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PRESENT STATUS, PROBLEMS AND RESEARCHABLE ISSUES OF BETEL VINE (*PIPER BETEL* L.) PRODUCTION WITH SPECIAL REFERENCE TO NORTHERN KARNATAKA

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ABSTRACT

Betel vine (*Piper betle L)* is a perennial climber Betel vine (*Piper betle L)* is a perennial climber cultivated for its leaf. In India, 55000 ha and in Karnataka 7143 ha area covered under this crop. This paper is the outcome of series of field visits made to the betel vine growing areas. Significant diversity observed in production aspects and also problems related to crop production. Lack of alternative standard for vine climbing, irrigation methods, fertigation, wilt, snail and un organized marketing are major problems in northern part of Karnataka. To solve these problems identified researchable issues are identification of alternative standard, standardization of fertigation schedule, integrated pest management practices and development of organized market.

INTRODUCTION

Betel vine (*Piper betle L)* is known by its many names across the country and abroad. In Indian subcontinent it is known as pan in Hindi, Tambula in Sanskrit, Villayadela in Kannada, Vettilakkoti in Malyalam, Vettilai in Tamil, Tamalapaku in Telugu, Videch-pan in Marathi, Nagarbel in Gujrati and pan in Bangala It belongs to *piperaceae* family and is a perennial climber cultivated for its leaf. It is a shade loving plant and originated from Malaysia according to De Cando. Historically, the word pan in Hindi and other Indian languages is probably a derivative of the Sanskrit word 'pan' meaning leaf. It has been very intimately connected with the ancient Indian history, religion and culture as is evident by many references in the early Sanskrit literature (3000 BC), like Vedas, Ramayana, Mahabharata, Mahavansha etc. Marcopolo (1295 AD) took notice of the pan chewing habit of the people in south India. Over the centuries, pan chewing had become so prevalent that serving and chewing of pan had been raised to the level of a fine art at the Mughal Darbar, particularly during the Akbar's regime. In course of time, offering the 'bida' of betelvine has become a symbol of offering and acceptance of mutual love and friendship. Betel vine has been under cultivation in India for centuries. In fact, no Hindu religious ceremony is complete without pan. It is also offered after lunch and dinner and also during other social get together.

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Area and production of betelvine

In India, the major states producing betelvine include West Bengal, Maharshtra, Karnataka, Andhra Pradesh, Orissa, Tamil Nadu and Kerala. Haveri, Davanagere, Tumkur, Bagalkot, Bijapur, Belgaum and Chitradurga Districts are the major production areas in Karnataka. The area, production and productivity of betelvine are given in Table 1 (Anonymous, 2012). This paper discusses the present status of betelvine, problems faced by the growers and traders and the researchable issues to address those problems mainly in Northern parts of Karnataka comprising Haveri, Bagalkot, Bijapur and Belgaum districts. This paper is the outcome of series of field visits made to the betelvine growing areas; survey of sample group of 49 farmers representing four districts through a preset questionnaire and an interaction programme organized at University of Horticultural Sciences, Bagalkot by involving growers, researchers and officers from the Department of Horticulture. Essentially, betelvine is a small holder crop in this region owing to the intensive cultivation practices and the amount of labour involved in harvesting. The villages surveyed are given in Table 2. Betelvine is cultivated under partially shaded humid micro-climatic conditions. Intensity of light in the plantation is regulated by periodical lopping of branches. In northern parts of Karnataka shade is regulated just before the commencement of monsoon (May-June) by lopping the branches of live standards for optimum growth of vine.

Table 1. Area, production and productivity of betelvine during 2011-12

Sl No		Area (ha)	Production (Lakh leaves)	Productivity (Lakh leaves/ha)
I	India	55,000	9000 million	16.37
2	Karnataka	7,143	1,30,332	18.25
	Haveri	1,350	34,332	25.43
	Davanagere	956	4,459	4.66
	Tumkur	814	20,735	25.47
	Bagalkot	361	7,512	20.81
	Chitradurga	319	7,144	22.39
	Belgaum	286	5,645	19.74
	Bijapur	158	3,160	20.00

Source: Department of Horticulture

Table 2. List of betelvine growing villages surveyed

Sl No	District	Taluk	Growing villages
1	Bagalkot	Badami	Cholachagudda, Mammatageri, Neeru Budihal, Ugalavata, Neelagunda, Jalageri, Endigeri
2		Jamakandi	Jamakandi, Jagadala, Navalagi, Banahatti, Teradala
3	Bijapur	Basavana Bagewadi	Kudagi, Talewada, Mulawada, Masuti, Kalaburagi, Nagaladinni, Kolara, Chemmalagi, Ronyala, Ukkali, Manuguli
	Belgaum	Chikkodi	Shiragaon, Galataka, Navanyala, Chulaganawadi, Junapura, Nagarala

Table 3. Diversity in betelvine production systems

Sl No	Particular	Diversity
1	Varieties	Kapoori (Ambadi) and Bangla (Kariyele)
2	Plant density per hectare (Nos)	6719, 8657, 13,661, 27,322
3	Spacing adopted (Ft)	4 X 4, 4 X 2, 4 X 1, 5 X 2.5
4	Standards used	Drumstick, Sesbania, Ceiba, Erythrina
5	Vine lowering time	Dec- Jan, June-July
6	Vine lowering method	Coiling the vines and burying under soil by leaving the vine 2 ft above ground (Commonly practiced) Coiling the vine and keeping it above the ground (Rarely)
7	Irrigation methods	Flooding, basin, sprinkler, drip
8	Nutrient management	Organic inputs (Neem cake, pongamia cake, red earth Fertilisers (DAP, Urea, MOP, SOP, 19 All) *Proportion and time of application varied among the farmers*
9	Pest/disease management	Agro agencies are the chief source of advise and rarely extension personnel. (Neem oil, confidor, propenophos, cypermethrin, Sulphur, metaldehyde, Melathion, Lambda cyalohethrin, trichoderma, COC, Carbendazium etc *Proportion and time of application varied among the farmers*
10	Packing	Usually a typical pack consisting of 12,000 number of leaves which is termed as '*Andige'* in folk. Rarely packs of 3000 leaves are also found which are referred as 'Karandige'. For packing generally banana pseudostem and leaves are used.
11	Harvesting interval (No. of days)	15, 20, 25, 30 (Generally once in 15 days)
12	Yield per Acre (Lakh leaves)	12 - 24

Height of live standards is also restricted by cutting the trees at four to five meter height (Kirankumar *et al.,* 2011). Significant diversity has been observed among the surveyed areas for the variety grown, production method and intensity, cropping system, vine lowering time and method, standards used, irrigation methods, nutrient management practices, pest/disease management practices, packing method, yield, leaf quality etc. This diversity is enlisted in Table 3.

Problems

Though, betelvine is giving significant economic benefits to its growers, the productivity and quality is affected by several problems, which are briefed here under.

- Problems related to crop production
- Problems related to crop protection
- Problems related to post-harvest technology
- Problems related to marketing

Problems related to crop production

- Lack of standardized integrated nutrient management package and fertigation
- Reduced yield under drip irrigation system
- Reduced yield when the lowered vines are coiled and kept above the ground
- Drumstick : Weak standard (Difficult to maintain after 3 years), stem fly, aphids
- Sesbania : This standard is alternate host for aphids and powdery mildew which severely affects betelvine
- Erythrina: Though, it is a good standard, severely affected by gall wasp, very rare to find
- Ceiba: Though, it is very sturdy and hardy, as per the opinion of farmers, it is found exhaustive with respect to absorption of water and nutrients thus competing with betelvine for those resources. As its surface is smooth, which affects the anchoring of betelvine

Problems related to crop protection

- *Phytophothora* wilt - As per the opinion of farmers, this problem is found severe during vine lowering (January – March)
- Stem and leaf anthracnose

- Powdery mildew incidence in 'Kariyele' variety (Bangla)
- Leaf curl due to aphids, mites and thrips
- Leaf eating caterpillar and defoliator
- Snails (Severe during rainy season)

Problems related to post-harvest technology

- Shorter shelf life of leaves specially during summer months

Problems related to marketing

- Highly unorganized marketing and non-scientific pricing

Researchable issues to address the above problems

- Standardization of irrigation and nutrient management practices including fertigation
- Need to standardize water requirement through drip irrigation
- Standardization of vine lowering time and method
- Need to find out alternate standards with minimum pest/diseases and preferably least competing standards for resources
- Introduction and evaluation of *Erythrina subumbrans* which is found be resistant to gall wasp
- Standardization of low cost, effective and eco-friendly pest/disease management practices for both the standards and the crop
- Standardization of suitable packing method to extend the shelf life

Developmental issues to sustain the betelvine production systems

- Need to organize the growers by forming betelvine growers associations (BGAs) and federation for better marketing and bargaining power
- To promote area expansion, incentives and schemes to be formulated and implemented as in case of other horticulture crops through NHM/RKVY
- Centre of excellence for betelvine is the need of the hour for the betterment of betelvine growers

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