

Short Communication

Collection, Maintenance and Evaluation of Aonla (*Emblca officinalis* Gaertn) Germplasm

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Aonla is an important indigenous minor fruit plant of India, known for its medicinal, nutritive value, high productivity and hardy nature. It is a natural source of vitamin C (550-750 mg/100 g) which is well preserved due to the presence of polyphenols.

In spite of productivity, tolerance to salt affected soils (10 ECC or 30 ESP) and nutritive value, several factors limit the commercial orcharding of *aonla*. These include lack of knowledge regarding its suitability to marginal and salt-affected soils and its varied uses, prolonged juvenility and lack of good cultivars.

Characteristics of Aonla cultivars

The promising cultivars of *aonla* possess the characteristics of dwarf tree stature, precocious and regular prolific bearing habit, medium fruit size (45-55g), fibreless and shining fruits with attractive appearance and rich in vitamin C.

Aonla, being so important, only little efforts with respect to improvement and description of its cultivars have been made. Some cultivars are based on fruits size (Amal and Raghwan, 1957), such as Banarasi Bansi red, Francis and others according to fruit colour as Green Tinged, Red Tinged, Pink Tinged and White Streaked have been identified. Singh and Arora (1967) studied the physico-chemical variations of two cultivars of *aonla* at maturity. Further, Singh (1974) described three important cultivars viz. Banarasi, Francis and Chakaiya grown in Uttar Pradesh, particularly in districts of Pratapgarh and Varanasi. Teatolia *et al.*, (1968) also described the physico-chemical characteristics of *aonla* cultivars grown in Uttar Pradesh. These cultivars have their own merits and demerits.

In the present study, seedling variation in the material available in the major *aonla* growing tract of Pratapgarh district were critically surveyed and few promising ones identified. These seedling variations, alongwith those of well known cultivars, were grouped on the basis of season of maturity, fruit size and bearing potential.

Some important cultivars

Banarasi : This is an early cultivar of *aonla*. The tree has upright growing habit, fruits are large in size (46.6g/fruit), flattened oblong, three lobed with smooth skin (yellowish) segments raised in three parts, 6 strip, thin, solid; flesh moderately fibrous, soft and semi-translucent. This cultivar contains maximum amount of vitamin C. Fruits are commercially used for preparation of preserves but often

TABLE 1. PHYSICO-CHEMICAL COMPOSITION OF *aonla* STRAINS

| Strains | Fruit wt (g) | Frut vol (ml) | T. S. S. (%) | Total sugar (%) | Acidity (%) | Vit. C (mg/100g) | Productivity |
|-----------------|--------------|---------------|--------------|-----------------|-------------|------------------|-----------------------|
| Banarasi | 46.6 | 47.7 | 12.5 | 4.6 | 1.50 | 650.0 | Shy bearer |
| Chakaiya | 30.5 | 32.0 | 10.5 | 4.0 | 1.65 | 602.0 | Productive |
| Francis | 41.5 | 42.0 | 12.0 | 4.5 | 1.70 | 385.0 | Productive |
| NA 4 (Krishna) | 40.0 | 42.0 | 11.5 | 4.9 | 1.40 | 475.0 | Moderately Productive |
| NA 5 (Kanchara) | 32.0 | 33.5 | 10.0 | 4.0 | 1.45 | 500.0 | Productive |
| NA 6 | 38.7 | 41.0 | 11.0 | 5.0 | 1.45 | 410.0 | Moderately Productive |
| NA 7 | 47.5 | 50.0 | 11.5 | 4.6 | 1.60 | 506.3 | Productive |
| NA 8 | 37.9 | 38.7 | 10.0 | 4.0 | 1.70 | 502.5 | Moderately Productive |
| NA 9 | 47.5 | 49.0 | 12.5 | 4.6 | 1.45 | 500.6 | Moderately Productive |

NA—Narendra *aonla*.

crack into number of segments during processing and storage. This is a shy bearing cultivar because of low number of female flowers (0.51/branchlet) and self incompatibility. Hence, this cultivar is not being recommended now for commercial plantation.

CV. NA 4 : This is probably a chance seedling of Banarasi cultivar and is locally known as 'Krishna'. It is an early maturing strain with moderate fruiting. Fruits are medium to large in size (40g/fruit), flattened, conical, angular, basin papillate in shape; skin very smooth, yellowish in colour with red blush on exposed surface. The fruits have 6-8 stripes, not very distinct, segments thin, angular; flesh almost fibreless, hard and semi-translucent. Fruits contained fairly high amount of vitamin C. This seems to be an ideal cultivar because of low fibre content and non-cracking of segments during processing.

CV. NA 9 : This is also an early strain and has probably originated as chance seedling from Banarasi cultivar. It has moderate bearing. Fruits are large in size (47.5 g/fruit) flattened, skin is smooth, strip 6-8, distinct, solid, thin, flesh moderately fibrous, soft and semi-translucent. Fruits contains medium amount of vitamin C and can be used for preserve making.

CV. Francis : The tree has drooping branches and thus known as *Hathijhool*. This is a moderate bearing cultivar (3.01 female flowers/branchlet). Fruits are medium to large in size (41.3g/fruit), flattend, oval, skin smooth, greenish yellow, strips 6, distinct, solid, thick at upper side and thin at basin, flesh soft, nearly fibreless and has moderate keeping quality. This cultivar is highly susceptible to fruit necrosis. In certain years, 70-80 per cent fruits get infected with necrosis and these are not suitable for preservation purposes.

CV. NA 6 : This is a mid season strain, fruits being medium in size, flattened in shape, skin smooth, greenish yellow in colour, strips 6-8, distinct, thin flesh fibreless, soft, fruit cracking is very common and has poor keeping quality. This is a moderate bearer (2.50 female flowers/branchlet).

CV. NA 7 : This is a seedling selection from the open pollinated seeds of cv. Francis. The tree has upright growth habit instead of drooping branches as in Francis. It bears profusely, fruits flattened oval, basin irregular and conical in shape., skin smooth, yellowish green flesh. It is very interesting to note that this strain does not show any symptom of fruit necrosis and hence can be used for preserve making.

CV. Chakaiya : This is a late maturing variety. The tree has spreading habit and bears profusely and possesses 4.0 female flowers per branchlet. Fruits are small to medium in size (30.5 g/fruit), flattened, skin is smooth, russet green in colour, strip not distinct, thin, solid, flesh, fibrous. The fruits have strong attachment, therefore, premature drooping is not a serious problem. Fruits have moderate keeping quality and are suitable for preparation of pickles and other products. This strain does not have the problem of fruit necrosis. Because of profuse bearing, freedom from fruit necrosis and premature drooping, this cultivar is gaining popularity for commercial plantation.

CV. NA 5 : This is perhaps a chance seedling of Chakaiya and locally known as Kanchan in Pratapgarh. The tree has spreading habit. It bears profusely because of higher number of female flowers (4.69/branchlet). Fruits are small to medium sized (32 g/fruit), flattened oblong, skin smooth, yellowish in colour, strip 6, distinct, solid, segments; flesh fibrous, hard and ideally suitable for processing industry.

CV. NA 8 : This is a late maturing strain. Fruits medium in size, flattened oblong, segmented, skin smooth, yellowish green in colour, semi-translucent, strip 6, distinct, flesh moderate fibrous, hard and a moderately fruiting strain.

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