



Performance of cashew varieties under northern transition zone of Karnataka

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Cashew (*Anacardium occidentale* L.) belonging to the family Anacardiaceae is one of the important plantation crops of the country earning foreign exchange. In Karnataka, cashew cultivation mostly confined to coastal regions, but it gained popularity in hills and plains because of its drought tolerance and wider adaptability to various agro-climatic conditions (Singh *et al.*, 2010). Successful cashew cultivation, however, depends on the selection of the best varieties suited for the agro-climatic condition and adoption of right package of practices recommended for the region. Considerable variation among cashew cultivars under Belgaum conditions of Karnataka was also observed by Hegde (1997). Selection of varieties is most important and critical decision in plantation management (Salam, 1999). Hence, the present investigation was undertaken to assess the performance of seven cashew varieties under northern transition zone of Karnataka.

The experiment was laid out at Horticultural Research Station, Kanabargi, Belgaum district, Karnataka during 2011-12. Kanabargi is situated in transitional tract (Zone-8) of Karnataka state at 15° 15' N latitude and 74° 32' E longitudes, at an altitude of 753 m above MSL. The soil type of experimental plots was medium red having a soil pH of 5.8. The climatic condition of transitional tract is sub tropical in nature with mean rain fall of 1250 mm over a period of eight months (April to November) and highly humid. The plantation was raised during 2005 (September) following randomized block design consisting of seven cashew varieties such as Goa-11/6, Ullal-3, Ullal-4, UN-50, Vengurla-4, Vengurla-7 and VRI-3 planted at a spacing of 4 m × 4 m. replicated four times.

Recommended package of practices were followed for all the varieties (Anonymous, 2009). For evaluating the performance of cashew, morphological characters like flowering behaviour, nut yield and nut characteristics were recorded.

The cashew varieties differed significantly for growth attributes at seventh year of planting under high density planting (Table 1). Cashew variety Ullal-4 was taller (4.12 m) among the seven varieties evaluated, followed by UN-50 (3.95 m), Ullal-3 (3.15 m) and Goa-11/6 (3.10 m). Similarly, collar girth was higher for the variety Ullal-4 (51.25 cm), which was on par with Vengurla-4 (48.62 cm). Cashew varieties differed significantly for crown size and plant spread in both north to south and east to west directions. Maximum plant spread was recorded by the variety Ullal-4 (3.56 and 3.98 m E-W and N-S, respectively) followed by VRI-3 (3.34 and 3.00 m E-W and N-S, respectively). Variations in vegetative characters among cashew varieties

Table 1. Morphological characters of cashew varieties at the age of seven years (2011-12) under northern transition zone of Karnataka

Sl. No.	Variety	Plant height (m)	Collar girth (cm)	Plant spread (m)	
				East to West	North to South
1	Goa-11/6	3.10	40.31	2.29	2.30
2	Ullal-3	3.15	41.06	2.84	2.56
3	Ullal-4	4.13	51.25	3.56	3.98
4	UN-50	3.92	37.25	2.44	2.41
5	Vengurla-4	3.05	48.62	2.72	3.51
6	Vengurla-7	2.70	39.29	2.49	2.63
7	VRI-3	2.63	41.50	3.34	3.00
S. Em±		0.218	2.603	0.186	0.186
C.D. (P=0.05)		0.65	7.74	0.55	0.55
CV (%)		13.50	12.18	13.26	12.80

were also reported by earlier workers (Mahesha *et al.*, 2005; Singh *et al.*, 2010).

In the present investigation, cashew varieties differed significantly for flowering duration, number of panicles per square meter of canopy and number of nuts per panicle (Table 2). Early flowering was recorded in variety Vengurla-4 (November I fortnight) followed by Ullal-3, Ullal-4 and UN-50 (November II fortnight). Duration of flowering varied from 105.25 days (UN-50) to 136.00 days (Ullal-4). Variation in the flowering season and duration could be attributed to genetic makeup of variety and agro-climatic conditions of the particular

Significant variation among varieties for nut yield and nut characters was observed (Table 2). Higher nut weight (>7 g) was recorded by Ullal-4 (7.93 g), UN-50 (7.67 g), Ullal-3 (7.29 g), Vengurla-4 (7.23 g) and Vengurla-7 (7.11 g). It is always better to select bold sized nuts, which directly influence towards the production of quality kernels. Similar observations were also recorded by Hanamashetti *et al.* (2002) and Mahesha *et al.* (2005). Highest nut yield per tree was recorded by Vengurla-4 (6.23 kg), which was on par with Goa-11/6 (5.60 kg) and Vengurla-7 (5.50 kg) compared to the lowest in Ullal-4 (2.92 kg).

Table 2. Floral and yield attributes of cashew varieties at the age of seven years (2011-12) under transition zone of Karnataka

Sl. No.	Variety	Flowering season (2011-12)	Flowering duration (Days)	Panicles (No. per m ² of canopy)	Nuts (No. panicle ⁻¹)	Nut yield (kg tree ⁻¹)	Weight of nut (g)
1	Goa-11/6	December I fortnight to March II fortnight	112.50	14.42	7.06	5.60	5.41
2	Ullal-3	November II fortnight to March II fortnight	116.25	11.37	7.75	3.63	7.29
3	Ullal-4	November II fortnight to April I fortnight	136.00	7.83	5.29	2.92	7.93
4	UN-50	November II fortnight to March I fortnight	105.25	10.04	5.00	3.57	7.67
5	Vengurla-4	November I fortnight to March II Fortnight	117.25	14.91	10.11	6.23	7.23
6	Vengurla-7	December II fortnight to March I fortnight	105.75	18.41	5.75	5.50	7.11
7	VRI-3	December II Fortnight to March I fortnight	109.25	15.67	4.63	4.71	6.65
S. Em ±			0.855	1.218	0.639	0.299	0.151
C.D. (P=0.05)			2.54	3.61	1.90	0.89	0.45
CV (%)			1.49	18.41	19.65	13.04	4.29

region. Similar variations in flowering season and duration under different agro-climatic conditions were also reported by Basavaraj and Hegde (1998) under upghat (Sirsi) conditions and Sharma *et al.* (2009) under Bastar (Chhattisgarh) region. Significantly higher number of panicles per square meter of canopy were observed in Vengurla-7 (18.41), which was on par with VRI-3 (15.67) compared to the lowest in Ullal-4 (7.83). Higher number of the panicles per unit area of canopy is an indication of higher yield per plant. Significantly higher number of nuts per panicle was recorded by Vengurla-4 (10.11) followed by Ullal-3 (7.75) and Goa-11/6 (7.06). Such variation might be attributed to inherent capacity of the variety to retain the nuts till maturity and agro-climatic conditions of the region. Similar findings were also made by earlier workers (Hegde, 1997; Reddy *et al.*, 2002; Singh *et al.*, 2010).

Based on the evaluation of cashew varieties at seventh years after planting grown at a spacing of 4 m × 4 m, it can be concluded that the cashew varieties Vengurla-4 and Vengurla-7 are performing better under northern transition tract of Karnataka. Although Goa-11/6 recorded higher nut yield per tree, but the nut weight was lower.

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