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Short communication

Performance of *aonla* cultivars for yield and physico-chemical properties under Coorg conditions

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Aonla (*Embilica officinalis* Gaertn.) is one of the important underutilized fruits of Indian origin and grown mostly in arid and semi-arid region of the country due to its hardy nature, drought tolerance, prolific bearing and high remuneration with much less care. It is also a rich source of vitamin 'C' and pectins and therefore regarded as very important in medicinal value under Ayurvedic system of traditional medicine in India.

A net return from the farming enterprise entirely depends on the total tonnage of produce, time of availability and its quality. Among these, quality itself is one of the most important aspect for marketability and fetching higher prices. Market price of *aonla* will vary according to quality at all the times. The quality of produce is judged by its physical appearance and chemical composition. A number of selections and cultivars were evolved during the last four to five decades, but meager information is available on the proximate yield and physicochemical properties of the varieties under humid tropic region like Coorg in Karnataka.

Present investigation was carried out at Central Horticultural Experiment Station, Chettalli, Kodagu District, Karnataka during 2006-07 to study the proximate yield and physico-chemical properties of five-year-old trees of *aonla* cultivars namely Kanchan, NA-6, NA-7, NA-10, Krishna, Chakaiya, BSR-1 and Local (Deshi). Chettalli is situated in the Western Ghats of Peninsular India with an elevation of about 3500' above MSL. The mean annual rainfall is about 1500 mm and it rains heavily in the months of July-Sep. The area is classified as hilly humid tropic region. Grafts of different *aonla* cultivars were planted in 2002 and the orchard maintained in good health. Mature fruits from all the cultivars were collected and washed properly for the study. Observations were recorded on fruit number and average yield (kg/plant), fruit weight (g), fruit size (cm), fruit volume (ml), pulp weight (g), pulp to stone ratio, total soluble solids (TSS °B), percent acidity, ascorbic acid (mg/100 ml of juice), percent reducing sugars and percent total sugars. The samples were analyzed as per standard AOAC (1) methods with modifications. The data were analyzed statistically by RBD with three replications.

Data pertaining to the study is presented in Table 1 and it is clear that the number of fruits were more (820) in cv. BSR-1 with the proximate yield of 17.56 kg/plant. Cultivar NA-6 recorded the least number of fruits (130) with 4.80 kg fruits/plant; however the lowest yield was recorded in cv. Local (2.37 kg/plant). Bhavani Sanker *et al.* (4) had also reported cv. BSR-1 as a high yielding *aonla* variety for different agro-climatic regions of Tamil Nadu. Fruit weight was found to be maximum in cv. Krishna (37.75 g) which was statistically at par with cv. NA- 6 (36.95 g), whereas the minimum was recorded in cv. Local (6.70 g). The same trend was also found in case of fruit size, fruit volume and pulp weight. The increase in fruit weight, size and volume in case of cv. Krishna may be due to more activeness of mesocarp cells which enlarge during fruit development (Balasubramanyan and Bangarusamy, 3). Pulp to stone ratio was maximum (21.52:1) in cv. Chakaiya as a result of smaller sized stones inside the fruits. However, the minimum pulp to stone ratio was found in Local (12.40:1). This result is in conformity with the result of Singh *et al.* (7) and Sudhir *et al.* (7), who have reported the minimum pulp to stone ratio in cv. Deshi. The total soluble solids were recorded at maximum in cv. BSR-1 (14 °Brix) and minimum in cv. Krishna (7.6°Brix). This is in conformity with the findings of Prasad *et al.* (5). The total sugars, reducing sugars, ascorbic acid and acidity were also found to be more in cv. BSR-1. This might be due to the inherent character and/or low moisture content in the pulp at the time of harvesting. Similar findings were also reported by Balamohan *et al.* (2), while studying the performance of *aonla* under sodic soils.

From the findings, it can be concluded that *aonla* could very well be grown in high rainfall areas of Kodagu and the cultivar BSR-1 is best suited in terms of yield and quality parameters, among eight cultivars whose performance was evaluated.

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Table 1. Yield and physico-chemical properties of *aonla* cultivars under Coorg conditions.

Cultivar	No. of fruits / plant	Av. fruit wt. (g)	Yield (kg/pl)	Fruit size (cm)		Fruit vol. (cc)	Pulp wt. (g)	Pulp : stone ratio	TSS (°B)	Acidity (%)	Ascorbic acid (mg/100 ml of juice)	Reducing sugar (%)	Total sugars (%)
				L	B								
Kanchan	200.00	30.52	6.10	3.38	3.87	29.33	28.90	17.98	7.97	2.47	228.80	2.70	5.50
NA-6	130.00	36.95	4.80	3.52	4.20	35.33	35.29	21.46	8.07	2.41	329.56	1.82	6.35
NA-7	171.67	27.93	4.80	3.38	3.80	27.17	26.30	16.65	8.87	2.67	289.30	1.97	5.99
NA-10	246.00	29.10	7.16	3.32	3.78	26.67	27.61	18.54	9.20	1.61	309.76	2.77	7.36
Krishna	181.00	37.75	6.83	3.67	4.17	35.83	35.99	20.42	7.60	1.32	236.72	2.73	7.94
Chakaiya	408.00	31.24	12.75	3.47	3.90	30.00	29.85	21.52	9.40	1.61	319.44	2.93	8.54
BSR-1	820.00	21.42	17.56	3.02	3.43	20.17	20.09	15.19	14.00	2.45	448.80	3.52	8.82
Local (Deshi)	353.67	6.70	2.37	2.05	2.30	6.17	6.20	12.40	9.67	2.37	406.56	2.30	6.46
CD at 5%	138.06	3.55	3.80	0.20	0.14	3.48	3.57	3.76	0.20	0.15	10.64	0.14	0.13

providing the facilities to carry out the present work.

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