



**AICRP (PALMS)**  
 ADDON 16: DEVELOPMENT OF COCONUT BASED INTERCROPPING  
 SYSTEM MODEL FOR DIFFERENT AGRO-CLIMATIC REGION  
 Year of Start: Sept., 2008, Rethinked on Nov., 2012

**Treatments:**

1. COCONUT + Intercrop/No Intercrop
2. COCONUT + Intercrop/No Intercrop + In-situ Green manuring + Bio-fertilizer + Vermicompost
3. Intercrop/No Intercrop + Bio-fertilizer + Vermicompost + In-situ Green manuring + Vermicompost + Bio-fertilizer
4. Intercrop/No Intercrop + Vermicompost + Bio-fertilizer + Vermicompost + Bio-fertilizer

**Crop combinations:** Coconut + Black pepper + Areca nut/Orange + Banana  
 \*Tropical Vegetables

**Area:** 0.4 ha

# Black Pepper - a promising intercrop in coconut gardens of Assam

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Mono-cropping coconut provide very low income for upland farmers even with an optimum planting density. However, there is a large area of land beneath the canopy of coconut plantations available for the farmer to use. From the land utilization point of view, coconut utilizes only 25 per cent of the soil mass while 75 per cent of the area is not utilised effectively. The unutilised coconut land can be efficiently utilized for inter-cropping. These advantages include an increase in productivity due to coconut yield and inter-crops and efficient land and labour utilization at farms. When seasonal crops are grown in coconut farms, it is called inter-cropping. With perennials it is called mixed cropping. When different crops are grown with coconut, it is known as multi-cropping.

Black pepper is a perennial climbing vine grown

for its berries and is extensively used as spice. It is valued for its characteristic pungency and flavour as an ingredient in food preparations and also as a condiment. It is therefore rightly considered as the "king of spices" and universally acclaimed as Black gold is one of the important foreign exchange earner for the country and where, pepper is grown as a profitable mixed crop in almost all the coconut and areca nut garden. Pepper has traditionally been a South Indian spice, growing in the region for centuries. Now, however, new geographies are rising to challenge the south's near monopoly in its cultivation. Spices in the North Eastern states have been grown using nature friendly for year as the region is blessed with tropical rain forests and rich soil, which are favorable for organic farming.

All India Coordinated research project on palms centre at Kahikuchi, Assam has started the screening of black pepper varieties for their performance as intercrop in coconut garden during 2009. Five pepper varieties viz., IISR Thevam, IISR Shakti, IISR Malabar Excel, Sreekara and Panniyur -1 were selected for the trail (Table 1).

## Planting and after care of black pepper

Black pepper vines produce three types of shoot, namely (1) Primary climbing shoot with long internodes having adventitious roots at nodes which

Variety	Mean yield dry (kg/ha)	Features
Panniyur -1	1242	High yielding, not suited to heavily shaded areas
IISR Shakthi	2677	Suited to all black pepper tracts
IISR Shakthi	2253	Tolerant to Phytophthora foot rot
IISR Thevam	2481	Tolerant to Phytophthora foot rot; suited to high altitudes and plains
IISR Malabar Excel	1440	Suited to high altitudes; rich in oleoresin

cling to the supports/ standards; (2) Runner shoots which originate from the base of the vine and creep

Pepper varieties	No of laterals (one m column height)	No of spikes (in one m column height)	Spike length (cm)	No of berries/spike	Dry yield (kg/vine)
IISR Thevam	25.1	87.4	10.9	55.1	0.98
IISR Shakthi	26.0	83.6	11.6	49.2	0.88
IISR Malabar Excel	23.7	82.0	11.5	56.7	0.92
Sreekara	29.8	91.2	8.7	43.8	0.89
Panniyur -1	27.6	109.1	14.4	64.1	1.25

on the ground, have long internodes which strike roots at each node and (3) Fruit bearing lateral shoots. Cuttings are raised mainly from runner shoots, though terminal shoots can also be used. The rooted cutting need to be planted one meter away from the bole of coconut in North – East direction. Before planting, one 50x50x50 cm dimension pit has to be taken and should be kept open for 15 days . The pits are filled with a mixture of top soil, farmyard manure @ 5 kg/pit and 150 g rock phosphate. Neem cake @ 1 kg, Trichoderma harzianum @ 50 g also may also be mixed with the mixture at the time of planting. With the onset of monsoon, 2-3 rooted cuttings of black pepper are planted individually in the pits.

Lowering of the vines is a practice followed in many pepper growing regions. In this method, the vines are allowed to trail on support trees up to 20-25 feet and to allow the climber to climb the coconut palms for harvest on nuts. Subsequently, the vines

are carefully separated from the tree and buried in the soil around the base of the coconut tree to ensure that the growing tip of the vine is kept above the soil. This practice induces more leader shoots covering the entire standard and production of laterals from the base of the standard.

Apply recommended dose of fertilizer and organic manures NPK at 50:50:150 g/vine and application of 2-3 kg of vermicompost or FYM or compost. Only one-third of this dosage should be applied during the first year which is increased to two-thirds in the second year. The full dose is given from the third year onwards. Care should be taken not to disturb the root system of the plant and apply the manure on the outer side of the root system and cover with soil. Irrigation during summer months is required and can be given in the form of drip irrigation or sprinkler irrigation.

### Harvesting

Black pepper takes about 7-8 months after flowering to reach full maturity. In India the crop is harvested during December –January in plains and January-April in the high ranges of Western Ghats. Among the pepper varieties, Panniyur-1 recorded significantly higher number of spikes, spike length, number of berries per spike and dry yield compared to other varieties. It is important to harvest pepper at the proper stage of maturity in order to achieve a dried product of good colour and appearance. Harvest starts when one or two berries turn yellow. The spikes are nipped of by hand and collected in bags.

Being a perennial crop, high yielding varieties or hybrids require several years of field observation. This is quite expected as the period of evaluation was very short (eight years) and further evaluation in the years to come will definitely bring out suitable varieties for Assam condition. ■