

Management of coconut eriophyid mite, *Aceria guerreronis* Keifer through spraying and root feeding

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Abstract: A field experiment was laid out in a randomized block design at Navalur, Dharwad, Karnataka to evolve effective spray schedule and root feeding against the coconut eriophyid mite, *Aceria guerreronis* Keifer. The experiment had nine treatments and six plants were selected for each treatment. Among the different schedules, the treatment consisting of root feeding for six times in a year at two months interval during (January, March, May, July, September and November) proved significantly superior in reducing the mite (both active stages and egg) population and recorded minimum number of damaged nuts.

Key words: Spraying, root feeding, coconut eriophyid mite, *Aceria guerreronis*

Introduction

Coconut is an important tropical plantation crop in India, grown mainly in Kerala, Tamil Nadu, Karnataka, Andhra Pradesh, Goa, Pondicherry, Andaman and Nicobar Islands, Lakshadweep islands, Orissa, Maharashtra, West Bengal, Assam and Tripura. The total area under the crop is presently more than 1.9 million hectares with a production of about 13.6 billion nuts per annum in India. More than 90 per cent of the area and production of coconut is from the four southern states of Kerala, Karnataka, Tamil Nadu and Andhra Pradesh. The pest complex of coconut is widening in recent decades. Though coconut palm is attacked by several pests, the widespread outbreak of the eriophyid mite, *Aceria guerreronis* Keifer (Sathiamma *et al.*, 1998) is unique and has shaken the copra industry in India. The mite feeds on the meristematic tissues, beneath the perianth of young nuts. The damage becomes evident as brown deep scars with cracks on the surface, accompanied with gummy ooze, when the nut grows. Severe damage can lead to premature nut drop or extreme reduction in the size of nuts. Such nuts are difficult to dehusk (Mallik *et al.*, 2003).

Material and methods

A field experiment was laid out during 2004-06 by following randomized block design in Navalur near Dharwad. The experiment had nine treatments and six plants were taken for each treatment. The trees were numbered before carrying out the spraying and root feeding. The details of application of spraying and root feeding are given (Table 1-3).

Twenty four palms were selected for imposing the treatments in the form of spray schedule and six palms were selected in each spray schedule. Monthly observations on stages of mites and eggs were taken by bringing nuts to laboratory. Two nuts were taken from fourth bunch of each tree. From each nut three inner surface of the inner perianths and three sliced nut areas below the perianth were selected for taking observations through stereo binocular microscope. For spraying monocrotophos @ 4 ml per liter was used.

Twenty four palms were selected for root feeding with six palms in each schedule. Monocrotophos was used for root feeding @ 10 ml with equal quantity of water per tree. Brick red

coloured roots were selected for which a slant cut was given without further damage. Then a small polythene bag (15 cm x 10 cm) filled with monocrotophos solution was tied to the root in such away that tip of root touched the bottom of bag inside. The bag was tied with a string and then observed on next day for its absorption. Two nuts from such trees were brought to the laboratory. Observations on active stages and eggs of mite were taken at monthly intervals on nut surface and perianth.

Results and discussion

The data presented in Table 1 indicated that there was no significant difference among the treatments a day before application of spray and root feeding.

A month after treatments imposed significant difference was noticed among the treatments. The lowest mite population was recorded with root feeding six times per year (38.43) which was significantly superior over all other treatments and was on par with spray six times per year (42.84), followed by root feeding two times per year (72.28), root feeding four times per year (73.91), root feeding three times per year (75.34), spray three times per year (76.94) and spray four times per year (79.08) which were on par with each other. The highest mite population was recorded with untreated control (91.96). Maximum per cent reduction was noticed in root feeding six times per year (58.16%) which was on par with six times spray per year (53.37%).

In November, root feeding two times per year (38.92) was significantly superior over all other treatments by recording the lowest mite population and was on par with root feeding three times per year (39.90) and root feeding four times per year (42.71). However, untreated control recorded the highest mite population (92.18). Among different treatments in reducing the mite population, spray two times per year (57.80) was significantly superior in recording maximum per cent reduction of mites and was found on par with root feeding three times per year (56.70) and root feeding four times per year (53.65). Significantly least per cent reduction was recorded with spray two times per year (15.04).

In December, schedule consisting of root feeding six times per year was found to be significantly superior by recording

least mite population (30.26 mites) followed by spray 6 times per year (37.85). The remaining treatments were the next best treatments, which are on par with each other except for spray two times per year (79.48) but was superior over untreated control (89.10). Treatments in per cent reduction also showed similar trend of results. Among all treatments, root feeding six times per year was significantly superior with maximum per cent reduction (66.01%). The next best treatment was proven to be spray six times per year (57.51%). Spray two times per year recorded least per cent reduction of mites (10.74%).

In January, schedule consisting of root feeding three times per year was significantly superior by recording minimum mite population (36.08 mites) which was on par with spray three times per year (39.80) followed by root feeding six times per year (48.45) and spray six times per year (52.62), which were on par with each other. However maximum mite population was recorded with spray two times per year (77.36 mites) but was significantly superior over untreated control. With respect to reduction of mites over untreated control, root feeding three times per year was significantly superior with highest per cent reduction (60.17%) over control which was on par with spray three times per year (56.07%). However spray two times per year (14.77%), spray four times per year (15.12%) and root feeding two times per year (20.81%) were least superior in reducing the mite population and were on par to each other.

In February, schedule consisting of root feeding six times per year was significantly superior in recording the least

mite population (30.03) which was on par with spray 6 times per year (35.99), followed by root feeding 4 times per year (40.99) and spray four times per year (45.13) which were next proven best treatments and on par to each other where as untreated control recorded highest mite population (92.08). Data on per cent reduction over control revealed the superiority of root feeding six times per year in reducing the mite population to an extent of 67.37 per cent and was significantly superior but was on par with spray six times per year (60.92%), while root feeding two times per year and spray two times per year were least effective treatments with only 18.31 per cent and 22.39 per cent over control respectively and were on par with each other.

During March, schedule consisting of root feeding six times per year maintained its superiority by recording significantly least mite population (42.19) and was on par with spray six times per year (44.84). Root feedings four times per year (61.79) and spray four times per year (64.41) were next best treatments which were on par with each other. However untreated control recorded significantly highest mite population (87.18). The per cent reduction of mites over control revealed that root feeding six times per year was the best treatment in reducing the mite population (51.57%) and was considered significantly superior but was on par with spray six times per year (48.50%). Then followed by root feeding four times per year, spray four times per year and root feeding three times per year with 28.70 per cent, 25.93 per cent and 21.34 per cent respectively which were on par with each other.

Table 1. Effect of spray schedule on active stages of mite of *A. guerreronis*

Sl. No.	Treatment	Number of active stages of mites per 28.28 mm ² area												
		Sep		October			November		December		January		February	
		No. of adults	No. of adults	% redn. Over UTC	No. of adults	% redn. Over UTC	No. of adults	% redn. Over UTC	No. of adults	% redn. Over UTC	No. of adults	% redn. Over UTC	No. of adults	% redn. Over UTC
1.	2 sprays/year (April and October)	85.36 ^a	83.44 ^b	9.18 ^c	78.33 ^b	15.04 ^c	79.48 ^b	10.74 ^d	77.36 ^b	14.77 ^d	71.44 ^{bc}	22.39 ^{de}		
2.	3 sprays/year (April, October and December)	85.32 ^a	76.94 ^{bc}	16.25 ^{bc}	44.73 ^{de}	51.44 ^{bc}	70.73 ^c	20.61 ^c	39.80 ^c	56.07 ^a	65.78 ^c	28.59 ^d		
3.	4 sprays/year (January, April, July and October)	84.52 ^a	79.08 ^{bc}	13.86 ^{bc}	44.51 ^{de}	51.67 ^{bc}	68.87 ^c	22.70 ^c	76.99 ^b	15.12 ^d	45.13 ^{de}	50.97 ^{bc}		
4.	6 sprays/year (January, March, May, July, September and November)	80.95 ^a	42.84 ^d	53.37 ^a	58.06 ^c	37.03 ^d	37.85 ^d	57.51 ^b	52.62 ^d	42.05 ^b	35.99 ^{ef}	60.92 ^{ab}		
5.	2 root feeding/year (April and October)	79.96 ^a	72.28 ^c	21.34 ^b	38.92 ^f	57.80 ^a	64.77 ^c	27.22 ^c	71.82 ^{bc}	20.81 ^{cd}	75.28 ^b	18.31 ^e		
6.	3 root feeding/year (April, October and December)	84.38 ^a	75.34 ^c	18.01	39.90 ^{ef}	56.70 ^{ab}	64.63 ^c	27.48 ^c	36.08 ^c	60.17 ^a	46.35 ^d	49.74 ^c		
7.	4 root feeding/year (January, April, July and October)	82.66 ^a	73.91 ^c	19.66 ^b	42.71 ^{ef}	53.65 ^{ab}	67.91 ^c	23.77 ^c	69.12 ^c	23.76 ^c	40.99 ^{de}	55.47 ^{bc}		
8.	6 root feeding/year (January, March, May, July, September and November)	82.60 ^a	38.43 ^d	58.16 ^a	48.44 ^d	47.44 ^c	30.26 ^e	66.01 ^a	48.45 ^d	46.54 ^b	30.03 ^f	67.37 ^a		
9.	Untreated control	84.65 ^a	91.96 ^a	-	92.18 ^a	-	89.10 ^a	-	90.78 ^a	-	92.08 ^a	-		
	S.Em±	-	2.26	2.51	1.61	1.69	1.99	2.23	2.45	2.60	2.94	3.19		
	CD at 5%	-	6.76	7.54	4.83	5.06	5.98	6.69	7.34	7.81	8.83	9.57		
	CV (%)	-	5.54	12.68	5.15	7.09	5.42	13.59	6.78	14.53	9.12	14.07		

DBS= Days before spraying; DAS = Days after spraying; In a column means followed by same alphabet do not differ significantly by DMRT (P=0.05)

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Sl. No.	Treatment	Number of active stages of mites per 28.28 mm ² area											
		March		April		May		June		July		August	
		No. of adults	% redn. Over UTC	No. of adults	% redn. Over UTC	No. of adults	% redn. Over UTC	No. of adults	% redn. Over UTC	No. of adults	% redn. Over UTC	No. of adults	% redn. Over UTC
1.	2 sprays/year (April and October)	71.32 ^b	17.82 ^d	76.66 ^b	16.40 ^d	41.70 ^c	50.76 ^b	63.65 ^b	28.70 ^b	72.04 ^b	18.37 ^c	75.64 ^b	9.91 ^c
2.	3 sprays/year (April, October and December)	71.25 ^b	17.97 ^d	76.22 ^b	16.83 ^d	35.94 ^{cd}	57.44 ^{ab}	64.17 ^b	28.22 ^b	68.01 ^b	22.91 ^c	75.62 ^b	9.91 ^c
3.	4 sprays/year (January, April, July and October)	64.41 ^{cb}	25.93 ^{bc}	68.18 ^c	25.70 ^c	40.06 ^c	52.75 ^b	61.25 ^b	31.47 ^b	69.61 ^b	21.15 ^c	37.75 ^c	54.95 ^b
4.	6 sprays/year (January, March, May, July, September and November)	44.84 ^e	48.50 ^a	31.22 ^d	65.96 ^b	42.15 ^c	50.11 ^c	31.51 ^c	64.62 ^a	45.58 ^c	48.34 ^b	39.82 ^c	52.48 ^b
5.	2 root feeding/year (April and October)	70.03 ^{bc}	19.25 ^{cd}	72.96 ^{bc}	20.41 ^{cd}	40.01 ^c	52.91 ^b	64.07 ^b	28.13 ^b	68.20 ^b	22.66 ^c	75.08 ^b	10.47 ^c
6.	3 root feeding/year (April, October and December)	68.26 ^{bc}	21.34 ^{bcd}	73.73 ^{bc}	19.50 ^{cd}	36.02 ^{cd}	57.68 ^{ab}	62.63 ^b	29.87 ^b	66.48 ^b	24.59 ^c	75.33 ^b	10.13 ^c
7.	4 root feeding/year (January, April, July and October)	61.79 ^d	28.70 ^b	68.27 ^c	25.51 ^c	31.41 ^c	62.89 ^a	57.35 ^b	35.69 ^b	68.19 ^b	22.69 ^c	36.87 ^c	56.02 ^b
8.	6 root feeding/year (January, March, May, July, September and November)	42.19 ^e	51.57 ^a	22.48 ^e	75.46 ^a	52.04 ^b	38.78 ^c	30.02 ^c	66.19 ^a	38.36 ^d	56.47 ^a	25.84 ^d	69.23 ^a
9.	Untreated control	87.18 ^a	-	91.62 ^a	-	84.85 ^a	-	89.34 ^a	-	88.22 ^a	-	83.92 ^a	-
	S.Em±	2.05	2.37	1.89	2.01	2.39	2.67	2.63	2.71	2.18	2.44	2.50	2.96
	CD at 5%	6.13	7.11	5.66	6.03	7.16	8.00	7.88	8.13	6.53	7.33	7.50	8.87
	CV (%)	5.49	15.99	5.07	11.80	9.21	9.83	7.82	13.52	5.81	14.01	7.42	14.90

During April, schedule consisting of root feeding six times per year continued to maintain its superiority by recording least mite population (22.48). The next best treatment was proved to be spray six times per year spray 4 times per year (68.18), root feedings four times per year (68.27), root feeding three times per year (72.96) and root feeding two times per year (73.73) which was on par with each other. In per cent reduction, once again root feeding six times per year was significantly superior with maximum per cent reduction (75.46) and was followed by spray six times per year (65.96). Significantly least superior treatment was found to be spray two times per year (16.40) and was on par with spray three times per year (16.83), root feeding three times per year (20.41) and root feeding two times per year (19.50).

In the month of May, schedule consisting of root feeding four times per year recorded lowest mite population (31.41) which was significantly superior and was on par with spray four times per year (35.04) and root feeding three times per year (36.02). The remaining next best treatments were on par with each other except for spray two times per year (52.09) and untreated control (89.88). Data on mite population reduction reveals that that root feeding four times per year (62.89) was significantly superior in reducing mite population over untreated control and was on par with other treatments like root feeding three times per year (57.68) and spray three 3 times per year (57.44).

Data of mite population during June, root feeding six times per year was significantly superior over all treatments (30.02) and was on par with spray six times per year (31.51). Remaining treatments were on par with each other except for untreated control (89.34) which is significantly less superior. Whereas in per cent reduction over untreated control also shows similar trend of results i.e., root feeding six times per year maintained its superiority in reducing the mite population over

UTC to an extent of 66.19 per cent and was on par with spray six times per year (64.62%). Remaining treatments were on par with each other.

In the month of July, the data revealed that root feeding six times per year was significantly superior (38.36) over all treatments by recording least mite population which was followed by spray six times per year (45.58). Remaining treatments were next best treatments which were on par to each other except for UTC (88.22). The data on mite population reduction shows that root feeding six times per year was significantly superior with maximum per cent reduction (56.47%) over UTC. It was followed by spray six times per year with 48.34 per cent. Remaining treatments were on par with each other.

August month data record envisages that once again root feeding six times per year was significantly superior (25.84) over all treatments. It was followed by spray six times per year (36.87) which was on par with root feeding four times per year (37.75) and spray four times per year (39.82). Similarly in per cent reduction also root feeding six times per year was significantly superior with maximum per cent reduction (69.23%) over control. It was followed by spray six times per year (56.02), root feeding four times per year (54.95%) and spray four times per year (52.48%) which was on par with each other. Remaining treatments were less effective but were on par with each other.

Treatments like spraying two times per year (April and October), three times per year (April, October, December), four times per year (January, April, July, October) and six times per year (January, March, May, July, September, November) and similarly root feeding at same schedules were evaluated against *A. guerreronis* with monocrotophos chemical. Among the different treatments, scheduling of root feeding six times per year at two months interval during January, March, May, July,

September and November was found significantly superior over all other treatments in reducing the mite population at every interval. It recorded maximum of 21.86 per cent reduction over control. However, it was on par with spray six times per year (January, March, May, July, September and November).

Root feeding six times per year was effective with minimum per cent damaged nuts (29.80%). More number of

healthy nuts was recorded in case of root feeding six times per year (59) and total number of nuts was also more (84) in this treatment. Due to lack of reviews in this content, the present findings can be correlated with findings of Anonymous (2002) who recommended three sprays per year at three months cultural i.e. during April, September and December to minimize the mite population.

Table 2. Effect of spray schedule on egg population of *A. guerreronis*

Sl. No.	Treatment	Number of active stages of mites per 28.28 mm ² area											
		March		April		May		June		July		August	
		No. of adults	% redn. Over UTC	No. of adults	% redn. Over UTC	No. of adults	% redn. Over UTC	No. of adults	% redn. Over UTC	No. of adults	% redn. Over UTC	No. of adults	% redn. Over UTC
1.	2 sprays/year (April and October)	71.32 ^b	17.82 ^d	76.66 ^b	16.40 ^d	41.70 ^c	50.76 ^b	63.65 ^b	28.70 ^b	72.04 ^b	18.37 ^c	75.64 ^b	9.91 ^c
2.	3 sprays/year (April, October and December)	71.25 ^b	17.97 ^d	76.22 ^b	16.83 ^d	35.94 ^{cd}	57.44 ^{ab}	64.17 ^b	28.22 ^b	68.01 ^b	22.91 ^c	75.62 ^b	9.91 ^c
3.	4 sprays/year (January, April, July and October)	64.41 ^{cb}	25.93 ^{bc}	68.18 ^c	25.70 ^c	40.06 ^c	52.75 ^b	61.25 ^b	31.47 ^b	69.61 ^b	21.15 ^c	37.75 ^c	54.95 ^b
4.	6 sprays/year (January, March, May, July, September and November)	44.84 ^e	48.50 ^a	31.22 ^d	65.96 ^b	42.15 ^c	50.11 ^c	31.51 ^c	64.62 ^a	45.58 ^c	48.34 ^b	39.82 ^c	52.48 ^b
5.	2 root feeding/year (April and October)	70.03 ^{bc}	19.25 ^{cd}	72.96 ^{bc}	20.41 ^{cd}	40.01 ^c	52.91 ^b	64.07 ^b	28.13 ^b	68.20 ^b	22.66 ^c	75.08 ^b	10.47 ^c
6.	3 root feeding/year (April, October and December)	68.26 ^{bc}	21.34 ^{bcd}	73.73 ^{bc}	19.50 ^{cd}	36.02 ^{cd}	57.68 ^{ab}	62.63 ^b	29.87 ^b	66.48 ^b	24.59 ^c	75.33 ^b	10.13 ^c
7.	4 root feeding/year (January, April, July and October)	61.79 ^d	28.70 ^b	68.27 ^c	25.51 ^c	31.41 ^c	62.89 ^a	57.35 ^b	35.69 ^b	68.19 ^b	22.69 ^c	36.87 ^c	56.02 ^b
8.	6 root feeding/year (January, March, May, July, September and November)	42.19 ^e	51.57 ^a	22.48 ^e	75.46 ^a	52.04 ^b	38.78 ^c	30.02 ^c	66.19 ^a	38.36 ^d	56.47 ^a	25.84 ^d	69.23 ^a
9.	Untreated control	87.18 ^a	-	91.62 ^a	-	84.85 ^a	-	89.34 ^a	-	88.22 ^a	-	83.92 ^a	-
	S.Em±	2.05	2.37	1.89	2.01	2.39	2.67	2.63	2.71	2.18	2.44	2.50	2.96
	CD at 5%	6.13	7.11	5.66	6.03	7.16	8.00	7.88	8.13	6.53	7.33	7.50	8.87
	CV (%)	5.49	15.99	5.07	11.80	9.21	9.83	7.82	13.52	5.81	14.01	7.42	14.90

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Sl. No.	Treatment	Number of eggs per 28.28 mm ² area											
		March		April		May		June		July		August	
		No. of eggs	% redn. Over UTC	No. of eggs	% redn. Over UTC	No. of eggs	% redn. Over UTC	No. of eggs	% redn. Over UTC	No. of eggs	% redn. Over UTC	No. of eggs	% redn. Over UTC
1.	2 sprays/year (April and October)	86.70 ^a	3.90 ^e	89.72 ^{ab}	2.36 ^f	44.23 ^{cd}	51.87 ^{bc}	71.45 ^{bc}	17.56 ^f	81.22 ^{ab}	6.90 ^f	82.33 ^a	6.70 ^d
2.	3 sprays/year (April, October and December)	79.18 ^b	12.30 ^d	83.60 ^{bc}	9.00 ^e	45.38 ^c	50.61 ^c	76.61 ^b	11.61 ^g	83.32 ^{ab}	4.49 ^g	83.17 ^a	5.71 ^d
3.	4 sprays/year (January, April, July and October)	71.36 ^{cd}	20.97 ^b	84.05 ^{bc}	8.52 ^e	40.94 ^{cd}	55.45 ^{abc}	68.77 ^c	20.65 ^{ef}	75.96 ^{bc}	12.23 ^e	39.52 ^c	55.19 ^b
4.	6 sprays/year (January, March, May, July, September and November)	70.17 ^{cd}	22.20 ^b	46.49 ^d	49.40 ^b	73.25 ^b	20.30 ^d	39.22 ^e	54.75 ^b	65.30 ^d	25.15 ^a	33.55 ^c	61.95 ^a
5.	2 root feeding/year (April and October)	80.24 ^b	11.12 ^d	83.30 ^{bc}	9.33 ^e	40.69 ^{cd}	55.72 ^{abc}	68.15 ^c	21.36 ^e	74.30 ^{bcd}	14.83 ^d	75.10 ^b	14.85 ^c
6.	3 root feeding/year (April, October and December)	75.41 ^{bc}	16.48 ^c	78.50 ^c	14.56 ^c	39.13 ^{cd}	57.41 ^{ab}	57.74 ^d	33.38 ^c	71.35 ^{cd}	18.21 ^c	75.95 ^b	13.93 ^c
7.	4 root feeding/year (January, April, July and October)	68.29 ^d	24.36 ^b	80.71 ^c	12.14 ^d	38.2 ^d	58.41 ^a	61.36 ^d	29.20 ^d	75.52 ^{bc}	13.43 ^{de}	39.71 ^c	54.99 ^b
8.	6 root feeding/year (January, March, May, July, September and November)	62.23 ^e	31.08 ^a	38.06 ^e	58.57 ^a	70.27 ^b	23.53 ^d	34.81 ^e	59.83 ^a	68.17 ^{cd}	21.86 ^e	33.24 ^c	62.30 ^a
9.	Untreated control	90.29 ^a	-	91.88 ^a	-	91.92 ^a	-	86.67 ^a	-	87.24 ^a	-	88.28 ^a	-
	CV (%)	5.84	12.77	5.09	5.57	6.59	8.00	5.00	6.60	6.81	6.88	5.72	6.51
	CD at 5%	5.96	3.50	6.51	1.75	6.13	5.74	5.43	3.15	8.94	1.55	6.05	3.44
		1.99	1.16	2.17	0.58	2.04	1.91	1.81	1.05	2.98	0.51	2.02	1.15

In a column means followed by same alphabet donot differ significantly by DMRT (P=0.05)

Among the different schedules, the treatment consisting of root feeding six times per year which was scheduled at two months interval during January, March, May, July,

September and November was significantly superior in reducing the mite (both active stages and egg) population and was also superior in recording minimum number of damaged nuts.

Table 3. Effect of spray schedule on nut damage and yields

Sl. No.	Treatment	Percentage of damaged nuts in					Number of nuts/4 bunches/palm			Net returns	Gross returns	B:C ratio
		Bunch 5	Bunch 6	Bunch 7	Bunch 8	Average	Healthy	Damaged	Total nuts			
1	2 sprays/year (April and October)	86.17 ^e	85.42 ^e	84.64 ^e	83.72 ^d	84.98 ^e	8 ^e	43 ^d	51	300	384	1:4.57
2	3 sprays/year (April, October and December)	61.53 ^d	68.06 ^d	72.72 ^d	77.03 ^{cd}	69.83 ^d	22 ^{de}	39 ^d	61	920	1056	1:7.76
3	4 sprays/year (January, April, July and October)	36.52 ^c	56.77 ^c	67.54 ^c	62.96 ^b	55.94 ^c	35 ^{cd}	18 ^a	53	1512	1680	1:10.00
4	6 sprays/year (January, March, May, July, September and November)	12.77 ^a	37.37 ^b	54.25 ^b	41.06 ^a	36.36 ^{ab}	48 ^b	25 ^b	73	2072	2304	1:9.93
5	2 root feeding/year (April and October)	61.09 ^d	66.21 ^d	78.12 ^{de}	73.87 ^c	69.82 ^d	15 ^e	32 ^c	47	620	720	1:7.20
6	3 root feeding/year (April, October and December)	35.89 ^c	52.15 ^c	73.33 ^d	60.73 ^b	55.52 ^c	30 ^d	28 ^c	58	1290	1440	1:9.60
7	4 root feeding/year (January, April, July and October)	26.29 ^b	43.03 ^{bc}	61.32 ^c	55.55 ^b	46.54 ^b	38 ^c	18 ^a	56	1624	1824	1:9.12
8	6 root feeding/year (January, March, May, July, September and November)	11.93 ^a	29.66 ^a	41.32 ^a	36.36 ^a	29.80 ^a	59 ^a	25 ^b	84	2532	2832	1:9.44
9	Untreated control	98.46 ^f	88.29 ^e	100.00 ^f	100.00 ^e	96.68 ^e	5 ^f	50 ^e	55	-	-	-
	CV (%)	10.61	11.43	6.78	7.04	8.96	9.83	6.48				
	CD at 5%	6.08	7.48	6.80	10.01	7.59	8.00	6.05				

In a column means followed by same alphabet donot differ significantly by DMRT (P=0.05)

Cost of monocrotophos – 500/litre, Cost of healthy nuts – Rs. 8/nut

References

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