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COLLECTION OF GENETIC DIVERSITY OF AONLA (*Emblica officinalis L.*) FROM GARO HILLS OF MEGHALAYA

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The aonla (*Emblica officinalis L.*) is a well known fruit of India. It is said to be indigenous to tropical South Eastern Asia, particularly in Central and Southern India (Firminger, 1947). The fruit is rich in vitamin C. carbohydrates, fibre, iron, calcium and phosphorus (Bose, 1985). The plants are well adopted to dry regions and can also grow in moderately alkaline soils. However, contrary to this it has been observed that, it is well acclinatired in humid climate of North East Region of India too where mostly soil is acidic in nature. Besides, it grows well on degraded and rocky hillly terrains (Chandra *et al.*, 1995). The fruits are mainly utilized as raw or used for preparation of pickles and other products in this region. Certain improved cultivers introduced at different centres of this institute did not perform well. Therefore, an effort was made to collect and select promising genotypes of aonla from the existing land races that are available in Meghalaya.

Some land races of aonla were seen growing in degraded lands in wild forms throughout the Garo Hills (East Garo Hills, West Garo Hills and Baghmara districts) and a high degree of variability in wild population was noticed in the area surveyed (300 - 850 MSL). Maximum diversity was observed in West Garo Hill district. The random sampling technique based on the distinct traits were followed as described by Sinha (1981). Thirteen distinct genotypes were marked in *situ* considering their bark colour, fruit colour and size. The age of these genotypes ranged from 10 to 35 years. Since the fruits were not fully matured during the survey, the fruit samples were collected in the 3rd week of January from already marked trees and analysed for their physico chemical characters following standard procedures. Ten fruits from each sample were randomly taken for recording of physical parameters while for chemical analysis 25 fruits were used.

All the thirteen genotypes exhibited variability in tree shape, stem bark colour, fruit shape, colour and weight and in fruit guality traits. Observations recorded on physico chemical characters of fruits are presented in Table 1 and 2. Maximum variability (CV%) was recorded in fruit weight (32.63%) followed by seed to pulp ratio indicating that these characters may be considered more while doing survey in aonla for selection of promising ones. Ascorbic acid was most variable parameter among quality traits which showed variability as high as 30.61%. On the basis of visual observations of the tree and physico chemical parameters of fruits the collections viz. RCA 11 RCA, 4 and RCA 13 are found promising.

Since introduced cultivars of aonla from Northern plains did not perform well in this region, option remains for selection of promising good fruiting behaviour, high yield, medium to large fruits size and better fruit quality. These promising genotypes after proper testing in different locations in Meghalaya may be multiplied and adopted for large scale cultivation.

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Table 1: Range. mean and CV for some physical characters in aonla (*Emblica officinalis L.*)

Genotype	Fruits weight (g)		Fruit length (mm)		Fruit diameter (mm)	
	Mean ± SEm	Range	Mean ± SEm	Range	Mean ± SEm	Range
RCA 1	6.64 ± 0.24	5.7-8.1	19.50 ± 0.27	19-21	22/10 ± 0.31	20-23
RCA 2	6.70 ± 0.38	5.8-9.5	18.00 ± 0.42	17-23	22.70 ± 0.45	21-26
RCA 3	4.94 ± 0.20	4.0-5.8	17.00 ± 0.26	16-18	21.90 ± 0.48	19-22
RCA 4	6.47 ± 0.13	5.8-7.1	18.60 ± 0.16	18-19	23.00 ± 0.15	22-24
RCA 5	3.49 ± 0.10	3.0-3.9	15.60 ± 0.22	15-17	18.10 ± 0.23	17-19
RCA 6	7.43 ± 0.47	5.3-9.7	19.90 ± 0.38	18-22	23.60 ± 0.56	21-26
RCA 7	4.91 ± 0.39	3.7-7.5	16.56 ± 0.47	15-19	21.22 ± 0.55	18-24
RCA 8	2.51 ± 0.05	2.0-2.8	14.18 ± 0.23	14-16	16.45 ± 0.34	15-19
RCA 9	4.08 ± 0.19	3.1-5.3	16.50 ± 0.34	15-18	19.00 ± 0.36	17-21
RCA 10	7.80 ± 0.33	6.0-9.6	21.40 ± 0.43	19-23	24.2 ± 0.42	22-27
RCA 11	6.21 ± 0.43	4.0-8.1	18.20 ± 0.39	16-19	22.2 ± 0.51	19-24
RCA 12	7.21 ± 0.39	6.3-8.9	22.44 ± 0.41	19-22	23.44 ± 0.53	21-25
RCA 13	9.69 ± 0.27	8.6-11.3	23.00 ± 0.33	22-25	25.33 ± 0.33	24.27
Mean	6.00		18.40		21.80	
Range	2.51 - 9.69	--	14.18 - 23.00	--	16.45 -- 25.30	--
CV	32.63	--	13.39 --		11.64	--

Table 2 : Range, mean and cv for seed pulp ratio and fruit guality characters in aonla

Genotype	Seed pulp ratio	T.S.S. (%)	Ascorbic acid (mg/100 g pulp)	Acidity (%)
RCA 1	1: 14.13	13.0	105.00	1.54
RCA 2	1: 12.64	12.0	832.50	1.18
RCA 3	1: 12.35	14.0	920.00	1.86
RCA 4	1: 14.70	10.0	465.00	1.73
RCA 5	1: 8.95	9.0	682.50	1.63
RCA 6	1: 14.02	11.0	502.50	1.18
RCA 7	1: 10.23	13.0	570.00	1.52
RCA 8	1: 5.83	9.0	982.50	1.52
RCA 9	1: 9.71	13.0	570.00	1.58
RCA 10	1: 8.67	12.0	772.50	1.31
RCA 11	1: 11.72	12.0	510.00	1.44
RCA 12	1: 12.12	12.0	603.73	1.36
RCA 13	1: 17.62	12.0	461.25	1.20
Mean	1: 11.75	11.69	640.77	1.47
Range	1: 5.83 – 1 : 17.62	9.00 –14.00	322.5 – 982.50	1.18 –1.86
CV	26.24	13.25	30.61	14.52