aim of this study was to evaluate the effects of commercial substrates: peat and three different qualities of the coir (Cocopeat, Coir – Medium and Coir - Crush chips) on plant growth, phytochemicals levels, and antioxidant activity in spinach (Spinacia oleracea L. cv. Manatee) grown an unheated greenhouse during the winter. Soil blocked spinach seedlings (five seedlings per block) were transplanted (on 16 February 2017) at 18 days after emergence into to Styrofoam planting boxes (100-cm long × 25-cm wide × 10-cm high) filled with 14 L of substrate. Each planting box was fertigated daily by drip with a complete nutrient solution. The nitrate concentration and pH in drainage water were higher in coir-chips, than the others substrates. Fresh yield, shoot dry weight, leaf area in cocopeat and coir-medium were similar to those obtained in peat. Leaf concentration for Most leaf nutrients in cocopeat and coir-medium did not differ from those observed in peat and they were within the recommended range. Leaf-blade phytochemical accumulation was affected by substrate type. Total phenols level was higher in cocopeat and peat. The peat presented the high values of ascorbic acid and DPPH-antioxidant activity followed by cocopeat. The findings indicate that coir could be an alternative to peat for soilless spinach production but depend on coir type.

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Peculiarities of Alliums seed germination under different growing media and environment conditions

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Low quantity of seeds of valuable breeding material is a limited factor for creation of a new cultivar. The aim of investigation was to evaluate the influence of growing media and environment for germination of onion, chives and garlic seeds. Three experiments were carried out at the Institute of Horticulture: seeds were placed in the Petri dishes with moistened filter paper under air temperature at 27°C±1°C, RH 90%; seeds were sown on the peat and sand (3:1) substrate in the greenhouse at 21°C±3°C temperature and in the open field under non controlled conditions. 60 seeds of each plant species were tested. Vigour of seed was counted after 5 and 10 days of sowing and germination after 14 days.

Analyse of seeds using tetrazolium chloride before investigation showed that 91% of onion, 80% of chives and 19% of garlic seeds were viable. Onion seeds showed the highest germination ability up to 88% of the tested Allium species in all experiments. The germination rate for chives was 77% and for garlic 1%.

Results showed the significant differences in germination of Allium seeds caused by different growing media and environment condition. The highest germination of seeds was observed in the peat and sand substrate. The