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Conservation and Multiplication of Endangered Plants :1. Leptophonia Reticulata (Retz.) Wight. & Arn.

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ABSTRACT*: The present communication deals with the vegetative propagation through air layering technique in L. reticluata, know as Jivanti in Ayurvedic medicinal plant, The results reveal tat ceradik treated twigs produced profuse and earl rooting with higher survival percentage*

INTRODUCTION

Herbal medicines are used by about 75-80% of the world population, mainly in the developing countries, for primary health care because of better cultural acceptability, better compatibility with the human body and lesser side effects last few ears have sown a major increase in their use in the developed world also. In India, the herbal drug market is about one billion US dollars and the export of plant based crude drugs is about 80 billion US dollars (Kamboj, 2000). The use of medicinal plants is a widespread phenomenon in India. The use of Leptadaenia reticulata (Fam. Asclepiadaceae) dates back to about 4,500 to 1,600 B.C as mentioned in Atharva Veda, Manda eight, sukta two. This plant is in hug demand and increasing ever year. The user groups at various levels are now conscious of the decline and nonavailability of L. reticulata and factors like sort supply, high prices and a forced substitution of certain species, signaling that the survival of medicinal plants are threatened and getting endangered. Looking at the importance of the medicinal value of this plant, conservation has become necessity. It is therefore, worthwhile to have some long term measures for cultivation of endangered medicinal plants which are largely required b the drug industry of Indian system of medicine (Uniyal & Uniyal 1998).

Vegetation propagation is one of the best methods to propagate this plant species. Air layering is one method of vegetative propagation. Thus, vegetative propagation of L. reticulata is suggested for fast multiplication and perpetuation to achieve conservation target. In the present experiment successful vegetative propagation in L. reticulata though air layering has been achieved for the first time.

MORPHOLOGY AND HABITAT

It is a twining shrub, stem with cork-like deeply cracked bark, branches numerous, younger ones glabrous. Leaves coracious, ovate, glabrous above finely pubescent. Flowers greenish-yellow, in lateral or subaxillary cymes with small hairs. Fruit follicles sub-woody, 7-8.5 cm size with tapering ends.

This plant species is found in forests and gardens near thorny trees in Gujarat, Punjab, Himalayan ranges, Khasia ills, Konkan, Nilgiris, Southern India, Sikkim, Burma, Sri Lanka, Malaya Peninsula, Philippines, etc. (Anjaria, 1997). It has been also reported form Rajasthan (Banswara, Jalore, Jodhpur, Udaipur, etc), but now this plant is at the verge of total extinction in Rajasthan (Shetty & Singh, 1991).

MEDICINAL USES AND PHARMACOLOGY

The Atharva Veda involves its uses as life giver, a strength giver and propagator for milk and useful in many other ailments. All parts of the plant referred to have been used medicinally. Mostly the whole plant with leaves and stem is used its action/uses are: stimulant, galactagogue oestrogenic, eye tonic, astringent, agalactia and used to increase milk after parturition, prolapse of uterus, vagina, controlling habitual abortion, maintain pregnancy, repeat breeders, induce heat, soothen hard milkers induce milk letting (Anjaria et al. 1997). The leaves are also useful in asthma and cough and against ringworms (Satyavati et al., 1987).

The thin stem and leaves of L. reticulata have alkaloids but saponins and flavonoids are absent leaves and twigs on extraction with petroleum ether yielded hentriacontanol, - amyrin,-amyrin stigmasterol and sitosterol, wereas acetone and methanolic extracts gave tow flavonoids, viz diosmetin and luteolin. The alcoholic extraction of te pericarp of the follicles yielded quercetin and three flavonoids glycosides Viz. isoquercitrin and its monomethyl ether, the potassium and calcium content in L. reticulata were found to be 1,69% and 0.99% respectively (Anjaria, 1997;' Satyavati et al., 1987).

THCHNIQUE FOR PROPAGATION THROUGH AIR LAYERING

The young rooted seedling were collected from Gujarat university campus, Ahmedabad during December 1998 and transplanted in the experimental field. These plants are successfully established wit luxuriant growth at experimental site (Fig 1) The air layering experiments were performed during rainy season (1999) at Mahamandir, Jodhpur with seven month old plants (fig 2) for air layering experiments, 0.5 – 1.0 cm thick 10 matured plant twigs each for control and ceradik treatment were selected. Two fine cuts at a distance of 3- 4 cm were made below the node on the stem branch the bark in between the cuts was completely removed in a girdle like manner wit the help of a knife. This is followed by application of ceradik powder (a rooting hormone). The stem protion after removal of bark and treated with ceradik powder was wrapped with a tick moist clay soil layer and further covered with the help of a bandage of gunny bag followed by ploythene sheet and tied with the help of thread form two ends to minimize the water loss. The soil layer covered wit polythene sheet was kept wet wit the help of water form time to time. For control experiment the above procedure was repeated without applying ceradik powder. The air layering experiment was left for observation till the developed the roots.

The experimental air layered stem twigs were cut from the mother plant when they developed the roots after one month of experiment . These rooted stem cuttings were transplanted carefully in pits containing soil mixture of sand: Clay: FYM (2:1:1). Survival data were recorded form time to time.

RESULTS AND DISCUSSION

The data on air layering technique in L. reticulata are presented in Table -1

Treatment	Initiation of roots (days)	Sprouting of roots (%)	Root length (cm)	Mortality rate in field(%)	Success in field (%)
Control	15-20	80.0	10.0	90.0	10.0
Ceradik	15-20	100.0	11.5	30.0	70.0

It is evident from the Table that root formation took place after two weeks in control as well as in ceradik treated twigs. Ceradik treated protion of the stem showed profuse rooting as compared to control (Fig 3&4). In ceradik treated twigs a cent per cent rooting as been recorded, whereas in control it was upto 80%. The mortality rate is very high in control (90%) as compared to ceradik (30%) treated experiments. The survival percentage of air layered twigs after transplanting in the field in 70% and 10% in ceradik treated twigs and control, respectively after six months of setting te experiments, te ceradik experimental plants produced large sized and more number of leaves as compared to those of control after they established in experimental field (Figs 5&6).

Propagation of L. reticulate trough air layering is not only quick but an economical technique also. This is probably the first attempt of air layering experiments on L. reticulate. The preliminary experiments have shown encouraging results. Therefore, the application of this method for large scale vegetative propagation should be taken up.

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DESCRIPTION OF FIGURES

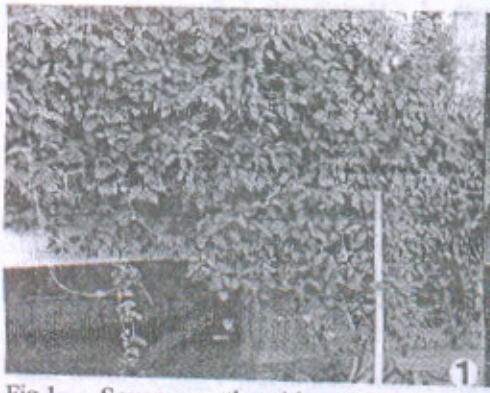

Fig.1 Seven months old established plant of *L. reticulata* in flowering stage

Fig.2 Air layering technique in *L. reticula*

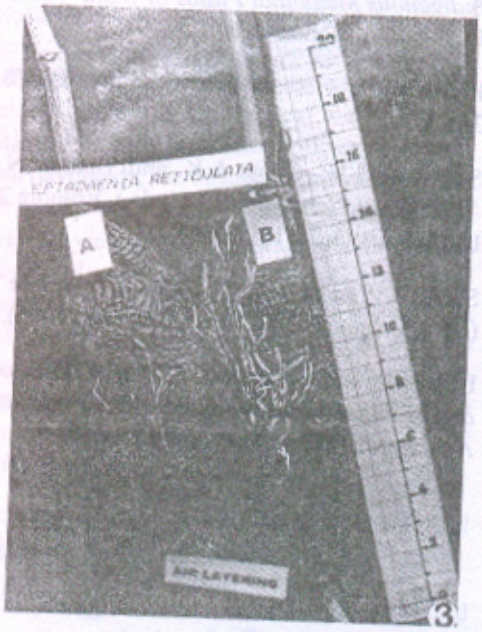

Fig.3 Air layered twigs wrapped with layer of gunny bag showing sprouting more roots in ceradik treated twig (B) as compared to control (A)

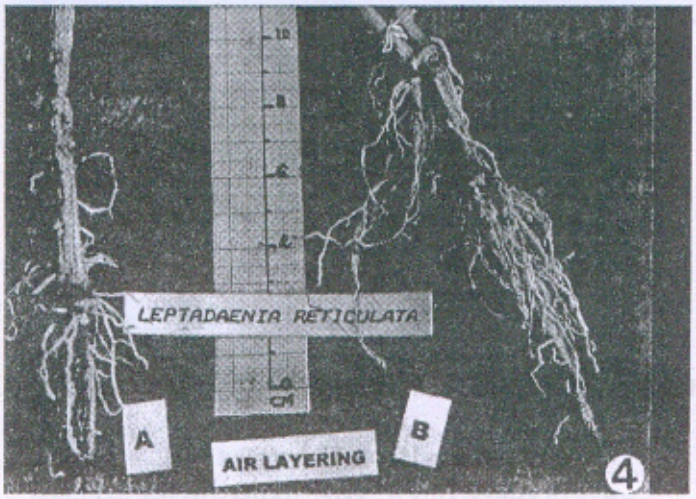

Fig.4 Profuse rooting in ceradik treatment (B) than control (A)

Fig.5 Air layered control plant after one month of transferring in experimental field condition

Fig.6 Air layered ceradik treated plant after one month of transferring in experimental field.