

Integrated crop management practices enhances betelvine leaf production

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Background

Betelvine (*Piper betle* L) has been under cultivation in India for centuries. In Haveri district betelvine is cultivated in 1216 ha with production of 27634 lakh leaves. Essentially only those families which are traditionally betelvine growers take-up the cultivation of betelvine. In spite of the tremendous potentiality of the crop, cultivation of betelvine is highly risky and returns are uncertain because of its proneness to foot rot diseases, aggravated by the moist and humid weather conditions. A number of pathogens including *Phytophthora parasitica*, *Pythium*, species of *Rhizoctonia* and *Sclerotium rolfsii* produces foot rot symptom in betelvine. During the survey by KVK in betelvine growing area of Honnatti village (Ranebennur taluk) and Anaji village (Hirekerur taluk) it is came to know that farmers are not practicing cultural practices like vine lowering, staking and they are not using any bio control agents to manage foot rot disease with 15-20 % incidence. Farmers are needed to be educated on the integrated crop management (ICM) to enhance the yield in betelvine.

KVK intervention

The demonstration of ICM practices for enhancement of betel leaf production was conducted during 2017-18 to 2019-20. ICM practices like garden sanitation after onset of monsoon, application of *Trichoderma viride*, *Pseudomonas fluorescens* and neem cake enriched FYM during June-July months, lowering of vine in the month of December followed by drenching with 0.2% carboxin were demonstrated. Further method demonstration, off campus trainings, field visits were conducted and literature, advisory services, SMS services, pamphlets were provided to educate the farmers regarding the ICM practices for foot rot disease management.

Spread and Impact

The average yield obtained from demonstration was 26.73 lakh leaves/ha as compared to local check with 22.22 lakh leaves/ha. There was average yield increase in about 20.32 % from 15 FLD in 8.00 ha area. Low incidence of foot rot disease was observed in

demonstration plot (7.50%, 6.40%, 12.12%) than farmer practice (13.50%, 13.60%, 21.47%) during the three consecutive years. The expenditure involved in demonstration was higher than the farmer practice but the yield obtained was higher after adoption of technology so that the net returns was also higher from demonstrated plot. The increase in yield in demonstration was the impact of ICM practices adopted in demonstration.

Technology gap was 3.26 lakh leaves/ha. It is mainly attributed to changing weather conditions leading to higher disease incidence and spread of disease. Extension gap which was 4.50 lakh leaves/ha emphasized the need to educate the farmers through various means for adoption of ICM in betelvine for management of foot rot disease. The technology index (10.86) showed the feasibility of the ICM technology in farmers field.

Trichoderma viride and *Pseudomonas fluorescens* are potent biocontrol agents. Application of these bioagents along with integrated crop management practices gave farmers an additional income and reduced the application of 25-30 kg/ha of chemical fungicides. Number of pesticides application, chances of health hazards of women and environment pollution have also minimized. Within a period of three years, *Trichoderma viride* has become popular among farmers and as a result KVK has sold nearly 1081.50 Kg by earning income of Rs. 1,40,595/-

The ICM technology has been adopted by many beetlevine farmers in about 100 ha in the district. Farmers visit to KVK increased by 5-10 per cent for purchase of *Trichoderma viride*. Apart from beetlevine crop farmers now also started to use this bioagent for other crops like banana, onion, ginger to control soil born diseases.

Year	<i>Trichoderma viride</i> (Kg)	Village Number
2017-18	291.50	32
2018-19	182	23
2019-20	608	39
Total	1081.50	94



FYM enrichment with *Trichoderma viride* and *Pseudomonas fluorescens*



Diagnostic field visit to betelvine crop affected with foot rot disease



Foot rot disease incidence in Beetlevine crop



Off campus training programme for betelvine farmers



Bountiful betelvine leaf yield in front line demonstration field