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عنوان مقاله :

Assessing the potential of co-composting rose waste as a sustainable waste management strategy: Nutrient availability and disease control

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The current limited usage of rose waste makes rose cultivation far from a sustainable circular industry. Unfavorable properties of horticultural waste such as the high lignin content of stems and high polyphenol levels in both flowers and leaves makes it difficult to re-use. These traits hamper an effective composting process and so far little studies have focused on optimizing this process. The aim of this study was to investigate the potential of (co-)composting rose waste with other on-farm available green wastes (tomato and kalanchoe) or mature rose compost to obtain an improved compost with high fertilizing capacity. In a small-scale composting system the evolution of five mixtures was closely monitored in terms of their physico-chemical parameters. The *in-vitro* disease suppressive capacity of mature rose compost was assessed. All mixtures resulted in stable and mature compost after six months showing industry standard suitable macro- and micro-nutrient concentrations. The matured compost showed a C/N below 10, a strong decrease in polyphenols of ≥70% and a good fertilizing capacity with an increase in cation exchange capacity since the start of ≥100%. These results demonstrate that the ligneous character of rose waste is not preventing an effective composting process. The addition of mature compost accelerated the composting process as shown by significantly increases in OM degradation rates. For the first time a high disease suppressive capacity against several common rose pathogens was shown for mature rose compost. Overall, this study showed the potential of (co-)composting rose waste as sustainable waste management strategy.