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Effects of reusing coir-based substrates with municipal compost and biochar on growth and phytochemical accumulation in lettuce

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Abstract:
This research aimed to evaluate the influence of reusing as growing media, five blends of coir, with municipal organic compost, biochar, perlite and pine bark on growth and phytochemical accumulation in lettuce. The tested growing media blends were coir (new) and four reused mixtures: coir:biochar:perlite, coir:compost:perlite, coir:biochar:pine bark, and coir:compost:pine bark. All mixtures had already been used to grow transplanted spinach and had the ratio between the three components was the same (78:12:10%, *v*/*v*). Lettuce (*Lactuca sativa* L. 'Godzilla') seedlings were transplanted into Styrofoam plant boxes. The planting boxes were drip irrigated daily with a complete nutrient solution. Shoot dry weight and head fresh yield in reused mixes were similar to those obtained from coir. The fresh yield of lettuce heads ranged from 4.6 to 4.9 kg m^{-2}. Leaf total phenols of the plants grown in reused mixes were higher or equal to those grown in coir. Leaf anthocyanin and flavonoid contents were unaffected by substrates. These findings suggest that coir-based growing media, after being used to grow spinach, can still be reused to cultivate another short-cycle crop such as lettuce, without reducing yield or phytochemical accumulation.

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