

Title: Propagation Model of *Terminalia bellirica* (Baheda)

A: The propagation will be carried out as intercropping on community land already fenced under Departmental scheme.

Background: *Terminalia bellirica* (Baheda), family Combretaceae, is a deciduous tree which attains a height of 15-24 m with clear bole and girth of 1.5 to 2.4 m. It is frequently found in tropical and sub-tropical zones, mostly in hilly tracks. In Himachal Pradesh, the species is confined to sub-tropical zone 400-900 m. Being an important ingredient of 'triphala', an Ayurvedic formulation, it is used for high cholesterol and digestive disorders, including both diarrhea and constipation, and indigestion. While traversing through districts Bilaspur, Mandi and Kangra, its natural zone of occurrence has been found at the aforementioned altitudinal range. Therefore, it is felt that if the propagation of this species is initially undertaken in these districts, the same may easily be developed into a model site and replicated to other appropriate areas subsequently.

Scheme: The scheme includes identification of areas in the above altitudinal zone of Bilaspur, Mandi and Kangra Districts as per availability, suitable soil and water source. Common Interest Groups (CIGs) of interested families will be formed to take up its propagation in the adjoining fenced forest plantation areas of VFDS. In order to compare and monitor the progress more efficiently, the propagation will also be undertaken on private land. Marketing will be carried out by the marketing committee set up at Cluster level of VFDS and under the aegis of Manager (Marketing) from PMU.

Activities: The suitable areas for propagation will be identified in the above mentioned districts. Depending on the soil moisture and season, the irrigation in pit areas is required and the plants may need to be irrigated at least once a week in summers. In addition, Potassium acrylate will be used for moisture retention as per requirement in the field.

Nursery raising: The improved quality/ grafted plants will be procured from Training Station (RHR&TS) Jachh, Nurpur, Collage of Horticulture & Forestry (COH&F), Neri, Hamirpur and Regional Horticultural and Department of TIGR, Nauni. @ Rs.70/plant as agreed by them.

Costs involved: Estimated projections have been broadly worked out as below:

No.	Activities	Units	Quantity (No.)	Norms (Rs.)	Cost (Rs.)
1.	Constitution of CIG from VFDS	1			
2.	Cost of Planting Material	1	2,000	70	1,40,000
3.	Agricultural Implements	LS		LS	7,000
4.	Digging of pits (90x90x90) cm size	%	2,000	12,477.20	2,49,544
5.	Filling of pits (90x90x90) cm size	%	2,000	1,063.5	21,270
6.	Planting of plants in P-bags	%	2,000	436.50	8,730
7.	Potassium acrylate	LS		LS	15,000
8.	Manure cost/NPK	LS		LS	20,000
9.	Carriage of manure	LS		LS	2,000
10.	Initial Watering Cost	LS		LS	50,000
11.	Carriage of extracted material	LS		LS	20,000
12.	Cleaning & Packing cost	LS		LS	20,000
13.	Packaging material cost	LS		LS	5,000
14.	Cost of labels				1,000
15.	Sale & Auction	LS		LS	1,000
16.	General Overheads/Other Charges	LS		LS	50,000
	Total				6,10,544

The maintenance and recurring costs will be reflected in the Business plan.

Financial Returns: Total expected average yield/annum (**from 5th year onward**) will be 30 kg/tree (approx.) which on the minimum market price of Rs.4,000/quintal may give annual return of Rs.24,00,000/- (for 10 ha). However, the average yield/annum may increase up to 2 quintal/tree after 15 years of propagation under ideal conditions.

Cost Benefit Analysis: The average Benefit: Cost = $24,00,000/6,10,544 = 3.93$. Any project which on PNV gives a value of 3.93 times that of investment is sustainable.

Sustainability: The sustainability of this activity will depend on motivation of people after the project period. If the practice of cultivation coupled with proper care of the above medicinal plant species is adopted on their cultivable land and/or village common lands, they are bound to get rich dividends out of it. This will also strengthen the Ayurveda system of medicine in the State and outside.

B: Public distribution of Plants:

The beneficiaries of VFDS will be encouraged for propagation of 'Baheda' on their private lands. The cost and carriage of planting material will be borne by the Project.