

Growth and development of moringa (*Moringa oleifera* L.) stem cuttings as affected by diameter magnitude, growth media, and indole-3-butyric acid

ABSTRACT

The acknowledged status of *Moringa oleifera* L. in sub-Saharan Africa, especially western Africa, has of recent accorded it the significance of being a good source of income to a large segment of many of its populace. Intensification of research into the realization of its full economic potential will be of utmost value to impoverished societies globally. One way to achieve this is the full exploration of all possible means that will facilitate its successful growth, propagation, and domestication. Even though it can be successfully raised through seeds, the high level outcrossing (64.3%) observed is a hindrance to realization of true to type trees. Vegetative propagation can be employed as an option to tackle the noted limitation, ease the cultivation process, and achieve the required realization of its economic potential. Our trial was carried out to study the influence of two growth media and three levels of indole 3-butyric acid (IBA) on root and shoot development in cuttings taken from a coppiced moringa tree existent in Universiti Putra Malaysia. Semi-hardwood cuttings of moringa, of between 20 and 30 mm diameter, cut into 25 cm length, were obtained, rinsed with a fungicide, then dipped, through their basal portion, inside varying levels (0, 1000, 2000, and 3000 ppm) of indole-3-butyric acid (IBA) for between 7 and 10 seconds. The treated cuttings were then transplanted into a polyethylene bags (23 cm × 36 cm), containing two growth media - a munchong series soil (M) and a combination of a munchong series soil thoroughly mixed with biochar (MB) in a 3:1 ratio sequence. The trial was conducted inside a shade house where the humidity of the experimental area was manipulated through a regular daily manual hand sprinkling. Plant height, percentage of primary branch produced, leaf area, and dry matter (DM) were found to be significantly ($P < 0.05$) influenced by variation in stem diameter magnitude, while the diameter of the primary branch and spad chlorophyll content were found to be non-significantly ($P > 0.05$) influenced. The MB growth media was observed to significantly affect the plant height, percentage root number, and root length as compared to the M growth media. For a successful vegetative propagation and subsequent domestication, the MB growth media coupled with a higher stem diameter size are recommended.

Keyword: Biochar; Dry matter; Munchong series; Plant hormone; Primary branch