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Vitex negundo Linn: Stem cutting propagation in Herbal Garden

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Abstract

Plant community consists of a variety of plant species and their population in specific ecological areas. These are also playing a significant role in development of biological diversity. For presence and multiplication of the plants these are adapted in several modes to generate new individuals like their parental ones.

Seeds and vegetative parts are found suitable to develop in to new individuals of the different plant species separately. *Vitex negundo* Linn is showing rich potential to develop their new copies using their stem cuttings. For this purpose mature stem cuttings were selected and cut around 15 – 20 cm in length and deep in soil of prepared sites in Herbal Garden and are also applied to develop new plants in prepared poly bags. Water level maintained as per need of the developing stem cuttings individually. Well-developed plants in each poly bags were further shifted as per need.

Keywords: Stem cutting, Vegetative Propagation, Herbal Garden, *Vitex negundo* Linn.

1. Introduction

Plants are showing variation in their morphology, habit and habitat and these are remarkable factors for generation of plant diversity in specific ecological areas. It becomes a major part of further development of biodiversity. Richness of plant diversity is characterized by several factors like presence of favourable environmental condition, plant genetics and capacity of the plants to regenerate itself in natural sites.

Developments of the varied plant species are leading by seed development their dispersal and further germination capacity which are found in different trends among the plant community. All the plants are not capable to develop new plants using seeds because it is not produced by all the plants in the nature.

For the same purpose, many plants are well adapted to regenerate by using their rest of the plant parts except seeds known as vegetative propagation. It takes place by the active participation of the root, stem, leaf etc. Vegetative parts of the plants are directly involving for their rapid propagation or their modification forms like bulb, tuber, rhizome etc are also found suitable for this purpose to multiply the plants. Above practice of the plant propagation is supported by the presence of suitable climatic conditions.

Unique plant propagation pattern is followed by different species of the plants in nature. Unique behavior for the same is also recorded among the plant community to support the better growth and development of the plants. In present study vegetative propagation was recorded for *Vitex negundo* Linn using their mature stem cuttings in Herbal Garden. Mature stem cuttings were grown in different poly bags filled with soil and properly supplied essential facilities to the developing plants as per their need

Ahirrao *et al.* 2011 ^[1] made Pharmacognostical Studies of *Vitex negundo* Leaves. Chawla *et al.* 1992 ^[2] analyzed Chemical Investigation and anti-inflammatory activity of *Vitex negundo* seeds. Chowdhury *et al.* 2009 ^[3] recorded antibacterial and cytotoxic activity screening of leaf extracts of *Vitex negundo* (Family: Verbenaceae).

Thermogravimetric analysis of lignans from *Vitex negundo* was done by Kosankar *et al.* 2000 ^[5]. Khan *et al.* 2012 ^[4] found mitocidal activity of Methanolic extract of *Vitex negundo-lam* against *Sarcoptes scabiei* in animals and man. GC-MS Analysis of essential oils from four *Vitex* species made by Kuo *et al.* 1989 ^[6]. Mahmud *et al.* 2009 ^[7] studied antifungal activities of *Vitex negundo* Linn.

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Pharmacognostic and Phytochemical Analysis of *Vitex negundo* L. was done by Nirmal kumar 2014 [9]. Mallavarapu *et al.* 1994 [8] recorded on composition of the essential oil of the leaves of *Vitex negundo*. Singh *et al.* 2010 [11] found chemical composition and Antimicrobial activity of essential oil of leaves of *Vitex negundo* Linn. (Verbenaceae). Antimicrobial Compounds from *Vitex negundo* was assessed by Ragasa *et al.* 1999 [10]. Medicinal uses and biological activities of *Vitex negundo* was made by Tandon 2005 [12]. Studies on analgesic and anti-inflammatory activities of *Vitex negundo* Linn. Was done by Telang *et al.* 1999 [14]. Tandon and Gupta 2006 [13] recorded *Vitex negundo* Linn leaf extract as an adjuvant therapy to standard anti-inflammatory drugs. Tandon and Gupta 2006 [13] studied on *Vitex negundo* Linn (VN) leaf extract as an adjuvant therapy to standard anti-inflammatory drugs. Tiwari and Tripathi 2007 [15] noticed on antioxidant properties of different fractions of *Vitex negundo*.

2. Material and methods

It is woody shrub capable to develop in a variety of soil with moderate water requirements. It is well performing

vegetative propagation using its stem cutting. Well-developed stem cutting of 30 cm long were selected and oblique cut were made individually. These are deep in soil of poly bags included soil and also in the prepared sites of Herbal Garden. Temperature, Water etc levels were managed as per need of the developing stems cuttings.

After 15 – 20 days sporting of new buds on the nodular part of the plant stem cuttings starts and further gradually develop a new plant of *Vitex negundo* Linn similar to their parental plants.

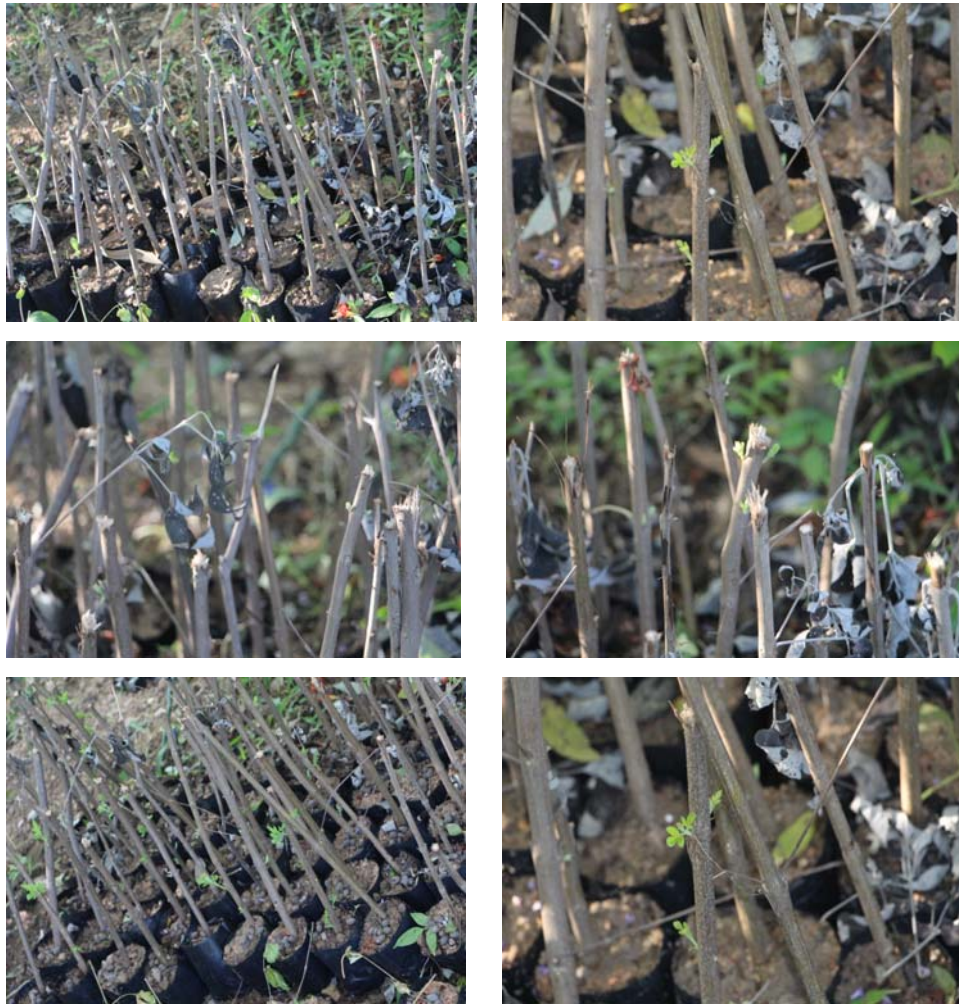
For above purpose there are fifty poly bags were used after filling a mixture made by soil, sand and manure equally. After this practice poly bags are arranged selected and cut part of the *Vitex negundo* Linn stem cuttings were grown in each one of the poly bags separately.

The experiments were done in shady places of the herbal garden developed for ex-situ conservation of medicinal and aromatic plants. Necessary facilities (needed for successful growth and development of the new buds on stem) were provided as per need of the plant followed by proper monitoring of the experimental plants.

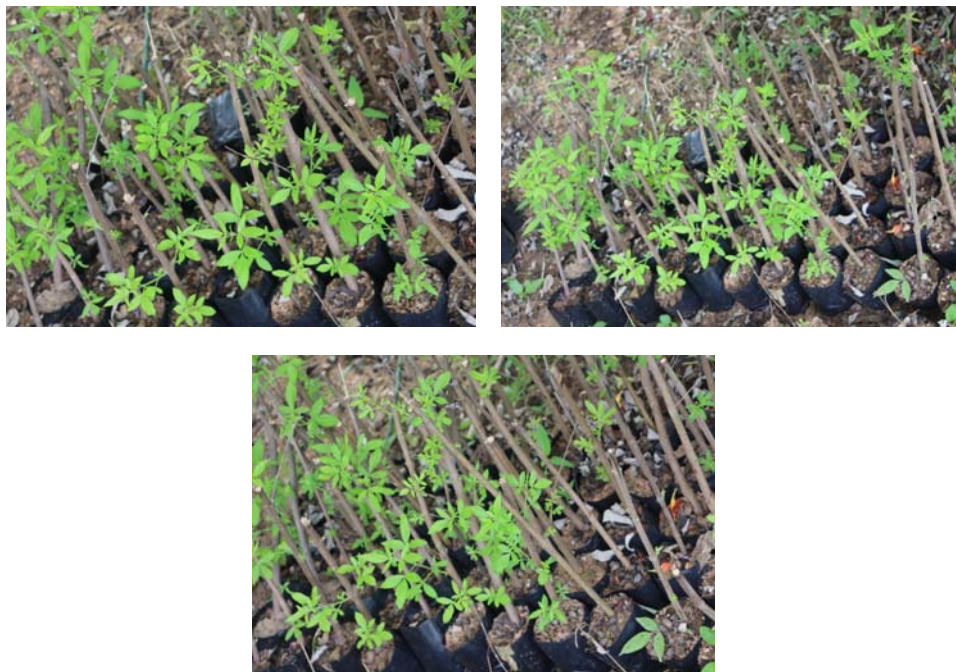
Images related to current study



Poly bags and Plant parts selection, preparation/18 July 2015



Stem cutting propagation in poly bags separately/28 July 2015



Plant Development – A /8 August 2015



Plant development - B /18 August 2015





Transfer of mature plant in the field/20 August 2015

3. Result and Discussions

The plant is shrub in nature capable to grow in almost all type of soil. It requires moderate range of water for its growth and development. Roots of this plant are tap root system, branched and deep in soil. Stems are cylindrical, branched, smooth, and woody at the basal part and top portion herbaceous. Leaves are green, petiolate, compound leaf, penta foliate, glabrous. Flowers are blue in colour, arranged in acropetal order.

The plant is useful in teeth problem. Useful for cleaning of teeth in rural areas. The plant is commonly found in near the cultivated areas. It is potential for multiplication using by its stem cutting like their parental ones. The plant registered for its multifold utility among the peoples. It is used in various purposes like anti-inflammatory, antibacterial, essential oil production, antifungal agents, antimicrobial, antioxidants etc. It is grown near the cultivated fields.

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