Available online at www.ijpab.com

DOI: http://dx.doi.org/10.18782/2320-7051.6319

ISSN: 2320 – 7051

Int. J. Pure App. Biosci. **6 (3):** 278-281 (2018)

Research Article

International Journal of Pure & Applied Bioscience

OPEN ACCESS

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

Manas Kumar Patel*, Ajay Kumar Karna, A. K. Das

Department of Fruit science and Horticulture Technology, College of Agriculture, Orissa university of Agriculture and Technology, Bhubaneswar-751001, Odisha, India

*Corresponding Author E-mail: manasicar@gmail.com

Received: 8.03.2018 | Revised: 14.04.2018 | Accepted: 22.04.2018

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 climactic 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.

Cite this article: Patel, M.K., Karna, A.K., Das, A.K., Evaluation of Reproductive Characters of Different Sapodilla Genotypes under the Coastal Zones of Odisha, *Int. J. Pure App. Biosci.* **6(3):** 278-281 (2018). doi: http://dx.doi.org/10.18782/2320-7051.6319

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, hens 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 DISSCUSSION

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, 133.66on 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 12thMarch 2016, 12th May 2016 respectively). It was followed by DHS-1 (10.33 and 9.33on 12th March 2016, 12th May 2016 respectively). The lowest number of flowers per shoot was recorded in PKM-5 (4.23.00, 4.33on 12th March 2016, 12h 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 Sharma[3], 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 12thMarch 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, 12h 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 Sharma[3], 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 Saraswati *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 Bharati. 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 flowering 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.

REFERENCES

1. Bhoyar R. K, Joshi, P. S; And Sahoo A. K. Effect of Growth Promoting Substances on Pre-Bearing Mango Plantation, *Trends in Biosciences* **8(4):** 1066-1068 (2015).
2. Rafiul Islam K.M, Md. Rezwanul Habib, Md. Shajedur Hossain and Md. Habibur Rahman Morphological characterization of Sapota (Manilkara zapota) germplasm, Asian Australas. *J. Biosci. Biotechnol.* **1 (1):** 108-115 (2016).
3. Raghuvanshi and Sharma 2011, Varietal Evaluation of French Marigold (*Tagetes patula* Linn.) Under Mid-Hill Zone of Himachal Pradesh, *Prog. Agric.* **11(1):** 123-126

4. Saraswathy S, Parameswari C, Parthiban S, Selvarajan M and Ponnuswami M. Evaluation of Sapota genotypes for growth, yield and quality attribute,*Electronic Journal of Plant Breeding*, **1 (4):** 441-446 (2010).
5. Shirol A. M., Kanamadi V. C, Shankargouda Patil And Thammaiah N. Studies on the performance of new sapota cultivars under Ghataprabha command area, Karnataka *J. Agric. Sci.*, **22 (5):** 1056-1057 (2009).
6. Shirol AM, Hanamashetti SI, Kanamadi VC, Thammaiah N AndShankargowda P. Performance of some sapota cultivars under ghataprabha command area, *Karnataka J. Agril. Sc*, **19 (2):** 366-370 (2012).
7. Suhasini, J., Kanamadi, V.C, Shirol, A.M., Basavarajappa,H.R., Swamy,G.S.K., Prabhuling, L, Chavan, M. And Naik, R.B. Morphological characterization of Sapota (Achras zepote l.) *J. Asian Hort.*, **7(4):** 186-190 (2011).