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ISSN: 2320 – 7051
Int. J. Pure App. Biosci. **1 (3):** 99-101 (2013)

Research Article

Evaluation of Custard apple genotypes in southern Telangana zone of Andhra Pradesh

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Received: 7.04.2013 | Revised: 11.06.2013 | Accepted: 18.06.2013

ABSTRACT

Thirteen genotypes of Custard apple (Annona squamosa L.) were evaluated for fruit yield and yield attributing traits from 2001-2008 at Arid Horticulture Research Station, Kondamallepally, Nalgonda district of Andhra Pradesh. Critical examination of the data revealed that a cross between Atemoya x Blanagar exhibited the highest cumulative yield (163.50 kg) over these years. The data revealed that the highest fruit yield in the cross has been attributed to highest number of fruits coupled with moderate fruit weight while, the Islandjem identified as poor yielder over years in the area due to low yield contributing characters.

Keywords: *Custard apple, Genotype evaluation, Fruit yield.*

INTRODUCTION

Custard apple (*Annona squamosa* L.) which is popular among poor soils and neglected areas of rural side in India. It is popularly known as 'Sitaphal' in the area which is getting popularity due to its huge demand in the recent years fetching very high price even its was more than price of the apples in the local market. Though it is native of Tropical America, wide diversity exists in the surrounding areas also. It belongs to the family, Annonaceae with chromosome number 2n=14. It is hardy crop and comes up well in dry tracts in the country. The crops has been very popular in dry areas, forest areas and tribal areas. Fruit surface is covered with scale like structures. Its cultivation extended in Maharastra, Gujarat, Madhya Pradesh, Andhra Pradesh, Chattisgarh, Karnataka, Bihar, Orissa, Assam, and Tamilnadu. Its cultivation also extended to different parts of the world due to its wider adaptability over different agro climatic conditions. The fruit is rich in carbohydrates 23 g per 100 g. fruit, protein 1.6g, 0.4 g of fat, 0.9 g minerals, 3.1 g. fiber, 17 mg. calcium, 47.1 phosphorous, 1.5 mg. iron, 37 mg vitamin c, etc. with 104 k ca. energy (Gopalan, 1987 and Singh, 1995) with creamy white flesh coupled with delicious flavour which will be very liked by all round the world. Hence, an investigation was taken up to evaluate the promising and high yielding varieties that to meet the growing needs.

Cite this article: Kaladhar Babu, K., Ramesh Babu, B. and Chalapathi Rao, N.B.V., Evaluation of Custard apple genotypes in southern Telangana zone of Andhra Pradesh, *Int. J. Pure App. Biosci.* **1(3):** 99-101 (2013).

MATERIALS AND METHODS

The present study was conducted at Dr.YSR Horticulture University, Arid Horticulture Research Station, Konda Mallepally, Nalgonda district during the period of 2001 to 2008. The Station falls under southern Telangana zone of Andhra Pradesh (Latitude 17.0586693 and Longitude 17.265585) with average rainfall of 560 mm with mean temperatures of 17ºC minimum and 40ºC maximum. The soils are calcareous shallow red chalka type. The trail was conducted in non replicated model with 13 genotypes with 6 plants in a row with a spacing of 6 x 6 meters. Standard package of practices were followed to grow the trees. The Genotypes *viz*., Local, Balanagar, Atemoya, Atemoya x Balnagar, Chance seedling, Washington were planted in the August 1994, ARJ-211, ARJ-204, ARJ-311,were planted in July1995 and SHFN ,Islandjem, Red Seethaphal x Pond apple, Red Seethaphal planted during August1997. The data on fruit yield and yield attributing traits were recorded from 2001-2008 and the cumulative yield data was collected.

RESULTS AND DISCUSSION

Perusal of the data (Table.1) revealed that the cumulative fruit yield over eight years ranged from 5 kg to 34.5 kg. The cross, Atemoya x Balanagar recorded the highest cumulative fruit yield (163.5 kg) followed by Atemoya (132.6 kg) and Balanagar (115.5 kg). These genotypes recorded number of fruits per tree(Table 2) as 35.4 (SHFN) to 86.24 (Atemoya x Balanagar) while, the average fruit weight(Table 3) ranged from 102.4g (Atemoya x Balanagar) to 240.30g (Washington). The genotype, Atemoya x Balanagar exhibited superior performance over the best check, Balanagar for the traits, Cumulative fruit yield (kg) over years and No. of fruits per tree.

It can be understood that number of fruits per tree contributed more for achieving higher fruit yield (cumulative) over years which was reflected in the Atemoya x Balanagar yield. However, there is a still scope of further improvement in the programme to achieve higher fruit weight coupled with more number of fruits per tree ultimately to obtain higher fruit yield per tree for average fruit weight.

Table 1: Cumulative Yield of Custard apple Genotypes (2001-2008)

S. No	Name of Genotype	Average yield (kg/tree)								Cumulative fruit yield (kg/Tree) (2001-2008)
		2001	2002	2003	2004	2005	2006	2007	2008	
1	Local	3.5	7.6	5.8	18.0	12.1	10.0	13.2	20.3	90.5
2	Balanagar	6.2	9.2	6.4	20.2	14.6	12.4	21.5	25.0	115.5
3	Atemoya	5.1	6.5	5.5	28.0	15.0	16.4	24.6	31.5	132.6
4	Atemoya x Balanagar	5.0	8.6	7.2	37.4	22.1	20.2	28.5	34.5	163.5
5	Chance seedling	2.0	7.2	4.9	15.0	10.8	12.4	16.2	20.0	88.5
6	Washington	0.8	6.0	3.8	5.2	4.2	12.1	8.5	7.6	48.2
7	ARJ-211	0.5	6.1	4.1	5.3	3.9	5.0	10.0	16.0	50.9
8	ARJ-204	1.5	5.8	4.0	10.3	7.2	7.6	13.4	20.5	70.3
9	ARJ-311	1.2	6.4	3.0	2.8	3.2	10.0	11.0	18.0	55.6
10	SHFN	0	2.6	1.6	2.5	2.3	3.0	7.5	9.0	28.5
11	Islandjem	0	1.8	1.2	2.0	3.1	7.2	8.2	8.6	32.1
12	Red seethaphal x Pond apple	0.4	2.0	1.8	7.0	5.4	7.1	9.0	9.4	42.1
13	Red seethaphal	0	2.5	2.0	12.0	8.6	8.8	15.1	14.4	63.4

Table 2: Average number of fruits per Tree in Custard apple Genotypes

S.No	Name of the Genotype	Average number of fruits /Tree
1	Local	48.12
2	Balanagar	58.70
3	Atemoya	73.10
4	Atemoya x Balanagar	86.24
5	Chance seedling	44.71
6	Washington	35.41
7	ARJ-211	42.30
8	ARJ-204	37.32
9	ARJ-311	51.70
10	SHFN	35.40
11	Islandjem	38.60
12	Red seethaphal x Pond apple	42.30
13	Red seethaphal	40.20

Table 3: Average fruit weight (g) in Custard apple Genotypes

S.No	Name of Genotype	Fruit weight(g)
1	Local	120.3
2	Balanagar	145.8
3	Atemoya	143.2
4	Atemoya x Balanagar	102.4
5	Chance seedling	148.0
6	Washington	240.3
7	ARJ-211	156.8
8	ARJ-204	143.6
9	ARJ-311	134.6
10	SHFN	170.2
11	Islandjem	154.7
12	Red seethaphal x Pond apple	113.4
13	Red seethaphal	152.4

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