

4.Result and Discussion

During the present investigation, laboratory test were conducted to evaluate efficacy to different plant extracts prepared in water. The prepared extracts were used under the laboratory condition to findout the mortality percentage of adult mites. *T .cinnabarinus* and adult and pupa of whiteflies of *B. tabaci*. Gennnadius.

Red spider mite(Adult)

By considering the observation table 39.

It is observed that the treatments with *Datura stramonium*, *Dimethoate*, *Annona squamosa*, *Tridax procumbens*, *Azadirachta indica*, *Lantana camara* L. are equal and significantly superior overall other treatments recorded 50,50,30,20,20,10 % mortality respectively, when observations were recorded at 0hours for 1% extracts. The treatments with *Lantana camara*, *Argemone maxicana*, *Vitex negundo* found to be significantly superior overall other treatments recorded 50,30,20 % mortality respectively, when observations were recorded at 4 hours 1% extracts. Mortality percentage is more than 0.03% Dimethoate solution. Significant differences did not exist among the 1% treatment at 8 hours. While mortality percentge is 0 at 1% extract for 12 hours.

The treatments with *Datura stramonium*, *Annona squamosa*, and *Dimethoate* found to significantly superior overall other treatments recorded 70 and 50 % mortality when observations were recorded at 2 % tratment for 0 hours. The treatment with *Nerium oleander*, and *Argemone maxinana* were next in order of efficacy. However significant differences did not exist among the rest of the treatments. The treatments with, *Argemone maxicana*, *Lantana camara*,

Indica and *Azadirachta* found to be significantly superior overall other treatments recorded 50, % mortality when observations were recorded at 2 % treatment for 4 hours. Significant differences did not exist among the treatments of 2 % at 8 hours and 2 % treatment for 12 hours.

The treatment with *Datura stramonium* and *Argemone maxicana* found to be significantly superior over all other treatment recorded 80% and 70% mortality when observation were recorded 3% extract for 0 hours. The treatment with *Lantana camara* and *Argemone maxicana* found to be significantly superior overall other treatments recorded 60 and 50 % mortality when observation were recorded at 3% treatment 4 hours. Significant differences did not exist among the treatment of 3% extract for 8 and 12 hours.

White flies – Adult

By considering the observation table 11.

There is no result of mortality percentage, treated with all plant extract ie. 1,2 and 3% for 0 hours. Only the Dimethoate shows 20 % mortality at 0 hours.

The treatment with *Argemone maxicana* found to be significantly superior over all other treatments recorded 85.71 % mortality when observations were recorded at 1 % treatment for 4 hrs. The treatment with *Datura stramonium* and *Lantana camara* were next in order of efficacy. However, significant difference did not exist among the rest of the treatment.

The treatment with *Vitex negundo* found to be significantly superior over all other treatment recorded 37.5 % mortality when observation were recorded at 1% treatment for 8 hours. The treatment with *Datura stramonium* found to be significantly superior over all other treatment recorded 14.28 % mortality when observations were recorded at 1 % treatment for 12 hours.

The treatment with *Argemone maxicana* found to be significantly superior over all other treatments recorded 57.14 % mortality when

observations were recorded at 2 % treatment for 4 hrs. However, significant different did not exist among the rest of the treatment.

The treatment with *Lantana camara* found to be significantly superior over all other treatments recorded 40 % mortality when observations were recorded at 2 % treatment for 8 hrs. However, significant different did not exist among the rest of the treatment. The treatment with *Argemone maxicana* found to be significantly superior then 0.03% Dimethoate.

The treatment with *Lantana camara* found to be significantly superior over all other treatments recorded 72 % mortality when observation were recorded at 3% treatment for 4 hours. While *Annona squamosa* shows 50% mortality. However, significant different did not exist among the rest of the treatment. significant different did not exist among the rest of the treatments of 3% extracts at 8 & 12 hours.

White fly – pupa

By considering the observation table 25.

The treatments with *Argemone mexicana* and *vitex negundo* L. found to be significantly superior overall other treatments recorded 14.28 % mortality when observations were recorded at 1 % treatment for 4 hours

The treatment with dimethoate 0.03 % found to be significantly superior overall treatment recorded 40 % mortality when observation were recorded at 1 % treatment for 8 hour.

The treatments with *Annona Squamosa* L. found to be significantly superior overall other treatments reduced 20 % mortality when observations were reduced at treatment 1% for 12 hours The treatments with *Azadirachta indica* found to be significantly superior over all other treatments recorded 12.5 % mortality when observation were recorded at treatment for 24 hours.

The treatments with *Argemone maxicana* found to be significantly superior over all other treatments recorded 28.56 % mortality when observation were recorded at 2% treatment for 4 hours. The treatments with *Dimethoate* 0.03% found to be significantly superior over

all other treatments recorded 40.0 % mortality when observation were recorded at 2% treatment for 8 hors. The treatments with *Annona squamosa* found to be significantly superior over all other treatments recorded 20.0 % mortality when observation were recorded at 2% treatment for 12 hors. Only the 0.03% Dimetho^{at} e shows 10 % mortality at 2 % treatments for 24 hours significant different did not exist among the 3% treatment for 4,8,12 and 24 hrs.



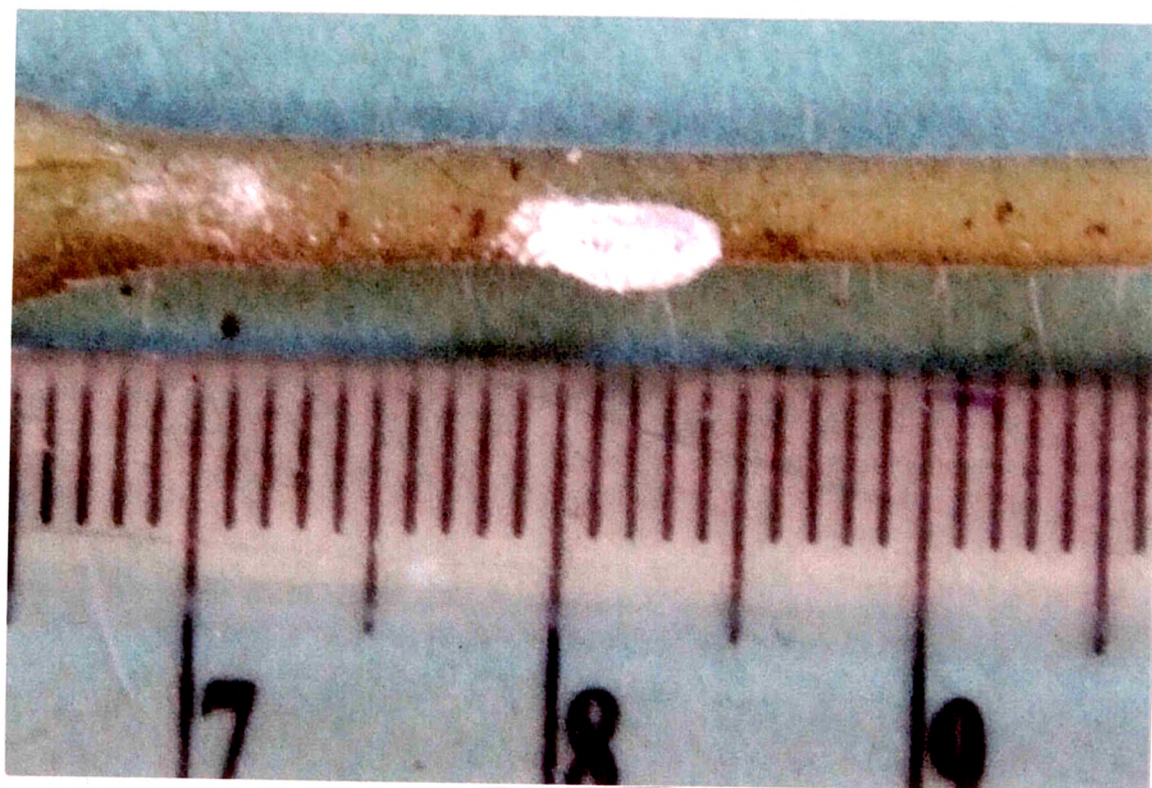
Cultivation of Tomato.



A Tomato plant affected by white flies.



Dead (blackish) and alive (white) pupa of white flies.



Enlarged single pupa.



Trapping of white flies on tomato leaves.

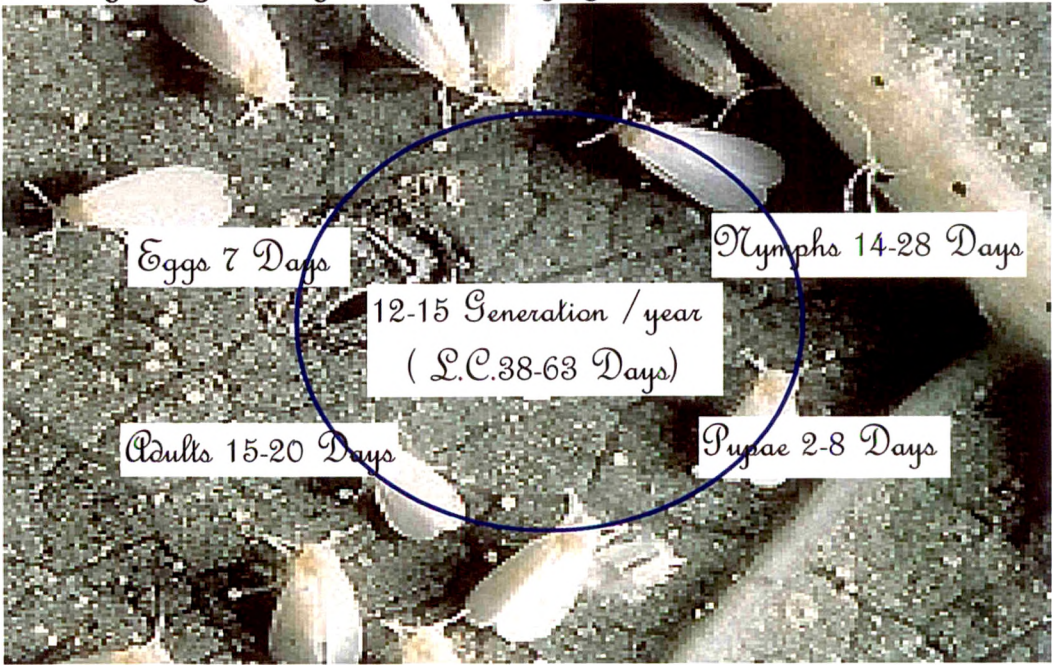


Spraying of plant extract on trapped white flies.



Adult white flies feeding on tomato leaf.

Life cycle of White fly : *Bemisia tabaci*



Life cycle of white flies.



A tomato plant infested by white flies.

Whitefly Adult

Table 1

Efficacy of different plant extract against Whitefly Adult
Extract concentration – 1%, observation time - 4 hours.

Treatment	Name of the plant	Total No. of whiteflies/ leaf	Percent mortality			
			R I	R II	R III	Mean
T ₁	<i>Lantana camera</i> L.	10	30 (50)	50 (50)	40 (40)	40
T ₂	<i>Blumea malcolmii</i> Hook.	8	11 (12.5)	5 (25.5)	2 (20)	12.5
T ₃	<i>Tridax procumbeans</i> L.	8	30 (37.5)	20 (25)	10 (12.5)	25
T ₄	<i>Celosia argentea</i> , Linn.	7	10 (14.28)	00 (0)	10 (14.28)	14.28
T ₅	<i>Datura stramonium</i> L.	7	60 (57.12)	60 (57.12)	60 (57.12)	57.14
T ₆	<i>Annona squamosa</i> L.	7	00 (0)	10 (14.28)	10 (14.28)	14.28
T ₇	<i>Nerium oleander</i> L.	8	22 (20)	30 (30)	20 (25)	25.00
T ₈	<i>Azadirchata indica</i> A.Juss.	8	20 (25)	20 (22)	20 (28)	25.00
T ₉	<i>Vitex negundo</i> L.	8	00 (00)	00 (00)	00 (00)	00
T ₁₀	<i>Argemone mexicana</i> L.	7	70 (83.33)	75 (85.71)	72 (87.5)	85.51
T ₁₁	Dimethoate 0.03%		20	20	20	20
T ₁₂	Control		00	00	00	00
SE ±						5.48
C.D. at 5%						11.37

Figures in the parenthesis are arcsin transformed values.

Table 2
Efficacy of different plant extract against Whitefly Adult
Extract concentration – 1%, observation time – 8 hours.

Treatment	Name of the plant	Total No. of whiteflies/ leaf	Percent mortality			
			R I	R II	R III	Mean
T ₁	<i>Lantana camara</i> L.	10	30 (30)	10 (10)	20 (20)	20
T ₂	<i>Blumea malcolmii</i> Hook.	8	10 (12.5)	10 (12.5)	10 (12.5)	12.5
T ₃	<i>Tridax procumbens</i> L.	8	10 (12.5)	10 (12.5)	10 (12.5)	12.5
T ₄	<i>Celosia argentea</i> , Linn.	7	10 (14.28)	10 (14.28)	10 (14.28)	14.28
T ₅	<i>Datura stramonium</i> L.	7	10 (14.28)	10 (14.28)	10 (14.28)	14.28
T ₆	<i>Annona squamosa</i> L.	7	10 (14.28)	10 (14.28)	100 (14.28)	14.28
T ₇	<i>Nerium oleander</i> L.	8	10 (12.5)	10 (12.5)	10 (12.5)	12.5
T ₈	<i>Azadirchata indica</i> A.Juss.	8	10 (12.5)	10 (12.5)	10 (12.5)	12.5
T ₉	<i>Vitex negundo</i> L.	8	40 (50)	20 (25.0)	30 (37.5)	37.5
T ₁₀	<i>Argemone maxicana</i> L.	7	10 (14.28)	10 (14.28)	10 (14.28)	14.28
T ₁₁	Dimethoate 0.03%		20	20	20	20
T ₁₂	Control		00	00	00	00
SE ±						2.42
C.D. at 5%						5.02

Figures in the parenthesis are arcsin transformed values.

Table 3
Efficacy of different plant extract against Whitefly Adult
Extract concentration – 1%, observation time –12 hours.

Treatment	Name of the plant	Total No. of whiteflies/ leaf	Percent mortality			
			R I	R II	R III	Mean
T ₁	<i>Lantana camara</i> L.	10	10 (10)	10 (10)	10 (10)	10
T ₂	<i>Blumea malcolmii</i> Hook.	8	00 (00)	00 (00)	00 (00)	00
T ₃	<i>Tridax procumbens</i> L.	8	00 (00)	00 (00)	00 (00)	00
T ₄	<i>Celosia argentea</i> , Linn.	7	00 (00)	00 (00)	00 (00)	00
T ₅	<i>Datura stramonium</i> L.	7	10 (14.28)	10 (14.28)	10 (14.28)	14.28
T ₆	<i>Annona squamosa</i> L.	7	00 (00)	00 (00)	00 (00)	00
T ₇	<i>Nerium oleander</i> L.	8	00 (00)	00 (00)	00 (00)	00
T ₈	<i>Azadirchata indica</i> A.Juss.	8	00 (00)	00 (00)	00 (00)	00
T ₉	<i>Vitex negundo</i> L.	8	10 (12.5)	10 (12.5)	10 (12.5)	12.5
T ₁₀	<i>Argemone mexicana</i> L.	7	00 (0)	00 (00)	00 (00)	00
T ₁₁	Dimethoate 0.03%		00	00	00	00
T ₁₂	Control		00	00	00	00
SE ±						00
C.D. at 5%						00

Figures in the parenthesis are arcsin transformed values.

Table 4

Efficacy of different plant extract against Whitefly Adult

Extract concentration –2%, observation time – 4 hours.

Treatment	Name of the plant	Total No. of whiteflies/ leaf	Percent mortality			
			R I	R II	R III	Mean
T ₁	<i>Lantana camara</i> L.	10	10 (10)	30 (30)	20 (20)	30
T ₂	<i>Blumea malcolmii</i> Hook.	8	10 (12.5)	10 (12.5)	10 (12.5)	12.5
T ₃	<i>Tridax procumbens</i> L.	8	10 (12.5)	10 (12.5)	10 (12.5)	12.5
T ₄	<i>Celosia argentea</i> , Linn.	7	30 (42.84)	10 (14.28)	20 (28.56)	28.56
T ₅	<i>Datura stramonium</i> L.	7	10 (14.28)	20 (28.56)	30 (42.84)	28.56
T ₆	<i>Annona squamosa</i> L.	7	20 (22.22)	30 (33.33)	10 (11.11)	22.22
T ₇	<i>Nerium oleander</i> L.	8	10 (14.28)	10 (14.28)	10 (14.28)	14.28
T ₈	<i>Azadirachta indica</i> A. Juss.	8	10 (37.5)	40 (50.06)	20 (25.0)	37.05
T ₉	<i>Vitex negundo</i> L.	8	10 (12.5)	10 (12.5)	10 (12.5)	12.5
T ₁₀	<i>Argemone mexicana</i> L.	7	40 (57.14)	50 (71.42)	30 (42.85)	57.14
T ₁₁	Dimethoate 0.03%		20	20	20	20
T ₁₂	Control		00	00	00	00
SE ±						4.87
C.D. at 5%						10.10

Figures in the parenthesis are arcsin transformed values.

Table 5
Efficacy of different plant extract against Whitefly Adult
Extract concentration – 2%, observation time –8 hours

Treatment	Name of the plant	Total No. of white flies/ leaf	Percent mortality			
			R I	R II	R III	Mean
T ₁	<i>Lantana camara</i> L.	10	50 (50)	40 (40)	30 (30)	40
T ₂	<i>Blumea malcolmii</i> Hook.	8	10 (12.5)	10 (12.5)	10 (12.5)	12.5
T ₃	<i>Tridax procumbeans</i> L.	8	10 (12.5)	10 (12.5)	10 (12.5)	12.5
T ₄	<i>Celosia argentea</i> , Linn.	7	00 (0)	00 (0)	00 (0)	00
T ₅	<i>Datura stramonium</i> L.	7	10 (14.28)	10 (14.28)	10 (14.28)	14.28
T ₆	<i>Annona squamosa</i> L.	7	10 (11.11)	10 (11.11)	10 (11.11)	11.11
T ₇	<i>Nerium oleander</i> L.	8	1 (14.28)	1 (14.28)	1 (14.28)	14.28
T ₈	<i>Azadirchata indica</i> A.Juss.	8	30 (37.5)	10 (12.5)	20 (25)	25
T ₉	<i>Vitex negundo</i> L.	8	10 (12.5)	10 (12.5)	10 (12.5)	12.5
T ₁₀	<i>Argemone mexicana</i> L.	7	10 (14.28)	10 (14.28)	10 (14.28)	14.28
T ₁₁	Dimethoate 0.03%		20	20	20	20
T ₁₂	Control		00	00	00	00
SE ±						2.39
C.D. at 5%						4.97

Figures in the parenthesis are arcsin transformed values.

Table 6
Efficacy of different plant extract against Whitefly Adult
Extract concentration –2%, observation time –12 hours

Treatmen t	Name of the plant	Total No. of white flies/ leaf	Percent mortality			
			R I	R II	R III	Mean
T ₁	<i>Lantana camara</i> L.	10	00 (00)	00 (00)	10 (10)	10
T ₂	<i>Blumea malcolmii</i> Hook.	8	00 (00)	00 (00)	00 (00)	00
T ₃	<i>Tridax procumbens</i> L.	8	10 (12.5)	10 (12.5)	00 (00)	12.5
T ₄	<i>Celosia argentea</i> , Linn.	7	00 (00)	00 (00)	00 (00)	00
T ₅	<i>Datura stramonium</i> L.	7	00 (00)	00 (00)	10 (14.28)	00
T ₆	<i>Annona squamosa</i> L.	7	00 (00)	00 (00)	00 (00)	00
T ₇	<i>Nerium oleander</i> L.	8	00 (00)	0 (00)	0 (00)	00
T ₈	<i>Azadirchata indica</i> A.Juss.	8	0 (00)	0 (00)	00 (00)	00
T ₉	<i>Vitex negundo</i> L.	8	00 (00)	00 (00)	10 (12.5)	00
T ₁₀	<i>Argemone mexicana</i> L.	7	1 (14.28)	1 (14.28)	0 (0)	14.28
T ₁₁	Dimmethoate 0.03%		20	20	20	20
T ₁₂	Control		00	00	00	00
SE ±						00
C.D. at 5%						00

Figures in the parenthesis are arcsin transformed values.

Table 7
Efficacy of different plant extract against Whitefly Adult
Extract concentration –3%, observation time –4 hours

Treatment	Name of the plant	Total No. of whiteflies/ leaf	Percent mortality			
			R I	R II	R III	Mean
T ₁	<i>Lantana camara</i> L.	10	30 (30)	20 (20)	10 (10)	30
T ₂	<i>Blumea malcolmii</i> Hook.	8	10 (12.5)	00 (00)	10 (12.5)	12.5
T ₃	<i>Tridax procumbens</i> L.	8	10 (12.5)	10 (12.5)	00 (00)	12.5
T ₄	<i>Celosia argentea</i> , Linn.	7	20 (28.56)	10 (14.28)	20 (28.56)	28.56
T ₅	<i>Datura stramonium</i> L.	7	10 (22.5)	10 (22.5)	10 (22.5)	22.22
T ₆	<i>Annona squamosa</i> L.	7	30 (49.98)	00 (00)	30 (49.98)	49.98
T ₇	<i>Nerium oleander</i> L.	8	20 (28.56)	20 (28.56)	20 (28.56)	28.56
T ₈	<i>Azadirchata indica</i> A. Juss.	8	30 (42.84)	30 (42.84)	00 (00)	42.84
T ₉	<i>Vitex negundo</i> L.	8	10 (28.56)	10 (28.56)	10 (12.5)	28.56
T ₁₀	<i>Argemone mexicana</i> L.	7	10 (14.28)	10 (14.28)	10 (0)	72.00
T ₁₁	Dimmethoate 0.03%		20	20	20	20
T ₁₂	Control		00	00	00	00
SE ±						5.95
C.D. at 5%						12.33

Figures in the parenthesis are arcsin transformed values.

Table 8
Efficacy of different plant extract against Whitefly Adult
Extract concentration –3%, observation time –8 hours

Treatment	Name of the plant	Total No. of white flies/ leaf	Percent mortality			
			R I	R II	R III	Mean
T ₁	<i>Lantana camara</i> L.	10	50 (30)	40 (20)	10 (10)	40
T ₂	<i>Blumea malcolmii</i> Hook.	8	30 (37.5)	10 (12.5)	20 (25)	25.00
T ₃	<i>Tridax procumbens</i> L.	8	10 (12.5)	10 (12.5)	00 (00)	12.5
T ₄	<i>Celosia argentea</i> , Linn.	7	10 (14.28)	10 (14.28)	10 (14.28)	14.28
T ₅	<i>Datura stramonium</i> L.	7	20 (22.22)	30 (33.33)	10 (11.11)	22.22
T ₆	<i>Annona squamosa</i> L.	7	20 (16.16)	20 (16.16)	00 (00)	16.16
T ₇	<i>Nerium oleander</i> L.	8	10 (14.28)	10 (14.28)	00 (00)	14.28
T ₈	<i>Azadirchata indica</i> A.Juss.	8	10 (14.28)	10 (28.56)	00 (00)	28.56
T ₉	<i>Vitex negundo</i> L.	8	10 (28.56)	10 (28.56)	10 (12.5)	28.56
T ₁₀	<i>Argemone maxicana</i> L.	7	10 (28.56)	10 (28.56)	00 (00)	28.56
T ₁₁	Dimethoate 0.03%		20	20	20	20
T ₁₂	Control		00	00	00	00
SE ±						4.64
C.D. at 5%						9.63

Figures in the parenthesis are arcsin transformed values.

Table 9
Efficacy of different plant extract against Whitefly Adult
Extract concentration –3%, observation time –12 hours

Treatment	Name of the plant	Total No. of white flies/ leaf	Percent mortality			
			R I	R II	R III	Mean
T ₁	<i>Lantana camara</i> L.	10	00 (0)	00 (00)	00 (00)	00
T ₂	<i>Blumea malcolmii</i> Hook.	8	00 (00)	00 (00)	00 (00)	00
T ₃	<i>Tridax procumbeans</i> L.	8	10 (12.5)	10 (12.5)	10 (12.5)	12.5
T ₄	<i>Celosia argentea</i> , Linn.	7	20 (14.28)	20 (14.28)	20 (14.28)	14.28
T ₅	<i>Datura stramonium</i> L.	7	10 (10)	10 (10)	10 (10)	10
T ₆	<i>Annona squamosa</i> L.	7	00 (00)	00 (00)	00 (00)	00
T ₇	<i>Nerium oleander</i> L.	8	00 (14.28)	00 (14.28)	00 (14.28)	14.28
T ₈	<i>Azadirchata indica</i> A. Juss.	8	10 (14.28)	10 (14.28)	10 (14.28)	14.28
T ₉	<i>Vitex negundo</i> L.	8	10 (14.28)	10 (14.28)	10 (14.28)	14.28
T ₁₀	<i>Argemone mexicana</i> L.	7	00 (00)	00 (00)	00 (00)	00
T ₁₁	Dimethoate 0.03%		00	00	00	00
T ₁₂	Control		00	00	00	00
SE ±						00
C.D. at 5%						00

Figures in the parenthesis are arcsin transformed values.

Table 10

Dimethoate (0.03 %)

Hour's	R I	R II	R III	Mean
0 hours	40 00	60 00	50 00	50 00
4 hour	30	20	10	20
8 hour	30	10	10	10
12 hour	20	30	10	20

Summary table 1

Effect of plant extracts on the mortality percentage of whiteflies (Adults)

Table 11

Sr No	Treatments Name of the Plants	Time of observation																	
		4 hrs			8 hrs			12 hrs						24 hrs					
		Concentration of the extracts																	
		1%	2%	3%	1%	2%	3%	1%	2%	3%	1%	2%	3%	1%	2%	3%			
1	Lantana camara L.	00	00	00	40 (39.15)	30 (33.00)	30 (26.07)	20 (26.07)	40 (39.15)	40 (33.00)	10 (18.84)	00	00	00					
2	Blumea malcomii Hook.	00	00	00	12.5 (20.06)	12.5 (20.70)	12.5 (20.70)	12.5 (20.70)	12.5 (20.70)	25.00 (29.47)	00	00	00						
3	Tridax procumbens L.	00	00	00	25 (29.49)	12.5 (20.70)	12.5 (20.70)	12.5 (20.70)	12.5 (20.70)	12.5 (20.70)	00	12.5 (20.70)	12.5 (20.70)	12.5 (20.70)					
4	Celosia argentea, Linn.	00	00	00	14.28 (22.22)	28.56 (31.82)	28.56 (31.80)	14.28 (22.22)	00	14.28 (22.22)	00	00	14.28 (22.22)	14.28 (22.22)					
5	Datura stramonium L.	00	00	00	57.12 (49.22)	28.56 (31.82)	22.22 (27.55)	14.28 (22.22)	14.28 (22.22)	14.28 (22.22)	14.28 (22.22)	00	00	00					
6	Annona sequamosa L.	00	00	00	14.28 (22.22)	22.22 (27.55)	49.50 (45.00)	14.28 (22.22)	11.11 (19.37)	16.66 (24.12)	00	00	00	00					
7	Nerium oleander L.	00	00	00	25.00 (37.59)	14.28 (22.22)	28.56 (31.80)	12.5 (20.70)	14.28 (22.22)	14.28 (22.22)	00	00	00	14.28 (22.22)					
8	Azadirachata indicaA.Juss.	00	00	00	25.00 (37.59)	37.5 (37.56)	42.85 (31.80)	12.5 (20.70)	25 (29.47)	28.56 (31.80)	00	00	00	14.28 (22.22)					
9	Vitex negundo L.	00	00	00	00	12.5 (20.70)	28.56 (31.80)	37.5 (37.59)	12.5 (20.70)	28.56 (31.80)	12.5 (20.70)	00	00	14.28 (22.22)					
10	Argemone maxicana L.	00	00	00	85.71 (71.82)	57.14 (49.22)	71.42 (58.17)	14.28 (22.22)	14.28 (22.22)	28.56 (31.80)	00	14.28 (22.22)	00	00					
11	Dimethoate 0.03%	20 (26.56)			20 (26.56)			20 (26.56)			00								
12	Control	00	00	00	00	00	00	00	00	00	00	00	00	00					
	S.E =	00	00	00	5.48	4.87	5.95	2.42	2.39	4.64	00	00	00	00					
	CD at 5 %	00	00	00	11.37	10.10	12.33	5.02	4.97	9.63	00	00	00	00					

Figures in the parenthesis are arcsin transformed values.
(These are the summarised values from table 1 to 10)

White fly – pupa

Table 12

Efficacy of different plant extract against Whitefly - Pupa
Extract concentration – 1%, observation time - 4 hours.

Treatment	Name of the plants	Total No of pupa observed/ leaf	Percent mortality			
			R I	R II	R III	Mean
T ₁	<i>Argemone mexicana</i> L.	7	14.28 (22.22)	14.28 (22.22)	14.28 (22.22)	14.28 (22.22)
T ₂	<i>Annona squamosa</i> L.	10	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₃	<i>Azadirachta indica</i> A.Juss.	8	00 (00)	00 (00)	00 (00)	00 (00)
T ₄	<i>Vitex negundo</i> L.	7	14.28 (22.22)	14.28 (22.22)	14.28 (22.22)	14.28 (22.22)
T ₅	<i>Nerium oleander</i> L.	7	00 (00)	00 (00)	00 (00)	00 (00)
T ₆	<i>Celosia argentea</i> Linn.	9	00 (00)	00 (00)	00 (00)	00 (00)
T ₇	Dimethoate 0.03%	10	10	10	10	10
T ₈	Control	00	00	00	00	00
SE ±						00
C.D. at 5%						00

Figures in the parenthesis are arcsin transformed values.

Table 13

Efficacy of different plant extract against Whitefly - Pupa
Extract concentration – 1%, observation time - 8 hours.

Treatment	Name of the plants	Total No. of pupa observed/ leaf	Percent mortality			
			R I	R II	R III	Mean
T ₁	<i>Argemone mexicana</i> L.	7	00 (00)	00 (00)	00 (00)	00 (00)
T ₂	<i>Annona squamosa</i> L.	10	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₃	<i>Azadirachta indica</i> A .Juss.	8	12.5 (20.70)	12.5 (20.70)	12.5 (20.70)	12.5 (20.70)
T ₄	<i>Vitex negundo</i> L.	7	14.28 (22.22)	14.28 (22.22)	14.28 (22.22)	14.28 (22.22)
T ₅	<i>Nerium oleander</i> L.	7	14.28 (22.22)	14.28 (22.22)	14.28 (22.22)	14.28 (22.22)
T ₆	<i>Celosia argentea</i> Linn.	9	00 (00)	00 (00)	00 (00)	00 (00)
T ₇	Dimethoate 0.03%	10	40 (39.23)	40 (39.23)	40 (39.23)	40 (39.23)
T ₈	Control	00	00 (00)	00 (00)	00 (00)	00 (00)
SE ±						00
C.D. at 5%						00

Figures in the parenthesis are arcsin transformed values.

Table 14
Efficacy of different plant extract against Whitefly - Pupa
Extract concentration – 1%, observation time - 12 hours.

Treatment	Name of the plants	Total No. of pupa observed/ leaf	Percent mortality			
			R I	R II	R III	Mean
T ₁	<i>Argemone mexicana</i> L.	7	00 (00)	00 (00)	00 (00)	00 (00)
T ₂	<i>Annona squamosa</i> L.	10	20 (26.56)	10 (18.44)	30 (33.21)	20.00 (26.07)
T ₃	<i>Azadirachta indica</i> A.Juss	8	12.5 (20.70)	12.5 (20.70)	12.5 (20.70)	12.5 (20.70)
T ₄	<i>Vitex negundo</i> L.	7	00 (00)	00 (00)	00 (00)	00 (00)
T ₅	<i>Nerium oleander</i> L.	7	00 (00)	00 (00)	00 (00)	00 (00)
T ₆	<i>Celosia argentea</i> Linn.	9	00 (00)	00 (00)	00 (00)	00 (00)
T ₇	Dimethoate 0.03%	10	00 (00)	00 (00)	00 (00)	00 (00)
T ₈	Control	00	00 (00)	00 (00)	00 (00)	00 (00)
SE ±						2.14
C.D. at 5%						4.43

Figures in the parenthesis are arcsin transformed values.

Table 15

Efficacy of different plant extract against Whitefly - Pupa
Extract concentration – 1%, observation time - 24 hours.

Treatment	Name of the plants	Total No. of pupa observed/ leaf	Percent mortality			
			R I	R II	R III	Mean
T ₁	<i>Argemone mexicana</i> L.	7	00 (00)	00 (00)	00 (00)	00 (00)
T ₂	<i>Annona squamosa</i> L.	10	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₃	<i>Azadirachta indica</i> A.Juss.	8	12.5 (20.70)	12.5 (20.70)	12.5 (20.70)	12.5 (20.70)
T ₄	<i>Vitex negundo</i> L.	7	00 (00)	00 (00)	00 (00)	00 (00)
T ₅	<i>Nerium oleander</i> L.	7	00 (00)	00 (00)	00 (00)	00 (00)
T ₆	<i>Celosia argentea</i> Linn.	9	00 (00)	00 (00)	00 (00)	00 (00)
T ₇	Dimethoate 0.03%	10	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₈	Control	00	00 (00)	00 (00)	00 (00)	00 (00)
SE ±						00
C.D. at 5%						00

Figures in the parenthesis are arcsin transformed values.

Table No 16

Efficacy of different plant extract against Whitefly - Pupa
Extract concentration – 2%, observation time - 4 hours.

Treatment	Name of the plants	Total No. of pupa observed/ leaf	Percent mortality			
			R I	R II	R III	Mean
T ₁	<i>Argemone maxicana</i> L.	7	28.56 (32.33)	42.84 (40.86)	14.28 (22.22)	28.5 (31.80)
T ₂	<i>Annona squamosa</i> L.	10	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₃	<i>Azadiracta indica</i> A.Juss.	8	12.5 (20.70)	12.5 (20.70)	12.5 (20.70)	12.5 (20.70)
T ₄	<i>Vitex negundo</i> L.	7	14.28 (22.22)	14.28 (22.22)	14.28 (22.22)	14.28 (22.22)
T ₅	<i>Nerium oleander</i> L.	7	14.28 (22.22)	14.28 (22.22)	14.28 (22.22)	14.28 (22.22)
T ₆	<i>Celosia argentea</i> Linn.	9	00 (00)	00 (00)	00 (00)	00 (00)
T ₇	Dimethoate 0.03%	10	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₈	Control	00	00 (00)	00 (00)	00 (00)	00 (00)
SE ±						2.69
C.D. at 5%						5.59

Figures in the parenthesis are arcsin transformed values.

Table No 17

Efficacy of different plant extract against Whitefly - Pupa
Extract concentration – 2%, observation time - 8 hours.

Treatment	Name of the plants	Total No. of pupa observed/ leaf	Percent mortality			
			R I	R II	R III	Mean
T ₁	<i>Argemone maxicana</i> L.	7	14.28 (22.22)	14.28 (22.22)	14.28 (22.22)	14.28 (22.22)
T ₂	<i>Annona squamosa</i> L.	10	20 (26.56)	10 (18.44)	30 (33.21)	20.00 (26.07)
T ₃	<i>Azadiracta indica</i> A.Juss.	8	25 (30.0)	37.5 (37.7)	12.5 (20.70)	25.0 (29.47)
T ₄	<i>Vitex negundo</i> L.	7	14.28 (22.22)	14.28 (22.22)	14.28 (22.22)	14.28 (22.22)
T ₅	<i>Nerium oleander</i> L.	7	00 (00)	00 (00)	00 (00)	00 (00)
T ₆	<i>Celosia argentea</i> Linn.	9	11.11 (19.37)	11.11 (19.37)	11.11 (19.37)	11.11 (19.37)
T ₇	Dimethoate 0.03%	10	40 (39.23)	40 (39.23)	40 (39.23)	40 (39.23)
T ₈	Control	00	00 (00)	00 (00)	00 (00)	00 (00)
SE ±						3.48
C.D. at 5%						7.21

Figures in the parenthesis are arcsin transformed values.

Table 18
Efficacy of different plant extract against Whitefly - Pupa
Extract concentration – 2%, observation time - 12 hours.

Treatment	Name of the plants	Total No. of pupa observed/ leaf	Percent mortality			
			R I	R II	R III	Mean
T ₁	<i>Argemone ^emexicana</i> L.	7	14.28 (22.22)	14.28 (22.22)	14.28 (22.22)	14.28 (22.22)
T ₂	<i>Annona squamosa</i> L.	10	30 (33.21)	20 (26.56)	10 (18.44)	20.0 (26.07)
T ₃	<i>Azadiracta indica</i> A.Juss.	8	00 (00)	00 (00)	00 (00)	00 (00)
T ₄	<i>Vitex negundo</i> L.	7	14.28 (22.22)	14.28 (22.22)	14.28 (22.22)	14.28 (22.22)
T ₅	<i>Nerium oleander</i> L.	7	14.28 (22.22)	14.28 (22.22)	14.28 (22.22)	14.28 (22.22)
T ₆	<i>Celosia argentea</i> Linn.	9	11.11 (19.37)	11.11 (19.37)	11.11 (19.37)	11.11 (19.37)
T ₇	Dimethoate 0.03%	10	00 (00)	00 (00)	00 (00)	00 (00)
T ₈	Control	00	00 (00)	00 (00)	00 (00)	00 (00)
SE ±						2.14
C.D. at 5%						4.43

Figures in the parenthesis are arcsin transformed values.

Table 19

Efficacy of different plant extract against Whitefly - Pupa
Extract concentration – 2%, observation time - 24 hours.

Treatment	Name of the plants	Total No. of pupa observed/ leaf	Percent mortality			
			R I	R II	R III	Mean
T ₁	<i>Argemone mexicana</i> L.	7	00 (00)	00 (00)	00 (00)	00 (00)
T ₂	<i>Annona squamosa</i> L.	10	00 (00)	00 (00)	00 (00)	00 (00)
T ₃	<i>Azadiracta indica</i> A.Juss.	8	00 (00)	00 (00)	00 (00)	00 (00)
T ₄	<i>Vitex negundo</i> L.	7	00 (00)	00 (00)	00 (00)	00 (00)
T ₅	<i>Nerium oleander</i> L.	7	00 (00)	00 (00)	00 (00)	00 (00)
T ₆	<i>Celosia argentea</i> Linn.	9	00 (00)	00 (00)	00 (00)	00 (00)
T ₇	Dimethoate 0.03%.	10	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₈	Control	00	00 (00)	00 (00)	00 (00)	00 (00)
SE ±						00
C.D. at 5%						00

Figures in the parenthesis are arcsin transformed values.

Table 20
Efficacy of different plant extract against Whitefly - Pupa
Extract concentration – 3%, observation time - 4 hours.

Treatment	Name of the plants	Total No.Of pupa observed/ leaf	Percent mortality			
			R I	R II	R III	Mean
T ₁	<i>Argemone mexicana</i> L.	7	28.56 (32.33)	42.84 (40.86)	14.28 (22.22)	28.56 (31.80)
T ₂	<i>Annona squamosa</i> L.	10	20 (26.56)	10 (18.44)	30 (33.21)	20.0 (26.07)
T ₃	<i>Azadiracta indica</i> A.Juss.	8	37.5 (37.7)	12.5 (20.70)	25.0 (30.0)	25.0 (26.07)
T ₄	<i>Vitex negundo</i> L.	7	14.28 (22.22)	14.28 (22.22)	14.28 (22.22)	14.28 (22.22)
T ₅	<i>Nerium oleander</i> L.	7	14.28 (22.22)	14.28 (22.22)	14.28 (22.22)	14.28 (22.22)
T ₆	<i>Celosia argentea</i> Linn.	9	11.11 (19.37)	11.11 (19.37)	11.11 (19.37)	11.11 (19.37)
T ₇	Dimethoate 0.03%	10	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₈	Control	00	00 (00)	00 (00)	00 (00)	00 (00)
SE ±						4.42
C.D. at 5%						9.17

Figures in the parenthesis are arcsin transformed values.

Table 21.

Efficacy of different plant extract against Whitefly - Pupa
Extract concentration – 3%, observation time - 8 hours.

Treatment	Name of the plants	Total No. of pupa observed/ leaf	Percent mortality			
			R I	R II	R III	Mean
T ₁	<i>Argemone mexicana</i> L.	7	57.14 (49.08)	71.42 (57.67)	42.85 (40.92)	57.14 (49.22)
T ₂	<i>Annona squamosa</i> L.	10	40 (39.33)	50 (45.00)	30 (33.21)	30 (39.15)
T ₃	<i>Azadirachta indica</i> A .Juss.	8	25.0 (30.0)	50.0 (45.0)	37.5 (37.7)	37.5 (37.7)
T ₄	<i>Vitex negundo</i> L.	7	28.56 (32.33)	14.28 (22.22)	42.84 (40.86)	28.56 (31.80)
T ₅	<i>Nerium oleander</i> L.	7	42.84 (40.86)	28.56 (32.33)	14.28 (22.22)	28.56 (31.80)
T ₆	<i>Celosia argentea</i> Linn.	9	11.11 (19.37)	33.33 (35.24)	22.22 (28.04)	22.22 (27.55)
T ₇	Dimethoate 0.03%	10	40 (39.23)	40 (39.23)	40 (39.23)	40 (39.23)
T ₈	Control	00	00 (00)	00 (00)	00 (00)	00 (00)
SE ±						5.84
C.D. at 5%						12.10

Figures in the parenthesis are arcsin transformed values.

Table 22

Efficacy of different plant extract against Whitefly - Pupa
Extract concentration – 3%, observation time - 12 hours.

Treatment	Name of the plants	Total No. of pupa observed / leaf	Percent mortality			
			R I	R II	R III	Mean
T ₁	<i>Argemone mexicana</i> L.	7	14.28 (22.22)	14.28 (22.22)	14.28 (22.22)	14.28 (22.22)
T ₂	<i>Annona squamosa</i> L.	10	30 (33.21)	40 (39.23)	20 (26.56)	30.0 (33.00)
T ₃	<i>Azadiracta indica</i> A.Juss.	8	12.5 (20.70)	12.5 (20.70)	12.5 (20.70)	12.5 (20.70)
T ₄	<i>Vitex negundo</i> L.	7	28.56 (32.33)	14.28 (22.22)	42.84 (40.86)	28.56 (31.80)
T ₅	<i>Nerium oleander</i> L.	7	14.28 (22.22)	43.84 (40.86)	28.56 (32.33)	28.56 (31.80)
T ₆	<i>Celosia argentea</i> Linn.	9	22.22 (28.04)	11.11 (19.37)	33.33 (35.24)	22.22 (27.55)
T ₇	Dimethoate 0.03%	10	00 (00)	00 (00)	00 (00)	00 (00)
T ₈	Control	00	00 (00)	00 (00)	00 (00)	00 (00)
SE ±						5.03
C.D. at 5%						10.43

Figures in the parenthesis are arcsin transformed values.

Table 23

Efficacy of different plant extract against Whitefly - Pupa
Extract concentration – 3%, observation time - 24 hours.

Treatment	Name of the plants	Total No.of pupa observed/ leaf	Percent mortality			
			R I	R II	R III	Mean
T ₁	<i>Argemone e maxicana</i> L.	7	00 (00)	00 (00)	00 (00)	00 (00)
T ₂	<i>Annona squamosa</i> L.	10	00 (00)	00 (00)	00 (00)	00 (00)
T ₃	<i>Azadirecta indica</i> A.Juss.	8	00 (00)	00 (00)	00 (00)	00 (00)
T ₄	<i>Vitex negundo</i> L.	7	14.28 (22.22)	14.28 (22.22)	14.28 (22.22)	14.28 (22.22)
T ₅	<i>Nerium oleander</i> L.	7	00 (00)	00 (00)	00 (00)	00 (00)
T ₆	<i>Celosia argentea</i> Linn.	9	00 (00)	00 (00)	00 (00)	00 (00)
T ₇	Dimethoate 0.03%	10	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₈	Control	00	00 (00)	00 (00)	00 (00)	00 (00)
SE ±						00
C.D. at 5 %						00

Figures in the parenthesis are arcsin transformed values.

Table 24

Dimethoate (0.03 %)

Hour's	R I	R II	R III	Mean
0 hours	40 00	60 00	50 00	50 00
4 hour	30 10	20 10	10	20 10
8 hour	10	40	30	10
12 hour	0	0	0	0

Percent Mortality (Table 25)

Sr No	Treatments Name of the Plants	Time of observation											
		4 hrs			8 hrs			12 hrs			24 hrs		
		Concentration of the extracts											
		1%	2%	3%	1%	2%	3%	1%	2%	3%	1%	2%	3%
1	Argemone maxicana L	14.28 (22.22)	28.26 (31.80)	28.26 (31.80)	00 (00)	14.28 (22.22)	57.14 (49.22)	00 (00)	14.28 (22.22)	14.28 (22.22)	00 (00)	00 (00)	
2	Annona squamosa L	10.00 (18.44)	10.00 (18.44)	20.00 (26.07)	10.00 (18.44)	20.00 (26.07)	30.00 (39.15)	20.00 (26.07)	20.00 (26.07)	30.00 (39.15)	10.00 (18.44)	00 (00)	
3	Azadiracta indica A.Juss	00 (00)	12.5 (20.70)	25.00 (29.47)	12.5 (20.70)	25.00 (29.47)	37.5 (37.76)	12.5 (20.70)	00 (00)	12.5 (20.70)	12.5 (20.70)	00 (00)	
4	Vitex negundo L	14.28 (22.22)	14.28 (22.22)	14.28 (22.22)	14.28 (22.22)	14.28 (22.22)	28.56 (31.80)	00 (00)	14.28 (22.22)	28.56 (31.80)	00 (00)	14.28 (22.22)	
5	Nerium: oleander L	00 (00)	14.28 (22.22)	14.28 (22.22)	14.28 (22.22)	00 (00)	28.56 (31.80)	00 (00)	14.28 (22.22)	28.56 (31.80)	00 (00)	00 (00)	
6	Celosia argentina Linn	00 (00)	00 (00)	11.11 (19.37)	00 (00)	11.11 (19.37)	22.22 (27.55)	00 (00)	11.11 (19.37)	22.22 (27.55)	00 (00)	00 (00)	
7	Dimethoate 0.03%	10.00 (18.44)			40.00 (39.23)			00.00 (00)			10.00 (18.44)		
8	Control	00	00	00	00	00	00	00	00	00	00	00	
	S.E ±	00	2.69	4.42	00	3.48	5.84	2.14	2.14	5.03	00	00	
	CD at 5 %	00	5.59	9.17	00	7.21	12.10	4.43	4.43	10.43	00	00	

Figures in parenthesis arcsin transformed values

(These are the summarised values from table 12 to 24)



Spraying of plant extract on tomato leaves affected by red spiders.



Bagging of treated leaves of tomato.

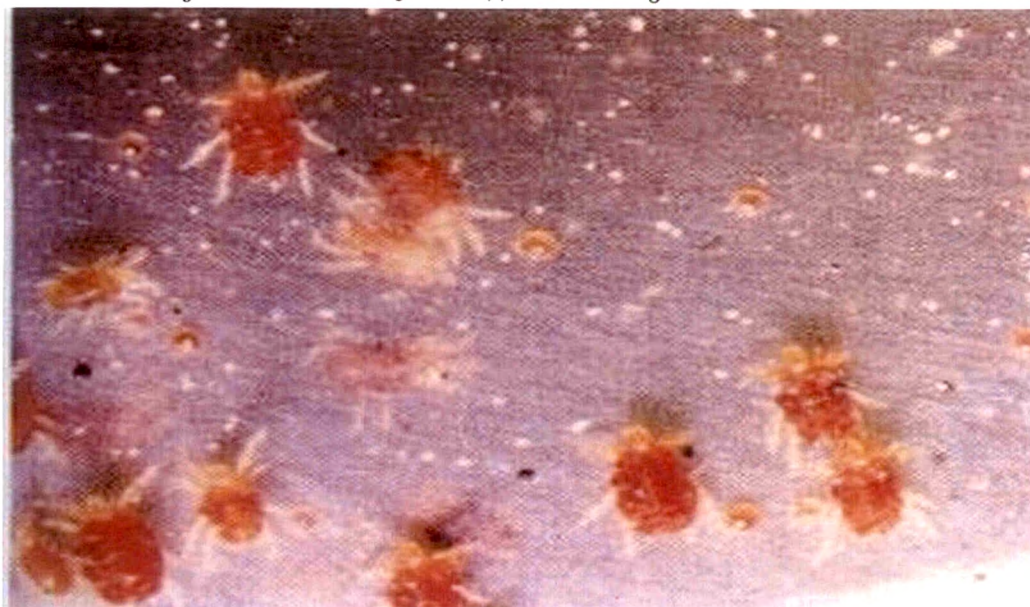


Bagging of treated leaves of tomato.



Bagging of treated leaves of tomato.

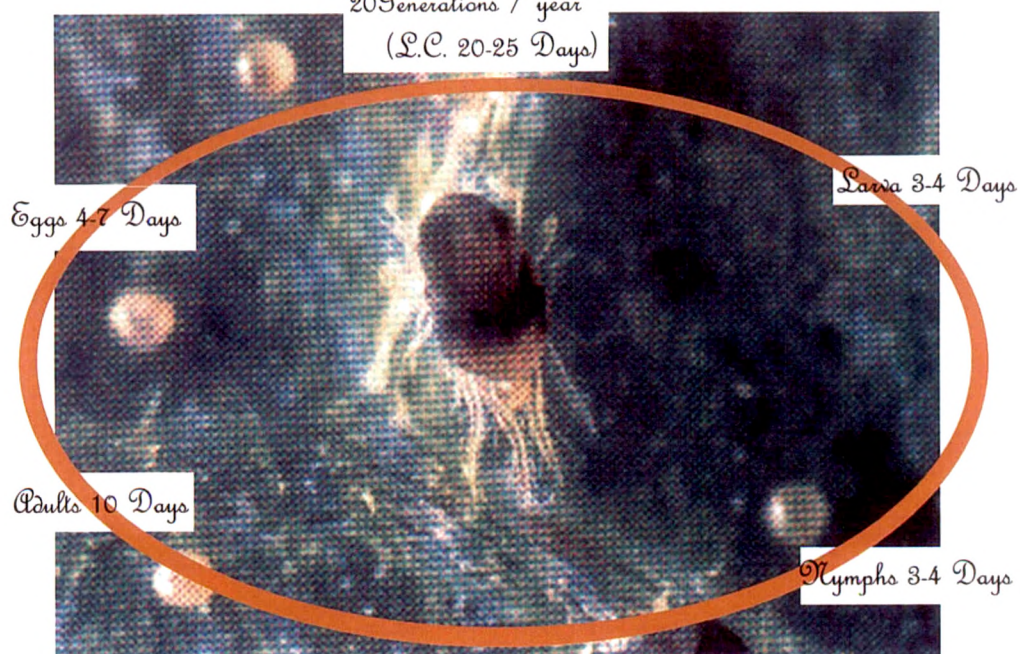
Red spider mite *Tetranychus* spp. (Tetranychidae : Acarina)



Red spider mites (Genus -*Tetranychus*, sp - *Cinnabarinus*)

Life cycle of Red spider mite :*Tetranychus* spp.

20 Generations / year
(L.C. 20-25 Days)



Life cycle of red spider mites.

Red spider mite (Adult)

Table 26

Efficacy of different plant extract against red spider mites

Extract concentration – 1%, observation time - 0 hours.

Treatment	Name of the plants	Percent mortality			
		R I	R II	R III	Mean
T ₁	<i>Lantana camara</i> L.	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₂	<i>Blumea malcolmii</i> Hook.	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₃	<i>Tridax procumbeans</i> L.	30 (33.21)	20 (26.56)	10 (18.44)	20 (26.07)
T ₄	<i>Celosia argentea</i> , Linn.	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₅	<i>Datura stramonium</i> L.	40 (39.23)	50 (45.00)	60 (50.77)	50 (45.00)
T ₆	<i>Annona squamosa</i> L.	20 (26.56)	40 (33.21)	30 (18.44)	30 (26.07)
T ₇	<i>Nerium oleander</i> L.	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₈	<i>Azadirchata indica</i> A. Juss.	20 (26.56)	30 (33.21)	10 (18.44)	20 (26.07)
T ₉	<i>Vitex negundo</i> L.	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₁₀	<i>Argemone maxicana</i> L.	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₁₁	Dimethoate 0.03%	50 (45.00)	60 (50.77)	40 (39.23)	50 (45.00)
T ₁₂	Control	00 (00)	00 (00)	00 (00)	00 (00)
SE ±					2.48
C.D. at 5%					5.14

Table 27

Efficacy of different plant extract against red spider mites

Extract concentration – 1 %, observation time - 4 hours.

Treatment	Name of the plants	Percent mortality			
		R I	R II	R III	Mean
T ₁	<i>Lantana camara</i> L.	60 (50.77)	50 (45.0)	40 (39.23)	50 (45.00)
T ₂	<i>Blumea malcolmii</i> Hook.	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₃	<i>Tridax procumbens</i> L.	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₄	<i>Celosia argentea</i> , Linn.	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₅	<i>Datura stramonium</i> L.	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₆	<i>Annona squamosa</i> L.	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₇	<i>Nerium oleander</i> L.	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₈	<i>Azadirachta indica</i> A. Juss.	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₉	<i>Vitex negundo</i> L.	20 (26.56)	10 (18.44)	30 (33.21)	20 (26.07)
T ₁₀	<i>Argemone maxicana</i> L.	30 (33.21)	40 (39.33)	20 (26.56)	30 (33.00)
T ₁₁	Dimethoate 0.03%	20 (26.56)	10 (18.44)	30 (33.21)	20 (26.07)
T ₁₂	Control	00 (00)	00 (00)	00 (00)	00 (00)
SE ±					2.04
C.D. at 5%					4.23

Figures in the parenthesis are arcsin transformed values.

Table 28
Efficacy of different plant extract against red spider mites
Extract concentration – 1 %, observation time - 8 hours.

Treatment	Name of the plants	Percent mortality			
		R I	R II	R III	Mean
T ₁	<i>Lantana camara</i> L.	00 (00)	00 (00)	00 (00)	00 (00)
T ₂	<i>Blumea malcolmii</i> Hook.	00 (00)	00 (00)	00 (00)	00 (00)
T ₃	<i>Tridax procumbeans</i> L.	00 (00)	00 (00)	00 (00)	00 (00)
T ₄	<i>Celosia argentea</i> , Linn.	00 (00)	00 (00)	00 (00)	00 (00)
T ₅	<i>Datura stramonium</i> L.	00 (00)	00 (00)	00 (00)	00 (00)
T ₆	<i>Annona squamosa</i> L.	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₇	<i>Nerium oleander</i> L.	20 (26.56)	30 (33.21)	10 (18.44)	10 (26.07)
T ₈	<i>Azadirchata indica</i> A. Juss.	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₉	<i>Vitex negundo</i> L.	10 (18.44)	10 (33.21)	20 (26.56)	20 (26.07)
T ₁₀	<i>Argemone maxicana</i> L.	10 (18.44)	10 (18.44)	10 (18.44)	10 18.44)
T ₁₁	Dimethoate 0.03%	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₁₂	Control	00 (00)	00 (00)	00 (00)	00 (00)
SE ±					00
C.D. at 5%					00

Figures in the parenthesis are arcsin transformed values.

Table 29
Efficacy of different plant extract against red spider mites
Extract concentration – 1 %, observation time - 12 hours.

Treatment	Name of the plants	Percent mortality			
		R I	R II	R III	Mean
T ₁	<i>Lantana camara</i> L.	00 (00)	00 (00)	00 (00)	00 (00)
T ₂	<i>Blumea malcolmii</i> Hook.	00 (00)	00 (00)	00 (00)	00 (00)
T ₃	<i>Tridax procumbeans</i> L.	00 (00)	00 (00)	00 (00)	00 (00)
T ₄	<i>Celosia argentea</i> , Linn.	00 (00)	00 (00)	00 (00)	00 (00)
T ₅	<i>Datura stramonium</i> L.	00 (00)	00 (00)	00 (00)	00 (00)
T ₆	<i>Annona sequamosa</i> L.	00 (00)	00 (00)	00 (00)	00 (00)
T ₇	<i>Nerium oleander</i> L.	00 (00)	00 (00)	00 (00)	00 (00)
T ₈	<i>Azadirchata indica</i> A.Juss.	00 (00)	00 (00)	00 (00)	00 (00)
T ₉	<i>Vitex negundo</i> L.	00 (00)	00 (00)	00 (00)	00 (00)
T ₁₀	<i>Argemone maxicana</i> L.	00 (00)	00 (00)	00 (00)	00 (00)
T ₁₁	Dimethoate 0.03%	00 (00)	00 (00)	00 (00)	00 (00)
T ₁₂	Control	00	00	00	00
SE ±					00
C.D. at 5%					00

Figures in the parenthesis are arcsin transformed values.

Table 30

Efficacy of different plant extract against red spider mites
Extract concentration – 2%, observation time - 0 hours.

Treatment	Name of the plants	Percent mortality			
		R I	R II	R III	Mean
T ₁	<i>Lantana camara</i> L.	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₂	<i>Blumea malcolmii</i> Hook.	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₃	<i>Tridax procumbeans</i> L.	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₄	<i>Celosia argentea</i> , Linn.	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₅	<i>Datura stramonium</i> L.	80 (63.44)	60 (50.77)	70 (56.79)	70 (57.0)
T ₆	<i>Annona squamosa</i> L.	50 (45.0)	40 (39.23)	60 (50.77)	50 (45.00)
T ₇	<i>Nerium oleander</i> L.	20 (26.56)	30 (33.21)	10 (18.44)	20 (26.07)
T ₈	<i>Azadirchata indica</i> A. Juss.	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₉	<i>Vitex negundo</i> L.	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₁₀	<i>Argemone maxicana</i> L.	10 (18.44)	20 (26.56)	30 (33.21)	20 (26.07)
T ₁₁	Dimethoate 0.03%	40 (39.23)	60 (50.77)	50 (45.00)	50 (45.00)
T ₁₂	Control	00	00	00	00
		303.27	311.18	314.85	
SE ±					2.48
C.D. at 5%					5.14

Figures in the parenthesis are arcsin transformed values.

Table 31

Efficacy of different plant extract against red spider mites
Extract concentration – 2 % , observation time - 4 hours.

Treatment	Name of the plants	Percent mortality			
		R I	R II	R III	Mean
T ₁	<i>Lantana camera</i> L.	60 (50.77)	40 (39.23)	50 (45.00)	50 (45.00)
T ₂	<i>Blumea malcolmii</i> Hook.	00 (00)	00 (00)	00 (00)	00 (00)
T ₃	<i>Tridax procumbeans</i> L.	00 (00)	00 (00)	00 (00)	00 (00)
T ₄	<i>Celosia argentea</i> , Linn.	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₅	<i>Datura stramonium</i> L.	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₆	<i>Annona squamosa</i> L.	10 (18.44)	30 (33.21)	20 (26.56)	20 (26.07)
T ₇	<i>Nerium oleander</i> L.	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₈	<i>Azadirchata indica</i> A. Juss.	60 (50.77)	40 (39.23)	50 (45.00)	50 (45.00)
T ₉	<i>Vitex negundo</i> L.	10 (18.44)	30 (33.21)	20 (26.56)	20 (26.07)
T ₁₀	<i>Argemone mexicana</i> L.	40 (39.23)	60 (50.77)	50 (45.00)	50 (45.00)
T ₁₁	Dimethoate 0.03%	30 (33.21)	10 (18.44)	20 (26.56)	20 (26.07)
T ₁₂	Control	00	00	00	00
		266.18	269.41	270.0	
SE ±					3.01
C.D. at 5%					6.24

Figures in the parenthesis are arcsin transformed values.

Table 32

Efficacy of different plant extract against red spider mites

Extract concentration – 2 %, observation time - 8 hours.

Treatment	Name of the plants	Percent mortality			
		R I	R II	R III	Mean
T ₁	<i>Lantana camera L.</i>	00 (00)	00 (00)	00 (00)	00 (00)
T ₂	<i>Blumea malcolmii Hook.</i>	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₃	<i>Tridax procumbeans L.</i>	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₄	<i>Celosia argentea, Linn.</i>	00 (00)	00 (00)	00 (00)	00 (00)
T ₅	<i>Datura stramonium L.</i>	00 (00)	00 (00)	00 (00)	00 (00)
T ₆	<i>Annona squamosa L.</i>	00 (00)	00 (00)	00 (00)	00 (00)
T ₇	<i>Nerium oleander L.</i>	00 (00)	00 (00)	00 (00)	00 (00)
T ₈	<i>Azadirchata indicaA.Juss.</i>	00 (00)	00 (00)	00 (00)	00 (00)
T ₉	<i>Vitex negundo L.</i>	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₁₀	<i>Argemone maxicana L.</i>	00 (00)	00 (00)	00 (00)	00 (00)
T ₁₁	Dimethoate 0.03%	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₁₂	Control	00	00	00	00
SE ±					00
C.D. at 5%					00

Figures in the parenthesis are arcsin transformed values.

Table 33

Efficacy of different plant extract against red spider mites

Extract concentration – 2 %, observation time - 12 hours.

Treatment	Name of the plants	Percent mortality			
		R I	R II	R III	Mean
T ₁	<i>Lantana camera L.</i>	00 (00)	00 (00)	00 (00)	00 (00)
T ₂	<i>Blumea malcolmii Hook.</i>	00 (00)	00 (00)	00 (00)	00 (00)
T ₃	<i>Tridax procumbeans L.</i>	00 (00)	00 (00)	00 (00)	00 (00)
T ₄	<i>Celosia argentea, Linn.</i>	00 (00)	00 (00)	00 (00)	00 (00)
T ₅	<i>Datura stramonium L.</i>	00 (00)	00 (00)	00 (00)	00 (00)
T ₆	<i>Annona sequamosa L.</i>	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₇	<i>Nerium oleander L.</i>	00 (00)	00 (00)	00 (00)	00 (00)
T ₈	<i>Azadirchata indicaA.Juss.</i>	00 (00)	00 (00)	00 (00)	00 (00)
T ₉	<i>Vitex negundo L.</i>	00 (00)	00 (00)	00 (00)	00 (00)
T ₁₀	<i>Argemone maxicana L.</i>	00 (00)	00 (00)	00 (00)	00 (00)
T ₁₁	Dimethoate 0.03%	00 (00)	00 (00)	00 (00)	00 (00)
T ₁₂	Control	00	00	00	00
SE ±					00
C.D. at 5%					00

Figures in the parenthesis are arcsin transformed values.

Table 34

Efficacy of different plant extract against red spider mites

Extract concentration – 3 %, observation time - 0 hours.

Treatment	Name of the plants	Percent mortality			
		R I	R II	R III	Mean
T ₁	<i>Lantana camera L.</i>	40 (39.23)	30 (33.21)	20 (26.56)	30 (33.00)
T ₂	<i>Blumea malcolmii Hook.</i>	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₃	<i>Tridax procumbeans L.</i>	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₄	<i>Celosia argentea, Linn.</i>	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₅	<i>Datura stramonium L.</i>	90 (87.87)	70 (56.79)	80 (63.44)	80 (63.44)
T ₆	<i>Annona squamosa L.</i>	60 (50.77)	80 (63.44)	70 (56.79)	70 (57.00)
T ₇	<i>Nerium oleander L.</i>	30 (33.21)	40 (39.23)	50 (45.00)	40 (39.15)
T ₈	<i>Azadirchata indica A. Juss.</i>	20 (26.56)	30 (33.21)	10 (18.44)	20 (26.07)
T ₉	<i>Vitex negundo L.</i>	30 (33.21)	20 (26.56)	10 (18.44)	20 (26.07)
T ₁₀	<i>Argemone mexicana L.</i>	20 (26.56)	30 (33.21)	40 (39.23)	30 (33.07)
T ₁₁	Dimethoate 0.03%	40 (39.23)	60 (50.77)	50 (45.00)	50 (45.00)
T ₁₂	Control	00 (00)	00 (00)	00 (00)	00 (00)
		322.53	391.74	368.42	
SE ±					5.25
C.D. at 5%					10.88

Figures in the parenthesis are arcsin transformed values.

Table 35
Efficacy of different plant extract against red spider mites
Extract concentration – 3 %, observation time - 4 hours.

Treatment	Name of the plants	Percent mortality			
		R I	R II	R III	Mean
T ₁	<i>Lantana camera L.</i>	40 (39.23)	60 (50.77)	80 (63.44)	60 (51.15)
T ₂	<i>Blumea malcolmii</i> <i>Hook.</i>	20 (26.56)	10 (18.44)	30 (33.21)	20 (26.07)
T ₃	<i>Tridax procumbeans</i> <i>L.</i>	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₄	<i>Celosia argentea,</i> <i>Linn.</i>	10 (18.44)	20 (26.56)	30 (33.21)	20 (26.07)
T ₅	<i>Datura stramonium</i> <i>L.</i>	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₆	<i>Annona squamosa</i> <i>L.</i>	40 (39.23)	30 (33.21)	20 (26.56)	30 (33.00)
T ₇	<i>Nerium oleander L.</i>	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₈	<i>Azadirchata</i> <i>indicaA.Juss.</i>	50 (45.00)	60 (50.77)	40 (39.33)	50 (45.03)
T ₉	<i>Vitex negundo L.</i>	10 (18.44)	20 (26.56)	30 (33.21)	20 (26.07)
T ₁₀	<i>Argemone maxicana</i> <i>L.</i>	40 (39.23)	30 (33.21)	50 (45.00)	40 (39.15)
T ₁₁	Dimethoate 0.03%	10 (18.44)	20 (26.56)	30 (33.21)	20 (26.07)
T ₁₂	Control	00	00	00	00
		299.89	321.40	362.49	
SE ±					4.66
C.D. at 5%					9.66

Figures in the parenthesis are arcsin transformed values.

Table 36

Efficacy of different plant extract against red spider mites

Extract concentration – 3 % , observation time - 8 hours.

Treatment	Name of the plants	Percent mortality			
		R I	R II	R III	Mean
T ₁	<i>Lantana camera</i> L.	00 (00)	00 (00)	00 (00)	00 (00)
T ₂	<i>Blumea malcolmii</i> Hook.	00 (00)	00 (00)	00 (00)	00 (00)
T ₃	<i>Tridax procumbeans</i> L.	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₄	<i>Celosia argentea</i> , Linn.	10 (18.44)	20 (26.56)	30 (33.21)	20 (26.07)
T ₅	<i>Datura stramonium</i> L.	00 (00)	00 (00)	00 (00)	00 (00)
T ₆	<i>Annona squamosa</i> L.	00 (00)	00 (00)	00 (00)	00 (00)
T ₇	<i>Nerium oleander</i> L.	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₈	<i>Azadirchata indica</i> A.Juss.	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₉	<i>Vitex negundo</i> L.	20 (26.56)	10 (18.44)	30 (33.21)	20 (26.07)
T ₁₀	<i>Argemone mexicana</i> L.	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₁₁	Dimethoate 0.03%	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₁₂	Control	00	00	00	00
		137.20	129.08	143.85	
SE ±					00
C.D. at 5%					00

Figures in the parenthesis are arcsin transformed values.

Table No 37

Efficacy of different plant extract against red spider mites
Extract concentration – 3 %, observation time - 12 hours.

Treatment	Name of the plants	Percent mortality			
		R I	R II	R III	Mean
T ₁	<i>Lantana camera</i> L7	00 (00)	00 (00)	00 (00)	00 (00)
T ₂	<i>Blumea malcolmii</i> Hook.	00 (00)	00 (00)	00 (00)	00 (00)
T ₃	<i>Tridax procumbeans</i> L.	00 (00)	00 (00)	00 (00)	00 (00)
T ₄	<i>Celosia argentea</i> , Linn.	00 (00)	00 (00)	00 (00)	00 (00)
T ₅	<i>Datura stramonium</i> L.	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₆	<i>Annona sequamosa</i> L.	00 (00)	00 (00)	00 (00)	00 (00)
T ₇	<i>Nerium oleander</i> L.	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₈	<i>Azadirchata indica</i> A.Juss.	00 (00)	00 (00)	00 (00)	00 (00)
T ₉	<i>Vitex negundo</i> L.	00 (00)	00 (00)	00 (00)	00 (00)
T ₁₀	<i>Argemone maxicana</i> L.	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)
T ₁₁	Dimethoate 0.03%	00 (00)	00 (00)	00 (00)	00 (00)
T ₁₂	Control	00	00	00	00
SE ±					00
C.D.5%					00

Figures in the parenthesis are arcsin transformed values.

Table No 38

Dimethoate (0.03 %)

Hour's	R I	R II	R III	Mean
0 hours	40	60	50	50
4 hour	30	20	10	20
8 hour	10	10	10	10
12 hour	0	0	0	0

summary table 3

Table 1 : Effect of plant extracts on the mortality percentage of Red spider mite

Treatments Name of the plants	Time of observation											
	0 hrs			4 hrs			8 hrs			12 hrs		
	Concentration of the extracts											
	1%	2%	3%	1%	2%	3%	1%	2%	3%	1%	2%	3%
Lantana camara L	10 (18.44)	10 (18.44)	30 (33.00)	50 (45.00)	50 (45.00)	60 (50.77)	00	00	00	00	00	00
Blumea malcomii Hook	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)	00 (26.07)	20 (18.44)	00	10 (18.44)	10 (18.44)	00	00	00
Tridax procumbens L	20 (26.07)	10 (18.44)	10 (18.44)	10 (18.44)	00	10 (18.44)	00	10 (18.44)	10 (18.44)	00	00	00
Celosia argentea Linn	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)	10 (18.44)	20 (26.07)	00	00	10 (18.44)	00	00	00
Datura stramonium L	50 (45.00)	70 (56.79)	80 (63.44)	10 (18.44)	10 (18.44)	10 (18.44)	00	00	00	00	00 (18.44)	10
Annona squamosa L	30 (33.00)	50 (45.00)	70 (56.79)	10 (18.44)	20 (26.07)	30 (33.00)	10 (18.44)	00	00	00	10 (18.44)	00
Nerium oleander L	10 (18.44)	20 (26.07)	40 (39.23)	10 (18.44)	10 (18.44)	10 (18.44)	20 (26.07)	00	10 (18.44)	00	00 (18.44)	10
Azadiracta indica A. Juss	20 (26.07)	10 (18.44)	20 (26.07)	10 (18.44)	50 (45.00)	50 (45.00)	10 (18.44)	10 (18.44)	10 (18.44)	00	00	00
Vitex negundo L	10 (18.44)	10 (18.44)	20 (26.07)	20 (26.07)	20 (26.07)	20 (26.07)	20 (26.07)	00	20 (26.07)	00	00	00
Argemone maxicana L	10 (18.44)	20 (26.07)	30 (33.00)	30 (33.00)	50 (45.00)	40 (39.23)	10 (18.44)	00	10 (18.44)	00 (18.44)	00	10
Dimethoate 0.03%	50 (45.00)			20 (26.07)			10 (18.44)			00		
Control	00	00	00	00	00	00	00	00	00	00	00	00
SE ±	2.48	2.48	5.25	2.04	3.01	4.66	ND	00	ND	00	00	00
C.D. (0.05)	5.14	5.14	10.88	4.23	6.24	9.66	ND	00	ND	00	00	00

Figures in parenthesis are aretin transformed values. ND =Not defined.

These are the summarised values from table 2 & 3