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Short Scientific Report

Performance of Java long pepper (*Piper chaba* Hunter non Blume syn. *P. retrofractum* Vahl.) intercropped with arecanut

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Key words: Chaba, Java long pepper, intercropping, *Piper chaba*, yield, arecanut

Long pepper (Pippali or Thippali) is the dried fruit obtained from four or five species of *Piper* used as stimulant, expectorant, carminative and alternative tonic to alleviate cough and bronchitis. Java long pepper (*Piper chaba* Hunter syn. *P. retrofractum* Vahl.) is one such species. It is also called as Gajathippali, Hastithippali or Bengalathippali. It is a perennial, glabrous, fleshy climber with adhesive roots, native to Moluccas, found in hot and moist climate. It is considered as minor forest produce. There was no evidence on organized cultivation of this plant. Owing to its medicinal use, recently it is gaining popularity and grown as intercrops in arecanut / coconut gardens and avenue trees. There were not much experiments on this crop.

The trial was conducted at Indian Institute of Spices Research Experimental Farm, Peruvannamuzhi on laterite soil to study the feasibility of intercropping chaba with arecanut. The chaba was inter-planted at 1.35 x 1.35 m spacing on an established live *Glyricidia* support of 3 m height in 9 year old arecanut spaced at 2.7 x 2.7 m spacing. One cutting of 1 feet height was planted in each *Glyricidia* standard during July 1994. Totally 70 plants were raised in 6.25 cents area. Arecanut was maintained as per standard package of practices. No external manure was given to chaba except two mulching with *Glyricidia* leaf pruning during June and October. Mature (greenish orange) fruit was harvested individually and weight was recorded from 1997 to 2003 (7 years). Random samples were drawn and individual fresh weight, length and dry weight of fruit recorded. The fruits were kept in hot air oven at 65°C until stable weight was obtained and dry recovery was expressed as percentage.

The yield of chaba over the years and its summary statistics are presented in Table 1. Out of 70, only 59, 67,

62, 61, 60, 60 and 66 plants yield during 1997, 98, 99, 2000, 01, 02 and 03, respectively. The total yields of harvested matured fresh fruit in these years were in the order of 18.88, 37.22, 13.35, 34.10, 45.14, 29.55 and 32.85 kg, respectively. This crop continuously flowers and bears fruit under ideal conditions. At this site, the major yield share was obtained during July. The yield variations might be due to external variables. The frequency distribution of yield per vine (Table 2.) indicated that on an average 34.3% of the vines were in the yield range of 20 to 250 g/plant followed by 29.0% of the vines which were in 251 to 500 g / plant yield range. Approximately, 500 g fresh mature fruit per plant could be harvested. Sasikumar (2003) stated that yield from a 4 year - old vine was 5 - 10 kg. Perhaps, the bigger support tree might have allowed for more canopies to bear fruit.

Table 1. Summary statistics of *Piper chaba* yield (mature fresh fruit/ vine)

Year	Range	Mean	Median	S.D
1997	20-980	320.0	250.0	235.5
1998	30-1700	555.5	490.0	405.4
1999	50-800	215.3	180.0	179.6
2000	20-1700	559.0	500.0	387.9
2001	70-2530	752.3	660.0	498.0
2002	20-1500	492.5	400.0	386.1
2003	50-1320	498.2	450.0	308.8

Table 2. Frequency distribution of yield (g/plant¹) over the years

Frequency	1997	1998	1999	2000	2001	2002	2003
20-250	30	18	42	15	9	21	14
251-500	18	18	15	17	16	17	25
501-750	8	13	4	14	10	6	14
751-1000	3	10	1	8	8	8	8
1001-1250	0	2	0	3	9	5	4
1251-1500	0	4	0	3	4	3	1
>1501	0	2	0	1	4	0	0

The fresh weight of individual fruit was 2.495 g (range) 2.132 - 2.889 g), length was 4.313 cm (3.0 - 5.2 cm) and dry weight was 0.636 g (0.579 - 0.826 g). The dry recovery (oven dry) was 27.8% (19.8 to 34.31%). Das *et al.* (2003) reported that the dry recovery of mature fruit was 29.43% (Mechanical drying with CPCRI Small Holder's Dryer). Dry recovery of 35% was also reported (Sasikumar, 2003).

It could be inferred that intercropping chaba with arecanut will provide additional income to the farmers. Around 4000 plants could be grown in 1 ha arecanut garden. On an average 135 g dry mature fruit per vine could be harvested. At the rate of Rs. 60 per kg, a produce

(135 x 4000 x 60 / 1000) worth Rs. 32,400 from one hectare can be obtained without much effort. Compared to black pepper, chaba is free from infection with diseases and pests. In addition, the leguminous support tree *Glyricidia* would enrich the soil by fixing atmospheric nitrogen and providing green leaf for mulch.

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