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SHORT COMMUNICATION

DHARUR-6: A Custard Apple variety for cultivation in Maharashtra

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Custard apple, *Annona squamosa* L. commonly known as *sitaphal, sita palam, sharifa, sita pazham, sita phalmu, katal, ata* and sweet sop depending upon the region. Fruits are called as a delicacy of dry region due to its very sweet delicate flesh. The pulp has a pleasant flavor and texture. It is sweet with slight acidity. Fruits are rich in carbohydrate mainly in the form of sugar, protein, calcium, phosphorus and iron. It is one of the delicious fruits meant for table purpose. It is almost eaten as dessert fruit, besides the pulp of fruit may be mixed with milk to prepare drink or mixed into ice-cream. In Maharashtra, custard apple is cultivated on an area of 60,000 hectares in Pune, Beed, Aurangabad, Nanded, Dhule, Jalgaon, Nandurbar, Osmanabad, Latur, Ahmednagar, Solapur, Bhandara and Wardha districts. Balaghat hills of Marathwada are famous for natural occurrence of custard apple.

Custard apple is a dry land horticultural crop and in past it was considered as hardy crop devoid of any pest and disease. Now-a-days, the crop is being grown under irrigated conditions with fertilizers. This resulted in high yield of good quality fruits, however, the crop is found to be badly infected with mealy bugs and anthracnose due to development of favourable micro climate in the crop canopy. Mealy bugs, *Maconellicoccus hirstus* (Green) are small soft bodied insects, pink in colour and covered with white mealy wax coating. Both nymphs and adults are damageable, they fasten their mouth at fissure and furrow of rounded fleshy tubercles of the green fruits and suck the sap through piercing and sucking action. If the infestation occurs on developing stage, the fruit size becomes diminished, shrivelled and undergo premature dropping. These mealy bugs also infest at fruit stalks, leaves and terminal shoots causing, yellowing and drying symptoms. Bugs excretion contains honeydew which encourages the growth of sooty mold on leaves and fruits and also attracts black ants which help in the spread of these mealy bugs. The sooty mould also reduces the photosynthetic efficiency of the plant. Anthracnose of custard apple is caused by fungal pathogen, *Colletotrichum gloeosporioides* results in to blackening of leaves and fruits. Infection begins at blossom-end of the fruit and later spreads on entire fruit surface, affected fruits shrivel and they may cling to the tree or fall down. Necrotic spots of 2-10 mm in diameter appear on unripe fruits which turn into dark brown to black spots. These spots coalesce later and cover entire fruit.

Keeping these problems in view, the survey was conducted in Balaghat hilly tract of Beed district in Maharashtra for selection of tolerant genotype of custard apple to the infestation of anthracnose and mealy bugs. The studies were conducted in fruiting season of local genotype. Fewer superior types were marked through survey and cultivated at the Research Farm of Custard apple Research Station, Ambajogai Dist. Beed (MS). Dharur-6 was selected from local genotypes of custard apple present on hilly area near to Ashti, Dist Beed (MS). The comparative studies were carried out during 2011-2014 with Dharur 6 v/s well known varieties viz., Balanagar, TP-7, Daultabad and Dharur-3 for the occurrence of anthracnose and mealy bugs infestation on fruits and branches in order to detect the reaction of genotype to the disease and pest (Table 1-3).

Table 1. Reaction to anthracnose severity (%) on custard apple varieties at CARS, Ambajogai.

Sr. No.	Varieties	Disease severity	
		Grade	Percent
1	Balanagar	2	17.2
2	Daulatabad	1	10.50
3	TP-7	1	10.00
4	Dharur-3	1	9.15
5	Dharur-6	1	8.20

The anthracnose disease severity was recorded applying 0-5 disease rating scale, as detailed below.
Scale of disease ratings:
No infection.
0-10 % leaf/fruits damaged
11-25 % leaf/fruits damaged

26-50 % leaf/fruits damaged
51-75 % leaf/fruits damaged
76-100 % leaf/fruits damaged

$$\text{Severity (\%)} = \frac{\text{No. of leaves/ stems/ fruits X Disease grade}}{\text{Total leaves/ stems/ fruits X Max grade}} \times 100$$

All of the custard apple varieties tested were found infected with anthracnose disease, however its severity was at tolerable level in the range of 5 to 20 %, whereas, cv. Dharur -6 recorded comparatively least disease severity (0-5 %).

Table. 2. Screening of custard apple varieties against mealy bugs

Sr. No.	Period of observation	Mealy bug population per infested branch				
		Balanagar	Dharur-3	TP-7	Daulatabad	Dharur-6
1	Sept. FN-1st*	2.133	1.930	2.000	2.000	2.060
2	Sept.FN-2nd	5.200	5.070	5.260	4.730	3.400
3	Oct.FN-1st	13.330	13.600	13.260	15.130	10.730
4	Oct.FN-2nd	30.000	25.860	28.600	26.730	18.760
5	Nov.FN-1st	21.200	21.400	21.530	21.930	16.260
6	Nov.FN-2nd	16.730	16.600	15.260	14.660	10.800
7	Dec.FN-1st	3.860	5.070	5.930	6.730	4.260
8	Dec.FN-2nd	2.600	2.200	2.800	3.000	1.600

*Average of three years 2011-12, 2012-13 and 2013-14

Table 3. Screening of custard apple fruits against mealy bugs

Sr. No.	Period of observation	Mealy bug population per infested fruit				
		Balanagar	Dharur-3	TP-7	Daulatabad	Dharur-6
1	Sept. FN-1st*	0.770	0.640	0.690	0.710	0.610
2	Sept.FN-2nd	2.810	2.520	3.070	3.000	2.020
3	Oct.FN-1st	10.240	9.670	9.990	10.010	7.170
4	Oct.FN-2nd	23.810	25.000	24.490	23.160	16.930
5	Nov.FN-1st	20.170	20.570	19.030	19.960	14.100
6	Nov.FN-2nd	14.530	13.820	13.470	14.000	10.500
7	Dec.FN-1st	5.770	5.600	4.180	4.200	2.800
8	Dec.FN-2nd	1.730	1.670	1.570	1.620	0.300

*Average of three years 2011-12, 2012-13 and 2013-14

Overall observations revealed that Dharur-6 genotype noted comparatively less mealy bug population per infested branch (1.60 to 18.760) & fruit (0.300 to 16.930).

Because of high yield potential high potential yield, pulp percentage and tolerant to anthracnose & mealy bug infestation the genotype Dharur-6 was released under name Dharur-6 for cultivation in Maharashtra State by the variety release committee meeting in joint AGRESCO held at BSKKV, Dapoli on 29-31 May, 2014.

This variety is suitable substitute for earlier susceptible varieties Balanagar, TP-7, Daultabad.

The cultivation of this variety will help in enhancing the production & productivity of Custard Apple crop in the state of Maharashtra

References

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