



Effect of certain ant attractants on cashew nut yield

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Cashew is the most important plantation crop in Konkan region of Maharashtra. It is planted in an area of 1.83 lakh hectare and have surpassed mango in the region. More than 90 per cent of cashew plantations are with improved varieties like Vengurla-1, Vengurla-4, Vengurla-7 and Vengurla-8. The potential productivity of all these improved varieties is 3000 kg/ha. In spite of this, the average productivity in Konkan region is 1300 kg/ha. Several workers have reported various reasons for low productivity in cashew. Among the various factors, low pollination is one of the most important reasons for low productivity. Cashew is an entomophilous and highly cross pollinated crop and the fruit-set is only 48% in natural open pollination. Naturally, no other insects except black and red ants are seen to visit the flower frequently (Mandal, 2007). Cashew pollen is heavy and sticky. Several workers have reported the role of ants in cashew pollination (Northwood, 1966; Elsy *et al.* 1986; Salunke and Kadam, 1995). Hence, a trial was initiated to study the effect of various ant attractants for yield improvement in cashew in Konkan region of Maharashtra.

The trial was conducted at Regional Fruit Research Station, Vengurla from 2001 to 2004. For the experimentation a uniform adult cashew plantation of 14 years age and distinctly low yielding was selected. Eight treatments were tested as follows.

- T₁ Jaggery 2.5%
- T₂ Jaggery 5%
- T₃ Glucose 0.5%
- T₄ Glucose 1%

- T₅ Dried fish extract 5% (fully dried fishes were ground in mixer and made to powder form. The fish powder was filtered using muslin cloth, mixed and dried. Dried fish powder @ 500 g in 10 liters of water gave dried fish extract of 5%).
- T₆ Cashew apple juice 1% (fresh cashew apple juice obtained from early cashew varieties of current season were used for spraying).
- T₇ Establishment of red ant colony under cashew tree (the natural houses/colonies of red ants were brought as such from nearby plots of cashew plantation and kept near the trunk base of cashew trees as one of the treatment).
- T₈ Control

The main idea behind T₇ treatment was to see whether these ants were attracted to inflorescence during flowering and fruiting stage of cashew or not. All the ant attractant treatments (except T₇ and T₈) were sprayed twice, first at the time of flowering and second at 15 days after the first spray. These treatments were replicated four times with a unit of 6 trees/replication in randomized block design. Annual yield (kg/ha), cumulative yield of 3 years and economics were worked out. The statistical analysis was done as per Panse and Sukhatme (1995).

The data on yield and economics of cashew influenced by various sprays of ant attractants is presented in Table 1. The yield was significantly differed during 2001-2002 and 2003-2004. The yield during 2002-03 was reduced due to blossom blight disease. The treatment T₅ produced significantly superior yield (13.50 kg/tree) during 2001-02

Ant attractants on cashew nut yield

Table 1. Yield and economics of cashew influenced by sprays of certain ant attractants

Treatments	Yield (kg/tree)			Cumulative yield for 3 years	Yield (kg/ ha)	Returns/ha (Rs/ha)	C : B ratio
	2001-02	2002-03	2003-04				
T ₁ : Jaggery 2.5%	6.73	5.04	6.39	20.80	1234	37730	1:1.39
T ₂ : Jaggery 5%	8.83	4.53	9.36	26.78	1544	47320	1:1.61
T ₃ : Glucose 0.5%	7.83	3.34	6.61	21.49	1209	37590	1:1.36
T ₄ : Glucose 1%	8.00	4.56	8.71	23.15	1446	42770	1:1.40
T ₅ : Dried fish extract 5%	13.50	3.54	7.31	29.01	1655	51240	1:1.57
T ₆ : Cashew apple juice 1%	1.80	3.44	3.04	10.81	563	17920	1:0.70
T ₇ : Establishment of red ant colony under cashew tree	7.23	2.16	5.07	17.23	983	29470	1:1.09
T ₈ : Control	4.47	1.57	4.29	15.25	702	25970	1:1.11
SE(m)±	1.22	0.95	0.83	-	-	-	-
C.D. at 5%	3.70	N.S.	2.39	-	-	-	-

whereas during 2003-04 treatment T₂ produced the highest yield (9.36 kg/tree). The highest yield per hectare was recorded in treatment T₅ (1655 kg) followed by T₂ (1544 kg). The yield obtained in control was 702 kg. During the experiment, activity of various ants species like *Tapinoma indicum*, *Myrmecaria brumea*, *sanders*, *Componotus compressus* and *Anoploepsis lengipes* was noticed in treatment T₅ and T₂. In treatments T₆, T₇ and T₈ ant activity was not noticed whereas in all the remaining treatments it was moderate. Economics

of the trial is given in Table 2. It was found that the net realization over control was maximum in treatment T₅ (spray of dried fish extract 5%) amounting to Rs. 25,270/- with C : B ratio 1 : 1.57. In case of treatment T₂ (spray of jaggery 5%) the C : B was the highest (1 : 1.61) but the net returns were low. The results thus indicate that ant attractants are beneficial for yield improvement in cashew nut. The best ant attractant was treatment T₅ (dried fish extract 5%) followed by treatment T₂ (jaggery 5%). Organically produced cashew

Table 2. Economics of pollinator attractant trial in cashew (2001-2004)

Sl. No.	Treatment	Qty. of spray/ha. for 2 sprays @ 10 lit /tree /spray (lit)	Man-days required for 2 sprays @ 9 men/ day/ ha/ spray	Qty. of attractant for 2 sprays (kg/ha)	Cost of input (Rs/ha)	Cost of Labour (Rs/ha)	Cost of other inputs for management (Rs/ha)	Net cost of production (Rs/ha) (6 +7)	Returns /ha (Rs/ha)	Net realization over control (Rs/ha)	C : B ratio
1.	T ₁ : Jaggery 2.5%	4000	18	100	2400	1206	23380	26986	37730	11760	1:1.39
2.	T ₂ : Jaggery 5%	4000	18	200	4800	1206	23380	29386	47320	21350	1:1.61
3.	T ₃ : Glucose 0.5%	4000	18	20	3000	1206	23380	29395	37590	11620	1:1.36
4.	T ₄ : Glucose 1%	4000	18	40	6000	1206	23380	27586	42770	16800	1 :1.40
5.	T ₅ : Dried fish extract 5%	4000	18	200	8000	1206	23380	30586	51240	25270	1:1.57
6.	T ₆ : Cashew apple juice 1%	4000	18	200 lit	1000	1206	23380	32586	17920	8050	1:0.70
7.	T ₇ : Establishment of red ant colony under cashew tree	-	40	-	1000	2680	23380	27060	29470	3500	1:1.09
8.	T ₈ : Control	-	-	-	-	-	23380	23380	25970	-	1:1.11

fetches good price in the market especially in international market, which indicate large scope for organic cashew production. The present results will be helpful as one of the package of practice for yield improvement in organic cashew production.

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