The Pharma Innovation Journal 2021; SP-10(12): 985-987

www.ThePharmaJournal.com

The Pharma Innovation

ISSN (E): 2277- 7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2021; SP-10(12): 985-987

www.thepharmajournal.com
Received: 01-10-2021
Accepted: 03-11-2021

Beena Singh
Scientist (Horticulture) S.G. College of Agriculture and Research Station, AICRP on Palms, Jagdalpur, Chhattisgarh, India

KP Singh
Scientist (Horticulture) College of Horticulture and Research Station, Kumhrawand, Jagdalpur, Chhattisgarh, India

Rajesh Patel
JRF (Entomology) S.G. College of Agriculture and Research Station, Kumhrawand, Jagdalpur, Chhattisgarh, India

Corresponding Author
Beena Singh
Scientist (Horticulture) S.G. College of Agriculture and Research Station, AICRP on Palms, Jagdalpur, Chhattisgarh, India

Performance of different coconut varieties in non-traditional Bastar region of Chhattisgarh

Beena Singh, KP Singh and Rajesh Patel

Abstract
The present investigation was carried out as an unreplicated observational trial under the All India Coordinated Research Project on Palms at S.G. College of Agriculture and Research Station, Jagdalpur (C.G.) having ten palms per genotype to evaluate the performance of different coconut varieties in Bastar region of Chhattisgarh. The growth parameters revealed the maximum plant height in Kalpa Raksha (670 cm) while the girth at base in Kalpa Mitra (139.0cm). With regard to the other plant growth and yield characters Gautami Ganga revealed to be superior over the other varieties for the maximum number of leaves at crown (18.8), annual leaf production (9.2), age of palm at first flowering (72 months), number of inflorescence (10.1), nut setting percentage (51) and number of harvested nuts (78) over the other varieties. With regard to the tolerance of varieties against insect-pests the minimum infestation of Rhinocerus beetle (%) as well as Rugose spiriling white fly (%) was observed in the variety Kera Bastar (1.5 and 11.6 respectively). While the incidence of Red Palm weevil was the minimum in the variety Kalpa Raksha (1.2%).

Keywords: coconut, annual leaf production, insect-pest, Kalpa Raksha, Gautami Ganga, Kera Bastar, Kalpa Dhenu

Introduction
Coconut is grown in more than 93 countries of the world in an area of 12.29 million ha with a total production in terms of copra equivalent of 11.04 million MT. Indonesia (25.63%), Philippines (23.91%), India (19.20%) are the major coconut producing countries of the world. India occupies a predominant position with respect to production of coconut in the world. Coconut is a crop of small and marginal farmers since 98% of about five million coconut holdings in the country are less than two hectares. In the west coast of India, the palm is an essential component in the homestead system of farming. Apart from the major growing states in India like Kerala, Tamil Nadu, Karnataka, Andhra Pradesh, Odisha, Goa, West Bengal, Puduchery, Maharashtra and Islands of Lakshadweep and Andaman and Nicobar, coconut although being a non-traditional crop has a huge scope in Bastar region of Chhattisgarh. Inter/mixed crops may be selected based on the climatic requirement of the inter/mixed crop, irrigation facilities and soil type. Coconut is a very fruitful crop therefore there is need to evolve more productive & remunerative coconut based cropping system under the Bastar plateau zone of Chhattisgarh. The income of coconut as sole crop is low in our country but by intercropping it with different economical crops proves its cultivation to be very beneficial. Although Bastar is an LWE affected and most backward districts in the country, the suitability of land and agro-climatic condition is well identified to be suited for the crops like coconut, cocoa, coffee, black pepper, silver oak, jackfruit and other horticultural crops. The livelihood pattern in Bastar continues to be dictated by tradition as even today, agricultural practices followed by the tribals are traditional. The usage of traditional agricultural implements has lowered the production of agriculture. Adoption of coconut based multiple cropping system in the farming pattern could emerge as a viable way for improving the economic status of marginal farmers and enhance their socio-economic status in the disadvantaged district of Bastar region of Chhattisgarh.

Materials and Methods
The present study was carried out during the year 2019-20 at the experimental field of the All India Coordinated Research Project on Palms, S.G. College of Agriculture and Research Station, Jagdalpur (C.G.) in a nine year old coconut plantation spaced at 7.5x7.5 m^2. The experiment was an unreplicated observational trial having ten palms per genotype viz., Kalyani

Coconut-1, Gautami Ganga, Konkan Bhatye Coconut Hybrid-1, Kalpa Dhenu, Kera Keralam, Kera Bastar, Kalpa Pratibha, Kalpa Mitra, Kalpa Raksha and Kahikuchi Hybrid-1. Bastar region is a tribal dominated region and is located within $17^0$45' to $20^0$34' N latitude and $80^0$15' to $82^0$15' E longitude with an altitude ranging from 550 to 850 metres above the mean sea level (MSL). The region has a sub-tropical monsoon climate with three distinct seasons i.e. summer, monsoon and winter. The southwest monsoon starts from June and continues till middle of September, winter season spreads from October to February whereas; summer season extends from March to middle of June. Rainfall is the major source of ground water recharge in the area and receives maximum (85%) rainfall during the southwest monsoon season. The maximum and minimum temperatures during peak summer and winter touch upto 43^0C and 5^0C, respectively. The soil of Bastar region is majorly Entisol, Inceptisol and Alfisol wherein organic material like FYM or compost improves the water retention and storage capacity of soil with a pH range between 5.5 and 6.8.

Results

The growth parameters recorded at the age of nine years coconut plantation is presented in Table 1. Among the growth parameters, the plant height (cm), girth at base (cm), number of leaves at crown and annual leaf production was studied. The perusal of data revealed that the maximum plant height was observed in Kalpa Raksha (670 cm) followed by Kalyani Coconut-1 (656.5 cm) however the minimum height was observed in the variety Kalpa Pratibha (552 cm). Kalpa Mitra (139.0cm) recorded the maximum girth at base followed by the variety Kalyani Coconut-1 that recorded 138.7 cm plant girth at base. Gautami Ganga estimated the minimum tree girth of 105.5cm. With regard to the other growth characters viz., number of leaves at crown and annual leaf production, the maximum value was observed in Gautami Ganga (18.8 and 9.2 respectively). Similar results of higher growth and yield parameters were also reported by Rao *et al*. (2002) [7], Ramanandam *et al*. (2017) [6] and Nath *et al*. (2017) [4]. Identification of high yielding varieties/hybrids suitable to a particular area is very important to achieve higher production and productivity in coconut.

Table 2 depicts the yield characters of different coconut varieties viz., age of palms at first flowering (months), number of inflorescence, setting percentage and number of nuts harvested per palm. The results revealed that the minimum age of palm at first flowering (72 months), number of inflorescence (10.1), nut setting percentage (51) and number of harvested nuts (78) was superior in Gautami Ganga over the other varieties. According to Jerard *et al*. (2015) [3] the hybrid varieties have been developed by combining the early flowering trait of dwarf cultivar and hardiness and high yielding characters of tall cultivar. The quality and acceptability of coconut is governed by the variety, agro-climatic conditions and agronomic practices. According to Ramanandam *et al*. (2018) [8] and Jayabose *et al*. (2008) [2] the yield data revealed that the coconut hybrids gave higher nut yields compared to varieties could be attributed to their hybrid vigour and higher yield potential. The Indian coconut cultivars population is comprised of enormous variability due to continued cultivation since so many years. It is well established that the performance of the cultivar in a locality is a function of its genotype and environment. Therefore, the performance will vary under different agroclimatic conditions.

With regard to the tolerance of varieties against insect-pests the minimum infestation of Rhinocerus beetle (%) as well as Rugose spriling white fly (%) was observed in the variety Kera Bastar (1.5 and 11.6 respectively). However Konkan Bhatye Coconut Hybrid-1 recorded the maximum rhinocerus beetle incidence (4.1%) while Gautami Ganga had the maximum incidence as well as intensity of Rugose spriling white fly (30.1 and 15.3% respectively). With regard to the incidence of Red Palm Weevil, the variety Kalpa Raksha recorded the minimum (1.2%) incidence whereas Kalpa Dhenu had the maximum (2.9%) pest incidence in coconut. Rabindra (2000) [5] reported that the coconut palm is attacked by a number of insect pests at all stages of its growth. The coconut palm is attacked by 200 insect and non insect pests. Quite similar results were observed by Gurav *et al*. (2014) [1] for the rhinoceros beetle and red palm weevil in Konkan Region of Maharashtra.

Table 1: Growth parameters of coconut varieties

S. No	Name of variety	Palm height (cm)	Girth at base (cm)	Number of leaves at crown	Annual leaf production
1.	Kalyani Coconut-1	656.5	138.7	16.1	8.5
2.	Gautami Ganga	574.0	105.5	18.8	9.2
3.	Konkan Bhatye Coconut Hybrid-1	649.0	106.2	15.9	8.3
4.	Kalpa Dhenu	557.0	137.0	11.7	7.2
5.	Kera Keralam	573.0	119.0	14.2	8.1
6.	Kera Bastar	571.0	130.5	11.4	7.1
7.	Kalpa Pratibha	552.0	106.8	11.9	7.3
8.	Kalpa Mitra	617.0	139.0	15.9	8.4
9.	Kalpa Raksha	670.0	122.5	17.0	8.9
10.	Kahikuchi Hybrid-1	570.0	127.5	14.0	7.9

Table 2: Yield parameters of coconut varieties

S. No	Name of variety	Age at first flowering (months)	Number of inflorescence	Setting percentage	Number of nuts harvested
1.	Kalyani Coconut-1	87	7.0	41	32
2.	Gautami Ganga	72	10.1	51	78
3.	Konkan Bhatye Coconut Hybrid-1	91	5.3	38	28
4.	Kalpa Dhenu	-	-	-	-
5.	Kera Keralam	88	7.0	45	51
6.	Kera Bastar	-	-	-	-
7.	Kalpa Pratibha	-	-	-	-

8.	Kalpa Mitra	82	7.5	42	47
9.	Kalpa Raksha	85	7.0	35	22
10.	Kahikuchi Hybrid-1	83	8.0	31	39

Table 3: Insect pest incidence in coconut

S. No	Name of variety	Rhinoceros beetle incidence (%)	RPW incidence (%)	RSW	
				Incidence (%)	Intensity (%)
1.	Kalyani Coconut-1	2.3	1.4	19.2	9.1
2.	Gautami Ganga	2.9	1.7	30.1	15.3
3.	Konkan Bhatye Coconut Hybrid-1	4.1	2.3	21.2	11.2
4.	Kalpa Dhenu	3.2	2.9	16.4	7.2
5.	Kera Keralam	2.1	1.6	12.6	6.1
6.	Kera Bastar	1.5	1.3	11.6	9.4
7.	Kalpa Pratibha	1.6	2.1	17.5	12.7
8.	Kalpa Mitra	4.3	1.6	24.2	14.6
9.	Kalpa Raksha	1.8	1.2	21.3	14.3
10.	Kahikuchi Hybrid-1	1.0	1.4	18.7	13.2

References

1. Gurav SS, Khandekar RG, Sawant VS,. Narangalkar AL. Scenario of Coconut Pests in Konkan Region of Maharashtra. International Journal for Research in Emerging Science and Technology 2014;1:4.
2. Jayabose C, Ganesh S, Mohanan KV, Arulraj S. Estimation of heterosis of economical important characters of coconut (*Cocos nucifera* L.) hybrids. Journal of Plantation Crops 2008;36(3):151-4.
3. Jerard AB, Niral V, Samsudeen K, Nair RV, Jayabose C, Thomas GV. Development of a Dwarf × Tall coconut hybrid Kalpa Samrudhi. Journal of Plantation Crops 2015;43(1):46-52.
4. Nath JC, Deka KK, Saud BK, Maheswarappa HP. Performance of coconut hybrid MYD × WCT in the Brahmaputra valley region of Assam. Indian Journal of Horticulture 2017;74(2):173-177.
5. Rabindra R. Microbial control of coconut pests. Presented in group meeting on Recent Advances in Management of Coconut Pests held at CPCRI", Kayangulam from 24-25 May, 2000, 26.
6. Ramanandam G, Ravindra Kumar K, Padma E, Kalpana M, Maheswarappa HP. Potential coconut (*Cocos nucifera*) hybrids for yield and quality for coastal region of Andhra Pradesh (India). Indian Journal of Agricultural Sciences 2017;87(8):1073-6.
7. Ramanandam G, Padma E, Kalpana M, Ravindra Kumar K, Rao NBVC, Maheswarappa HP. Evaluation of Promising Hybrids and Varieties of Coconut in East Coast Region of Andhra Pradesh. International Journal of Pure and Applied. Biosciences 2018;6(6):207-211.
8. Rao DVR, Hameed Khan H, Srininvasulu B, Rao NBVC, Kalpana M. Evaluation of certain coconut crosses for heterosis. Proceedings of PLACROSYM 2002;XI:88-94.