

## Effect of nutrient integrated bio-fertilizer, vermicompost and mustard oil cake + inorganic on betelvine (*Piper betle* L.) crop.

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### ABSTRACT

A field experiment was conducted during 2004-05 and 2005-06 at betelvine conservatory of RAU, Pusa (Bihar) to evaluate the effect of various sources of nutrient on growth parameter, leaf yield, nutrient uptake, soil nutrient and economics of betelvine (*Piper betle* L.) variety 'Bangla'. The treatment comprised *Azotobactor* 5 kg/ha incubated in FYM 5 t/ha + P<sub>2</sub>O<sub>5</sub> 100 kg/ha + K<sub>2</sub>O 100 kg/ha, *Azotobactor* 10 kg/ha incubated in FYM 5 t/ha + P<sub>2</sub>O<sub>5</sub> 100 kg/ha + K<sub>2</sub>O 100 kg/ha, Phosphobactor 5 kg/ha incubated in FYM 5 t/ha + N 200 kg/ha incubated in FYM 5 t/ha + K<sub>2</sub>O 100 kg/ha, Vermicompost 12 t/ha : K<sub>2</sub>O 100 kg/ha with one control plot (no nutrient applicable). All the treatment recorded similar and at par response on vine growth, marketable leaf production (lac/ha, dry matter production and nutrient (NPK) content in betelvine crop. However, the fresh weight of 100 leaves, leaf area and nutrient uptake recorded significantly higher with vermicompost treatment. Comparatively low B : C obtained by vermicompost treatment due to its high input cost but all the nutritional treatments found remunerative with positive effect on soil nutrient status. Significantly lower shelf life or keeping quality of leaves (days to 50% rotting) and higher disease incidence noticed with mustard oil cake : inorganic treatment. Though control treatment responded significantly poor growth, leaf yield, soil nutrient status and economics but low disease incidence and higher shelf life of leaves was noticed with this treatment.

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Accepted : December, 2006  
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**Key words :** Betelvine (*Piper betle* L.), Bangla, *Azotobactor*, Phosphobactor, FYM, Vermicompost, Mustard oil cake.

**B**etelvine is an important commercial crop in India, Bangladesh and Sri Lanka. It is also cultivated in almost all the South-East Asian countries on a limited scale. The betelvine (*Piper betle* L.) is a perennial climber, cultivated for its leaf which is used as a masticatory. Panchewing is an ancient habit, prevalent amongst all classes of people in South-East Asian countries.

Although cultivated in the Indian Sub-continent over the centuries as well as in Bihar too, not much scientific research input has been directed towards improvement of betelvine cultivation. It is grown in India by two system : first in open system in South India and second in the closed conservatory system in north India situation, established for more than 25-30 years at a place. Cultivation of betelvine crop is preferred under organic nutrient and integrated nutrient management system for producing quality leaf keeping this view under consideration, the present study has been taken out at northern Bihar condition to assess the effect of nutrient integrated bio-fertilizers, vermicompost and organic inorganic combination on the production of betelvine crop.

### MATERIALS AND METHODS

A field experiment was undertaken during 2004-05 and 2005-06 at existing betelvine conservatory (Bareja) of Rajendra Agricultural University, Bihar, Pusa (Samastipur) under All India Networking Project to identify efficient sources of nutrients for maximum and healthy leaf production from betelvine crop variety 'Bangla' in affixed location. The soil experimental plot was clay loam-alluvial calciorthent type (calcareous) having pH 8.4, organic carbon 0.59 epr cent, available N 243.97 kg/ha, available P<sub>2</sub>O<sub>5</sub> - 31.46 kg/ha, available K<sub>2</sub>O - 117.26 kg/ha. The experiment was laid out in a randomized block design with 3 replication on a fixed site. Seven sources of nutrients i.e. *Azotobactor* 5 kg/ha + P<sub>2</sub>O<sub>5</sub> 100 kg kg/ha + K<sub>2</sub>O 100 kg/ha + FYM 5t/ha; *Azotobactor* 10 kg/ha P<sub>2</sub>O<sub>5</sub> 100 kg/ha + K<sub>2</sub>O 100 kg/ha + FYM 5t/ha; Phosphobactor 5 kg/ha + N 200 kg/ha + K<sub>2</sub>O 100 kg/ha + FYM 5 t/ha; *Azotobactor* 5 kg/ha + Phosphobactor 5kg/ha + K<sub>2</sub>O 100 kg/ha + FYM 5 t/ha; vermicompost 12 t/ha; mustard oil cake : inorganic (1 : 1) for N 200 kg/ha : P<sub>2</sub>O<sub>5</sub> 100 kg/ha : K<sub>2</sub>O 100 kg/ha and control (no nutrient application) were taken for study. Bio-fertilizers incubated with FYM was applied once in the month of April during both the years of experimentation and all other nutrient sources were applied in 4 equal splits