

THE EFFECT OF SUBSTRATES ON DIFFERENT CHARACTERISTICS OF *PHILODENDRON ERUBESCENS* CUTTINGS

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Philodendron erubescens (an indoor foliage ornamental climbing plant) was propagated 3 times (in 3 trials) by shoot cuttings (size: 10-15 cm with 2-3 leaves). At the end of May (28.05.2015), the first group of cuttings was planted in 5 kinds of substrates as 100% perlite, white peat, coco coir, BRT GreenMoss (henceforth: BRT Moss), ASB Greenworld plant soil (henceforth: ASB soil). Mixtures (50-50%) of BRT Moss plus the other 4 agents were used for the second and third cutting trials (16.09.2015, 03.06.2016). Our aim was to find morphological (leaf width and length, number of new shoots and roots, length of shoots and roots, fresh weight of green parts and roots) and physiological (total chlorophyll, carotenoid content, peroxidase enzyme activity) differences between the rooted and survived cuttings and ascertain the effects of substrates on the success of cutting propagation.

The longest (190.17 mm), widest (80.6 mm) leaves and the shortest roots (185.29 mm) was found with the use of 100% ASB soil in the first trial, and 50% BRT Moss + 50% ASB soil resulted the shortest leaves in the second study. The length of the shoots was the shortest (58.43 mm) and the number of new shoots was the highest (2.88) when coco coir + BRT Moss (1:1) mixture was applied in the second cutting experiment, and significantly the longest shoots (147.26 mm) were developed in case of combination of 50% ASB soil and 50% BRT Moss in the third trial. Almost every trials, 100% coco coir eventuated the most and longest roots and 100% perlite resulted the fewest roots and shoots. On the other hand, time of propagation and greenhouse temperatures also influenced the shoot number: in the second experiment lower night temperatures (6-12 oC) during autumn and especially winter inhibited shoot tip growing, therefore, more new shoots emerged from the lateral buds of the middle or basal parts of the cuttings. In order to gain the highest fresh green and root weight, total chlorophyll and carotenoid contents, mainly 50% BRT Moss + 50% ASB soil was the best and perlite (or perlite + BRT Moss) effected the lowest fresh weight values. The highest peroxidase enzyme activity (0.0023 µg/g) was detected when 100% ASB soil was used in the first study, and colder conditions (during the second trial) resulted higher activities without reference to the type of substrate.

In conclusion, we obtained the highest morphological and physiological values when BRT Moss, ASB soil or its combinations used as substrate for cutting propagation. Additionally, coco coir (and its admixture with BRT Moss) has positive effect on development of roots and shoots, but for producing larger sized plants (with faster growing and shorter duration time) warmer temperatures (optimally 20-22 °C) is recommended, especially during cool seasons. Accordingly, bottom or basal heat is preferable for the sake of better, successful rooting. As cheaper options, we can use other substrates (for example vermiculite, gravel or sand) as further accessories of different soil mixtures containing applicable agents (like BRT Moss, coco coir etc.), but more test is necessary to find the best substrates.