

Evaluation of Reproductive Characters of Different Sapodilla Genotypes under the Coastal Zones of Odisha

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ABSTRACT

A research was carried out during 2015-16 in Department of Fruit science and Horticulture Technology, College of Agriculture, OUAT, Bhubaneswar to find out the effect of evaluation of reproductive characters of different sapota genotypes under the coastal agro climate of Odisha. Variation among different genotypes with respect to number of flowering shoot (127.33), number of flowers per shoot (10.116), number of flowers per plant (1297.85), number of fruit set per plant (1297.85), days of first flowering from its planting (1298 days) recorded in Mohan gootee but Days of first fruit set from flowering was earlier in PKM-2 (23.6 days).

Key words: Fruit set, Sapodilla, Agro-climate.

INTRODUCTION

Sapota or sapodilla (*Manilkara Zapota* L.P. Royen) also known as Chiku, belong to family Sapotaceae is one of the most delicious and flavoured tropical fruits. It is native to south Mexico as well as North East Guatemala. In colonial periods it was taken from tropical American countries to the Philippines and Malaysia and other countries of the tropic. India is the largest producer of sapota in the world. Maharashtra is the pioneer state in sapota production in India. The area under this crop has increased steadily in the recent years. In India, It is grown nearly in 160,000 ha with a production of 1363,000 MT and productivity of 12.5 MT/ha with area under sapota. In Odisha is 3.35Mha and 15.64 MT/ha. (NHB,

2014-15).The agro climatic conditions prevailing in Odisha is very congenial for sapota cultivation and provides splendid scope for Sapota cultivation. Through the area under cultivating sapota is increasing day by day but this increasing trend failed to meet up the expected level of production in this country due to absence of number of good choice varieties, so evaluation and characterization is an important aspect for documentation of the performance of the studied genotypes, which subsequently will help to introduce, select, and improve existing sapota variety that's why this research was undertaken to study of Sapota genotypes under different parameter. The state of Odisha is located in the eastern coast of the country.

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Sapota is grown in the coastal and interior districts of the state. It can be grown on inferior and marginal lands because of its hardy nature. Recently efforts are being made to popularize its cultivation in the interior districts of the state, hence research work has been conducted to identify the most promising ones basing on the reproductive growth parameter.

MATERIAL AND METHODS

The present investigation was carried out at the Department of Fruit science and Horticultural Technology, Bhubaneswar during 2015-16 with an aim to study the extent of variability among sapota genotypes and to identify the better performing genotypes. The experiment was laid out in Randomized Block Design (RBD) with 16 treatments (cultivars) and 3 replications. For evaluation 3 years old plant of all genotypes were taken with recommended intercultural operation.

The observations regarding on reproductive growth parameter with respect to number of flowering shoot, number of flowers per shoot, number of flowers per plant, date of first flowering, date of first fruit, number of fruit set, days to first fruit set were observed in 60 days interval and the data obtained were analysed through Randomized Block Design as suggested by Panse and Sukhatme,.

RESULT AND DISCUSSION

Number of flowering shoots under study indicated that sapota genotypes showed significant variations among themselves. Maximum number of flowering shoots was recorded under the Mohan gootee (107.33, 147.33 on 12th March 2016, 12th May 2016 respectively). It was followed by DHS-1 (94.66, 133.66 on 12th March 2016, 12th May 2016 respectively). The lowest number of flowering shoots was recorded in Pala (51.66, 61.66 on 12th March 2016, 12th May 2016 respectively). This might be due to the fact that the supplied nutrients from soil of environmental condition and genotypically different genotypes and plants could easily take up. The findings of present studies were

in accordance with the findings of Rafiul Islam *et al*².

Significant variations among treatments were observed with regards to the number of flowers per shoot (Vide Table no-11). Maximum number of flowers per shoot was recorded under the Mohan gootee (10.33 and 10.00 on 12th March 2016, 12th May 2016 respectively). It was followed by DHS-1 (10.33 and 9.33 on 12th March 2016, 12th May 2016 respectively). The lowest number of flowers per shoot was recorded in PKM-5 (4.23, 4.33 on 12th March 2016, 12th May 2016 respectively). This might be due to the cumulative effect of management practices and genotypically different genotypes influenced to generate variation in average flower number per shoot. These report are in close agreement with the findings of Shirol *et al*.⁶, Raghuvanshi and Sharma³, Rahman *et al*.², Rafiul Islam *et al*.², Suhasini *et al*.⁷.

Maximum number of flowers per plant was recorded under the Mohan gootee (1522.4, 1073.3 on 12th March 2016, 12th May 2016 respectively). It was followed by DHS-1 (1381.1, 883.5 on 12th March 2016, 12th May 2016 respectively). Mohangootee varied significantly from DHS-1 and rest of the genotypes. The lowest number of flowers per plant was recorded in PKM-5 (147.3, 257.1 on 12th March 2016, 12th May 2016 respectively). This might be due to the cumulative effect of management practices and genotypically different genotypes influenced to generate the variation in average number of flowers per plant. Similar results were observed from comparative study of Shirol *et al*.⁶, Raghuvanshi and Sharma³, Rahman *et al*.², Rafiul Islam *et al*.², Suhasini *et al*.⁷.

The sapota plant under study showed significant variations among themselves with regards to the number of fruit set per plant. Maximum number of fruit set per plant was recorded under the Mohangootee (11.6, 15.33 on 12th March 2016, 12th May 2016 respectively). It was followed by DHS-1 (9.66, 11.66 on 12th March 2016, 12th May 2016 respectively). Mohangootee varied significantly from DHS-1 and rest of the

genotypes. The lowest number of fruit set per plant was recorded in PKM-4 (1.00, 1.00 on 12th March 2016, 12th May 2016 respectively). These reports are in close agreement with the findings of Shirol *et al.*⁵, Saraswathi *et al.*⁴, Suhasini *et al.*⁷.

From the table it was observed that Pilipatti (1298 days) was earliest which flowered followed by CO-1 (1301days). The longest time period was required in Pilipatti genotypes. Mohan gootee but Kirti Bharthi

and Pala did not come to flowering till 31st May 2016. This results are in close agreement with the findings of Saraswathi *et al.*⁴.

Early fruit set was in PKM-2 (23.66 days in 8th March 2016). Whereas, DHS-1 took maximum number of days to set fruit (30.66 days in 2 and 3 April 2016), which was significantly differ with PKM-2. No fruit set was found in Pala and Kirti Bharthi. This work was in relation to the comparative findings of Shirol *et al.*⁵ in different sapota genotype.

Table 1: Evaluation of reproductive characters of different sapota genotypes

| Treatment | No of flowerin g shoot | No of flower per shoot | No of flower per plant | No of fruit set per plant | Days taken to fruit set from planting | Days taken for flowering from planting |
|------------------|------------------------|------------------------|------------------------|---------------------------|---------------------------------------|--|
| CO-1 | 83.6 | 8.6 | 580.7 | 3.6 | 25.6 | 1301 |
| Cricket Ball | 115.6 | 7.3 | 598.8 | 6.6 | 27.6 | 1338.3 |
| DHS-1 | 133.6 | 9.3 | 883.5 | 11.6 | 30.6 | 1326 |
| DHS-2 | 84.3 | 5.6 | 398.6 | 3.0 | 26 | 1332 |
| Kalipatti | 129.3 | 9.0 | 813.0 | 8.0 | 28.3 | 1310 |
| Kirti Bharthi | 66.3 | | | | | |
| Murraba | 125.3 | 8.6 | 754.0 | 8.0 | 26.3 | 1304 |
| Mohan Gotee | 147.3 | 10 | 1079.3 | 15.3 | 28 | 1298 |
| Pala | 61.6 | | | | | |
| Pili Patti | 117.0 | 8.6 | 722.2 | 7.3 | 26 | 1370 |
| Panic collection | 82.3 | 6.0 | 3800.0 | 2.0 | 28.3 | 1348 |
| PKM-1 | 108.0 | 6.6 | 508.9 | 5.0 | 26 | 1305 |
| PKM-2 | 95.3 | 6.0 | 430.0 | 4.0 | 23.6 | 1307 |
| PKM-3 | 87.3 | 6.0 | 376.0 | 1.3 | 27 | 1307 |
| PKM-4 | 77 | 5.6 | 394.4 | 1.0 | 27 | 1317 |
| PKM-5 | 73.6 | 4.3 | 257.1 | | | 1310 |
| Total | 88.2 | 5.8 | 8125.5 | 76.7 | 20.963 | 1026.2 |
| SE(m) | 1.613 | 0.270 | 149.2 | 1.3 | 0.305 | 0.203 |
| CD (5%) | 4.631 | 0.784 | 428.6 | 3.9 | 0.877 | 0.582 |

CONCLUSION

From the above result it can be concluded that Mohan gootee showed best result in all the parameters. Mohan gootee was comparatively dwarf and displayed superior reproductive characters which may be a superior one for this zone.

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