



Comparative study of shoot and root development in micropropagated and sucker-derived banana and plantain (*Musa* spp.) plants

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Abstract

As *in vitro* plants are increasingly being used to establish banana plantations, we made a comparative study of *in vitro* and sucker-derived plants, the latter being the conventional planting material. Eight *Musa* genotypes were assessed during the first production cycle. Shoot and root traits were measured during the vegetative and the early reproductive

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phase. During the mid-vegetative phase, sucker-derived plants produced a larger root system, possibly due to the larger corm, which bears the root initiation zone. However, leaf area and pseudostem size were similar at this stage for both types of propagules. At the flower emergence stage of growth no significant differences were observed between the two types of suckers with regard to leaf area, corm fresh weight, root traits, height of the tallest sucker and days to flower emergence. It appears that the larger amount of roots present on *in vitro*-derived plants at planting does not have a particular advantage during the first cycle. Few significant correlations between growth traits of *in vitro* and sucker-derived plants of identical genotypes were observed during the vegetative phase. However, significant correlations between both propagule types were observed at flower emergence, for leaf area, plant height, pseudostem circumference, corm weight and corm size, and root dry weight. This indicates that plants originating from different propagules tend to behave similarly at flower emergence. The results suggest that the major advantage of growing *in vitro*-derived plants would be their more homogenous growth, which is particularly important for timing of field practices. Despite their higher phytosanitary status, *in vitro* plants did not display a better growth than sucker-derived plants.

Key words: *in vitro*, tissue culture