Abstract Book

Innovating Plant Nutrition

XVII Simpósio Luso-Espanhol de Nutrição Mineral das Plantas

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Large amounts of spent coffee grounds residues are generated in the world due to widespread coffee beverage consumption. These can represent serious environmental problems, although opinions diverge, and some consider these residues as a valuable asset. Recycling them may contribute to circular economy and the protection of natural resources. Recently, their application in small-scale vegetable production in house gardens is being discussed, and espresso coffee grounds may be interesting for plant nutrition and an alternative to artificial fertilizers. Two experiments were carried out to evaluate the effect of fresh espresso coffee grounds amendment in the germination and growth of selected plant species: lettuce (Lactuca sativa L.), spinach (Spinacia oleracea L.), basil (Ocimum basilicum L.), stevia (Stevia rebaudiana (Bert. Bertoni)) and vervain (Verbena sp. L.). Plants were germinated in the absence and presence of the residue, in different doses, that was combined or not with mineral NPK fertilizer. The addition of fresh residue did not result in more effective germination. In fact, high application rates resulted in an inhibition of emergence seeds/seedling in all the species. However, high rates resulted in more organic matter and nitrogen content in the substrate, despite promoting the reduction of availability of phosphorus and potassium. Although the single use was found to be uninteresting, the combination of spent coffee grounds with a NPK fertilizer revealed positive impacts on plants development, suggesting a good potential for small scale and domestic use of this residue, and for partial replacement of mineral fertilizers. As the positive effects are species dependent, more research is needed to determine the effects of applying coffee grounds and soil/substrate mixtures above ground in vegetable production. Also the real effect of caffeine on leaves and stalks of plants when the fresh residues were applied to the soil/substrate need to be properly investigate.


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