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Fruiting characteristics of jalpai-the Indian olive (*Elaeocarpus floribundus* Blume.)

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Abstract

Indian Olive (*Elaeocarpus floribundus* Blume.) belongs to the family of *Elaeocarpaceae* is popularly known as “*Jalpai*” in the northern parts of West Bengal. It is a less exploited, underutilized fruit crop of this locality. Indian olive fruits are utilized for preparation of chutney, making pickles and other culinary purposes. Different species of *Elaeocarpus* have some medicinal properties also. Flowers appear during the summer months (April to May) and fruits are harvested during August to October. Fruits are greenish, single seeded, drupe and the edible portion of the fruit is the mesocarp around the seeds. To know the fruiting characteristic of Indian Olive, a survey was made during 2012 and the result shows that the fruit weight, length, breadth was varied from 15.78 to 22.46 g, 4.07 to 4.49 cm and 2.62 to 2.89 cm, respectively. Among the bio-chemical properties the TSS, ascorbic acid content of different accessions varied from 8.20 to 11.33°brix and 12.65 to 18.72 mg/100g of fruit pulp.

Keywords: *Elaeocarpus*, Indian Olive, Jalpai, Fruiting

1. Introduction

Elaeocarpus is a genus of 350 plants species with a wide distribution in Madagascar, India, Southeast Asia, Malaysia, southern China and Japan as well as Australia and New Zealand, Fiji and Hawaii in the east (Burkill *et al.*, 1966) [3]. Indian Olive (*Elaeocarpus floribundus* Blume.) is a less exploited, underutilized fruit crop belongs to the family of *Elaeocarpaceae* and it is locally known as *Jalpai* in the sub-Himalayan terai region of northern parts of West Bengal and grown in homestead condition with no or very few management practices. The fruit is somewhat similar to the fruit shape of olive, so it is known as ‘jalpai’ in Bengali or as Indian olive. Trees grown mainly in ‘terai’ region of West Bengal, specifically in Jalpaiguri, Alipurduar, Cooch Behar and other northern districts of West Bengal. The name of district Jalpaiguri is believed to be derived from two words ‘jalpai’ means plant of jalpai and ‘guri’ means the trunk of the tree (Bhowmick, 2011) [2]. The tree is found in eastern Himalayas up to 3,000 ft and in the evergreen forests of North Kanara and western coast down to Travancore (Anon., 2003) [1]. It is a medium to tall tree; leaves are simple, green in colour, often typical existences of some leaves which are red or orange in colour. Flowers appear during April-May and greenish fruits mature for harvesting in August to October. Fruits are greenish, single seeded, drupe and edible portion is mesocarp around the seeds. This acidic mature and immature fruit is mainly used for preparation of chutney, pickles. The medicinal properties of different species of *Elaeocarpus* and the Phenolic contents, antioxidant and cytotoxic activities of *Elaeocarpus floribundus* was reported by the several scientists (Dhadich *et al.*, 2013; Utami *et al.*, 2013) [6]. This plant also known as medang teja (in Malay) and infusion of bark and leaves is used as a mouthwash for inflamed gums (Wiat, 2006) [6]. Information regarding flowering and fruiting characteristics of Indian Olive is less in literature. To know the fruiting characteristics of Indian Olive the trial was conducted.

Materials and Methods

A survey was conducted during 2012 in and around the Indian Olive plantation of Uttar Banga Krishi Viswavidyalaya, Pundibari, Cooch Behar, West Bengal. Indian Olive is normally propagated by seeds and it is highly heterozygous in nature as well as no or very little information is available regarding the variety or cultivars or types of the crop in worldwide, so it has assumes that a variation among the population is present and each plant was treated as single accession during this experiment. After survey, total 10 numbers of plants (accession) were selected for further analysis. The fruit physical parameters like fruit weight, length, breadth and bio-chemical properties like Total soluble solids (TSS), total sugar percentage, reducing sugar percentage, ascorbic acid content as well as the number of fruit harvested and estimated yield potential of individual accession was recorded.

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Bio-chemical parameters were recorded following the methodology of Ranganna (1977) [5]. Analysis of variance (one way classified data) for each parameter was performed using ProcGlm of Statistical analysis System (SAS) Software (Version 9.3). Means separations for different accessions under different parameter were performed using Least Significant Difference (LSD) test ($p \leq 0.05$).

Results and Discussion

Different fruit physical and bio-chemical properties shows significant variation among the different accessions surveyed. The fruit weight, length, breadth was varied from 15.78 to 22.46 g, 4.07 to 4.49 cm and 2.62 to 2.89 cm, respectively. Among the bio-chemical properties the TSS, ascorbic acid content of different accessions varied from 8.20 to 11.33° brix and 12.65 to 18.72 mg/100g of fruit pulp. The variation

among different accessions may be due to differences among the genotypes, as the crop is highly heterozygous in nature. ACC-8 is recorded with maximum fruit weight (22.46g), fruit length (4.49cm), fruit breadth (2.89 cm). Maximum TSS(11.33° brix), total sugar (7.34%) was recorded with ACC-3, which is statistically at par with ACC-8 (10.73° brix and 6.92%, respectively). The maximum ascorbic acid content (18.72 mg/100g of pulp) was recorded with ACC-10. The number of fruits harvested was highest (2716) in ACC-9, but the estimated yield was highest (58.60 kg/tree) in ACC-8 due to the high average weight of the fruit

Conclusion

The Indian Olive, ACC-8 has showed the better results in terms of the most of the fruit physic-chemical properties and for the estimated fruit yield.

Table 1: Physico-Chemical Properties of Indian Olive

Accessions	Fruit Weight (g)	Fruit Length (cm)	Fruit Breadth (cm)	TSS (° brix)	Total Sugar (%)	Reducing Sugar (%)	Ascorbic Acid (mg/100g)	No. of fruits	Yield (kg/tree)
ACC-1	21.10 abc	4.13c	2.88ab	8.20e	5.78c	2.03ab	17.69ab	2408	50.81
ACC-2	21.72 ab	4.30b	2.76abcd	10.40bc	6.35b	1.90b	16.31bc	2579	56.02
ACC-3	20.71abc	4.37b	2.75bcde	11.33a	7.34a	1.91b	12.65d	1908	39.51
ACC-4	19.09bcd	4.07c	2.76abcd	10.40bc	6.39b	2.07ab	16.53b	2273	43.39
ACC-5	20.29abc	4.33b	2.69cde	8.20e	7.24a	2.04ab	16.78b	2357	47.82
ACC-6	22.27ab	4.36b	2.65de	9.73cd	5.73c	2.16ab	17.57ab	2511	55.92
ACC-7	19.12bc	4.08c	2.71cde	10.67ab	7.00a	2.40a	16.43b	2183	41.74
ACC-8	22.46a	4.49a	2.89a	10.73ab	6.92a	2.32a	14.97c	2609	58.60
ACC-9	15.78d	4.29b	2.80abc	10.27bc	7.00a	2.38a	16.81b	2716	42.86
ACC-10	18.27cd	4.35b	2.62e	9.20d	6.94a	2.25ab	18.72a	2307	42.15
S.Em.±	1.12	0.03	0.04	0.29	0.14	0.13	0.48	-	-
L.S.D. at 5%	3.33	0.09	0.13	0.87	0.43	0.38	1.42	-	-

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