



Fig. 1: Climatic conditions of Chettalli (A), Karnataka and Waynad district of Kerala

RESULTS AND DISCUSSION

The study revealed that most of the litchi growers in the surveyed areas have less than 5 trees in their plantations. These plants are planted in backyard and fruits are consumed for own purpose only little surplus quantity is sold through middle men. Only 8 % farmers have 5-100 plants. And most of them are planted as intercrop with coffee. only 2 % farmers have more than 5 acres under litchi .the mono crops of litchi was almost negligible. As far as the varieties are concerned there is no record of the varieties in most of the cases but the plants belongs to Shahi, china, Rose Scented, Early Seedless, Dehra, Shahi, Bedana varieties . These plants were brought from Assam (14%), Bihar (8%), U.P. (20 %) and local nurseries (58 %)(Table 1).

Table 1: Size and source of litchi plantation in surveyed areas of Karnataka and Kerala

Size of plantation	< 1acre (94%)	1-5 acres (8%)	>5 acres (2%)	
No. of trees/ plantation	< 5 (80%)	5-100 (16%)	>100 (4%)	
Cropping system	Mono crop (2%)	Intercrop with coffee (12 %)	Back yard planting (80 %)	
Source of planting material	Assam (14%)	Bihar (8%)	U.P. (20%)	Local nurseries (58 %)
Varieties	Shahi, china, Rose Scented, Early Seedless, Dehra, Shahi, Bedana			

As far as the age of plants is concerned, there of the surveyed plantation ranged between 4 to 60years. Most of the old trees are very big and attained heights of 8-10 meters. The fruits of most of the trees matures in the month of December and January .The fruits of cv. Early seedless matured first in the second week of December

while China fruits matures late in the month of January. The yield of plants varied from 0 to 200kg. No yield was recorded in some of the trees because the fruits were dropped due to infestation of fruit borer or fruit bats. As far as the quality of the fruits is concerns, the fruit weight ranged from 10.72 g to 23.28 g with average fruit weight of 17.77 g. The fruit volume shown similar trends with highest 23.5 ml and lowest 10.68 ml. The fruit length ranged from 2.88 cm to 3.96 cm while fruit width ranged from 2.64 to 3.49 cm.

Table 2: yield and quality of litchi trees surveyed in Karnataka and Kerala

Characters	Mini- mum	Maxi- mum	Aver- age	Standard deviation
Age of plants (years)	3	60	24.4	-
Yield / per tree (kg)	0	200	65.0	-
Fruit weight(g)	10.72	23.28	17.77	2.98
Fruit length(cm)	2.88	3.96	3.52	0.24
Fruit width(cm)	2.64	3.49	3.14	0.20
Fruit volume(ml)	10.68	23.50	17.54	2.94
Rind weight (cm)	1.40	3.38	2.49	0.54
Seed weight (g)	0.58	5.13	2.22	0.99
Pulp weight(g)	7.88	19.55	13.15	2.65
TSS (°Brix)	17.0	21.8	18.57	1.17
Acidity (%)	0.09	0.40	0.29	0.10
Ascorbic acid (mg/100g)	4.0	35.20	13.26	6.41
Reducing sugar (%)	2.87	10.23	7.27	1.44
Total sugar (%)	25.0	51.92	25.0	7.34

The cost of production is high as compared to North India due to cost of nets etc for prevention of fruit damage from the bats, birds and squirrels.

Table 3: Constraints/ problems faced by the growers

Problems	% Grower
Erratic flowering	45
Insects- fruit Borer	95
Red velvet mites	95
Flying foxes(bats)	95
Lack of quality planting materials	75
Lack of suitable package of practices	86

The climatic conditions of the region and the farmers experience shows that litchi can be grown successfully in the region but there are some constraints in cultivation of litchi. The erratic flowering was mentioned by the 45 % farmers one of the constraints. It was noticed that some of the are not a all flowering while some trees are flowering both in February and September. The higher infection of Red velvet mite may be one reason of no flowering in some of the trees. More than 95 percent farmers consider red velvet mites as major problem. The insects -pests is considered major constraints by the growers. Ninety five percent farmers told that they are unable to get even single fruit because of higher fruit borers. The bats problem is another major problem in Coorg and waynad. Ninety five percent farmers faced this problem. The non availability of quality planting material is mentioned by 75 % growers as an important constraint. The lack of standardized package of practices is another constraint and 86 percent farmers found is important (Table 3).

Though litchi was introduced in the region long back but due to limited area and less commercial importance, little research work done was on the evaluation of suitable varieties ,production and plant protection technologies of litchi cultivation for this region. Recently varietal evaluation trials and plant protection experiment were

conducted at the CHES Chettalli. Litchi cultivation have a bright future in the region because of the off season production. Most of the growers indicated that combined efforts are required at Research and development level for commercial cultivation of litchi in the region. This may be helpful in crop diversification and income enhancement of farmers of these areas.

REFERENCE

- Anonymous, 2015 Horticulture Data book. NHB. pp297.
- Anonymous, 2005-2006. Season and crop Report 2005-06. Department of Economics & Statistics. Govt. of Tamil Nadu.
- Panse, V.G. and Sukhatme V.G. 1995 Statistical methods for Agricultural workers, ICAR, 2nd Edition New Delhi.
- Ranganna, S. 1986 Handbook of analysis and quality control for fruit and vegetable products. Tata Mc Grow Hill Publishing company Ltd, New Delhi.
- Singh, Gorakh; Nath, Vishal; Pandey, S.D.; Ray, P.K. and Singh, H.S. 2012. The Litchi, FAO New Delhi, India, Pp. 219.
- Tripathi, P.C.; Karunakaran and Sakthivel, T. 2013. Performance of Litchi cultivars for off season production under Coorg conditions of Karnataka, Indian J. Hortic. (submitted)
- Tripathi, P.C.; Sankar, V. and Senthilkumar, R. 2014. Off season litchi cultivation in Coorg. Coffee land News Oct -Pp 7-8.
- Nath, Vishal; Kumar, Amrendra; Pandey, S. D. and Tripathi, P.C. 2015. Litchi in winter season-a way forward. *Indian Hort.* **60(2)**:26-27