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# **Scope of Crop Diversification in Tea**

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## **ABSTRACT**

**To maintain sustainability in tea cultivation, there is a need to implement novel ideas to ensure additional revenue generation, intensive land use and minimise the effect of fluctuation of green leaf price as well as price of processed tea. Crop diversification in tea provides an opportunity to achieve the desired goal under changing scenario. There is a possibility of growing some horticultural crops along with tea which is going to be a viable option for the growers of Assam. The Department of Tea Husbandry & Technology, Assam Agricultural University, Jorhat has been working on economic efficiency of tea based inter-crop at Experimental Garden for Plantation Crops for the benefit of tea growers. A few models are discussed below-**

- **Tea with Arecanut**
- **Tea with Agarwood**
- **Tea with Pepper using shade tree as standard**
- **Tea with Indian Gooseberry**

## **TEA WITH ARECANUT**

Arecanut (*Areca catechu Linn*) is one of the important cash crops of Assam. Most of the farmers of Assam grow arecanut in their homestead garden. There is a scope to grow tea with arecanut as mixed crop. From 8<sup>th</sup> year onwards, both arecanut and tea gives economical yield and its economics production is as follows –

Area	1333 m <sup>2</sup> (1 bigha)	
No. of tea plants	1950	Spacing: 105 cm x 65 cm
No. of Areca Plam	50	Spacing: 6.30 m x 4.20 m
Waiting period	7 years	
Cost	Rs. 26,000.00	
Earning	Rs. 38,500.00	
C: B ratio	1: 1.48	

- Both tea and arecanut should be grown under separate management practices.
- Cost Benefit ratio may vary depending on price of inputs.

Spacing of Tea (T) : 1.05 m X 0.60 m  
 Spacing of Arecanut (A) : 3.60 m X 3.15 m

**Figure 1. Crop geometry of Tea-Arecanut intercropping**





**Figure 2. Tea with Arecanut as inter-crop maintained at EGPC, AAU, Jorhat**

### **TEA WITH AGARWOOD**

Agarwood is native to Assam and parts of the North East. Although its use is varied – as an aromatic, medicine and for religious purposes – Xasi, as it is called in Assamese, is most famed for the expensive perfumes that it is used for making. Because of its high demand in international



**Figure 3. A view of the Tea with Agarwood as mixed crop maintained at EGPC, AAU, Jorhat**

market for making perfume, the exudates coming out from this plant is often called as “liquid gold”. However, this plant is economically advantageous only when it is infected. Then it produces the dark resin that makes the aromatic oil. Agarwood can be planted as intercrop with tea and a trial is being undertaken at Experimental Garden for Plantation Crops, AAU, Jorhat. to see its physibility as inter-crop with tea.

- Suitability of area for Agarwood planting has to be judged first with the help of an expert.
- For planting in 1333 m<sup>2</sup> area (1 bgha area), total number of tea and agarwood plant required is approximately 1950 and 50 respectively.

Spacing of tea and agarwood is 105 cm x 65 cm and 5.25 m x 5.20 m respectively.

### **TEA WITH BLACK PEPPER**

In the existing tea garden of Assam, Black Pepper (*Piper nigrum*) vine can be suitably introduced as intercrop by utilizing the shade tree plants as a support base for pepper vine. If it can be done by encouraging our small tea growers also, days are not far when Assam could be a major Black Pepper producing state in India. Efforts are being given at the Experimental garden for Plantation Crops of AAU, Jorhat given to take up BlackPepper cultivation with tea so that income can be maximised from the same piece of land.



**Figure 4. Tea with Pepper using shade tree as standard grown at EGPC, AAU, Jorhat**

- In this system, tea is planted at 105 cm x 65 cm
- Shade tree is planted at 12 m x 12 m
- 2-3 Pepper vines are planted at 50 cm away from shade tree plants.

Area	1333 m <sup>2</sup> (1 bigha)	
No. of tea plants	1950	Spacing: 105 cm x 65 cm
No. of shade tree plant	10	Spacing: 10-12 m x 10-12 m
Waiting period	4 years	
Cost	Rs. 20,000.00	
Earning	Rs. 27,500.00	
C: B ratio	1: 1.38	

**TEA WITH INDIAN GOOSEBERRY**

Indian Gooseberry or Aonla (*Emblica officinalis*) plant can be planted as shade tree in place of Albizzia spp. (commonly used shade tree) amidst tea plantations. Aonla is indigenous to Indian sub-continent. India ranks first in the world in area and production of this crop. The fruit is a good source of vitamin C. Aonla is used in the indigenous medicines (Aurvedic system) viz. trifla and chavanprash. Fruits are commonly used for preserve (murabbas), pickles, candy, jelly and jam. Besides fruits, leaves, bark and even seeds are being used for various purposes.

The technical details are mentioned below-

Area	1333 m <sup>2</sup> (1 bigha)	
No. of tea plants	1950	Spacing: 105 cm x 65 cm
No. of Indian Gooseberry plant	10	Spacing: 10-12 m x 10-12 m
Waiting period	5 years	
Cost	Rs. 16,000.00	
Earning	Rs. 27,500.00	
C: B ratio	1: 1.78	



**Figure 5. Tea with Indian Gooseberry being maintained at EGPC, AAU, Jorhat**

**CONCLUSION**

It is a fact that there is a high potentiality of growing intercrop for maximisation of return per unit area of tea land. It can be a source of additional income generation and can also act as an insurance against price fluctuation of green tea leaves. Although all the intercrops within the study area could not be considered as ideal shade for tea plantation, a favourable microclimate required for growth of tea may be achieved with proper canopy management of intercrops. Intensive research programme is to be undertaken to find out effect of different intercrops on tea volatiles and nutrient dynamics in soil eco-system.