International Journal of Multidisciplinary Research and Development
Online ISSN: 2349-4182 Print ISSN: 2349-5979
www.allsubjectjournal.com
Volume 3; Issue 1; January 2016; Page No. 64-68

Vegetative propagation study on *Lippia javanica* Burm F Spreng in Herbal Garden

D.K. Patel

Department of Rural Technology, Guru Ghasidas Vishwavidyalaya, (A Central University), Bilaspur, Chhattisgarh, India.

Abstract
Plants associating in certain ecological areas on the basis of their available climatic conditions and plants genetic action. These factors sure the occurrence of the different plant species in nature.
Mode of reproduction of the different plant species are categorized by seeds as well as by vegetative parts of the plants. Numerous seeds produced by the plants for above purpose, but all the plants are not equally efficient to do so. In this condition the plants are well adapted to regenerating by vegetative propagation. The vegetative structures like root, stem, and leaf are useful to achieve the goal of plant propagation.
Lippia javanica Burm Stem cuttings are suitable to propagate it in the presence of the suitable environmental condition. Mature stem cuttings around 15-20 cm long were selected and cut carefully from mother plant than are grown in prepared poly bags filled by prepared soil. As per need of the plant parts facilities were supplied to develop them in Herbal Garden. Developed plants individually in each poly bags were further transferred in different sites as per need.

Keywords: stem cutting, vegetative propagation, *Lippia javanica* Burm, herbal garden

1. Introduction
Different tendency of the plants in the term of their adaption as well as for propagation mode is determined by the environmental components and by the genes of the available plant species. Better environment and rich plant adaption capacity playing significant role in their presence in certain ecological areas. Presences of the plant species are a unit for construction of plant diversity in nature and is further become a major part of the biological diversity.
Soil type, Water facilities, Light, Plant type etc are leading factors to develop the certain plant species in nature following by several modification of the plants for varied purpose like for protection and for propagation etc. Seed production is related to develop new plants as their parental plants. For such purpose plant develop many seeds of diverse structure and mode of dissemination by several modes. In nature all plant species are not capable to do so and are for propagation utilizing another mode known as vegetative propagation.
Mature stem cutting, root part, leaves etc are found useful to achieve the goal of vegetative propagation. Some times their modified forms like bulb, tuber, rhizome etc are also utilized for the same purpose. All above modes which are related to the development of the new plants are regulated by the presence of available facilities like Temperature, Water, Soil structure and types etc. Water plays a remarkable role in the process of vegetative propagation as well as in the propagation by using seeds.
Current study is based on the development of the new plants of *Lippia javanica* Burm using their mature stem cutting. These are selected, collected and prepared for further propagation of this plant in Herbal Garden. Stem cutting were developed in new plants in poly bags individually which further support for its transplantation in selected/required sites.
Agah and Najafian 2012 recorded on essential oil content and composition of *Lippia citriodora* as affected by drying method before flowering stages. Catalan and PDe Lampasona 2002 analyzed the chemistry of the genus Lippia (Verbenaceae). Folashade and Omoregie 2012 recorded essential oil of *Lippia multiflora* Moldenke: A review. Chowdhury *et al*. 2003 found composition and fungi toxic properties of the essential oil of *Lippia javanica* leaves.
Composition and antimicrobial activities of volatile components of *Lippia javanica* made by Manenzhe *et al*. 2004 [6]. *Lippia javanica* (Burm F.) Spreng: its general constituents and bioactivity on mosquitoes was made by Lukwa *et al*. 2009 [5]. Mujovo *et al*. 2008 examined bioactive compounds from *Lippia javanica* and *Hoslundia opposite*. Munyima *et al*. 2004 [9] found antimicrobial and antioxidative activities of *Tagetes minuta*, *Lippia javanica* and *Foeniculum vulgare* essential oils from Eastern Cape Province of South Africa.
Composition and antimicrobial activity of essential oils of two populations of Tanzanian *Lippia javanica* (Burm.F.) Spreng (Verbenaceae) was assessed by Ngassapa *et al*. 2003 [10]. Mashela *et al*. 2010 [7] found fever tea (*Lippia javanica*) as a root-knot nematode suppressant in tomato production. The composition, geographical variation and antimicrobial activity o*f Lippia javanica* (Verbenaceae) leaf essential oils was recorded by Viljoen *et al*. 2005 [14].
Terblanche and Kornelius 1996 [13] studied on essential oil constituents of the genus *Lippia* (Verbenaceae)-a literature reviews. *Lippia*: traditional uses, chemistry and pharmacology: a review was made by Pascual *et al.* 2001 [12]. Composition and antimicrobial activities of volatile components of *Lippia javanica* was studied by Nkhumeleni *et al*. 2004 [11].

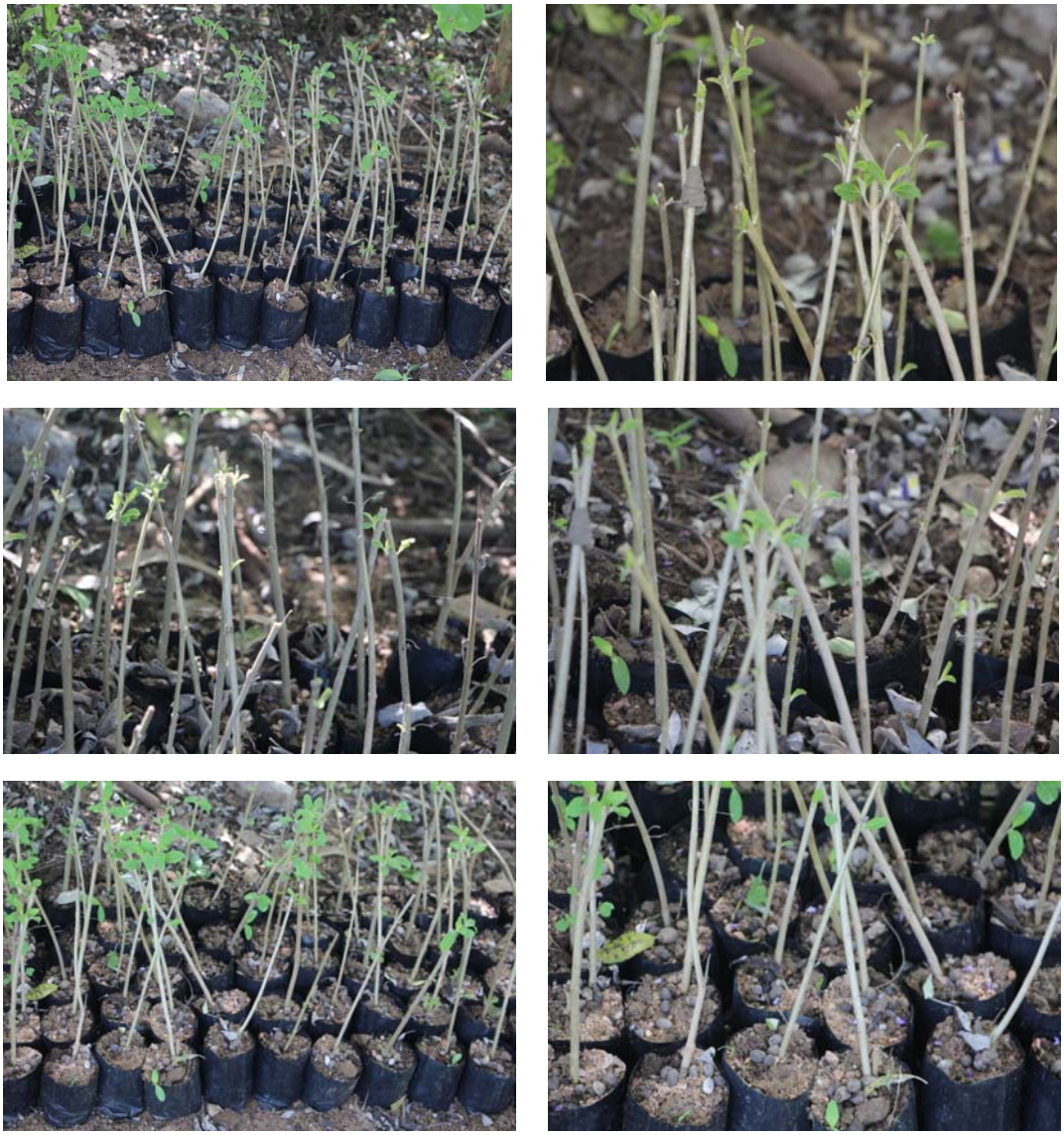
2. Material and Methods
The plant is shrub forming dense structure in grown areas/sites. It is adapted to grow in almost a variety of soil type. It is showing its rapid potential to regenerate using their mature stem cutting in the support of favourable environmental condition.

Woody stems of the mature plants were selected and cut made for 30 cm long of required number of stem cutting followed by oblique cut. These plant parts are further used for its rapid vegetative propagation in the prepared fields in Herbal Garden as well as in poly bags filled with soil. The experiment was conducted in rainy season. Both the practices were followed by supporting required materials for the support of initiation of the buds and roots of the grown stem cuttings. Developed plants in poly bags are helpful for further transfer in the required sites easily. Fifty Poly bags used for its rapid propagation were filled with soil, sand and manure mixture equally and separately in all fifty poly bags.

In primary stage of plant development the poly bags with plant stem cuttings (single stem cuttings in all poly bags) were kept in shade to protect against direct sunlight. All necessary facilities were given to developing new individuals of the plant *Lippia javanica* Burm.

Views related to the plant development

Starting of the experiment



Development of new plants through stem cutting in poly bags



New buds, leaves development - II





Transfer of developed plants in the field

3. Result and Discussions

It is medicinal as well as Aromatic shrub nature plant useful for fencing also near the cultivated fields. It requires less water than other plants to develop itself. Stem cutting of this plant rapidly used for same purpose. Roots are tap root system, branched and deep in soil. Stems are smooth, angular, and woody at the base and top herbaceous in nature, less branched. Leaves are simple, petiolate, rough surface, dentate margin, thick, alternate, unicosted reticulate venation including aroma. Flowers are small, light pink-white in colour and originate in clusters.

The plant is well adapted to grow in almost all type of soil with less requirement of water and is tolerant the high temperature. The plant is rich source of aroma found to be useful in multifold directions like for production of essential oil, as antifungal components, Antioxidants, Antimicrobial agents etc.

The plant can be easily multiplied using their mature stem cuttings with proper supply of water, nutrients etc. Excess water near the plants leading for its less development and is finally responsible for death of the plants. Focusing on above points excess water should be removed immediately near the plants to protect them against the adverse effect of the water loggings.

4. References

1. Agah M, Najafian S. Essential oil content and composition of *Lippa citriodora* as affected by drying method before flowering stages. European Journal of Experimental Biology. 2012; 2(5):1771-1777.
2. Catalan C.A.N, PDe Lampasona M.E. The chemistry of the genus Lippia (Verbenaceae). In S.E. Kintzios, (ed.) Oregano: The genera Origanum and Lippia, Taylor and Francis, London, 2002, 127-149.
3. Chowdhury J.U, Yusuf M, Begum J, Sultana S.A, Hussain M. M. Composition and fungi toxic properties of the essential oil of *Lippia javanica* leaves, Indian Perfumer 2003; 47(4):385-388.
4. Folashade K.O, Omoregie E.H. Essential oil of *Lippia multiflora* Moldenke: A review, Journal of Applied Pharmaceutical Science. 2012; 2(1):15-23.
5. Lukwa N, Molgaard P, Furu P, Bogh C. 2009. *Lippia javanica* (Burm F.) Spreng: its general constituents and bioactivity on mosquitoes, Tropical Biomedicine 2012; 26(1):85-91.
6. Manenzhe N.J, Potgieter N, Van R.T. Composition and antimicrobial activities of volatile components of *Lippia javanica*, Phytochemistry, 2004; 65(16):2333-2336.
7. Mashela P.W, Shimelis H.A, Waele D.D, Mokgalong M.N, Mudau F.N, Ngobeni L.G. Fever tea (*Lippia javanica*) as a root-knot nematode suppressant in tomato production, African Plant Protection, 2010; 16:1-6.
8. Mujovo S.F, Ahmed A, Hussein J.J, Meyer M, Fourie B, Muthivhi T, Namrita L. Bioactive compounds from *Lippia javanica* and *Hoslundia opposita*, Natural Product Research, 2008; 22(12):1047-1054.
9. Munyima N.Y.O, Nziweni S, Mabinya L.V. Antimicrobial and antioxidative activities of *Tagetes minuta*, *Lippia javanica* and *Foeniculum vulgare* essential oils from Eastern Cape Province of South Africa. Journal of Essential Oil Bearing Plants. 2004; 7(1):68-78.
10. Ngassapa O, Runyoro D.K.B, Harvala E, Chinou I.B. Composition and antimicrobial activity of essential oils of two populations of Tanzanian *Lippia javanica* (Burm.F.) Spreng (Verbenaceae). Flavour and Fragrance Journal. 2003; 18:221-224.
11. Nkhumeleni J.M, Natasha P, Teunis V.R. Composition and antimicrobial activities of volatile components of *Lippia javanica*. Phytochemistry, 2004; 65:2333-2336.
12. Pascual M.E, Slowing K, Carretero E, Sánchez D.M, Villar A. *Lippia*: traditional uses, chemistry and pharmacology: a review. Journal of Ethnopharmacology. 2001; 76:201-214.
13. Terblanche F.C, Kornelius G. Essential oil constituents of the genus *Lippia* (Verbenaceae)-a literature reviews. Journal of Essential Oil Research. 1996; 8:471-485.
14. Viljoen A.M, Subramoney S, Van V.S.F, Baer K.H, Demirci B. The composition, geographical variation and antimicrobial activity of *Lippia javanica* (Verbenaceae) leaf essential oils. Journal of Ethnopharmacology. 2005; 96:271-277.