Post-transplanting evaluation in restoration intervention with *Viburnum lantana* L. grown on peat-free substrates

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Restoration interventions of natural ecosystems, as well as degraded urban areas, require an accurate selection of plants, not only considering the genotype, but also the adopted growing techniques. Native species are to be preferred (often mandatory in restoration interventions and in some municipal regulations), being able to guarantee high eco-physiological responses, especially to post-transplanting plant stress. This feature is intrinsic of each species, but it is also highly influenced by agronomic techniques. The growing techniques usually adopted in the ornamental sector are aimed at obtaining high quality standard. Nevertheless, not always these methods lead to satisfactory post-transplanting performances, especially if transplanting cares, *e.g.*, irrigation, are not available. Another critical issue in restoration interventions is the use of potted plants grown on peat-based substrates, which must be reduced/avoided in line with high sustainability requirements of this special sector as well as of waste policies. With the aim to evaluate post-transplanting responses of the Euro-Mediterranean native *Viburnum lantana* L., a one-year cultivation trial was conducted by testing different peat-free substrates, followed by transplanting in a degraded area of the "Parco Regionale Lombardo della Valle del Ticino". Tested growing media were: 1) peat:pumice 70:30 v v^{-1}, as control treatment; 2) coconut coir dust:pumice 70:30 v v^{-1}; 3) coconut coir dust:green compost 55:45 v v^{-1}; 4) coconut coir dust:stabilized wood fibre 60:40 v v^{-1}. Cuttings were planted in 4 L pots directly adding a controlled release fertilizer to the substrate, integrated with a top-dress controlled release one in the following early spring. Plant growth was monitored throughout the entire vegetative cycle by both non-destructive biometric measures (*i.e.*, plant height, collar diameter) and eco-physiological parameters (*i.e.*, gas exchange, efficiency of photosystem II and SPAD index). At the end of the cultivation cycle, some plants were sampled to assess root and shoot biomass productions and tissue nutrient contents, while 12 plants per treatment were transplanted in field in three randomized blocks. Irrigation was provided after the transplant and then plants were subjected to the environmental conditions (*i.e.*, sunny, dry summer). At 100 days after transplanting both eco-physiological and destructive biometric parameters were collected (*i.e.*, shoot biomass and leaf necrotic area). Plants grown in the tested peat-free substrates showed a faster response to transplanting stress respect to control plants, which showed higher phylloptosis and wider necrotic leaf area. This higher efficiency in recovery from transplanting stress was also highlighted by the eco-physiological measures.

Keywords: green compost, coconut coir dust**,** stabilized wood fibre, eco-physiological responses, stomatal conductance.