

Short Communication

Propagating crotons from leaves

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The present investigation was conducted in the Department of Horticulture, Agricultural College and Research Institute, Madurai during the period of 2011 to 2012. The croton leaves were placed in water for observation. Within a month, it was observed that, roots appeared from the petiole region of the leaves. The root length varied from 1.5 to 4 cm. Further, secondary roots were also observed from primary roots after one month. The rooted leaves were then placed in coir pith media and watered regularly. There was no symptom of shoot formation from the leaves. Leaves remained green for few months without showing any sign of wilting or drying.

Key words: Croton leaves, root, shoot, wilting, drying.

INTRODUCTION

Croton (*Codiaeum variegatum*) with its amazing colors and leathery leaves is regarded as a beautiful foliage plant. The plant is native of South East Asia. *C. variegatum*, commonly known as Croton and sometimes called Joseph's Coat, belongs to the family Euphorbiaceae and is one of the most popular ornamental plants because of its vivid foliage colors and varied leaf shapes. It is an evergreen shrub growing up to 6 m in height but usually maintained at 60 to 90 cm and grows well in areas having humid climate. More than 200 varieties of croton exist in the globe and are available in different leaf sizes, shapes and color patterns.

Young leaves are usually green, bronze, yellow, or red, later changes to gold, cream, white, scarlet, pink, maroon, purple, black or brown. Sometimes, distinct forms of leaves and color variations occur in the same plant. They have glossy leathery leaves that are variable in shape and colour. The leaves are alternate, non-serrated but sometimes lobed. The shape varies from linear-lanceolate, oblong, elliptic, lanceolate, ovate, spatulate, fiddle-shaped to broad and obovate. Sometimes the leaf blade is interrupted along the midrib

and becomes divided into an upper and lower part. The leaf is probably green in its original natural state, but in cultivated forms, it is variously marked, streaked, blotched or banded with green, white, red, orange, purple, pink, indigo, violet, yellow, crimson, scarlet, brown or cream colour when grown in appropriate light conditions.

The plant may change colour as it matures. (Ogunwenmo et al., 2007). Flowers are small, long, axillary, usually unisexual racemes. Fruits are globular capsules and 3 to 8 mm in diameter. In addition to its aesthetic value as an indoor plant, crotons are also well known for its medicinal value. The leaf extracts of crotons are reported to have many medicinal properties including purgative, sedative, antifungal, antiamebic, and anticancerous activities (Deshmukh and Borle, 1975; Kupchan et al., 1976).

The plant is also well reputed for the production of valuable secondary metabolites of alkaloids, terpenes and flavanoids in nature (Puebla et al., 2003; Martins et al., 2002). Croton can be propagated by various methods such as cuttings, grafting, by seeds and air layering.

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Figure 1. Root formation from crotons leaves

Generally, crotons are multiplied vegetatively by means of cuttings and air layering. This process is slow in response and requires large number of mother/stock plants. Micropropagation is an alternative means of propagation, to meet its high demand in relatively shorter time. An improved and enhanced method was established for the *in-vitro* propagation of croton. From shoot tip cuttings, one mother/stock plant can yield only 20 plants per year (Nasib et al., 2008; Mulabagal and Tsay, 2004). Due to its slow rate of conventional multiplication, the demand for the planting material will be on the rise.

Micro propagation is a relatively new technology, and application of innovative method have served to overcome the barriers to progress in the multiplication of elite species and further improvements are anticipated. *In-vitro* growth and development is considerably influenced by several factors like genotype, the age and size of mother plant and explant, the season, growth conditions, media composition, and various other physiological factors. As a means of securing pathogen free plants, culture of shoot apical meristem is ideal. Other advantages in this method include rapid multiplication of plants within shorter period of time irrespective of the season (Mulabagal and Tsay, 2004). Keeping the above points in mind, croton was chosen for

micropropagation due to its rare success in conventional breeding and also due to the meager availability of data for *in-vitro* production (Shibata et al., 1996; Orlikowska et al., 1995, 2000).

MATERIALS AND METHODS

The present investigation was conducted in the Department of Horticulture, Agricultural College and Research Institute, Madurai during the period of 2011 to 2012. The croton leaves were collected and immediately placed in water for observation. The experiment was laid out in completely randomized block design with three replications. Root initiation was observed and data were recorded.

RESULTS AND DISCUSSION

The present study of root formation from crotons leaves were illustrated in Figure 1. Within a month, it was observed that, roots appeared from the petiole region of the leaves. The root length varied from 1.5 to 4 cm. Further, secondary roots were also observed from primary roots after one month (Figures 1 and 2). The rooted leaves were then placed in coir pith media and watered regularly. There was no symptom of shoot formation from the leaves. Leaves remained green for



Figure 2. Lateral root formation.

few months without showing any sign of wilting or drying. This may be due to the fact that, the endogenous auxin levels were stimulated by root initiation. These results indicate that, auxin induces lateral roots by activating NPH4/ARF7 and ARF19. Similar results were obtained by Davies and Joiner (1980) and Hones, 1953.

Conclusion

From the study it is understood that, there is a possibility of getting new plantlets from leaves in the near future, which could be an easy method of propagating croton plants.

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